

# INSTALLATION GUIDE



## VENMAR AVS

AVS E15 ECM ERV\*

AVS E15 ECM HRV\*

AVS E15 HRV

AVS E10 HRV



## vÄN EE

90H-V ECM ERV\*

90H-V ECM HRV\*

90H-V+

60H-V+

VB0202

\*THESE UNITS HAVE A SPECIAL BOOTING SEQUENCE, REFER TO PAGE 12.

△ RESIDENTIAL USE ONLY △

**READ AND SAVE THESE INSTRUCTIONS**



These products earned the ENERGY STAR® by meeting strict energy efficiency guidelines set by Natural Resources Canada and the US EPA. They meet ENERGY STAR requirements only when used in Canada.

21781 rev. 03

## ABOUT THIS GUIDE

Because of the large amount of models covered in this publication, the illustrations are typical ones. Some details of your unit may be slightly different than the ones shown.

Please take note that this guide uses the following symbols to emphasize particular information:

### WARNING

**Identifies an instruction which, if not followed, might cause serious personal injuries including possibility of death.**

### CAUTION

**Denotes an instruction which, if not followed, may severely damage the unit and/or its components.**

NOTE: Indicates supplementary information needed to fully complete an instruction.

We welcome any suggestions you may have concerning this guide and/or the unit, and we would appreciate hearing your comments on ways to better serve you. Please contact us by phone at 1-800-567-3855.

## ABOUT THESE UNITS

### LIMITATION

For residential (domestic) installation only. Installation work and electrical wiring must be done by a qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction codes and standards.

### WARNING

#### TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSON(S) OBSERVE THE FOLLOWING:

1. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed in the warranty.
2. We recommend that your unit be inspected by a specialized technician once a year.
3. Before servicing or cleaning the unit, disconnect power cord from electrical outlet.
4. This unit is not designed to provide combustion and/or dilution air for fuel-burning appliances.
5. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
6. Do not use the units with any solid-state speed control device other than the corresponding ones listed below:

UNIT	MAIN CONTROL	AUXILIARY CONTROL
AVS E15 ECM ERV, AVS E15 ECM HRV	ALTITUDE OR DECO-TOUCH	60-MINUTE CRANK TIMER, 20/40/60-MINUTE PUSH-BUTTON TIMER AND DEHUMIDISTAT
90H-V ECM ERV, 90H-V ECM HRV	PLATINUM OR DECO-TOUCH	
AVS E15 HRV, AVS E10 HRV	ALTITUDE, DECO-TOUCH, LITE-TOUCH CONSTRUCTO OR CONSTRUCTO	
90H-V+, 60H-V+	PLATINUM, DECO-TOUCH, LITE-TOUCH BRONZE OR BRONZE	

7. This unit must be grounded. The power supply cord has a 3-prong grounding plug for your personal safety. It must be plugged into a mating 3-prong grounding receptacle, grounded in accordance with the national electrical code and local codes and ordinances. Do not remove the ground prong. Do not use an extension cord.
8. Do not install in a cooking area or connect directly to any appliances.
9. Do not use to exhaust hazardous or explosive materials and vapors.
10. When performing installation, servicing or cleaning these units, it is recommended to wear safety glasses and gloves.
11. Due to the weight of the unit, two installers are recommended to perform installation.
12. When applicable local regulations comprise more restrictive installation and/or certification requirements, the aforementioned requirements prevail on those of this document and the installer agrees to conform to these at his own expenses.

### CAUTION

1. To avoid premature clogged filters, turn OFF the unit during construction or renovation.
2. Please read specification label on product for further information and requirements.
3. Be sure to duct air outdoors – Do not intake/exhaust air into spaces within walls or ceiling or into attics, crawl spaces, or garage.
4. Intended for residential installation only in accordance with the requirements of NFPA 90B (for a unit installed in USA) or Part 9 of the National Building Code of Canada (for a unit installed in Canada).
5. Do not run any air ducts directly above or closer than 2 ft (0.61 m) to any furnace or its supply plenum, boiler, or other heat producing appliance. If a duct has to be connected to the furnace return plenum, it must be connected not closer than 9' 10" (3 m) from this plenum connection to the furnace.
6. The ductwork is intended to be installed in compliance with all applicable codes.
7. When leaving the house for a long period of time (more than two weeks), a responsible person should regularly check if the unit operates adequately.
8. If the ductwork passes through an unconditioned space (e.g.: attic), the ducts must be insulated, and the unit must operate continuously except when performing maintenance and/or repair. Also, the ambient temperature of the house should never drop below 18°C (65°F).

