

# AprilAire<sup>®</sup>

Air Cleaner

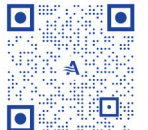
## INSTALLATION INSTRUCTIONS

### Model 5000

Electronic Air Cleaner



Product Info &  
Digital Manual



## TABLE OF CONTENTS

SAFETY INSTRUCTIONS .....	2
SPECIFICATIONS .....	3
DIMENSIONS .....	3
COMPONENTS .....	4
LOCATING THE AIR CLEANER .....	5
Clearance .....	5
Installation Options .....	5
INSTALLING THE OUTER HOUSING AND INNER HOUSING ASSEMBLY .....	6
WIRING AND START UP .....	7
TROUBLESHOOTING GUIDE .....	9
MAINTENANCE RECOMMENDATIONS .....	10
Clean the Control Electrode .....	10
Replace the Air Filter .....	10
Clean the Ionizer Wires .....	10
Clean the Inner Assembly .....	10
APPLICATIONS WITH A HUMIDIFIER .....	12

## SAFETY INSTRUCTIONS

### ⚠ WARNING

- **ATTENTION INSTALLER:** Read this manual before installing. Improper installation or maintenance may cause property damage or injury. It is recommended that installation, service, and maintenance be performed by a trained service technician. This product must be installed in compliance with all local, state, and federal codes.
- **ELECTRIC SHOCK HAZARD:** 120 volts may cause serious injury from electric shock. Disconnect electrical power to the HVAC system before starting installation or servicing. Leave power disconnected until installation/service is completed.
- Arcing in electrical components may cause an explosion. Do not install unit where explosive gases will be present.
- To reduce the risk of electrical shock, this equipment has a grounding-type (three prong) plug. This plug will fit only into a grounding-type power outlet. If the plug does not fit into the outlet, contact qualified personnel to install the proper outlet. Do not alter this plug in any way.
- To reduce the risk of electrical shock, position the product so that the power cord can be plugged into an electrical outlet without the use of an extension cord.

### ⚠ CAUTION

- **SHARP EDGES MAY CAUSE INJURY FROM CUTS.** Use care when cutting plenum openings and handling ductwork. Always wear glasses/goggles and gloves when installing the unit.
- **DO NOT PLUG THE AIR CLEANER INTO AN OUTLET THAT IS ALWAYS LIVE.** The outlet must only be live when the HVAC system fan is operating. Failure to properly wire the outlet can result in excessive ozone production.
- Dropping may cause personal injury or equipment damage. Handle with care and follow installation instructions.

### NOTICE

#### EQUIPMENT DAMAGE MAY OCCUR IF INSTALLATION INSTRUCTIONS ARE NOT FOLLOWED.

- Do not install the air cleaner on the warm air supply or in an area where the temperature may exceed 140°F. This may include areas above heat exchangers in downflow furnaces or above exhaust flues in lowboy furnace cold air returns.
- Do not install air cleaner downstream of a UV light. UV lamps will cause degradation of the air filter media.
- The air cleaner must be installed where the ambient air temperature remains between 32°F and 140°F (0°C and 60°C).
- Do not install an atomizing humidifier upstream of the air cleaner. Water or mist will cause the power supply to shut down.
- Do not plug any other device into the outlet in which the air cleaner is plugged. This is a current sensitive outlet. Damage to circuit components may occur if a device other than the air cleaner is operated from the air cleaner outlet.

## SPECIFICATIONS

**TABLE 1: MODEL 5000 SPECIFICATIONS**

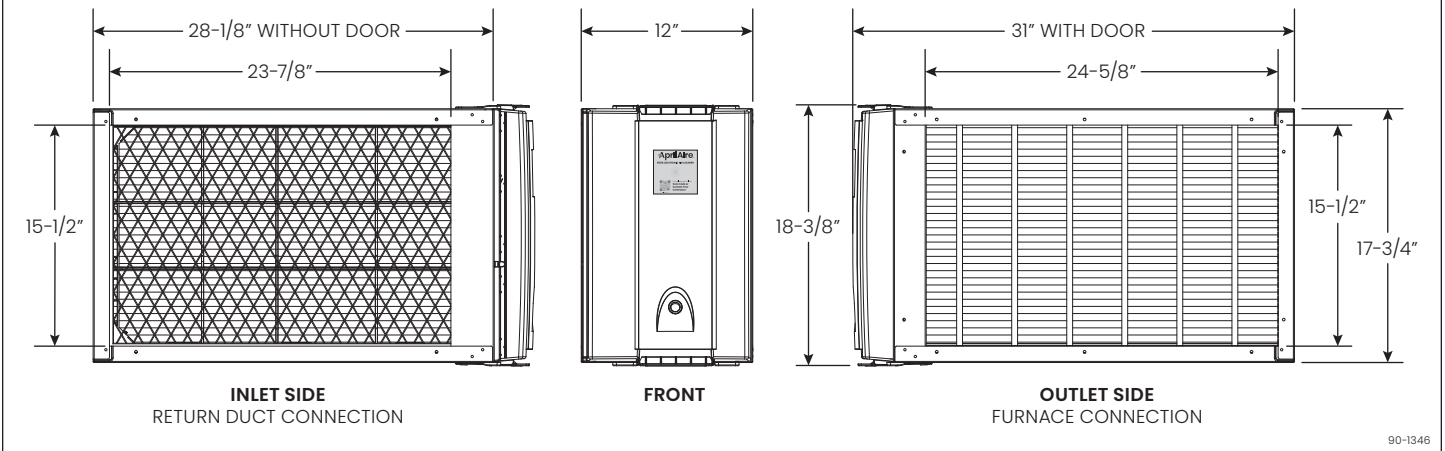
<b>0.3-0.4 <math>\mu</math>m Particle Filtration Efficiency @ 347 fpm</b>	94%
<b>Replacement Air Filter Model</b>	501
<b>Airflow Capacity</b>	Up to 2000 CFM maximum
<b>Electrical – Voltage</b>	120 VAC $\pm$ 15% @ 50/60 Hz
<b>Electrical – Current/Power</b>	Consumes less than 50 watts with high voltage active
<b>Maximum Equipment Weight</b>	Cabinet will support 400 lb. static load

