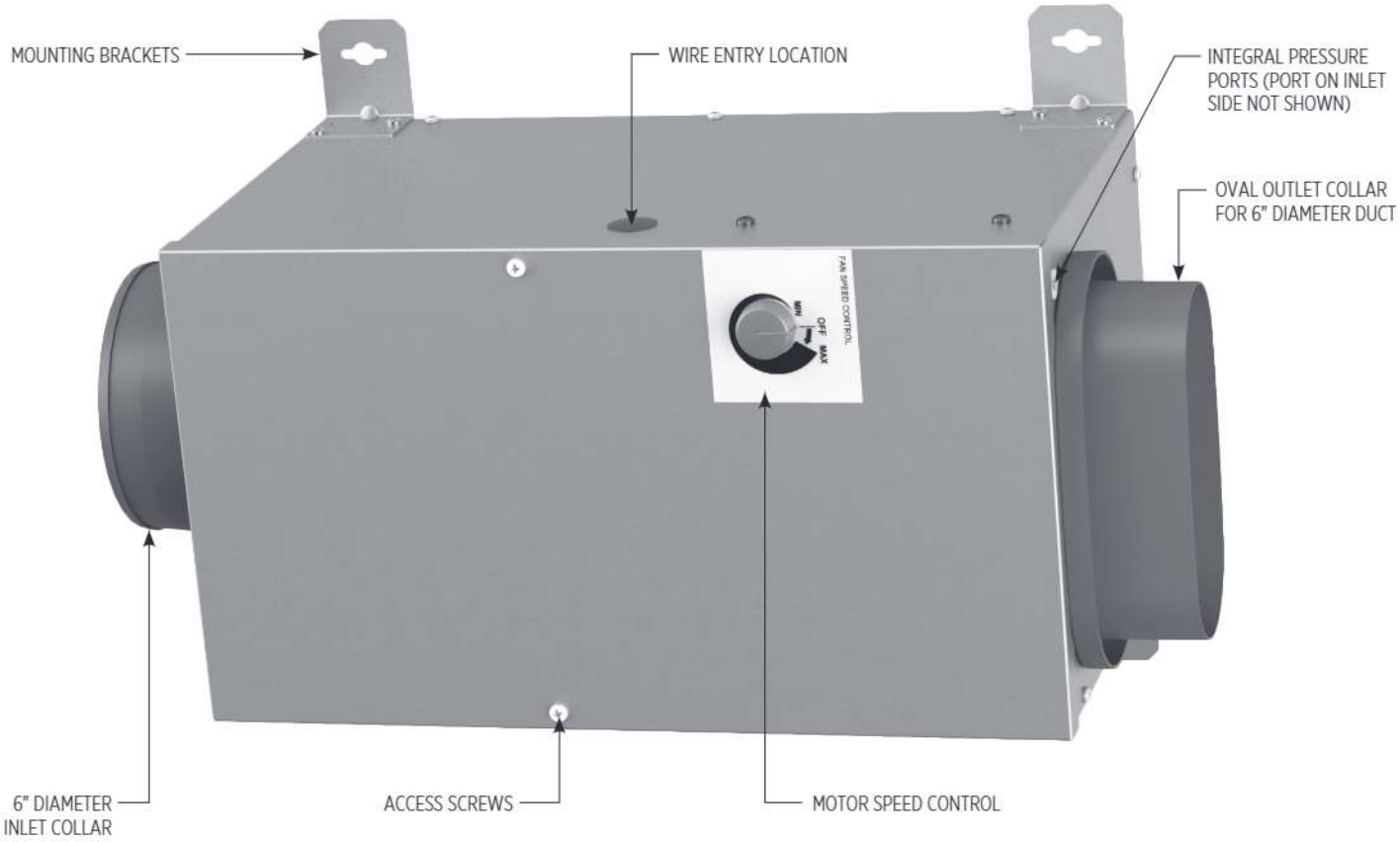
Model 8144NC Fresh Air Ventilator

Installation and Operating Instructions



SAFETY INSTRUCTIONS

⚠ WARNING

1. 120 Volts may cause serious injury from electric shock. Disconnect electrical power before starting installation or servicing. Leave power disconnected until installation/service is completed.
2. Sharp edges may cause serious injury from cuts. Use care when cutting plenum openings and handling duct work.

⚠ CAUTION

1. Read all instructions before beginning installation.
2. Improper installation may cause property damage or injury. Installation, service, and maintenance must be performed by a qualified service technician.

READ AND SAVE THESE INSTRUCTIONS

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INTRODUCTION AND COMPLIANCE STATEMENT

The Model 8144NC Fresh Air Ventilator is designed to economically bring in precisely the right amount of fresh air into today's efficiently designed homes and apartments. Duct the inlet of the ventilator to an outdoor air intake and the outlet to the return side of the HVAC system or into a mechanical closet, then set the desired flow.