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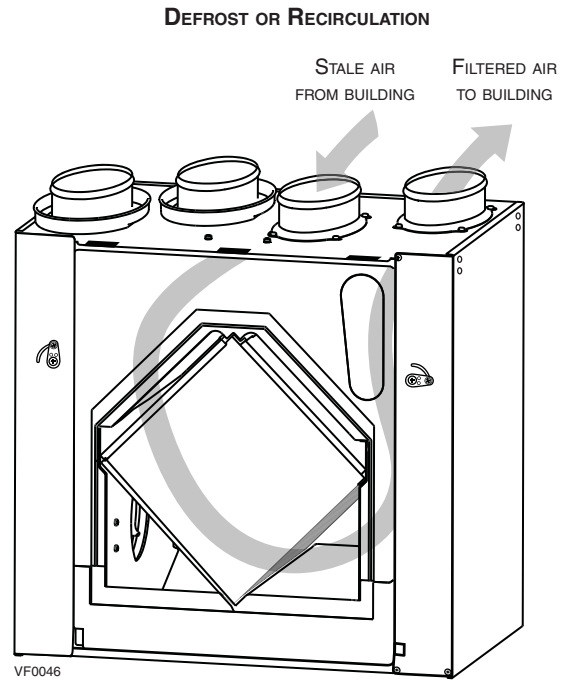
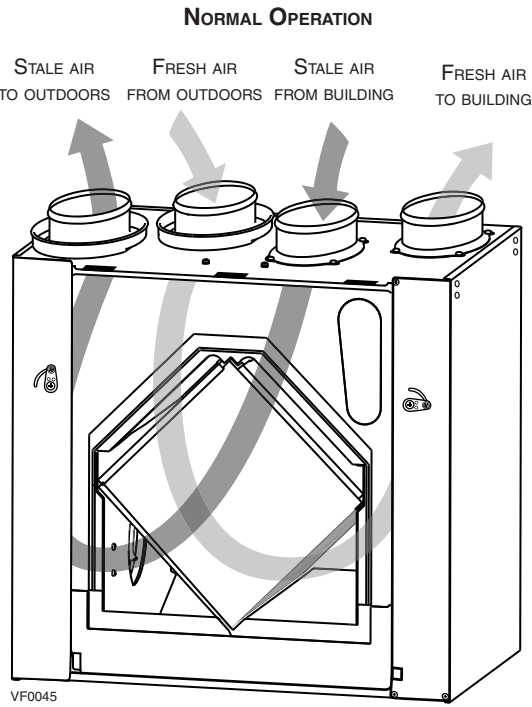
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# 1. TECHNICAL DATA