**TABLE 2: MODEL 5000 INITIAL AIRFLOW RESISTANCE (INCHES w.c.)**

Airflow (CFM)					
1000	1200	1400	1600	1800	2000
.10	.14	.17	.21	.25	.29

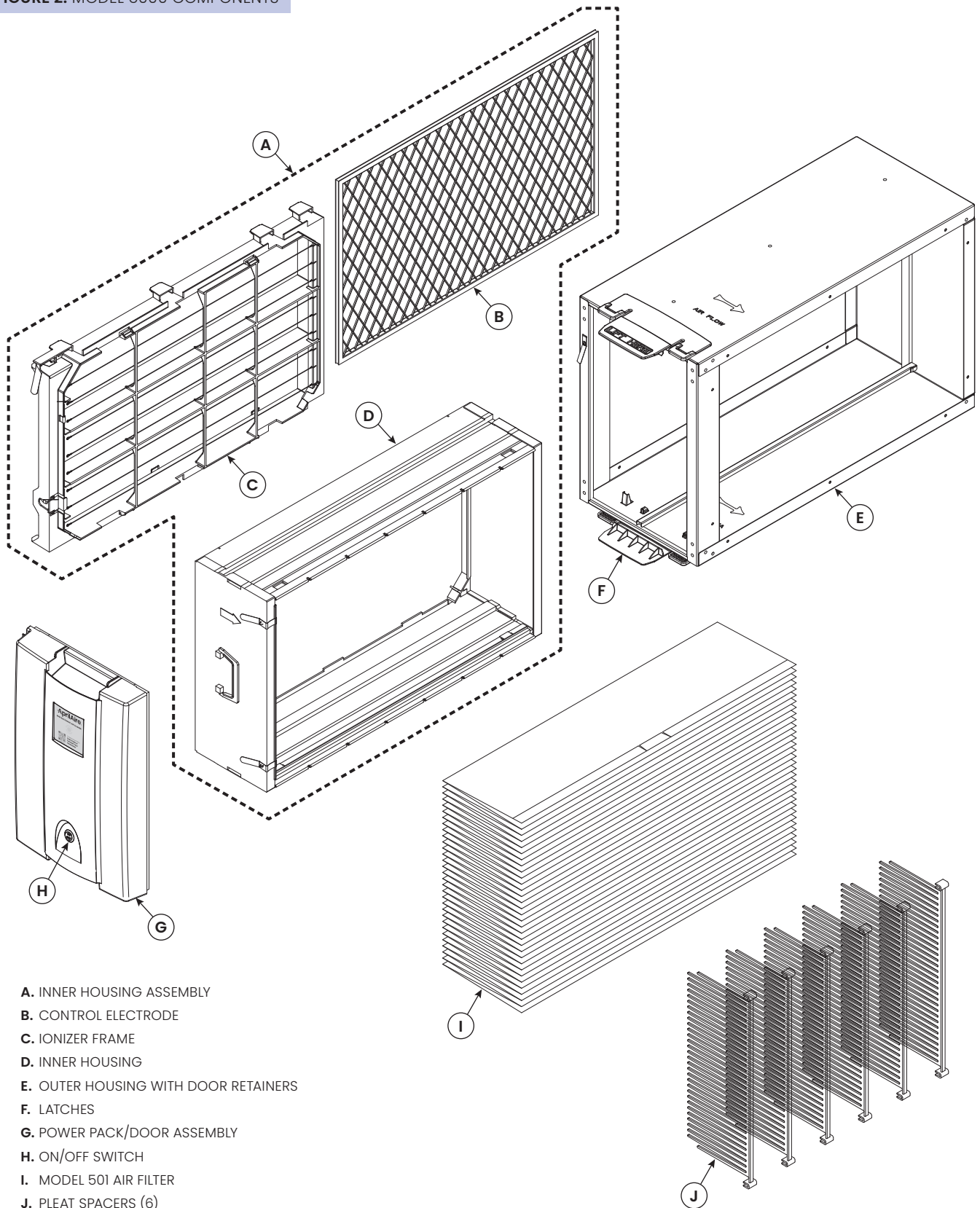
## DIMENSIONS

**FIGURE 1: MODEL 5000 DIMENSIONS**



# COMPONENTS

**FIGURE 2: MODEL 5000 COMPONENTS**



- A. INNER HOUSING ASSEMBLY
- B. CONTROL ELECTRODE
- C. IONIZER FRAME
- D. INNER HOUSING
- E. OUTER HOUSING WITH DOOR RETAINERS
- F. LATCHES
- G. POWER PACK/DOOR ASSEMBLY
- H. ON/OFF SWITCH
- I. MODEL 501 AIR FILTER
- J. PLEAT SPACERS (6)