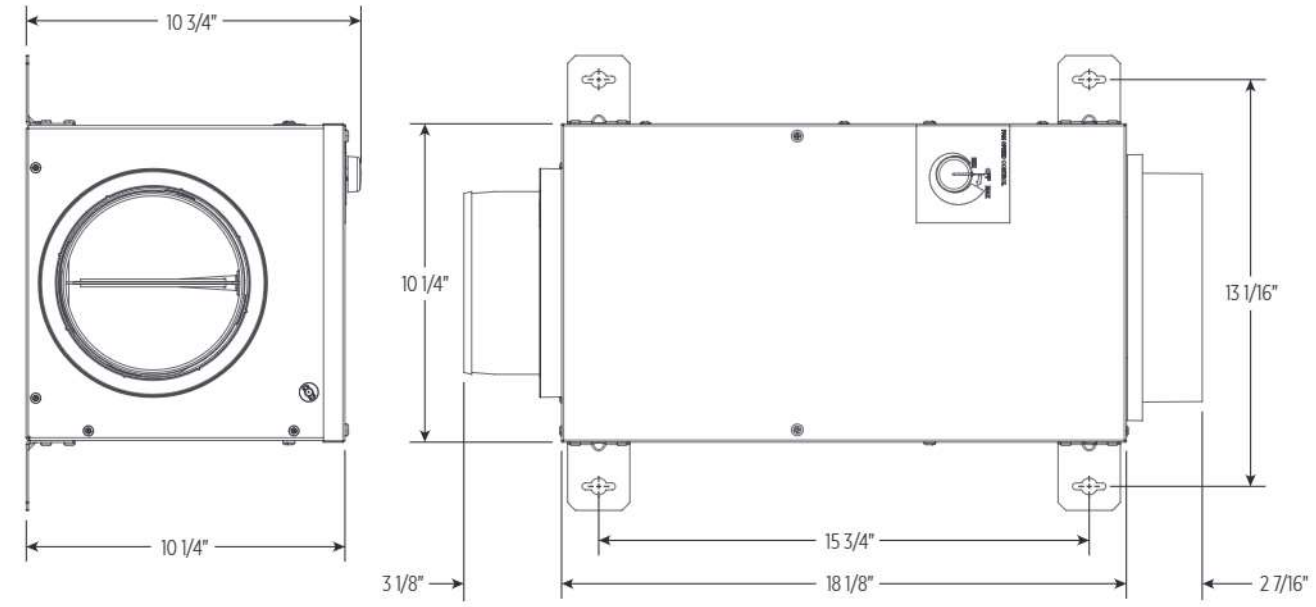
When properly installed and controlled, the Model 8144NC will meet the mechanical ventilation requirements of:

Energy Star Certified Homes Version 3
EPA Indoor airPLUS Version 1
2012/2015 International Residential Code (IRC)
2012/2015 International Energy Conservation Code (IECC)
2012/2015 International Mechanical Code (IMC)
California Energy Commission Title 24

SPECIFICATIONS

Airflow: 20-160 CFM
Filter: MERV 6 washable

FIGURE 1 – DIMENSIONS (INCHES)



MOUNT THE VENTILATOR

⚠ CAUTION

1. Mount the blower with the lowest, exposed moving parts at least 8 feet (2.4 m) above floor or grade level.
2. Mount the blower at least 3.3 feet (1.0 m) from an accessible opening of the duct.

The ventilator can be mounted in any orientation. Avoid locations that block wiring access openings in the housing and ensure that location allows sufficient clearance for filter maintenance and service. See **FIGURE 2**.

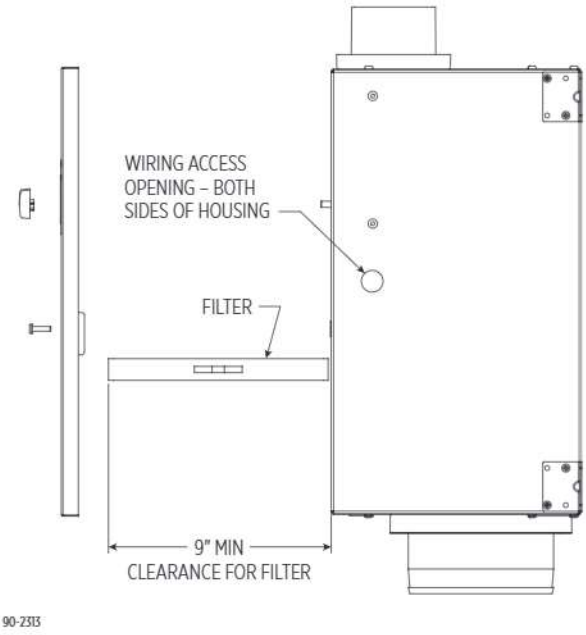
1. Install the mounting brackets in the designated holes in the housing using the supplied #8 x 1/2" screws.

⚠ CAUTION

Screwing the brackets or any other hardware into any other location but the designated mount location may cause damage and invalidate the warranty.

2. Secure the unit to joists or a strong platform (do not install directly to drywall only as the ventilator weighs approximately 20 pounds) using the #10 x 3/4" screws provided.

FIGURE 2 – LOCATION CLEARANCES



WIRING & ELECTRICAL SPECIFICATIONS

⚠ WARNING

ELECTRICAL SHOCK HAZARD: 115-volts may cause serious injury or death from electrical shock. Disconnect and tag electrical service before starting installation or field-service. Leave electrical service disconnected until installation or field-service is complete.