## 1.1 AIR DISTRIBUTION

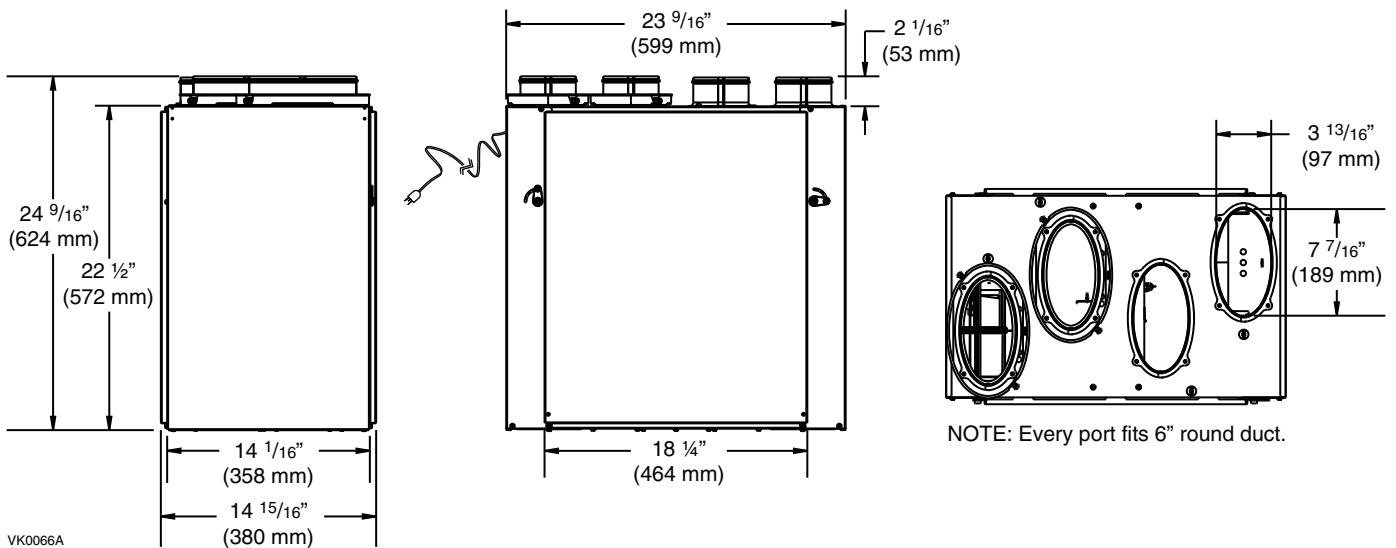


## 1.2 DEFROST CYCLES

OUTDOOR TEMPERATURE		AVS E15 ECM ERV, AVS E15 ECM HRV, 90H-V ECM ERV AND 90H-V ECM HRV UNITS				AVS E15 HRV, AVS E10 HRV, 90H-V+ AND 60H-V+ UNITS			
		NORMAL DEFROST CYCLE (MIN)		EXTENDED DEFROST CYCLE (MIN)		NORMAL DEFROST CYCLE (MIN)		EXTENDED DEFROST CYCLE (MIN)	
°C	°F	DEFROSTING	OPERATION BETWEEN EACH DEFROST	DEFROSTING	OPERATION BETWEEN EACH DEFROST	DEFROSTING	OPERATION BETWEEN EACH DEFROST	DEFROSTING	OPERATION BETWEEN EACH DEFROST
-5	23	7	25	9	23	5	40	9	30
-15	5	7	25	9	23	5	25	9	23
-27	-17	10	22	10	22	8	22	10	15

In a cold region, (outdoor temperature -27°C [-17°F] and lower), it may be necessary to setup EXTENDED DEFROST. See Section 4.3 or 4.4, according to the unit model.

## 1.3 DIMENSIONS



## 2. TYPICAL INSTALLATIONS

Use the following illustrations as guidelines to help you decide on how the unit will be installed.

All the units should be hung from the joists.

If required, bathroom fans and a range hood may be used to exhaust stale air. Also, for homes with more than one level, we recommend one exhaust register at the highest level.

There are 3 installation methods: Fully ducted, Central Draw Point and Simplified Installation.

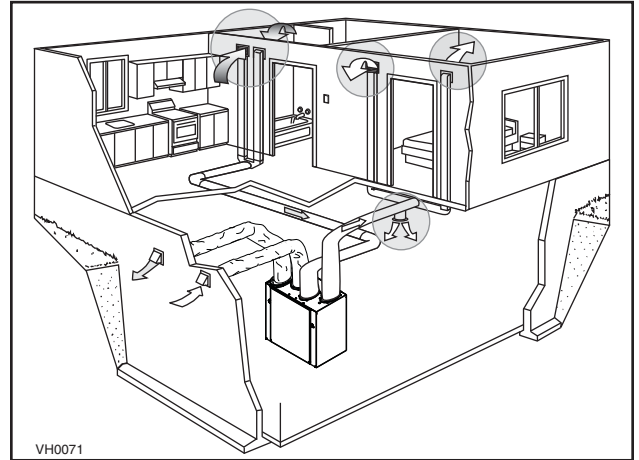
NOTE: An electrical outlet has to be available within 3 feet of the unit.

