AprilAire
Ventilation

INSTALLATION & OPERATING INSTRUCTIONS

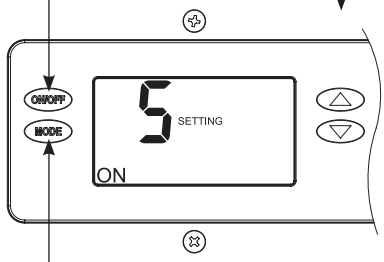
# Model E100DV

Ventilator with Dehumidification

Product Info & Digital Manual

**Up/Down** buttons used to change humidity or vent time setting

**ON/OFF** button used to turn the ventilator on and off




**MODE** button used to access ventilation time setting

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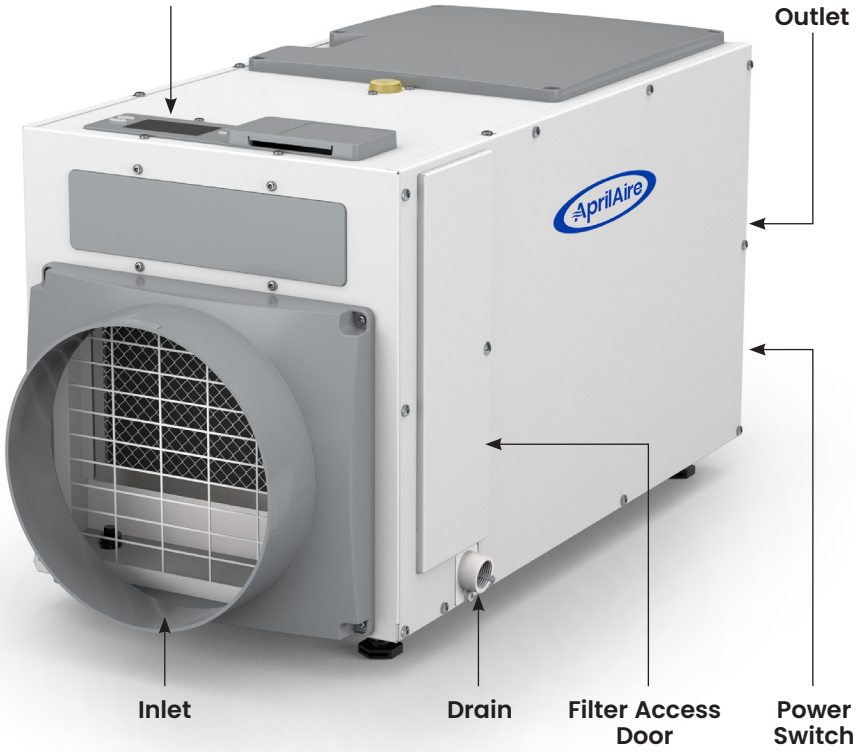


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PLEASE LEAVE THIS MANUAL WITH THE VENTILATOR OWNER

# 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.
- All safety precautions must be followed.
- Dispose of properly in accordance with federal or local regulations.

**ELECTRIC SHOCK HAZARD:**

- **120 volts may cause serious injury from electric shock.** Disconnect electrical power to the ventilator before starting installation or servicing. Leave power disconnected until installation/service is completed.
- **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.

**RISK OF FIRE OR EXPLOSION:**

- Flammable refrigerant used. Do not puncture refrigerant tubing.
- Store in well ventilated room without continuously operating flames or other potential ignition sources.
- Auxiliary devices which may be ignition sources shall not be installed in duct work.

## ⚠ 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.
- **TWO-PERSON LIFT REQUIRED.** Dropping may cause personal injury or equipment damage. Handle with care and follow installation instructions.
- This unit is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety.
- Be sure to supervise children to ensure that they do not play with the unit.
- Be sure to replace a damaged supply cord. It must be replaced by a special cord or assembly available from the manufacturer or its service agent.
- Never operate electrical equipment in standing water.
- Do not stick your fingers or other objects through the safety grills.
- Do not sit or stand on the unit, or use the unit as a table or shelf.
- The unit is designed to be installed indoors only.
- Always place in well ventilated area to prevent the accumulation of refrigerant in the case of a refrigerant system leak or failure.

## NOTICE

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

- Do not use in pool applications. Pool chemicals can damage the ventilator.
- Do not use solvents or cleaners on or near the display and circuit board. Chemicals can damage components.
- Wait 24 hours before running the unit if it was not shipped or stored in the upright position.
- Do not use dehumidification to prevent window condensation in the winter. To address window condensation, use ventilation to lower indoor humidity in the winter.
- Running the ventilator without the drain insert can lead to condensate leaks.

**ELECTRICAL INTERFERENCE CAN CAUSE OUTDOOR TEMPERATURE SENSOR INACCURACY.**

- Do not run Outdoor Temperature Sensor alongside wires carrying high voltage (120 VAC or higher).
- Do not run Outdoor Temperature Sensor wire lengths greater than 300 feet.

# INTRODUCTION AND COMPLIANCE STATEMENT

The Model E100DV Ventilator with Dehumidification is designed to bring outdoor air into today's efficiently designed homes while removing moisture from the air. Simply duct the inlet of the ventilator to an outdoor air intake and duct the discharge to the return side of the HVAC system. Plug the unit in, set the amount of needed ventilation and set the humidity limit.

High temperature limits can be set on the control to prevent bringing in outdoor air during the hottest period of the day. The built in control will automatically compensate for the ventilation time that is missed by bringing in additional outdoor air during cooler periods of the day. Compliance with the requirements of ASHRAE 62.2 is met as the control adds ventilation time as needed to account for the fractional on-time and effectiveness of the ventilation schedule. The control will also ensure that ventilation occurs no less than one hour of every four. When properly installed and set, the Model E100DV Ventilator with Dehumidification will meet the mechanical ventilation requirements of:

Energy Star Certified Homes, Version 3
EPA Indoor airPLUS, Version 1
International Residential Code (IRC)
International Energy Conservation Code (IECC)

# SPECIFICATIONS

| | Model E100DV | |
|---|---|---|
| **Unit Weight** | 69 lbs. | |
| **Shipping Weight** | 82 lbs. | |
| **Moisture Removal Capacity** | 100 pints per day @ 280 CFM<br>80°F, 60%RH Conditions | |
| **Power** | 115 VAC, Single Phase, 60Hz<br>6.7A operating current @ 80°F, 60%RH | |
| **Inlet Air Conditions** | Ventilation: 40°F – 140°F, 0%RH – 99%RH (non-condensing)<br>Dehumidification: 50°F – 104°F, 40°F dew point minimum | |
| **Filter** | MERV 8, washable | |
| **Airflow** | External Static Pressure ("w.c.) | Airflow (CFM) |
| | 0.0 | 280 |
| | 0.2 | 245 |
| | 0.4 | 210 |
| | 0.6* | 175 |

*Maximum design external static pressure.
**NOTE:** *Rated capacity and current draw measured at 80°F/60% RH inlet conditions at 0.0 external static pressure.*

# MAINTENANCE

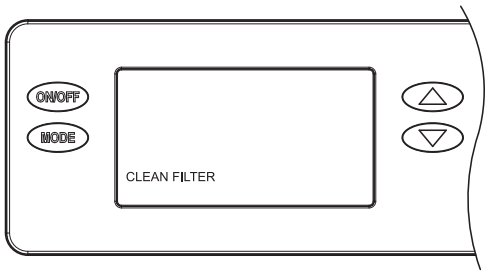
## CLEANING THE FILTER

After initial installation, the air filter and drain should be checked and cleaned every 6 months.