ELECTRICAL SHOCK HAZARD: An interrupted or broken ground may cause property damage, serious injury or death should an electrical fault occur. The cabinet must be grounded in accordance with national and local codes.

FIRE HAZARD: Use of improper wire may cause serious injury, property damage or death due to fire. Do not use aluminum wire for electrical service to the ventilator. Use only copper wire.

Input Voltage: 115 VAC, 60Hz, single-phase
Maximum Operating Current: 0.60 A

The Model 8144NC Fresh Air Ventilator must be hard wired. An electrical disconnect switch can be installed as needed to comply with appropriate codes or ordinances. The ON/OFF switch on the ventilator interrupts the 115VAC service to the blower of the ventilator, but does not disconnect the power supply input to the unit.

1. Disconnect electrical service at the fuse or circuit breaker that will be serving the ventilator.
2. Run electrical service to the ventilator. Install an electrical disconnect switch located as required by national and local code and label it as a "MECHANICAL VENTILATION" switch to differentiate it from other switches. A label is provided inside the ventilator carton. See **FIGURE 3**.
3. Remove the motor speed adjustment knob and take off the cover by removing the two retaining screws. Remove the cover insulation to expose the electrical compartment cover then remove the retaining screw to take off the electrical compartment cover. See **FIGURE 4**.

FIGURE 3 – ELECTRICAL SERVICE TO VENTILATOR

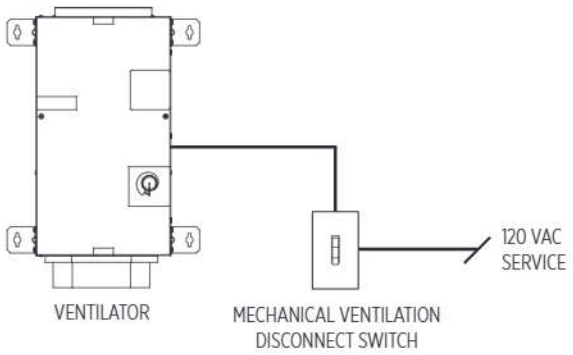
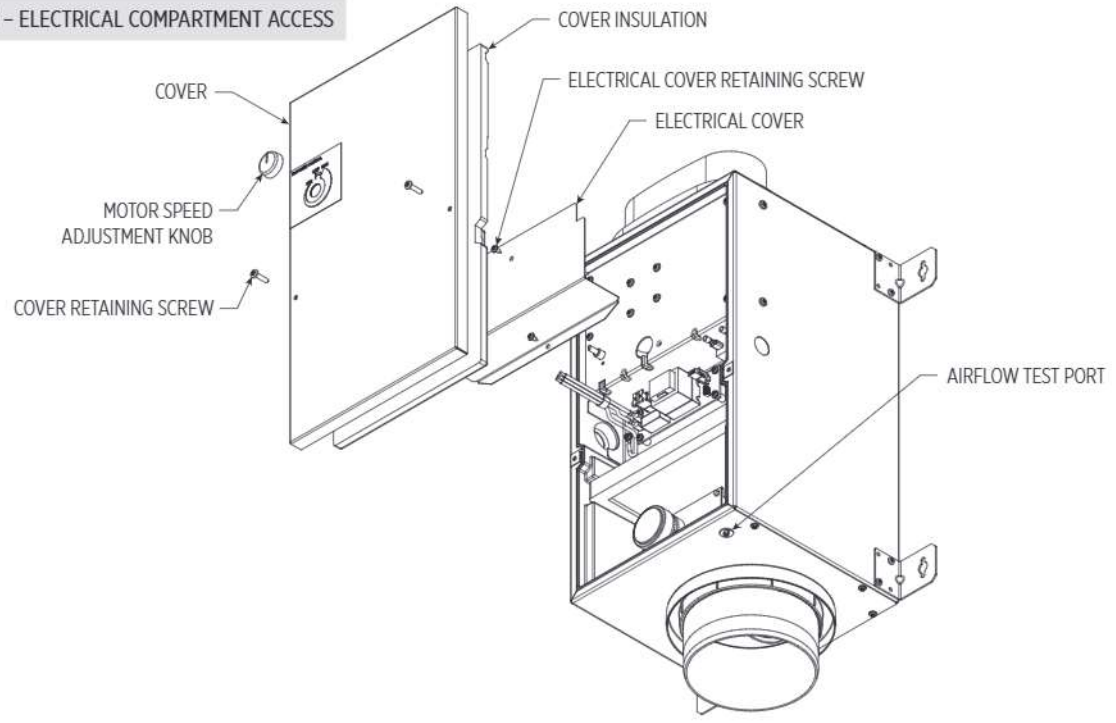
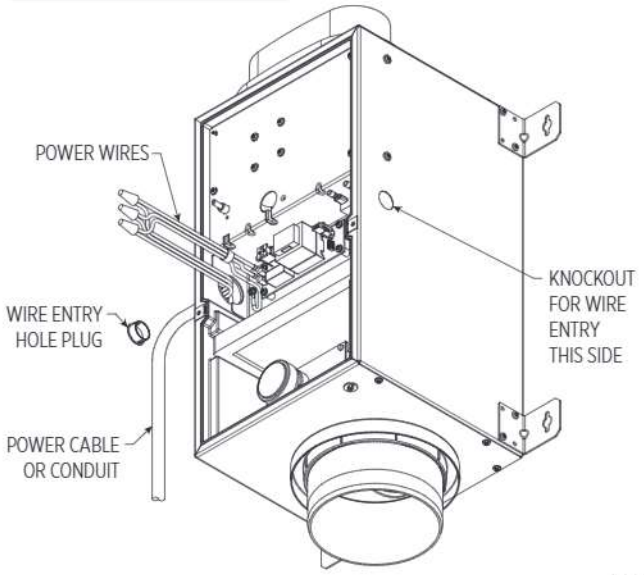