### 2.1 FULLY DUCTED SYSTEM (PRIMARYLY FOR HOMES WITH RADIANT HOT WATER OR ELECTRIC BASEBOARD HEATING)

Stale air coming from the registers located at the highest level of the house is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied by the register located in the lowest liveable level.

Homes with more than one level require at least one exhaust register at the highest level.

See figure at right.

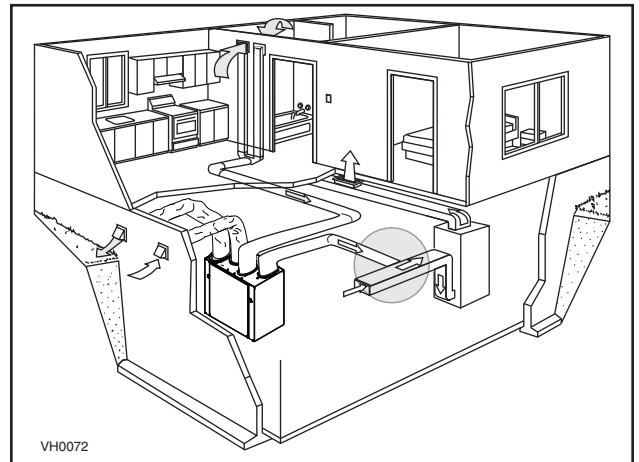


### 2.2 CENTRAL DRAW POINT (CONNECTION TO A FORCED AIR SYSTEM)

Stale air coming from the registers located at the highest level of the house is exhausted to the outdoors. Fresh air from outside is filtered and supplied to the return (plenum) or the supply duct of the forced air unit. See figure at right.

For this type of installation, it is not essential that the forced air system blower runs when the unit is in operation, but we recommend it.

NOTE: Home with multiple forced air systems should have one unit on each system.



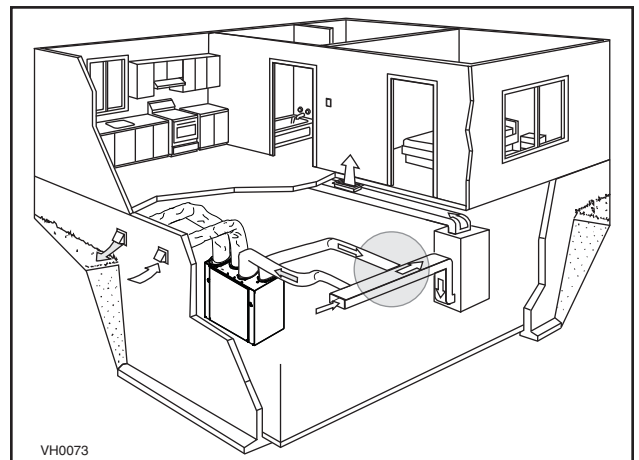
### 2.3 SIMPLIFIED INSTALLATION (CONNECTION TO A FORCED AIR SYSTEM)

Stale air is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied to the return (plenum) or the supply duct of the forced air unit.

See figure at right.

To avoid cross-contamination and achieve the highest efficiencies, the forced air system blower must always be ON.

NOTE: Home with multiple forced air systems should have one unit on each system.



## 2. TYPICAL INSTALLATIONS (CONT'D)

### 2.4 ATTIC INSTALLATION FOR AVS E15 ECM ERV ONLY

All three types of installation can be used in the attic (Fully ducted, Central Draw Point or Simplified). The example shown below is a Simplified Installation (connection to a forced air system).

NOTE: To get the most of your ERV unit, the ambient temperature around the unit should be conditioned. If the unit has to be installed in an unconditioned space, the heat gains or losses from the unit and the ducts could increase the operation costs of the unit.