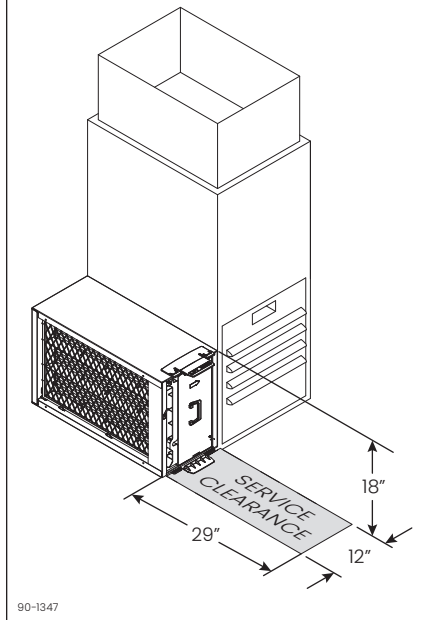


# LOCATING THE AIR CLEANER

## CLEARANCE

It is important to leave enough room to remove and re-install the inner housing for filter replacement (see **FIGURE 3**).

**FIGURE 3: CLEARANCE FOR INNER HOUSING REMOVAL**



## INSTALLATION OPTIONS

The Model 5000 can be installed in a variety of ways. **FIGURES 4-7** show some of the possibilities.

The air cleaner may be installed on the left or right side of the air handler. If installed on the right, the ON/OFF switch will be on top and the nameplate will be on the bottom. Remove the nameplate and rotate it 180° to read properly.

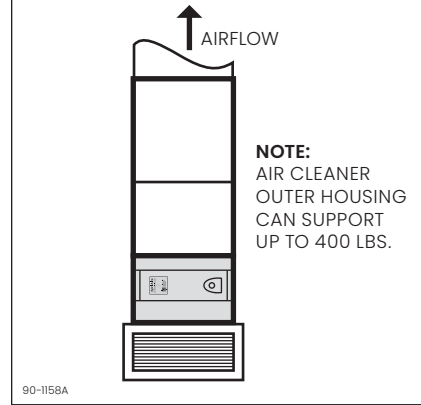
## APPLICATIONS WITH A HUMIDIFIER

An Aprilaire Whole-House Humidifier can be mounted upstream from the air cleaner.

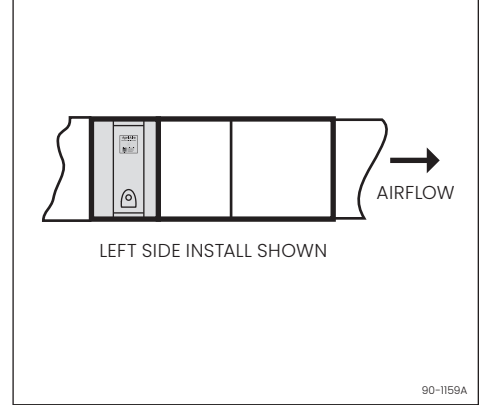
## NOTICE

Do not install an atomizing humidifier upstream of the air cleaner. Water or mist will cause the power supply to shut down.