FIGURE 4 – ELECTRICAL COMPARTMENT ACCESS



4. Insert the wires of the power cable into the wire entry hole on the side of the housing. By default the wire entry hole is nearest the power wires on the PCB. If it is desired to have the power wires enter from the other side, simply remove the plug installed in the wire entry hole on the other side and place it in the default location.
5. Use a bushing approved for the type of cable/conduit used to rigidly secure the cable/conduit to the housing of the ventilator using 1/2" nominal fittings.
6. Remove the wire nuts from the black (line), white (neutral) and ground (green) power wires and connect each to the corresponding wires in the electrical service. See **FIGURE 5**.
7. If the ventilator will run continuously, replace the electrical compartment cover, ventilator cover insulation, ventilator cover and motor speed adjustment knob. If additional external controls will be used to operate the unit intermittently, keep the cover off until all wiring is completed.
8. Do not restore electrical service until all ducting and control wiring has been completed.

FIGURE 5 – POWER WIRING



MOUNT INTAKE HOOD

Install a weather tight hood with a bird screen.

Cut a hole in the exterior wall that is large enough to fit 6" insulated flexible duct through with minimal compression of the insulation. Pull the duct through the hole and attach the flex duct to the collar of the hood. Use metal foil tape or a plastic zip-tie to secure the duct to the collar. Pull the insulation and vapor barrier over the duct and tape it to the collar.

IMPORTANT: The end of the insulation must be sealed to prevent condensation from forming inside the insulation. If a plastic zip-tie is used to secure the insulation to the hood collar, also tape the end to seal it against condensation problems.

Press the hood against the outside wall and secure in place with screws; seal around the perimeter of the hood with caulk.

INSTALL DUCTWORK

Install 6" diameter insulated duct from the round inlet collar of the unit to the intake hood and from the oval outlet of the unit to either the return side of the HVAC system ductwork, or to a mechanical closet.

⚠ CAUTION

Freezing temperatures can cause pipes to rupture. Do not discharge outdoor air directly at a pipe or water heater, or any other item at which unheated outdoor air should not be directed.

IMPORTANT: The end of the insulation must be sealed to prevent condensation from forming inside the insulation. If a plastic zip-tie is used to secure the insulation to the hood collar, also tape the end to seal it against condensation problems.