1. Press the ON/OFF button on the user interface to turn the unit OFF.
2. Remove the snap-on filter access door (see **FIGURE 1**) from the drain side of the ventilator by pulling on the handle until it releases. Then remove the filter door.
3. Slide the filter out of the ventilator.
4. Rinse the filter with water to remove dust and collected particles from the filter.
5. Shake off excess water from the filter.
6. Clean the drain as described in **CLEANING THE DRAIN** on page 5.
7. Reinstall the filter. An arrow on the filter frame shows the direction of airflow and it should point into the ventilator.
8. If the filter does not slide back in, make sure the drain insert has been properly installed. See **INSTALLING THE DRAIN** on page 9.
9. Replace the filter access door by inserting the two alignment tabs then snapping the door onto the side panel. Ensure both filter doors are securely installed.
10. Press the ON/OFF button to turn the ventilator back ON.

The **CLEAN FILTER** service reminder (see **FIGURE 5**) will display on the control every 6 months. **To clear the service message, press the ▲ and ▼ buttons simultaneously for 3 seconds.**

**FIGURE 5:** CLEAN FILTER SERVICE REMINDER

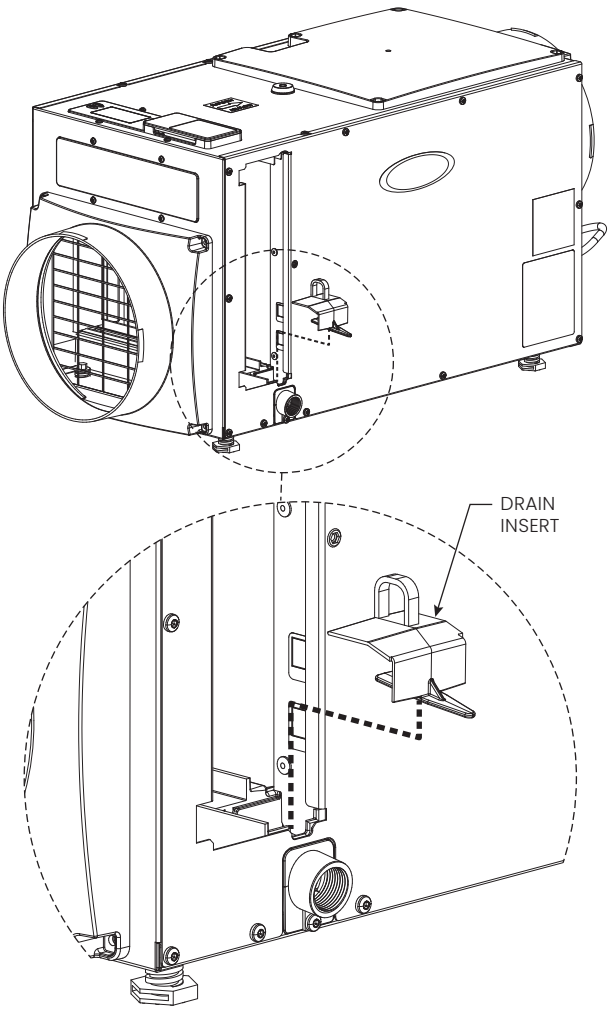



## CLEANING THE DRAIN

1. With the filter door on the drain side of the ventilator removed, reach in and pull out the drain insert using the finger loop (see **FIGURE 6**).

   **NOTE:** Drain insert must be installed before operating.

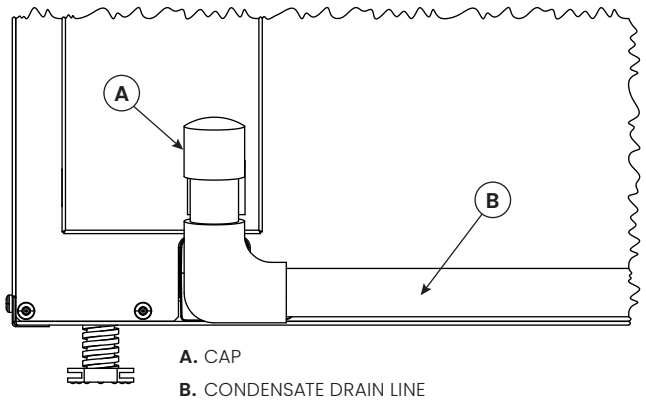
**FIGURE 6:** DRAIN CLEANING



2. Clean the accessible portion of the drain pan and the drain insert using a mild detergent.

3. If the drain has a capped tee or elbow to allow cleaner to be poured directly in the drain, remove the cap and pour approximately one cup of white vinegar into the tube (see **FIGURE 7**). If there is no visible access to the drain line from outside of the ventilator, pour approximately one cup of vinegar into the drain pan of the ventilator where the drain insert was located.

**FIGURE 7:** CAPPED DRAIN ACCESS FOR CLEANING PROCESS




**A.** CAP

**B.** CONDENSATE DRAIN LINE

90-2693

4. Reinstall the drain insert by gently placing the tip into the drain opening and rocking the insert downwards into place (see **FIGURE 6**). When inserted properly, the top of the drain insert will be at the same height as the filter guide channel.

5. If the ventilator has clear flexible drain tubing, look for excess buildup in the drain line that might prevent water flow, and replace as needed. Clear, smooth, flexible 3/4" Inside Diameter (ID) drain tubing is available in most hardware stores or Do-It-Yourself (DIY) retail stores.

## NOTICE

Running the ventilator without the drain insert can lead to condensate leaks.

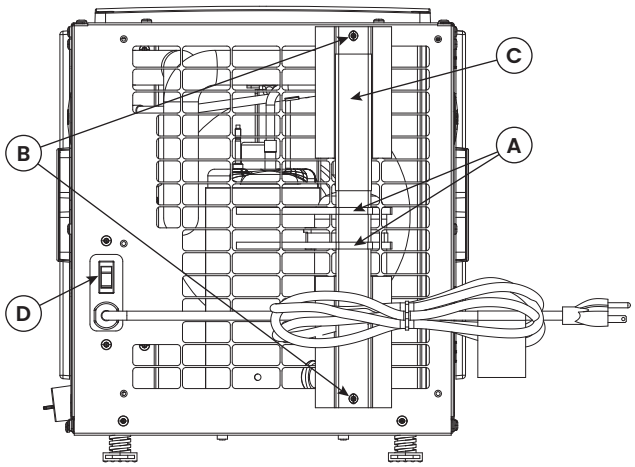
## PREPARING THE UNIT FOR INSTALLATION

**IMPORTANT:** Cut the strap securing the compressor shipping support bracket and remove the strap and shipping bracket (see **FIGURE 8**).

1. Clip off and remove the plastic straps securing the compressor to the shipping bracket.

2. Remove the two screws securing the shipping bracket to the housing. Remove and discard the shipping bracket, and reinstall the two screws in the ventilator.

**FIGURE 8:** PREPARING THE UNIT FOR INSTALLATION




**A.** PLASTIC STRAPS

**B.** SCREWS

**C.** SHIPPING BRACKET

**D.** ON/OFF POWER SWITCH (SELECT MODELS)

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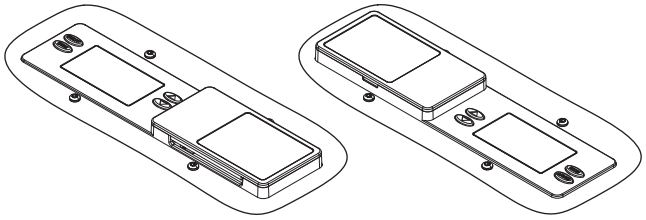
## REPOSITIONING THE USER INTERFACE FOR THE APPLICATION

The onboard user interface on top of the ventilator may be rotated 180 degrees to allow easier interaction.