**FIGURE 4: BOTTOM RETURN IN UPFLOW "HIGHBOY" INSTALLATION**

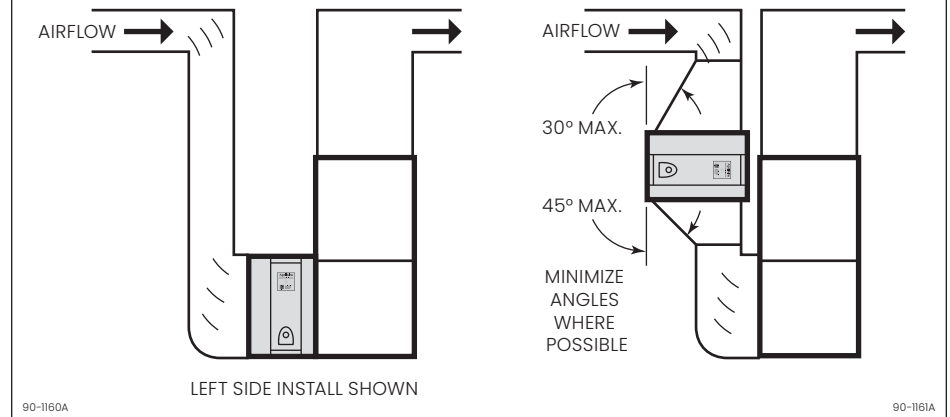


**FIGURE 5: INLINE IN DUCT, HORIZONTAL OR VERTICAL INSTALLATION**

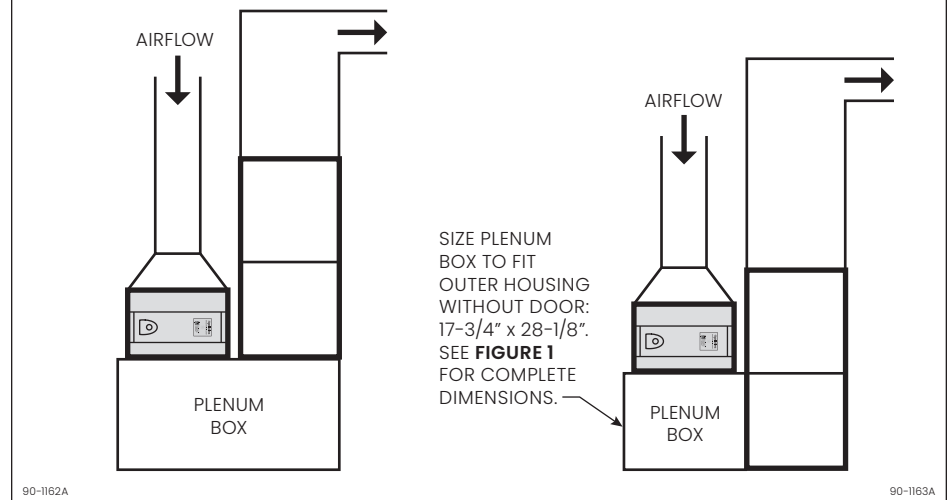


**FIGURE 6: SIDE RETURN IN UPFLOW "HIGHBOY" INSTALLATION**

EITHER OF THE METHODS SHOWN WILL RESULT IN A NARROWER "FOOTPRINT", CREATING BETTER CLEARANCE IN TIGHT MOUNTING APPLICATIONS.



**FIGURE 7: COMPACT SIDE RETURN IN UPFLOW "HIGHBOY" INSTALLATION**



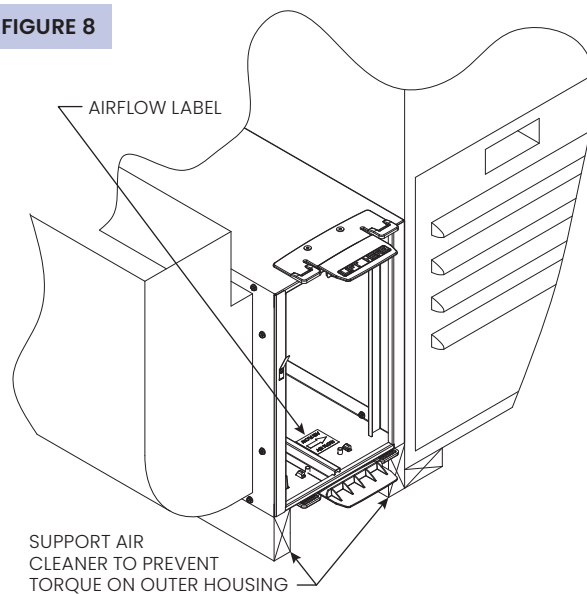
## INSTALLING THE OUTER HOUSING AND INNER HOUSING ASSEMBLY

### ⚠ WARNING

**ELECTRIC SHOCK HAZARD:** 120 volts may cause serious injury from electric shock. Disconnect electrical power to the HVAC system before starting installation or servicing. Leave power disconnected until installation/service is completed.