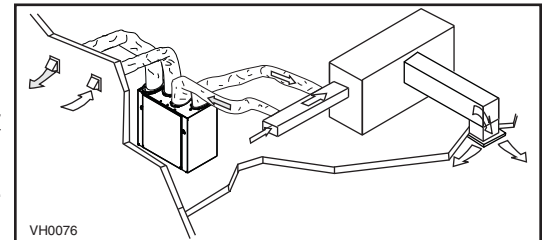
#### CAUTION

- Due to the potential temperature difference between the attic and the rest of the house, all unit ducts must be insulated.
- The attic temperature must always be above 10°C (50°F) and under 50°C (122°F).

Stale air is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied to the return (plenum) of the forced air unit. See figure at right.

To avoid cross-contamination and achieve the highest efficiencies, the forced air system blower must always be ON.

NOTE: Home with multiple forced air systems should have one unit on each system.



## 3. INSTALLATION

### 3.1 INSPECT THE CONTENT OF THE BOX

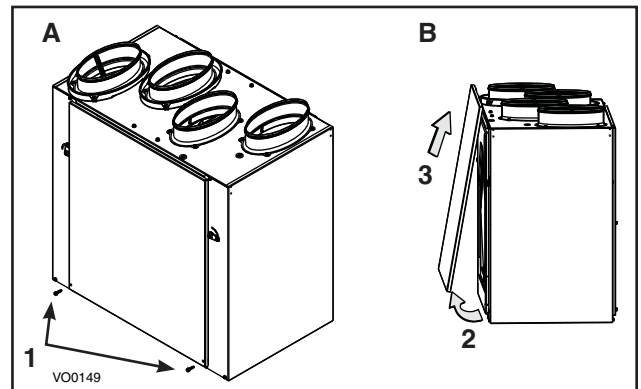
Inspect the exterior of the unit for shipping damage. Ensure that there is no damage to the door, ports, power cord, etc.

### 3.2 UNIT DOOR(S)

The AVS E15 ECM ERV, AVS E15 ECM HRV, 90H-V ECM ERV and the 90H-V ECM HRV units have one front door and one back door while the AVS E15 HRV, AVS E10 HRV, 90H-V+ and the 60H-V+ units only have one door. For these last models, the unit door can be relocated on the back of the unit. This can be helpful to optimize duct configuration while keeping access for unit maintenance. To change door location, follow these steps:

- Remove both door lower mechanical screws no. 8-32 x 1" (1) and set aside.
- Open (2) and lift out the door (3).

To remove unit back panel, repeat steps **A** and **B**, but instead of removing 2 mechanical screws, there are 4 mechanical screws to be removed. Hang the door to the back of the unit and secure it by tightening its both lower mechanical screws. Hang back panel to the front of the unit and secure it by tightening its four metal screws.

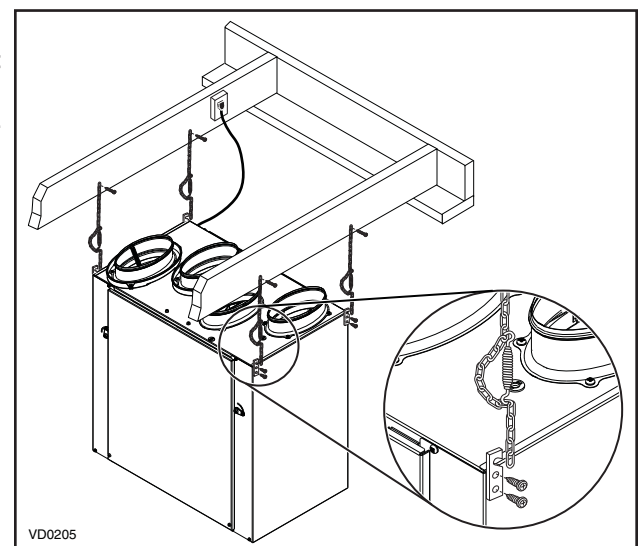


### 3.3 LOCATING THE UNIT

Choose an appropriate location for the unit.