**FIGURE 9:** USER INTERFACE ROTATED 180 DEGREES



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### ROTATING THE CONTROL

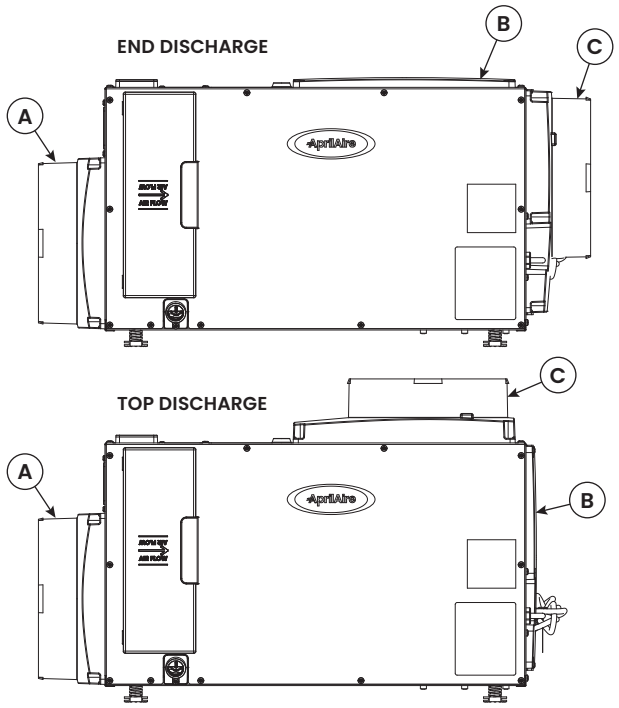
1. Remove the filter access door and filter.
2. Detach the onboard user interface by removing the four (4) screws around the user interface.

   **NOTE:** Use one hand to support the bottom of the onboard user interface when removing.
3. Keep the user interface in the unit and rotate it to face the desired direction.
4. Secure the user interface with the same four screws used to attach the user interface to the top of the unit.

## INSTALLING THE DUCT COLLARS

- Use the screws in the parts bag to attach the duct collars to the inlet and outlet of the ventilator. The outlet collar has a backflow damper.
- The outlet duct collar may be attached to the top or end of the unit. Move the outlet cover to the location not being used (see **FIGURE 10**).
- Make sure there are no bends in the ductwork coming off the outlet **for a minimum of 4"**. This precaution will ensure that the ductwork will not interfere with the backflow damper function.

**FIGURE 10:** FULLY DUCTED INSTALLATIONS




**A.** INLET DUCT COLLAR

**B.** OUTLET COVER

**C.** OUTLET DUCT COLLAR WITH BACK DRAFT DAMPER

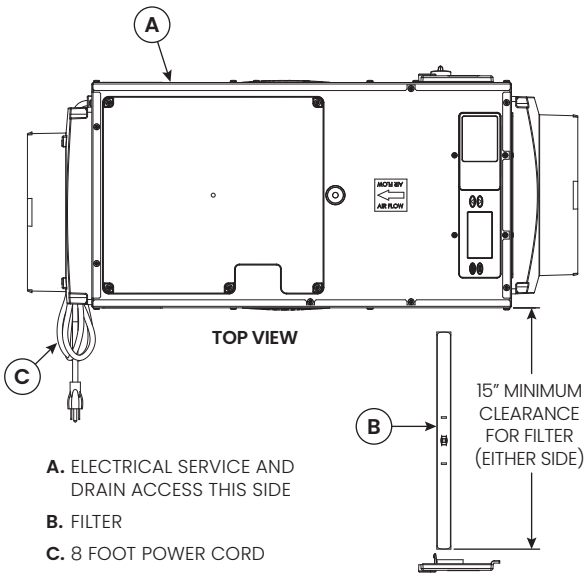
90-02808

# INSTALLING THE VENTILATOR

## VENTILATOR LOCATION

- Electrical service access and drain cleaning will require the removal of the electrical service side panel (see **FIGURE 11** ). Allow sufficient space for service on this side of the unit.
- The filter can be removed from either side of the ventilator. Allow sufficient space for the filter to be removed and reinstalled.
- If locating the unit where it is not readily accessible (such as a crawl space, an attic or even a basement for some individuals), consider controls such as the Model 76 Dehumidifier Control, which can be mounted in the living space and wired to the ventilator.
- For attic installations, suspending the ventilator is recommended to reduce noise transference.
- Always install the ventilator in or or above a condensate pan when locating in or above a finished space.

**FIGURE 11:** FILTER ACCESS CLEARANCE




**A.** ELECTRICAL SERVICE AND DRAIN ACCESS THIS SIDE

**B.** FILTER

**C.** 8 FOOT POWER CORD

90-02810

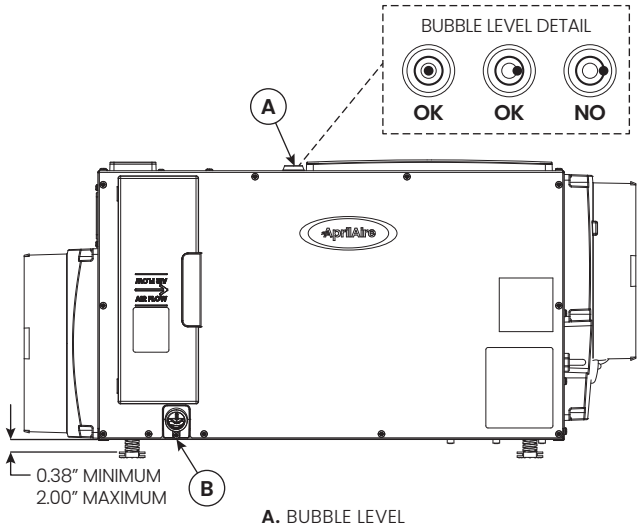
## LEVELING AND RAISING THE VENTILATOR

**NOTE:** This does not apply to Model E100C.

The feet can be adjusted to level the unit and accommodate drain fittings and condensate pans as required. Use the top-mounted bubble level to adjust the feet until the bubble is within the outer circle (see **FIGURE 12**). The unit must be level from front to back and side to side to ensure proper drainage from the ventilator.

If installing a condensate pump to the side of the unit more elevation than can be provided by the adjustable feet may be needed. Risers (Part #5879) or hanging kits (Part #5822) are available to lift the ventilator higher off the floor.

**FIGURE 12:** LEVELING THE UNIT




**A.** BUBBLE LEVEL

**B.** CONNECTS TO 3/4" I.D. DRAIN TUBE

90-02812

## INSTALLING A CONDENSATE PAN UNDER THE VENTILATOR

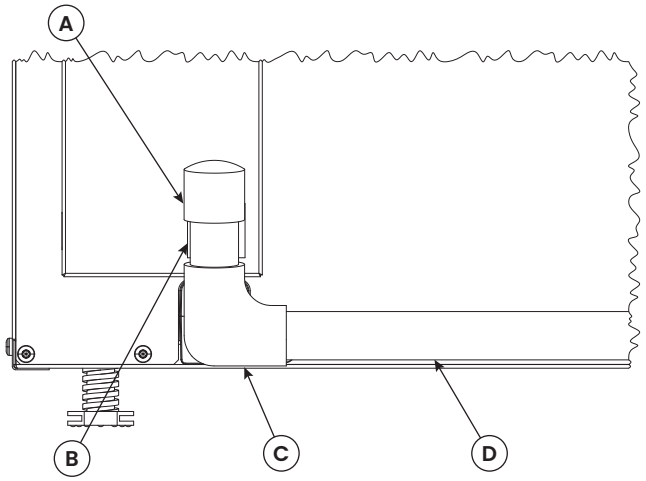
**Always install the ventilator in or above a condensate pan when locating it above a finished space.** Adhere to local codes regarding draining of the condensate pan. If a condensate pump is needed, make sure it is in the condensate pan as well. Install a float switch in the condensate pan and/or use the overflow wires/terminals on the condensate pump to stop the ventilator should overflow occur. See **WIRING TO A FLOAT SWITCH** on page 13.