FIGURE 6 – DUCTING TO CLOSET

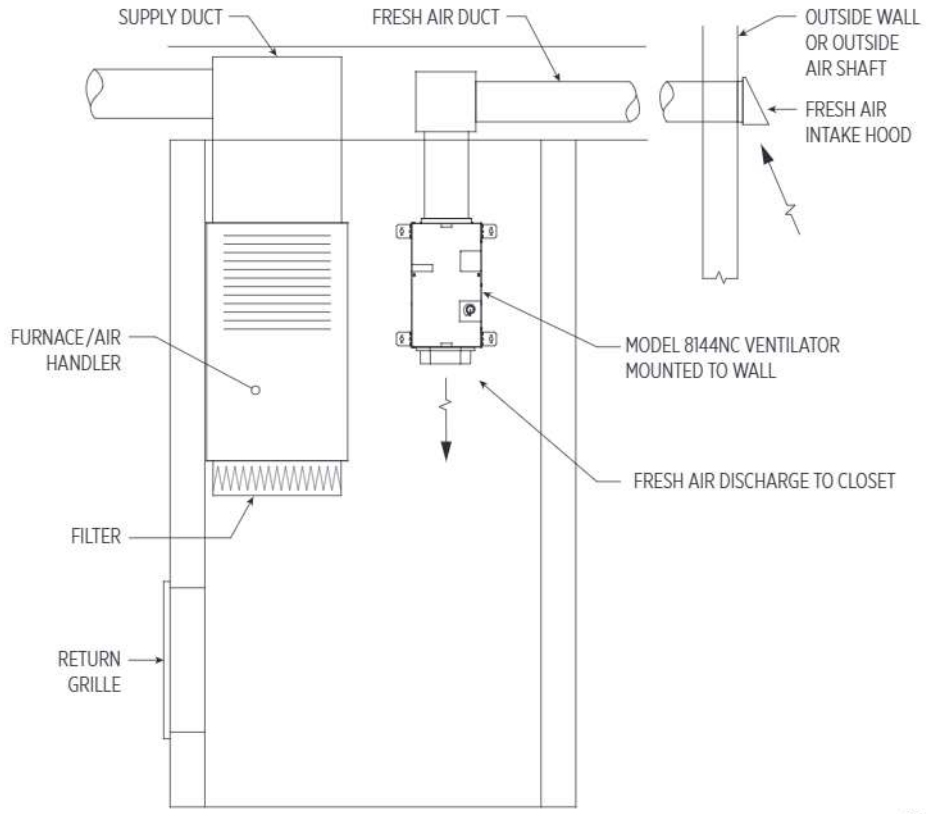
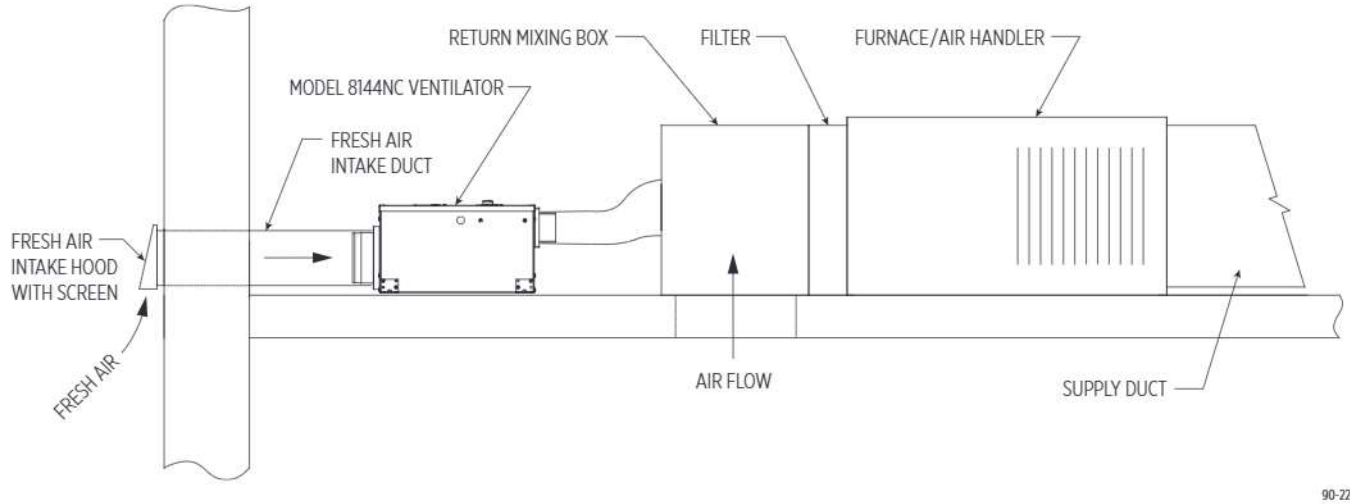


FIGURE 7 – DUCTING TO RETURN SIDE OF HVAC SYSTEM



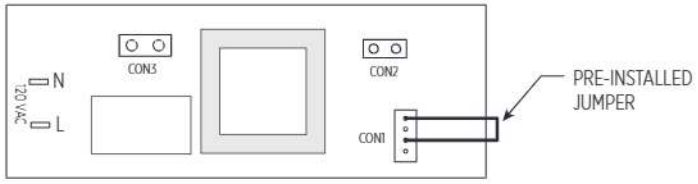
WIRING TO EXTERNAL CONTROLS

If the ventilator is to run continuously, then no additional wiring is required – go to **Test and Setting** section on page 9.

The ventilator can run intermittently with a ventilation controller.

1. Disconnect electrical service to the ventilator at the fuse or circuit breaker that feeds the circuit to which the ventilator is wired.
2. Disconnect electrical service to the HVAC system.
3. Remove the motor speed adjustment knob, the cover and cover insulation, and the electrical compartment cover (see Figure 4) to access the ventilator circuit board.
4. Cut the pre-installed jumper wire in half and strip of 1/2" of insulation off the end of each wire. See **FIGURE 8**.
5. Run external control wires through the opening on the side of the housing opposite where power wiring was installed.
6. Wire as shown for control selected. The recommended controls are:
   - Aprilaire IAQ Control Model 8910, 8910W or 8920W. See **FIGURE 9**.
   - Aprilaire Thermostat Models 8620 or 8620W. See **FIGURE 10**.
   - Aprilaire Model 8120X Digital Ventilation Controller. See **FIGURE 11**.
7. Restore power to the ventilator and the HVAC system.