- Within an area of the house **where the ambient temperature is kept between 10°C (50°F) and 40°C (104°F).**
- Away from living areas (dining room, living room, bedroom), if possible.
- So as to provide easy access to the interior of the unit, for quarterly and annual maintenance.
- Close to an exterior wall, so as to limit the length of the insulated flexible duct to and from the unit.
- Away from hot chimneys and other fire hazards.
- Allow for a power source (standard 3-prong grounding outlet).
- Close to a drain. If no drain is close by, use a pail to collect run-off.

Hang the unit with the four chains and springs provided. See illustration at right.



#### CAUTION

**Make sure the unit is level.**

### 3. INSTALLATION (CONT'D)

#### 3.4 PLANNING OF THE DUCTWORK

- Keep it simple. Plan for a minimum of bends and joints.
- Keep the length of insulated ducts to a minimum.
- Do not ventilate crawl spaces or cold rooms. Do not attempt to recover the exhaust air from a dryer or a range hood. This would cause clogging of the filters and recovery module.
- If the house has two floors or more, be sure to plan for at least one exhaust register on the highest lived-in level.

#### 3.5 CALCULATING DUCT SIZE

Use the table below to ensure that the ducts you intend to install will be carrying air flows at or under the recommended values. Avoid installing ducts that will have to carry air flows near the maximum values and never install a duct if its air flow exceeds the maximum value.

DUCT DIAMETER	RECOMMENDED AIR FLOW	MAXIMUM AIR FLOW
4" Ø (102 MM)	40 CFM (19 L/S OR 68 M <sup>3</sup> /H)	60 CFM (28 L/S OR 102 M <sup>3</sup> /H)
5" Ø (127 MM)	75 CFM (35 L/S OR 127 M <sup>3</sup> /H)	110 CFM (52 L/S OR 187 M <sup>3</sup> /H)
6" Ø (152 MM)	120 CFM (57 L/S OR 204 M <sup>3</sup> /H)	180 CFM (85 L/S OR 306 M <sup>3</sup> /H)

NOTE: Examples 3.5.1 and 3.5.2 use imperial units. The same calculation applies to metric units.

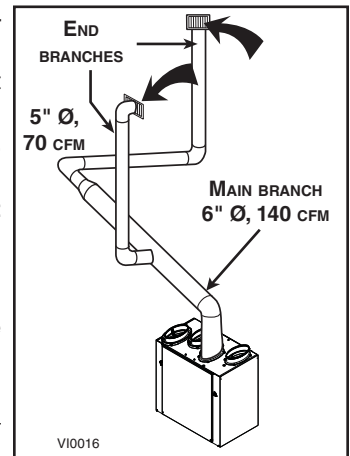
##### 3.5.1 EXAMPLE OF CALCULATION

**Problem:** My installation requires two exhaust registers (one for the kitchen, and the other for the bathroom). I will connect these registers to a main duct which will connect to the unit (high speed performance value of 140 cfm). What size of duct should I use for the main exhaust duct and for both end branches leading to the registers? (See illustration at right.)

**Solution:** Simplified method. (For a more detailed method of calculating duct size, refer to the ASHRAE or HRAI HANDBOOK.)