## INSTALLING THE DRAIN

### USING HARD PIPE

- Install a 3/4" PVC slip x 3/4" MNPT PVC fitting to the ventilator and use 3/4" nominal PVC schedule 40 pipe to run the condensate line to the nearest floor drain or to an outside location that slopes away from the building.
- **Always maintain a constant downward slope in drain piping. Ensure that drain tubing does not interfere with removal of the side panel or filter door.**
- **Do not use metal fittings and only hand-tighten threaded fittings.** PTFE thread seal tape is recommended for threaded connections.
- Install a tee or three-way elbow at the ventilator outlet with a small, capped vertical tube (do not cement cap in place) to allow for cleaner to be poured into the drain line (see **FIGURE 13**).
- PVC primer and cement is recommended for slip-fit connections (do not cement threaded connections).

**FIGURE 13:** CAPPED DRAIN ACCESS FOR CLEANING




**A.** CAP
**B.** SMALL SECTION OF DRAIN TUBE
**C.** 3/4" 3-WAY ELBOW OR TEE AND ELBOW
**D.** CONDENSATE DRAIN LINE

90-2693

### USING FLEXIBLE TUBING

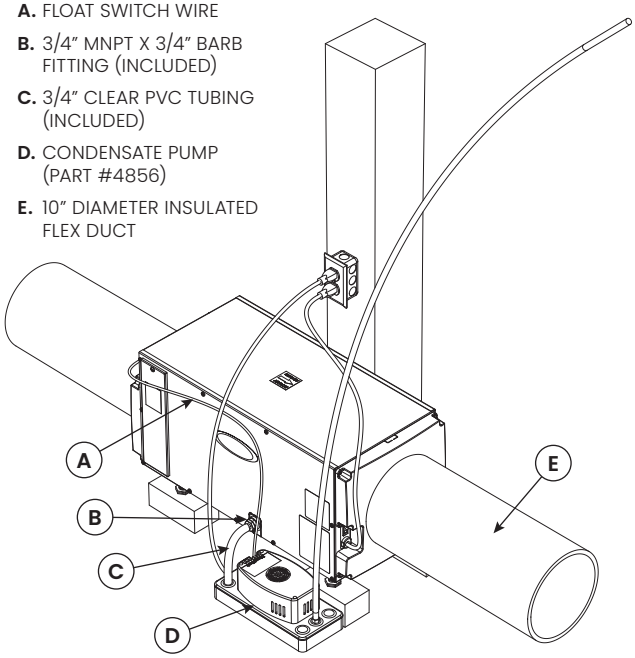
- Install the provided 3/4" NPT x 3/4" hose barb fitting and use 3/4" I.D. flexible drain tubing. **Hand-tighten the fitting to the ventilator.** PTFE thread seal tape is recommended for threaded connections.
- **Always maintain a constant downward slope from the ventilator to the nearest floor drain or condensate pump, and do not allow soft tubing to curl up, which may result in air lock.**

## INSTALLING THE CONDENSATE PUMP

- The AprilAire Model 4856 condensate pump is capable of lifting water up to 22 feet (see **FIGURE 14**).
- The ventilator can be elevated (while remaining level) to increase downward slope for proper draining.
- Wire the float switch terminals to the normally closed contacts on the condensate pump (see **FIGURE 22**).

**FIGURE 14:** DRAIN AND CONDENSATE PUMP INSTALLATION

**A.** FLOAT SWITCH WIRE
**B.** 3/4" MNPT X 3/4" BARB FITTING (INCLUDED)
**C.** 3/4" CLEAR PVC TUBING (INCLUDED)
**D.** CONDENSATE PUMP (PART #4856)
**E.** 10" DIAMETER INSULATED FLEX DUCT

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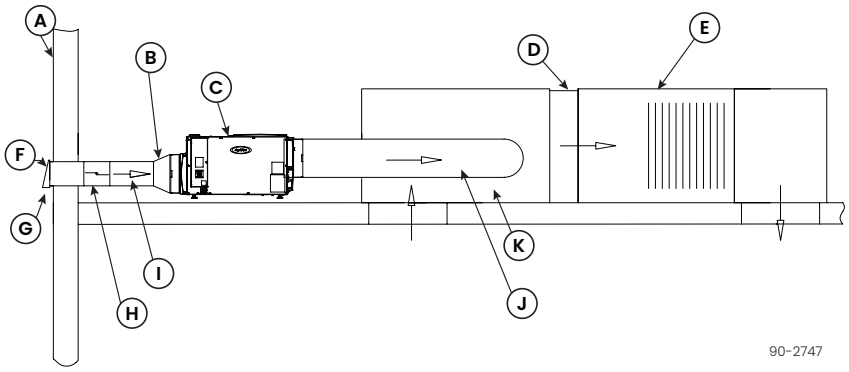
# DUCTING AND WIRING

## DUCTING

Install ducting as shown in ***Figure 15.*** A 6" diameter intake duct is usually sufficient, but a larger intake duct, or multiple 6" intake ducts can be used if added ventilation flow is needed.

A normally closed damper like the AprilAire Model 6506 needs to be installed in the intake duct to comply with Energy Star Certified Homes requirements.

*Figure 15: Ducting the Ventilator*




**A -** Gable End Wall, Band Joist, or Porch Soffit

**B -** 10x6 Round Transition

**C -** Dehum Ventilator

**D -** Filter

**E -** Furnace/Air Handle

**F -** Fresh Air Intake Hood w/ Screen

**G -** Fresh Air

**H -** Model 6506 Normaly Closed Damper

**I -** 6" Fresh Air Intake Duct

**J -** 10" Dia. Duct

**K -** Return Duct

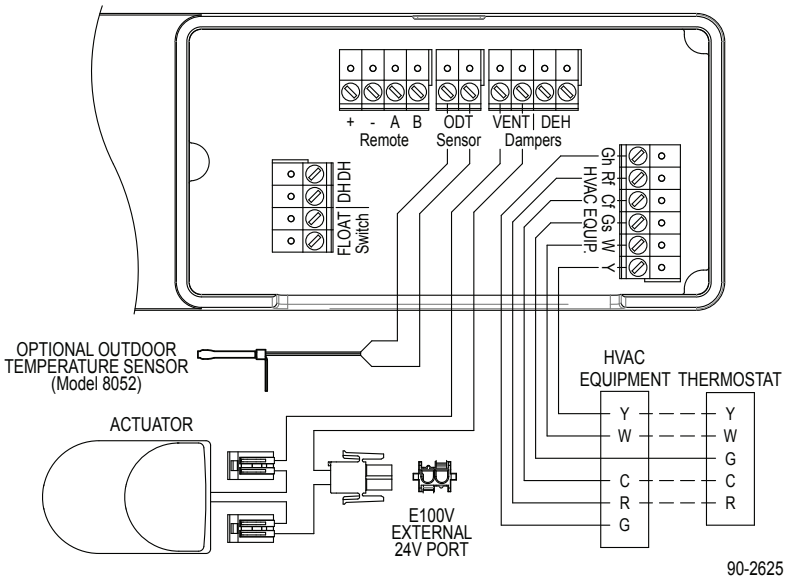
## WIRING

Wire the control to the HVAC system as show in ***Figure 16.*** Wiring to the HVAC system allows the ventilator to turn on when the HVAC system is running for improved circulation of the outdoor air, and to take advantage of the latent capacity of the air conditioning.