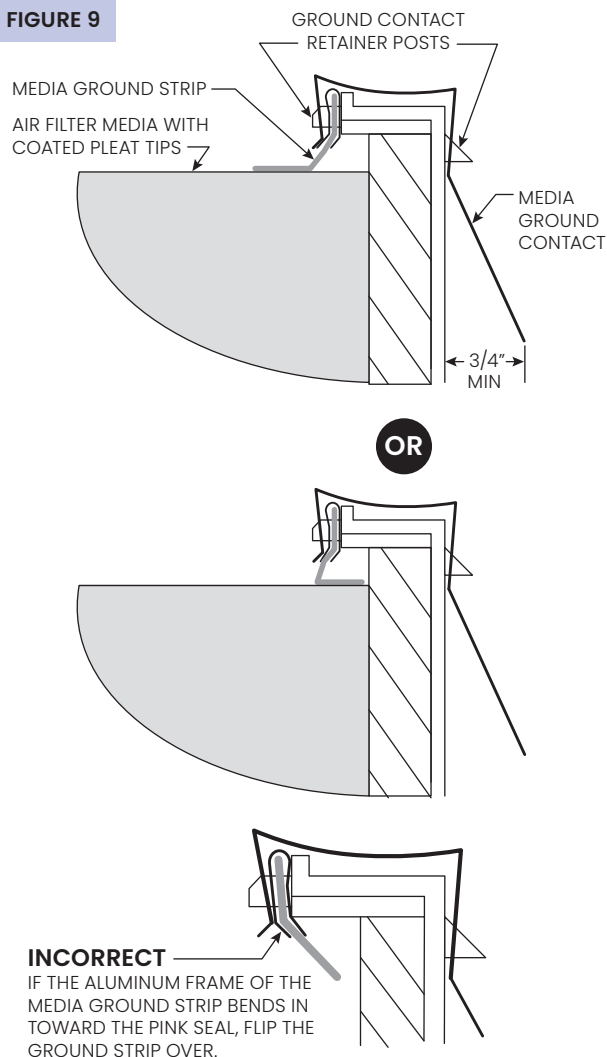
1. Turn the system OFF at the thermostat by changing the mode selector to OFF. This may be a switch or a push button, depending on the type of thermostat.
2. Disconnect power service to the furnace or air handler.
3. Remove air cleaner power pack/door assembly and pull inner assembly out of the outer housing.
4. Remove the air filter carton and the cardboard inserts and strapping, used to hold the air filter, from the inner housing.
5. On retrofit applications, remove and discard the existing filter and filter housing. Thoroughly clean the blower, blower compartment and evaporative coil.
6. With the airflow label on the outer housing pointing toward the furnace/air handler (see **FIGURE 8**), attach the outer housing to the furnace/air handler.
7. Provide support for the housing, as shown in **FIGURE 8**, if the unit is to be installed on the side of an upflow furnace/air handler (see example of this type of installation in **FIGURE 6**).
8. Seal the perimeter of the inlet and outlet connections with mastic, caulk or tape as desired. **DO NOT USE SILICON BASED CAULK.**
9. Open the inner housing and install the air filter. Use the instructions provided on the air filter carton.
10. After installing the air filter, close the inner housing. Check the media ground strip to ensure it is properly contacting the pleats (see **FIGURE 9**). If not, remove the ground strip by removing the ground contacts, and reposition as shown in **FIGURE 9**. Verify that the holes in the media ground contacts go over the ground contact retainer posts.
11. Check to make sure that the ionizer frame is fully installed onto the inner housing and that the control electrode is inserted fully into the ionizer frame.
12. Insert the inner assembly (ionizer frame and inner housing) into the outer housing.
13. Continue with **WIRING AND START UP** on page 7.

**FIGURE 8**



90-1348

**FIGURE 9**



90-1154

### ⚠ WARNING

**ELECTRIC SHOCK HAZARD:** 120 volts may cause serious injury from electric shock. Disconnect electrical power to the HVAC system before starting installation or servicing. Leave power disconnected until installation/service is completed.

1. Install a grounded (earth ground) 120-volt single receptacle outlet in accordance with NEC Standards and local codes, into which the EAC will be plugged. This outlet is to be live only when the furnace/air handler blower is running.

#### FOR EQUIPMENT WITH EAC TERMINALS:

- a. Install a single-receptacle outlet to the furnace/air handler wired as shown in **FIGURE 10**.
- b. Use a marker or label to identify the outlet as **EAC USE ONLY**.

#### FOR 120-VOLT EQUIPMENT WITHOUT EAC TERMINALS:

- a. Use an Aprilaire Model 51 Current Sensing Relay to wire a single receptacle outlet as shown in **FIGURE 11**. Refer to the instructions provided with the Model 51 for details on wiring requirements.
- b. For blowers that are 1/2 hp or larger, clamp the Model 51 around the common wire of the blower. See **FIGURE 12**.
- c. For blowers that are less than 1/2 hp, clamp the Model 51 around two wraps of the common wire as shown in **FIGURE 12**.
- d. Use a marker or label to identify the outlet as **EAC USE ONLY**.

#### FOR 240-VOLT EQUIPMENT WITHOUT EAC TERMINALS:

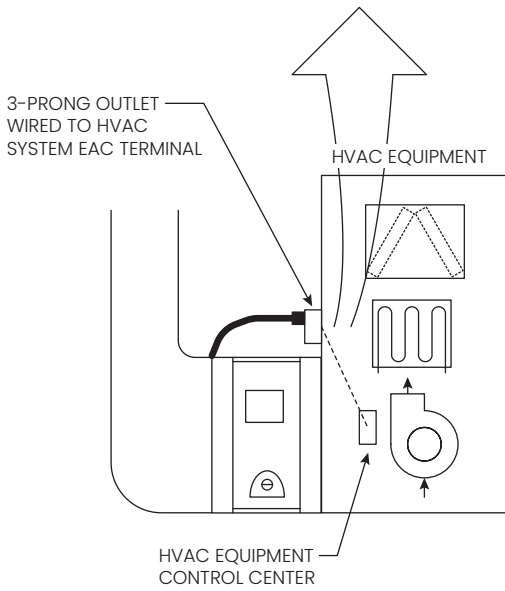
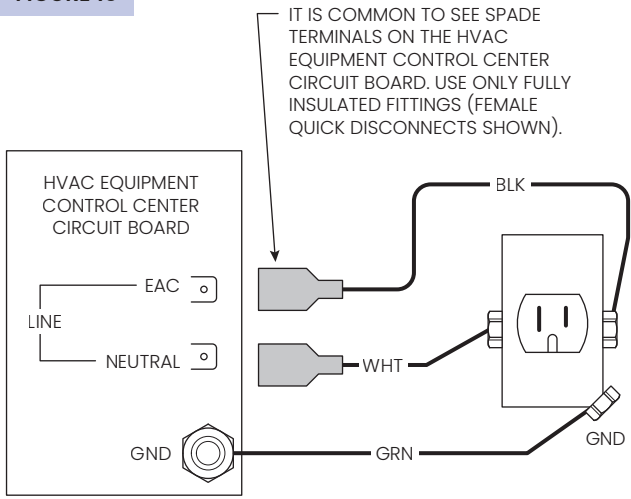
- a. Install a 2:1 step down transformer to get 120-volt service. Use the instructions provided with the transformer to ensure it is properly installed. Do not use ground as the common connection for the outlet.
  - b. Follow the instructions **FOR 120-VOLT EQUIPMENT WITHOUT EAC TERMINALS** above, except double the number of wraps around which the Model 51 is clamped.
2. Press the power cord into the slot in the side of the power pack (door) so that the plug is directed toward the installed outlet.
  3. Install the door on the housing (with the inner assembly installed in the housing). Place the bottom of the door on the lower door retainer, then swing the door toward the upper door retainer and snap into place.
  4. With the door ON/OFF switch in the **OFF** position, plug the door into the installed outlet.