FIGURE 8 – CONTROL WIRING JUMPER



8144NC CIRCUIT BOARD AS SHIPPED

FIGURE 9 – WIRING TO 8910/8910W/8920W IAQ CONTROL

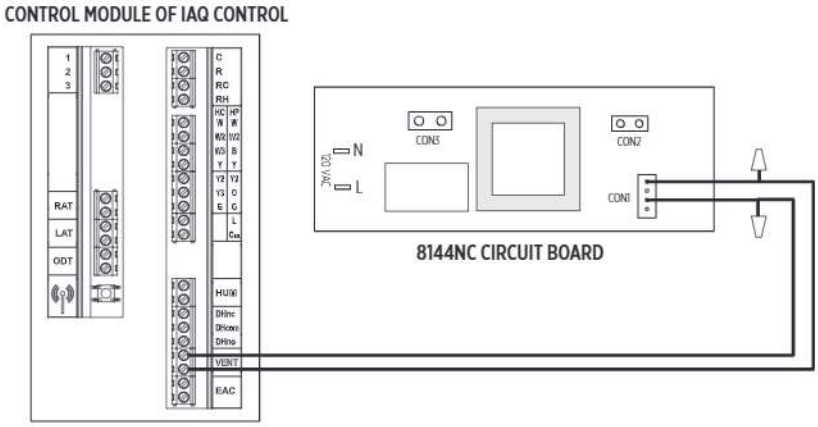


FIGURE 10 – WIRING TO 8620/8620W THERMOSTAT

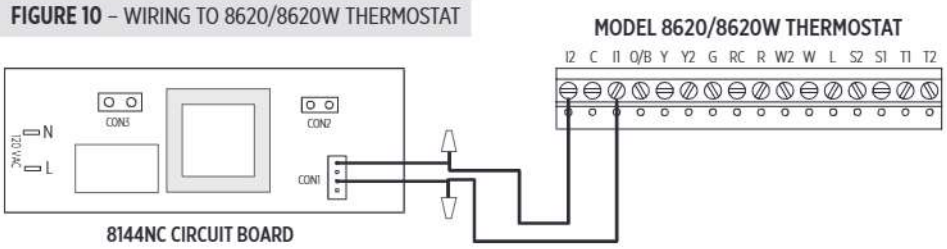
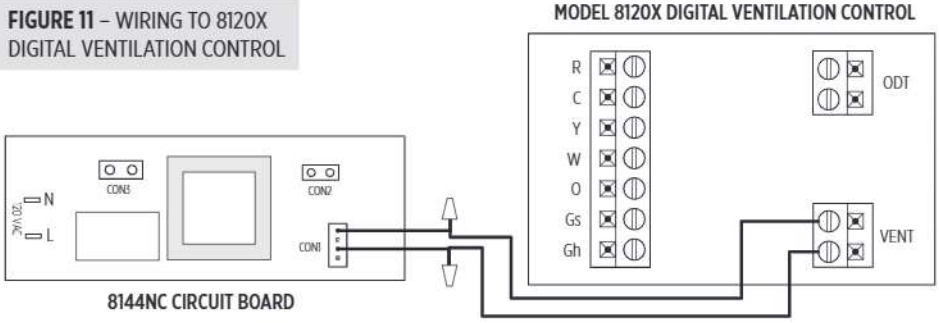


FIGURE 11 – WIRING TO 8120X DIGITAL VENTILATION CONTROL



TEST AND SETTING

1. Restore power and turn on any disconnect switch to the ventilator
2. Rotate the motor speed adjustment just past the on/off click to turn on the ventilator at maximum speed. If an external control is wired to the ventilator, turn the control on so the ventilator can run continuously.
3. Use 1/4" flexible tubing to attach a pressure gauge (set to " w.c. or in. w.g. or inH20) to the inlet and outlet pressure ports on the ventilator. The pressure gauge should have as small a range as possible to get a meaningful measurement – a range of 1.0" w.c. should be sufficient. Connect the high or "+" port of the gauge to the outlet pressure port on the ventilator, and the low or "–" port of the gauge to the inlet pressure port on the ventilator. See **FIGURE 12**.
4. Use the label on the cover of the ventilator, or the blank curves in **FIGURE 13B**, to determine airflow delivery. The following is an example using **FIGURE 13A**:
   - **a.** Measure the pressure differential at maximum speed (example assumes measured pressure is 0.35" w.c.).
   - **b.** Find the circle on the curve nearest the measured pressure differential. Extend a vertical line down from the circle to the corresponding airflow (CFM) – this is the maximum speed airflow of the system (145 CFM in the example).
     - For intermittent ventilation controls, this measurement is the delivered ventilation airflow. Use this value in setting up the ventilation controller.
   - **c.** For continuous ventilation systems, use the curve on which the maximum speed pressure circle is located to find the Pressure Differential that corresponds to the desired continuous airflow (the example assumes 75 CFM continuous airflow is required).
   - **d.** Adjust the motor speed controller until the pressure on the gauge matches the desired continuous airflow pressure (75 CFM corresponds to a Pressure Differential of approximately 0.10" w.c.).