The ventilation output of a thermostat can wired to the DH terminals of the Model E100DV to put control of ventilation in the living space. AprilAire thermostat models with a ventilation output include: 8840M, 8840, 8920W, 8830, 8910W, 8910, 8820, 8620W and 8620. Note that an outdoor temperature sensor (included with all models) must be wired to the thermostat to take full advantage of all ventilation features.

Wiring to the Rf terminal of the ventilator is optional. Wiring as shown allows the fresh air brought in by the ventilator to be distributed to the entire home by the HVAC system fan when it would not be otherwise running.

*Figure 16: Wiring the Ventilator*



# DETERMINE VENTILATION REQUIREMENTS

## CALCULATING AIRFLOW REQUIREMENT

1. The MINIMUM ventilation requirement is calculated using ASHRAE 62.2-2010.

   ASHRAE Airflow in CFM = [House Area in Sq. Ft. x 0.01] + [(Number of Bedrooms +1) x 7.5]

   **NOTE:** *Use 'Number of Bedrooms + 1' or 'Number of Occupants', whichever is larger.*

2. **Table 1** shows the calculated airflow values to the nearest 5 CFM.
3. Record the required CFM. _____

**TABLE 1 –** CFM Required

| House Sq. Ft. | Number of Bedrooms | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 |
| **1000** | 35 | 40 | 50 | 55 | 65 | 70 |
| **1500** | 40 | 45 | 55 | 60 | 70 | 75 |
| **2000** | 45 | 50 | 60 | 65 | 75 | 80 |
| **2500** | 50 | 55 | 65 | 70 | 80 | 85 |
| **3000** | 55 | 60 | 70 | 75 | 85 | 90 |
| **3500** | 60 | 65 | 75 | 80 | 90 | 95 |
| **4000** | 65 | 70 | 80 | 85 | 95 | 100 |
| **4500** | 70 | 75 | 85 | 90 | 100 | 105 |
| **5000** | 75 | 80 | 90 | 95 | 105 | 110 |

## DETERMINE OUTDOOR AIR (CFM) DELIVERY RATE

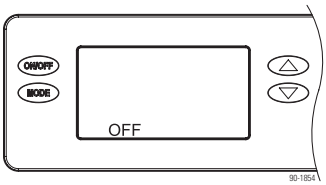
Measure the outdoor air flow (CFM) through the duct that is bringing in only outdoor air. Use the CFM Delivered along with the CFM required to find the Cycle Time per hour setting from **Table 2**. For example if the ventilator is providing 120 CFM, and the requirement is 70 CFM, set the time to 35 minutes.

**TABLE 2 –** Cycle Time Setting (minutes) for Airflow Delivered vs. Airflow Required for 1 Hour Cycle

| CFM Delivered | CFM Required | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 |
| **60** | 20 | 30 | 40 | 50 | 60 | | | | | |
| **80** | 15 | 25 | 30 | 40 | 45 | 55 | 60 | | | |
| **100** | 15 | 20 | 25 | 30 | 35 | 40 | 50 | 55 | 60 | |
| **120** | 15 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 |
| **140** | 15 | 15 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| **160** | 15 | 15 | 15 | 20 | 25 | 25 | 30 | 35 | 40 | 45 |
| **180** | 15 | 15 | 15 | 20 | 20 | 25 | 30 | 30 | 35 | 40 |
| **200** | 15 | 15 | 15 | 15 | 20 | 25 | 25 | 30 | 30 | 35 |
| **220** | 15 | 15 | 15 | 15 | 20 | 20 | 20 | 25 | 30 | 30 |

# SYSTEM SET-UP & CHECKOUT

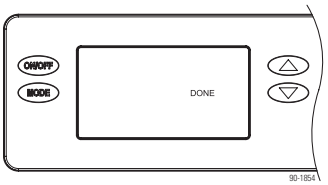
1. Check all wiring.
2. Make sure the wire access cover has been snapped back onto the on-board control.
3. Plug unit in and turn power switch to ON.
4. The on-board control screen should display OFF.

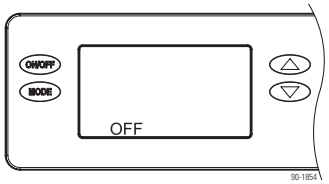



**NOTE:** *If the display backlight is not on, the first button press (any button) will only turn on the backlight. Press the button a second time to achieve function.*

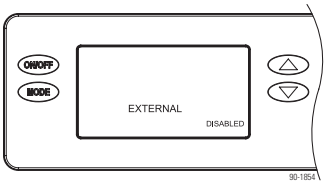
5. Hold the MODE button on the on-board control for 3 seconds to enter the Installer Set-up Menu.
6. Navigate through the following screens to set up the ventilator for the installed application.

   Use the UP or DOWN arrows to select items and use MODE to switch to the next set-up option. To exit installer set-up, all options must be scrolled through using the MODE button.
7. After the installer set up options have been completed, DONE will blink for 3 seconds and the control will return to the OFF screen.

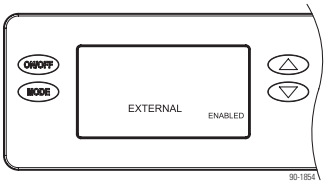



## External Ventilation Control Option

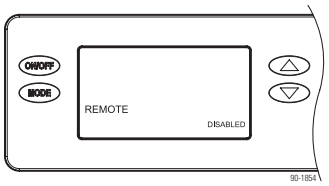



Ventilation settings are adjusted on the E100DV (on-board control) with External Control **DISABLED**.

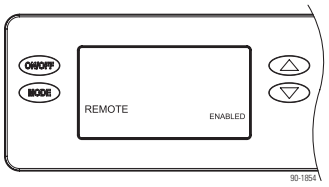



An external control such as a thermostat can be used to turn ventilation on and off with External Control **ENABLED**. The Remote Control option is not available when External Control is enabled.

## Model 76 Remote Control Option

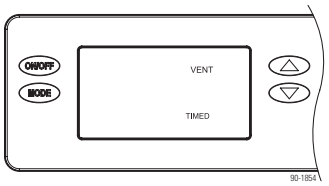



If using the control on the ventilator, keep this feature **DISABLED**.



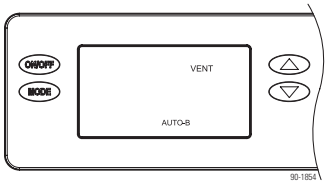

If using the Model 76 Remote Control to adjust the humidity setting, this feature should be **ENABLED**.

## On-Board Ventilation Control

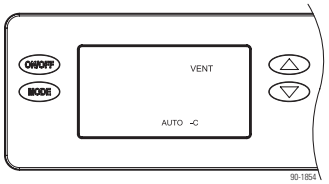



If ventilating based on time only (no outdoor temperature restrictions), press MODE at the VENT TIMED screen to go to ventilation time selection screen.