### ⚠ CAUTION

**DO NOT PLUG THE AIR CLEANER INTO AN OUTLET THAT IS ALWAYS LIVE.** The outlet must only be live when the HVAC system fan is operating. Failure to properly wire the outlet can result in excessive ozone production.

5. Restore power to the furnace/air handler.
6. Turn on the heating or continuous fan (whichever uses the slowest fan speed) and verify that the **blue light on the door is not on** (see **FIGURE 13**).
7. Turn ON the door switch.
8. Verify that the **blue light on the door turns on** (see **FIGURE 13**).
9. If the light is on, turn off the heating or fan and verify that the light on the door turns off. If the light turns off, installation is complete. If the light on the door does not turn on and off as described, continue with Step 10.
10. If the light stays on after the blower has stopped running, the outlet is continuously live and must be rewired in accordance with Step 1.
11. If the light flashes on, then turns off, or if the light does not come on at all, refer to the **TROUBLESHOOTING GUIDE** on page 9.

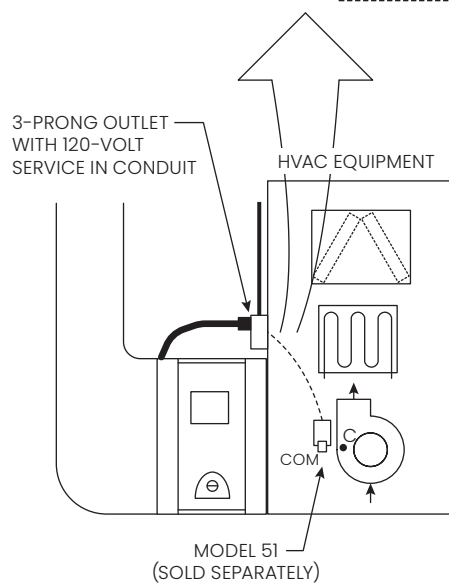
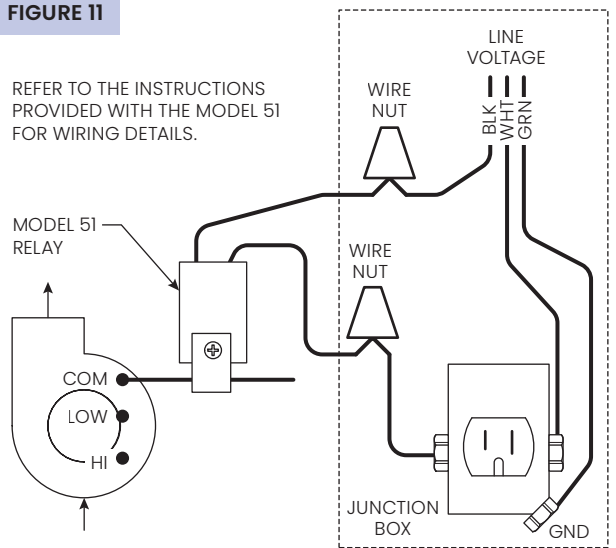
**FIGURE 10**



90-1155

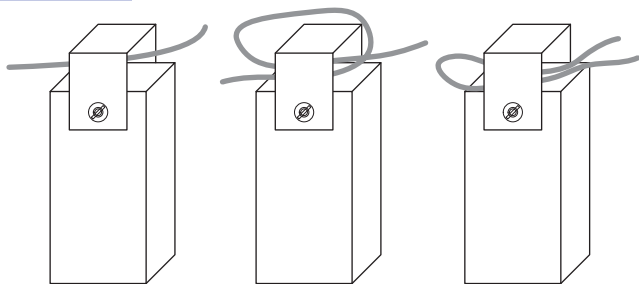
**FIGURE 11**

REFER TO THE INSTRUCTIONS PROVIDED WITH THE MODEL 51 FOR WIRING DETAILS.