FIGURE 12

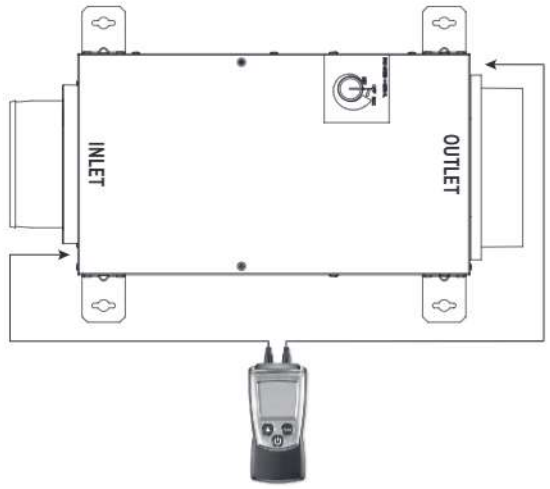


FIGURE 13A – AIRFLOW SETTING EXAMPLE

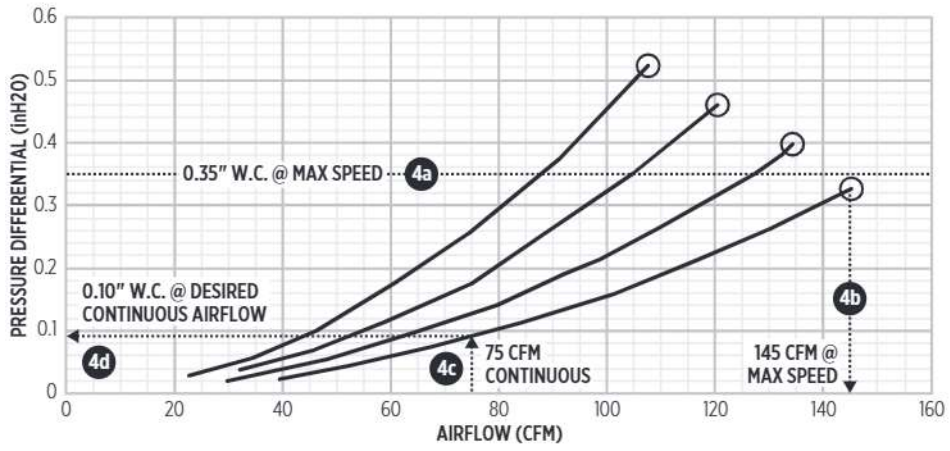
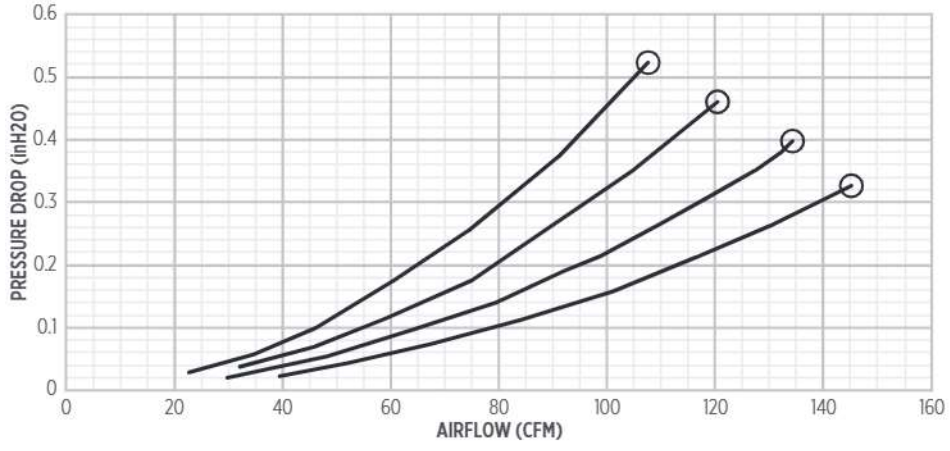


FIGURE 13B – AIRFLOW SETTING CURVES



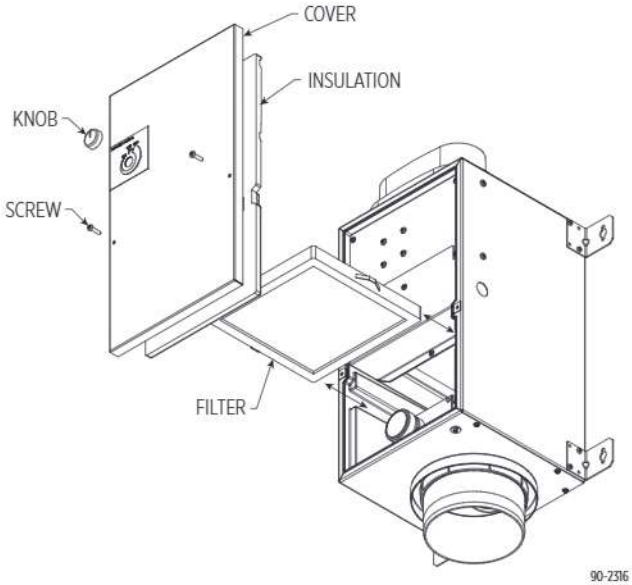
FILTER CLEANING

Normally the fresh air filter will need to be removed and cleaned every six months, but check it after the first three months following installation to determine if more or less frequent cleaning will be necessary. After cleaning the filter inside the ventilator, clean off the screen at the fresh air intake hood (if safely accessible). The most common cause of reduced ventilation is a clogged air intake hood.