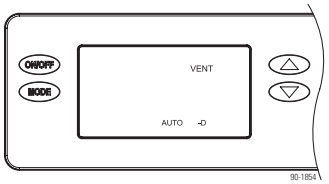
If ventilating with outdoor temperature restrictions, use the UP arrow to go from VENT TIMED to VENT AUTO –B and then the UP/DOWN arrows to select the desired ventilation mode, B, C, or D. Press MODE to go to the ventilation time selection screen.



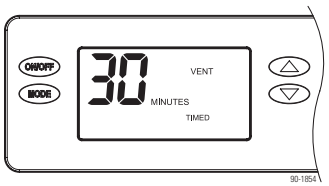

**Vent-Auto-B:** Ventilation prevented when outdoor temperature is above 105ºF.




**Vent-Auto-C:** Ventilation prevented when outdoor temperature is above 100ºF.

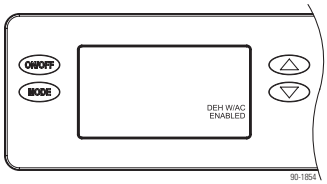



**Vent-Auto-D:** Ventilation prevented when outdoor temperature is above 95ºF.

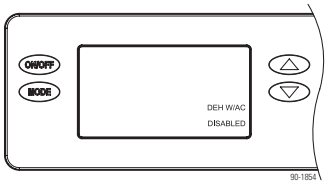



Press the UP or DOWN arrows to adjust the ventilation time per hour from 0 to 60 minutes. After selecting time, press MODE to go to the ZONE screen selections.

### DEH W/AC

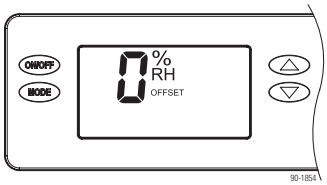



To allow the ventilator to dehumidify during active air conditioning, select **ENABLED** and press MODE.




To disable the ventilator from dehumidifying when the air conditioning is on, select **DISABLED** and Press MODE.

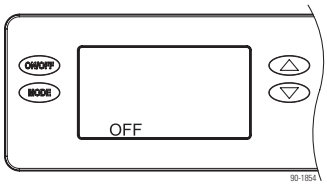
### RH Offset



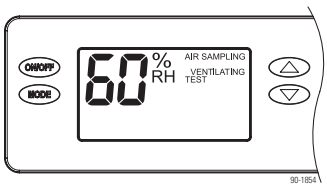

An offset can be applied to the on-board humidity reading to avoid discrepancies with other humidity measuring devices in the home. Use the UP/DOWN arrows to select an offset from -5% to 5%. Press MODE to exit the installer set-up screens.

### Installer Test Mode

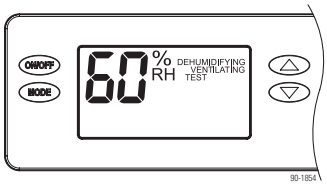
If everything is properly wired, the ventilator and all of the wired components will turn on and off during Installer Test Mode to demonstrate that all are properly operating. Installer Test Mode lasts for four (4) minutes. If the ON/OFF button is pressed during test mode, the ventilator will exit Installer Test Mode and return to the OFF screen.



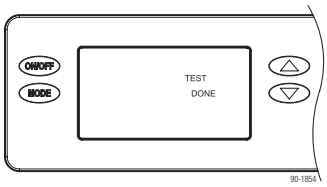

If the ventilator is not already OFF, press the ON/OFF button to turn it off.




Press and hold the MODE and ON/OFF button for 3 seconds. The blower will start, the vent damper will open and the display will appear as shown.




After three minutes the compressor will start and "AIR SAMPLING" will be replaced by "DEHUMIDIFYING".




After one minute of compressor operation, all outputs will turn off and DONE will blink for 3 seconds and then return to the OFF screen.

## START UP AND SEQUENCE OF OPERATION

Turn the ON/OFF switch ON, and turn on the control by pressing the ON/OFF button. The first press of any button only turns on the backlight, so the ON/OFF button may need to be pressed twice.

The display will show the humidity control setting – use the UP/DOWN buttons to adjust as needed. A setting of one (1) is less dry and a setting of seven (7) is more dry (see NOTE ON HUMIDITY CONTROL SETTING below). The ventilator will turn on and open the Vent Damper with the first call for heating (W) or cooling (Y) from the HVAC system. "VENTILATING" shows on the display when the ventilator is actively bringing in fresh air. For the first five minutes, the ventilator will measure the temperature of the incoming air, and if it is within the set limits, will stay on as long as the equipment is calling, or until the set amount of ventilation time has been met within the one hour cycle period. If the ventilation time is not met within the hour, the ventilator will turn on and open the damper at the end of the hour to ensure the ventilation time is met.

If the outdoor air temperature is above the high limit, ventilation will not occur during that one hour cycle period. The ventilation time missed will be added to a four hour cycle period so that the total ventilation will be met. The air temperature is measured once per hour to see if it is within range to be able to continue with ventilation. At the end of the four hour cycle period, the ventilator is turned on regardless of limits to ensure that the ventilator is on for at least one hour of every four. If the ventilation requirement has not been met in the first four hour cycle, the time will be added to the next four hour cycle, and so on until the cycle period reaches 24 hours. When the ventilation requirement can no longer be bypassed by limit, the ventilator will turn on and the ventilation requirement will be met.

If an external control has been wired to the thermostat, ventilation will occur only when a circuit is completed between the DH terminals of the Model E100DV control. The external control determines when ventilation occurs. Dehumidification of the incoming air is still controlled as described below even if an external control is determining when to ventilate.

Whenever the ventilator is on, the dew point of the incoming air is measured and if it is above the setting, the compressor will turn on and the air will be dehumidified. The compressor will run for a minimum of three minutes and must be off for a minimum of three minutes. "DEHUMIDIFYING" will show on the display of the ventilator whenever the compressor is running. If the ventilator is on with a cooling input (Y), the compressor will not turn on unless the feature to run dehumidification with the air conditioner has been enabled (see DEH W/AC in **SYSTEM SET UP & CHECKOUT** section on page 11).

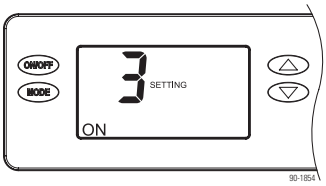
**NOTE ON HUMIDITY CONTROL SETTING:** *The humidity control setting corresponds to a dew point value. Dew point is used to control when the compressor turns on and off, and is a better measure than relative humidity (%RH) to ensure good humidity control without turning on the compressor more than is needed. Start with a humidity control setting of two (2) or three (3) and adjust as needed. The higher the humidity control setting, the more often the compressor will run. The table below can be used to relate the humidity control setting to the corresponding dew point and approximate resultant RH level in the home:*

**TABLE 3 –** Humidity Control Setting

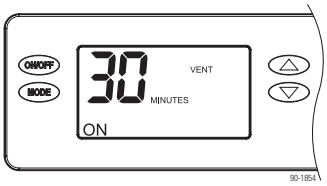
| Humidity Control Setting | Corresponding Dew Point | Resulting Indoor RH Level at Various Indoor Temperatures* | | |
|---|---|---|---|---|
| | | 72°F | 75°F | 78°F |
| 1 | 65°F | 78% | 70% | 64% |
| 2 (initial) | 60°F | 65% | 59% | 54% |
| 3 (initial) | 56°F | 57% | 51% | 46% |
| 4 | 52°F | 49% | 44% | 40% |
| 5 | 48°F | 42% | 38% | 35% |
| 6 | 44°F | 36% | 33% | 30% |
| 7 | 40°F | 31% | 28% | 26% |

*Resultant indoor RH levels do not account for internal humidity sources like cooking, showering, etc.