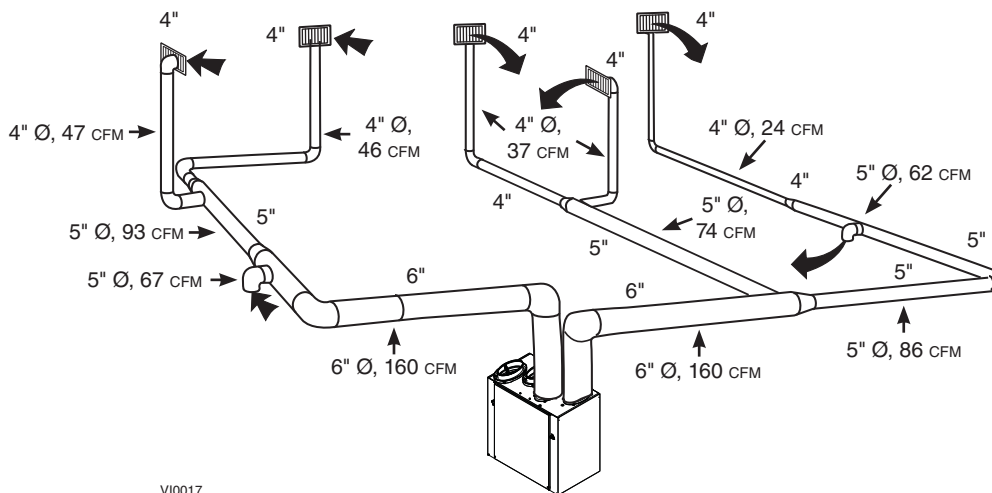
Main duct: Table indicates for a 6" Ø duct: recommended air flow: 120 cfm, maximum air flow: 180 cfm. The 140 cfm high speed air flow is close enough to the recommended value (120) and far away enough from the maximum value (180). Therefore, a 6" Ø duct or larger is an appropriate choice for the main exhaust duct.

End branches: Each end branch will have to transport a 70 cfm air flow (140 divided by 2). Table indicates for a 5" Ø duct: recommended air flow: 75 cfm; maximum air flow: 110 cfm. The high speed air flow of 70 cfm is close enough to the recommended value (75) and far away enough from the maximum value (110). Therefore, a 5" Ø duct or larger is an appropriate choice for both end branches.



NOTE: A 4" Ø duct would have been too small because the maximum acceptable value for a 4" Ø duct is 60 cfm.

##### 3.5.2 Example of a design for a fully ducted system with a unit having a high speed performance of 160 cfm.



### 3. INSTALLATION (CONT'D)

#### 3.6 INSTALLING THE DUCTWORK AND REGISTERS

##### 3.6.1 FULLY DUCTED SYSTEM (AS ILLUSTRATED IN SECTION 2.1)

#### ⚠ WARNING

**Never install a stale air exhaust register in a closed room where a combustion device operates, such as a gas furnace, a gas water heater or a fireplace.**

##### Stale air exhaust ductwork

- Install the stale air exhaust registers where the contaminants are produced: kitchen, living room, etc. Position the registers as far from the stairway as possible and in such a way that the air circulates in all the lived-in spaces in the house.
- If a register is installed in the kitchen, it must be located at least 4 feet (1.2 m) from the range.
- Install the registers 6 to 12 inches (152 to 305 mm) from the ceiling on an interior wall OR install them in the ceiling.
- If possible, measure the velocity of the air flowing through the registers. If the velocity is higher than 400 ft/min (122 m/min), then the register type is too small. Replace with a larger one.

##### Fresh air distribution ductwork

- Install the fresh air distribution registers in bedrooms, dining rooms, living room and basement.
- Keep in mind that the fresh air registers must be located as far as possible from the stale air registers.
- Install the registers either in the ceiling or high on the walls with air flow directed towards the ceiling. (The cooler air will then cross the upper part of the room and mix with room air, before descending to occupant's level.)
- If a register must be floor installed, direct the airflow up the wall.

##### 3.6.2 CENTRAL DRAW POINT SYSTEM (AS ILLUSTRATED IN SECTION 2.2)

##### Stale air exhaust ductwork

Same as for Fully Ducted System, described on point 3.6.1

#### ⚠ WARNING

**When performing duct connections, always use approved tools and materials. Respect all corresponding laws and safety regulations. Please refer to your local building code.**

#### CAUTION

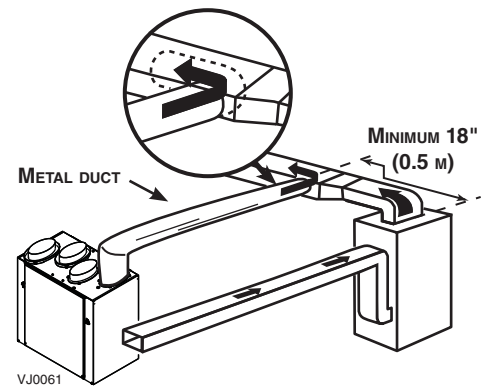
**When performing duct connections to the furnace supply duct, this duct must be sized to support the additional airflow produced by the unit. Also, the use of metal duct is highly recommended.**