To clean the ventilator filter:

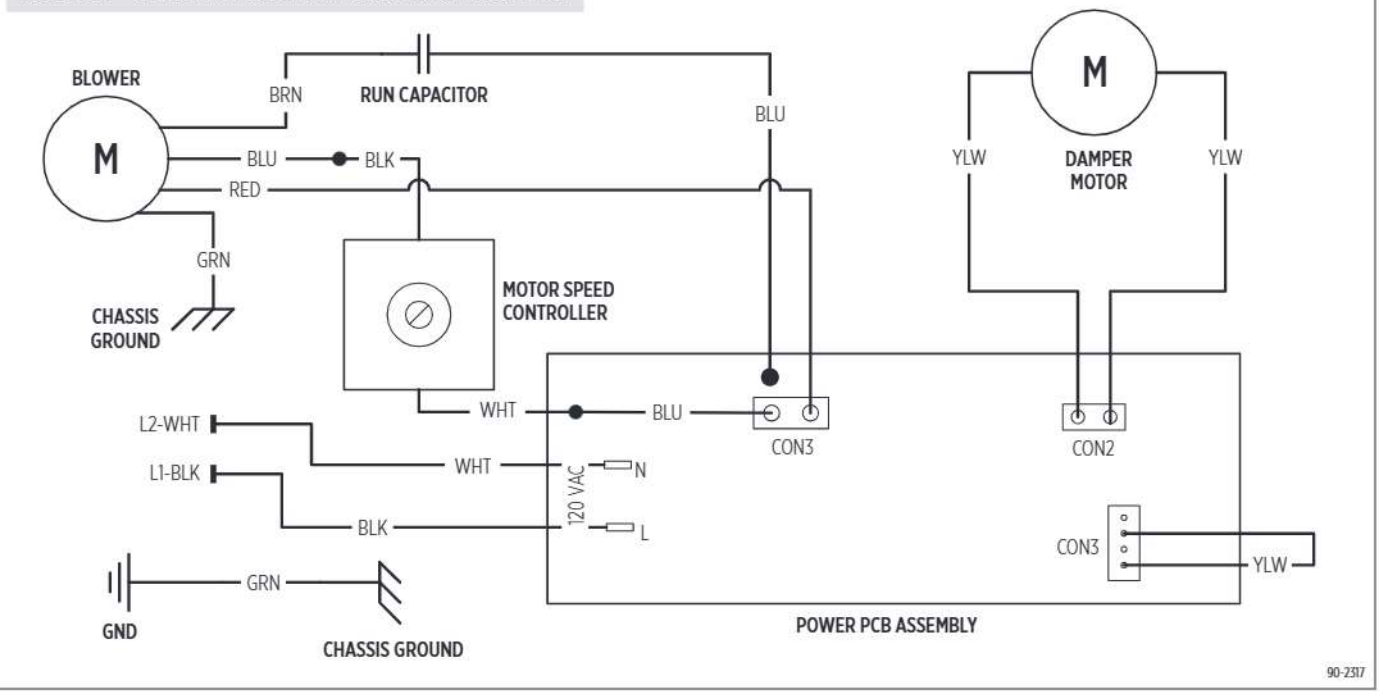
1. Remove the two screws securing the ventilator cover to the housing and then remove the insulation.
2. Remove the filter from housing.
3. Use water to rinse the filter and then shake out the excess moisture from the filter.
4. Replace the filter in the ventilator and reinstall the cover insulation and the cover.

FIGURE 14 – REMOVING THE FILTER



INTERNAL SCHEMATIC

FIGURE 15 – MODEL 8144NC INTERNAL ELECTRICAL SCHEMATIC



LIMITED WARRANTY

Your Research Products Corporation Aprilaire® Fresh Air Ventilator is expressly warranted for five (5) years from date of installation to be free from defects in materials or workmanship.

Research Products Corporation's exclusive obligation under this warranty shall be to supply, without charge, a replacement for any component which is found to be defective within such five (5) year period and which is returned not later than thirty (30) days after said five (5) year period by you to either your original supplier or to Research Products Corporation, Madison, Wisconsin 53701, together with the model number and installation date of the ventilator.

THIS WARRANTY SHALL NOT OBLIGATE RESEARCH PRODUCTS CORPORATION FOR ANY LABOR COSTS AND SHALL NOT APPLY TO DEFECTS IN WORKMANSHIP OR MATERIALS FURNISHED BY YOUR INSTALLER AS CONTRASTED TO DEFECTS IN THE VENTILATOR ITSELF.

IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFORESAID FIVE YEAR PERIOD. RESEARCH PRODUCTS CORPORATION'S LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFORESAID IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECTS(S) RESULT FROM FAILURE TO HAVE THIS UNIT INSTALLED BY A QUALIFIED HEATING AND AIR CONDITIONING CONTRACTOR. IF THE LIMITED WARRANTY IS VOID DUE TO FAILURE TO USE A QUALIFIED CONTRACTOR, 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 exclusion or limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

WARRANTY REGISTRATION

Visit us online at **www.aprilaire.com** to register your Aprilaire product. If you do not have online access, please mail a postcard with your name, address, phone number, email address, product purchased, model number, date of purchase, and dealer name and address to: Research Products Corporation, P.O. Box 1467, Madison, WI 53701.

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

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