## ADJUSTING VENTILATION TIME AFTER INITIAL SET UP USING ON-BOARD CONTROL




**1.** Press the UP or DOWN button to access the humidity control setting screen.




**2.** Press the MODE button to toggle to the VENT TIME setting.

**3.** Press the UP or DOWN button to adjust the ventilation time (minutes). After adjusted, press nothing else; the screen will return to home screen after three (3) seconds.

## DIAGNOSTIC CODES

When an error occurs, the Diagnostic Code along with SERVICE REQUIRED will be displayed on the control screen.

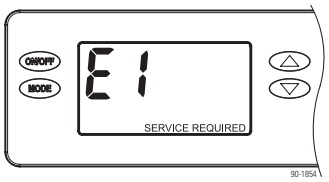



**TABLE 4 –** Diagnostic Codes

| Diagnostic Code | Failure Mode | Action | Reset |
|---|---|---|---|
| E1 | Internal Humidity or Temperature Sensor Open or Shorted | 1. Check the connection between the sensor board and control board.<br>2. If connection okay, replace sensor board, Part No. 5460. | Cycle Power |
| E2 | High Refrigeration Pressure | 1. Verify that the fan works, the backflow damper swings freely and there is no blocked or restricted ductwork.<br>2. If the fault persists, call Technical Support. | Cycle Power |
| E4 | Loss of Capacity | 1. Cycle power to clear the diagnostic code.<br>2. Turn the control ON and use the DOWN button to adjust the humidity setting to one (1), then press MODE and adjust the Vent Time to 60.<br>3. After the blower starts, press and hold the UP and MODE buttons for three (3) seconds to enter the diagnostic display. In the diagnostic display, use the UP or DOWN button to cycle between the air temperature (value and "AIR SAMPLING" displayed), air relative humidity (value and "%RH" displayed) and the Frost sensor temperature (value only displayed).<br>4. The air temperature and Frost Sensor temperature should get to within a few degrees of each other in two to three minutes. If the Frost Sensor temperature is significantly lower than the air temperature, the Frost Sensor will need to be replaced – Part No. 5455.<br>5. If the sensor is OK turn up the humidity setting to seven (7) to turn on the compressor. Allow the compressor to run for 15 minutes and again check the air and Frost Sensor temperatures. The Frost Sensor temperature should be anywhere from 5°F (VERY hot/humid conditions) to 20°F (cooler/dryer conditions).<br>6. Call Technical Support if the Frost Sensor temperature did not get lower. | Cycle Power |
| E5 | High Temperature Thermistor Failure | 1. Remove the side panel to access the electrical service box inside the unit.<br>2. Remove the cover of the electrical service box.<br>3. Verify that the "Hi-Temp" sensor connector is seated completely on the circuit board pins.<br>4. Cycle power and if the diagnostic code does not clear, replace the sensor with Part No. 5456. | Cycle Power |
| E6 | Low Temperature Thermistor Failure | 1. Remove the side panel to access the electrical service box inside the unit.<br>2. Remove the cover of the electrical service box.<br>3. Verify that the "Frost" sensor connector is seated completely on the circuit board pins.<br>4. Cycle power and if the diagnostic code does not clear, replace the sensor with Part No. 5455. | Cycle Power |

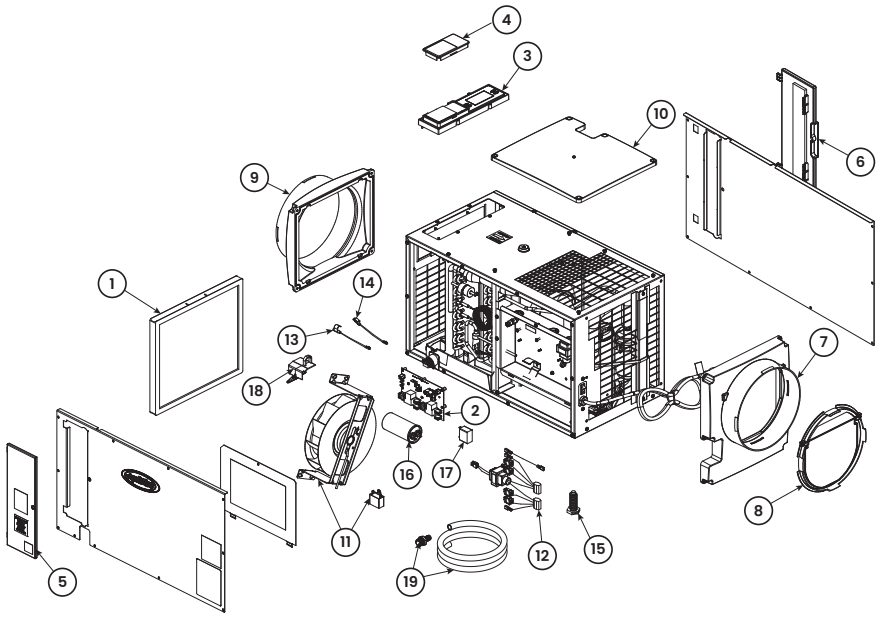
| | | | |
|---|---|---|---|
| E7 | Float Switch Open | 1. Empty the condensate pan.<br>2. Check the float switch connection at the control board.<br>3. If not using a float switch, verify jumper is between float switch terminals on ventilator control board.<br>4. If the problem persists, replace the float switch. | Self-Correcting |
| E8 | Inlet Air Too Hot or Cold to Dehumidify | 1. This shows on the display only to inform the user. If the air coming into the ventilator is colder than 50°F, or warmer than 104°F, no moisture removal can take place.<br>2. Check that all ductwork is sealed. | Self-Correcting |

**TABLE 5 –** Troubleshooting Guide

| Symptom | Possible Reason | Troubleshooting Procedure |
|---|---|---|
| Ventilator does not turn on/run. | No power to unit. | • Check that the ventilator is plugged in.<br>• Check that the power switch is turned ON.<br>• Check that the control is turned ON.<br>• Check that the circuit breaker has not tripped. |
| Ventilator blower is running but with little or no airflow. | Pressure drop across ventilator is higher than 0.4"w.c. | • Check ventilator air filter and wash or replace.<br>• Check for blocked duct work and clear.<br>• Verify that the outlet collar with backflow damper is installed on the outlet side of the ventilator.<br>• Check if backflow damper is blocked or stuck and remove obstruction. |
| Ventilator blower is running but compressor is not. | Float switch open. | • If float switch installed, check connections at control board and empty condensate pan.<br>• If no float switch installed check that the jumper is installed at the float switch terminals on the control board. |
| | Coil frosting. | • Lack of or reduced airflow. Check ventilator air filter and wash or replace.<br>• Check for blocked duct work.<br>• Inlet air conditions below 60°F. Increase the humidity setting. |
| | Inlet air temperature is outside of the 50°F – 104°F range or the dew point is below 40°F and there is a demand for dehumidification. | • Verify all ductwork is properly sealed. |
| The ventilation damper does not open when the HVAC fan is active. | Cycle time has been met. | • The damper will not open if the Ventilation Time has already been met. |
| Ventilator is not draining properly. | Drain line blocked or unit not level. | • Verify that the unit is level.<br>• Check the drain line blockages and for a continuous downward slope. |
| The HVAC fan turns on unexpectedly. | Ventilator is sampling or ventilation in progress. | • The ventilator will turn on the HVAC fan during air sampling or as needed to meet the ventilation time. |

| | | |
|---|---|---|
| Ventilator is producing hot air. | Normal function. | • Air is reheated across the condenser coil, resulting in a temperature rise between inlet and outlet. |
| Display shows “OFF” even when the ON/OFF button is pushed. | A manual override switch has been installed and has turned the unit OFF. | • Turn the manual override switch OFF. |