90-1156

**FIGURE 12**



**ONE "WRAP"**  
USE FOR  
1/2 HP MOTORS  
OR LARGER

**TWO "WRAPS"**  
USE FOR  
MOTORS LESS  
THAN 1/2 HP

**INCORRECT  
"WRAP"**  
DOES NOT  
WORK

90-1157

**FIGURE 13**



**UNIT OFF**  
(BLUE LIGHT OFF)



**UNIT ON**  
(BLUE LIGHT ON)



## TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE(S)	SOLUTION(S)
Light does not come on at all after 90 seconds	ON/OFF switch not in <b>ON</b> position	Turn switch <b>ON</b> .
	Air cleaner not plugged in	Plug in air cleaner.
	Insufficient current to activate Model 51 relay	Wrap blower common wire around relay bracket more. See <b>FIGURE 12</b> on page 8 for wire wrapping method.
	Furnace/air handler not running	Turn blower on by making a heat call or turning Fan ON.
Light flashes on then off quickly	Over current or arcing detected	Ensure components are dry.
		Excessive humidity - run cooling to lower humidity levels.
		Ensure that all 9 ionizer wires are held at both ends.
		Look for foreign object contacting ionizer wires or buss bar.
	Door not fully installed - ensure door is latched into top and bottom retainer.	
	Insufficient current to sustain Model 51 relay	Wrap blower common wire around relay bracket more. See <b>FIGURE 12</b> on page 8 for wire wrapping method.
Loose connection in outlet junction box or at furnace/air handler EAC terminal	Check wire nuts, screw terminals and crimped connectors for loose wires. Use only fully insulated crimped connectors.	
Light stays on after blower stops running	Outlet in which air cleaner is plugged is continuously live	See Step 1 in <b>WIRING AND START UP</b> section on page 7.
Produces an ozone smell	Outlet in which air cleaner is plugged is continuously live	See Step 1 in <b>WIRING AND START UP</b> section on page 7.
	Large crack/hole in air filter	Replace air filter.
	Poor connection between media ground strip and air filter	Remove ground strip and reinstall as shown in <b>FIGURE 9</b> on page 6.
	Poor contact between control electrode and ground contact	Push in control electrode so it fully seats in the ionizer frame. See <b>FIGURE 14</b> on page 11.
	Ground contacts not touching door liner	With the inner assembly installed in the outer housing, bend up ground contacts (2-media ground contacts, 1-control electrode ground contact) so they are at least 3/4" higher than the top of the inner housing. Refer to <b>FIGURE 9</b> and <b>FIGURE 14</b> .
	Media ground contacts not fully installed	Remove ground contacts and reinstall as shown in <b>FIGURE 9</b> on page 6.
Makes a buzzing sound or causes TV interference	Large crack/hole in air filter	Replace air filter.
	Poor connection between media ground strip and air filter media	Remove ground strip and reinstall as shown in <b>FIGURE 9</b> on page 6.
	Poor contact between control electrode and ground contact	Push in control electrode so it fully seats in the ionizer frame.
	Ground contacts not touching door liner	With the inner assembly installed in the outer housing, bend up ground contacts (2-media ground contacts, 1-control electrode ground contact) so they are at least 3/4" higher than the top of the inner housing. Refer to <b>FIGURE 9</b> and <b>FIGURE 14</b> .
	Media ground contacts not fully installed	Remove ground contacts and reinstall as shown in <b>FIGURE 9</b> on page 6.

## MAINTENANCE

### WARNING

**ELECTRIC SHOCK HAZARD:** 120 volts may cause serious injury from electric shock. Disconnect electrical power to the HVAC system before servicing. Leave power disconnected until service is completed.

Maintenance of your Model 5000 is simple, involving only periodic replacement of the air filter, and cleaning of the control electrode, ionizer wires and inner housing assembly. Frequency of filter replacement and cleaning the control electrode, ionizer wires and inner housing assembly will vary depending on the environmental conditions. Typically this is 6-12 months, but can be required more frequently. It is recommended to check your filter monthly after initial installation to determine the appropriate maintenance interval.

### REPLACING THE AIR FILTER

Always use genuine AprilAire Model 501 replacement air filter. The Model 5000 is designed to work only with genuine AprilAire Model 501 replacement air filter. Use of other air filters will damage your Model 5000 Electronic Air Cleaner.

To replace the air filter, follow the directions on the box of the replacement air filter.

### CLEANING THE CONTROL ELECTRODE, IONIZER WIRES AND INNER HOUSING ASSEMBLY

Particles and or debris will build up on the control electrode, ionizer wires and inner housing assembly over time as they are located upstream of the filter. Once a buildup is visible, all of these items should be cleaned to maintain optimum performance.

#### TO CHECK AND/OR CLEAN THE CONTROL ELECTRODE:

1. At the thermostat, turn the **Fan** to **Auto** and the **Mode** (Heat-Off-Cool) to **Off**. **Fan** and **Mode** setting changes are usually done with a switch or button on the thermostat.
2. Turn the ON/OFF switch on the power pack/door to **OFF** and unplug the door.
3. Lift up one of the latches to release and remove the power pack/door, and use the handle to pull the inner housing assembly out of the outer housing.
4. Lay the inner housing assembly on a flat surface with the control electrode facing up (see **FIGURE 14**) and examine the control electrode.
5. Slide the control electrode out (see **FIGURE 14**) and wipe off with a clean cloth.