## SERVICE PARTS




| No. | Part Description | Part No. |
|---|---|---|
| 1 | EZK Filter, 13.5" x 11.875" x 0.875" | 5881 |
| 2 | Internal Control Board | 5444 |
| 3 | User Interface Assembly | 5564 |
| 4 | Wiring Access Door | 5446 |
| 5 | Door, Filter Access, Tool Free, Right | 70000200 |
| 6 | Door, Filter Access, Tool Free, Left | 70000201 |
| 7 | Outlet Duct Panel | 5449 |
| 8 | Backflow Damper, 10” | 5450 |
| 9 | Inlet Duct Panel | 5451 |
| 10 | Cover, Outlet | 5452 |
| 11 | Fan, with 12MFD Capacitor | 5886 |

| No. | Part Description | Part No. |
|---|---|---|
| 12 | Wire Harness, 15 VA Power Supply | 5888 |
| 13 | Sensor, Low Temperature | 5455 |
| 14 | Sensor, High Temperature | 5456 |
| 15 | Leveling Foot | 5457 |
| 16 | Capacitor, Run, 50µF | 5594 |
| 17 | Capacitor, 12MFD, 450VAC | 5468 |
| 18 | Drain Insert | 5885 |
| 19 | Drain Tube + Fitting | 5692 |
| N/A | Wire Harness | 5887 |

# SERVICE INSTRUCTIONS

## SYMBOLS

| | | |
|---|---|---|
|  |  |  |
| Symbol ISO 7010-W021 (2011-05) | Symbol ISO 7000-1659 (2004-01) | Symbol ISO 7000-1659 (2004-01) |
| Warning: flammable materials | Service indicator: read technical manual | Operator's manual: operating instructions |

## SAFETY INSTRUCTIONS

### ⚠ WARNING

- **Sealed Refrigeration System is not field serviceable!**
- This appliance contains a mildly flammable A2L refrigerant.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored (when not in use) in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or operating electric heater).
- Do not pierce or burn sealed system.
- Be aware that refrigerants may not contain odor.

### ⚠ CAUTION

When connected via air ducts to one or more rooms the appliance shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct.

## SERVICE

**Approved auxiliary devices:** Only approved auxiliary devices approved by the appliance manufacturer shall be installed in the ductwork.

- Fresh Air Ventilator, Stock # 8190FF

**The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:**

- The ventilation machinery and outlets are operating adequately and are not obstructed.
- Marking on the equipment shall be visible and legible. Markings and signs that are illegible shall be corrected.
- When opening the ventilated enclosure for repair of electrical components, be sure to check for refrigerant leaks with a certified flammable refrigerant leak detector.

**Repair Initial safety checks shall include:**

- Servicing the electrical system on the unit should be carried out by a qualified and licensed electrician.
- Disconnect power from the unit (unplug) before attempting service or repair.
- The capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking; that no live electrical components and wiring are exposed in case of a leak.
- There is continuity of earth bonding.
- Sealed electrical components shall be replaced, not repaired.
- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components must be replaced if tripped.
- Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.
- Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.
- Ensure that the area is in the open or that it is adequately ventilated before removal of the ventilator panels for servicing or conducting any hot work in the vicinity of the unit. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
- The refrigeration system is considered factory sealed and puncturing the refrigerant tubing in any way is prohibited.
- Repairing the refrigeration system shall not be performed in the field and must be done at the manufacturing facility by trained personnel.
- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also consider the effects of aging or continual vibration from sources such as compressors or fans.
- If a leak is suspected, all naked flames shall be removed/extinguished.

**The following leak detection methods are deemed acceptable for all refrigerant systems:**

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
- Electronic leak detectors may be used to detect refrigerant leaks but must be calibrated correctly for Flammable Refrigerants. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the Lower Flammability Limit (LFL) of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipework. Examples of leak detection fluids are:
  - bubble method,
  - fluorescent method agents.
- **NOTE:** The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment.

**FOR ADDITIONAL ASSISTANCE: Technical Support is available Monday through Friday (see TROUBLESHOOTING).**

# LIMITED WARRANTY

**Terms of Coverage**

Your AprilAire® Ventilator is expressly warranted to be free from defects in materials or workmanship for five (5) years from date of purchase.

**What Is Covered**

The exclusive obligation of AprilAire under this Limited Warranty shall be, at the sole discretion of AprilAire, to supply, without charge, a replacement for any component or product which is found to be defective. A defective part will be replaced pursuant to this Limited Warranty with a genuine AprilAire part. A defective product will be replaced pursuant to this Limited Warranty with a new AprilAire product of equal or similar features and functionality if the original product has been discontinued or is no longer available.

**Not Covered by the Limited Warranty**

- Consumable or maintenance products, such as, but not limited to: Air Filters, Evaporative Humidifier Water Panels, Steam Canisters, or Steam Humidifier Electrode Wires.
- Products purchased from third parties that were previously used, such as previously-used products purchased from eBay, similar third party/auction sites, or individuals selling used products.
- Labor charges, shipping costs, removal fees, service fees, or reinstallation costs.
- Materials furnished by the installer.
- Damage caused by misuse, abuse, improper installation, or failing to install, use, or maintain the product in accordance with the instructions provided.
- Damage to HVAC equipment caused by improper installation(s) or misapplication installation(s).
- Modifications, changes, repurposing, or alterations to the AprilAire product.
- Extended warranties or satisfaction guarantees offered by third parties.
- Cosmetic damage or normal wear and tear, including, but not limited to: scratches, peeling finish, or dents that do not impede the mechanical functionality of the product.
- Damage caused by acts of nature, including but not limited to: fire, collision, flood, wind, power surge, lighting strike, or mold.
- Damage caused during transit.
- Damage caused during installation due to failure to follow local, state, or federal laws, statutes, codes, or ordinances.
- Damage caused by defects in materials furnished by the installer.

**Limit of Liability**

IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFOREMENTIONED EXPRESS WARRANTY PERIOD. APRILAIRE LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFOREMENTIONED IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECT(S) RESULT(S) FROM FAILURE TO INSTALL THE PRODUCT ACCORDING TO THE APRILAIRE INSTALLATION INSTRUCTIONS. IF THE LIMITED WARRANTY IS VOID DUE TO MISAPPLICATION OR IMPROPER INSTALLATION, ALL DISCLAIMERS OF IMPLIED WARRANTIES SHALL BE EFFECTIVE UPON INSTALLATION.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation(s) may not apply to your situation. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

**Register Your AprilAire® Product**

Thank you for choosing AprilAire. Register your product at **aprilaire.com/warranty** to receive important updates and notifications, and to streamline the process in the unlikely event you file a claim.

Your warranty registration information will not be sold or shared outside of this company.

**Make a Warranty Claim**

For questions regarding the Limited Warranty or to initiate a claim, contact AprilAire Customer Service at 1.800.334.6011 Monday through Friday, 7:00 a.m. to 5:00 p.m. Central Time.

At the sole discretion of AprilAire, you may be required to: return the product not later than thirty (30) days after the warranty period to the place of purchase or (if directed) to AprilAire, contact a professional contractor to provide warranty service, submit a product for testing related to a warranty claim, and/or send pictures of the original product with the serial number (if applicable) to AprilAire Technical Support for inspection as a condition to reviewing a claim and/or receiving a replacement product under this Limited Warranty.

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AprilAire