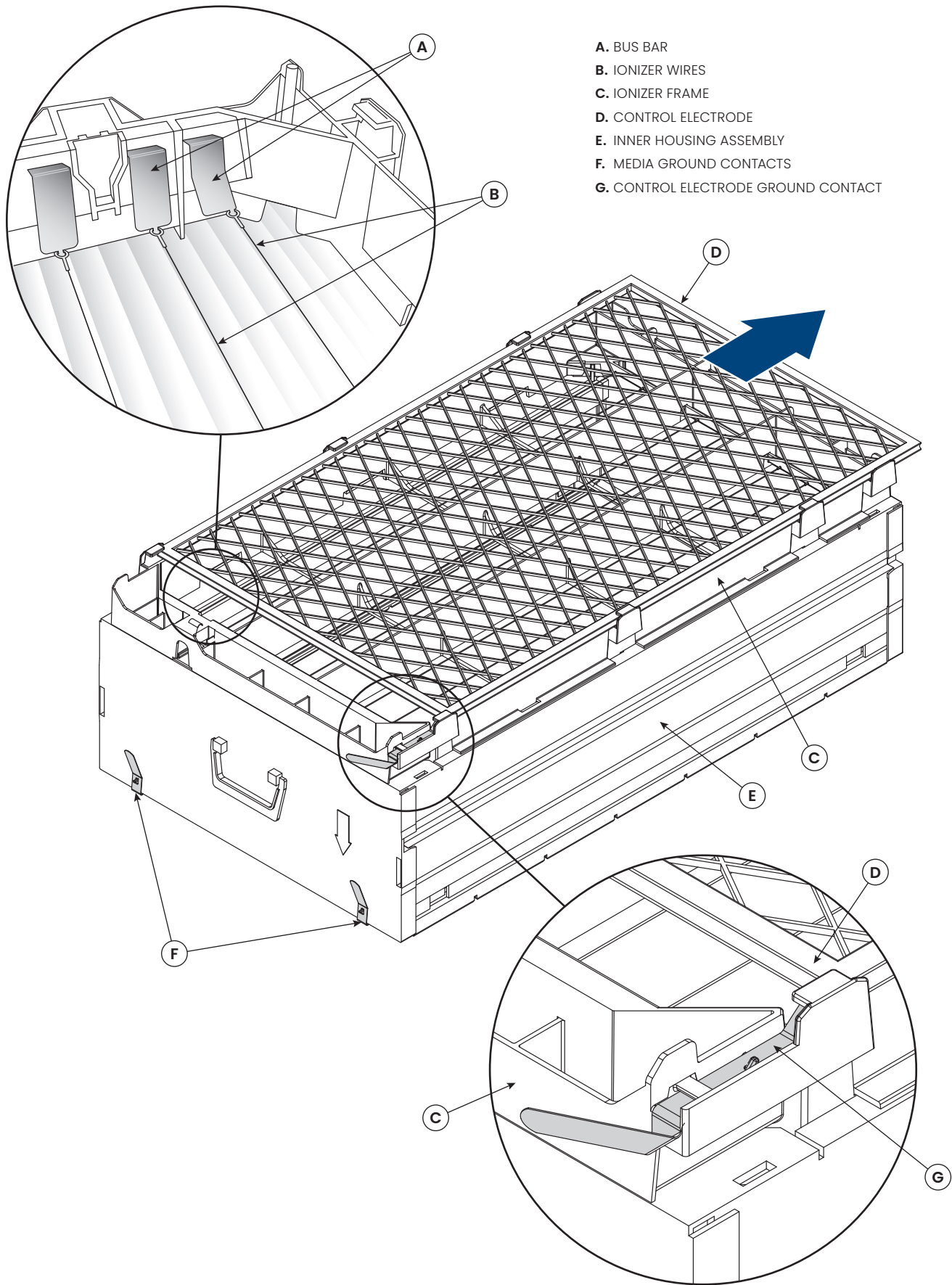
#### TO CLEAN THE IONIZER WIRES:

Using 200 grit sandpaper or an abrasive dish scrubber, clean each of the nine ionizer wires. Even if the wires don't appear dirty, clean each one. Do not use steel wool as this material readily sheds. See **FIGURE 14**.

#### TO CLEAN THE INNER HOUSING ASSEMBLY:

1. Use a vacuum with a brush attachment or a cloth to wipe off collected dust on the inner housing assembly and ionizer frame.
2. Slide the control electrode back into place.
3. Return the inner housing assembly into the outer housing and replace the door.
4. Plug in the door and turn the ON/OFF switch to the **ON** position.
5. Return the **Fan** and **Mode** settings on your thermostat to their original positions.

**FIGURE 14: MAINTENANCE**



- A. BUS BAR
- B. IONIZER WIRES
- C. IONIZER FRAME
- D. CONTROL ELECTRODE
- E. INNER HOUSING ASSEMBLY
- F. MEDIA GROUND CONTACTS
- G. CONTROL ELECTRODE GROUND CONTACT