##### Fresh air distribution ductwork

- There are 2 methods for connecting the unit to the furnace/air handler:

##### Method 1: Supply side connection

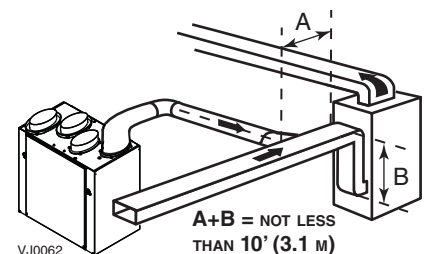
- Cut an opening into the furnace supply duct at least 18 inches (0.5 m) from the furnace/air handler.
- Connect this opening to the **Fresh air distribution** port of the unit (use **metal duct**, see figure at right).
- Make sure the unit duct forms an elbow inside the furnace/air handler ductwork.
- If desired, interlock (synchronize) the furnace/air handler blower operation (see Section 5 ELECTRICAL CONNECTION TO FURNACE).



##### Method 2: Return side connection

- Cut an opening into the furnace return duct not less than 10 feet (3.1 m) from the furnace/air handler (A+B).
- Connect this opening to the **Fresh air distribution** port of the unit (see figure at right).

NOTE: For Method 2, it is not essential that the furnace/air handler runs when the unit is operation, but we recommend it. If desired, interlock (synchronize) the furnace/air handler blower operation (see Section 5 ELECTRICAL CONNECTION TO FURNACE).





### 3. INSTALLATION (CONT'D)

#### 3.6 INSTALLING THE DUCTWORK AND REGISTERS (CONT'D)

##### 3.6.3 SIMPLIFIED INSTALLATION (AS ILLUSTRATED IN SECTION 2.3)

#### ⚠ WARNING

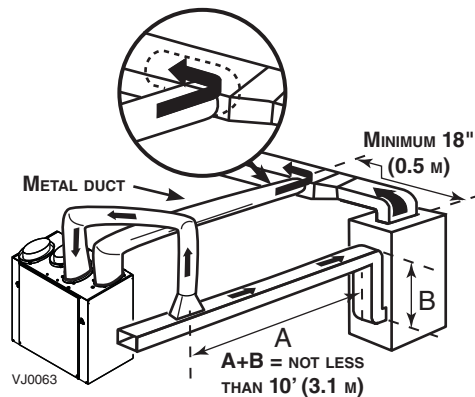
When performing duct connections, always use approved tools and materials. Respect all corresponding laws and safety regulations. Please refer to your local building code.

#### CAUTION

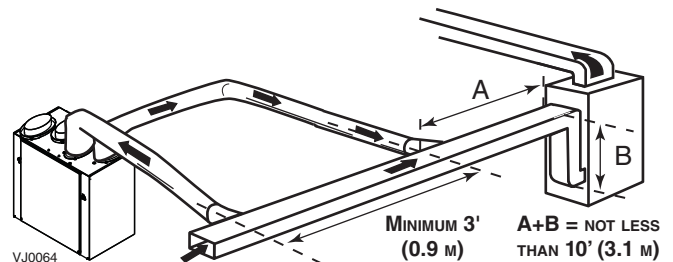
When performing duct connections to the furnace supply duct (Method 1), this duct must be sized to support the additional airflow produced by the unit. Also, the use of metal duct is highly recommended. For a Return-return installation, the furnace blower must be in operation when the unit is in operation.

There are 2 methods for connecting the unit to the furnace/air handler:

##### Method 1: Supply-return connection



##### Method 2: Return-return



##### Stale air intake

- Cut an opening into the furnace/air handler return duct not less than 10 feet (3.1 m) from the furnace/air handler (A+B).
- Connect this opening to the **Exhaust air from building** port of the unit.

##### Fresh air distribution

- Same instructions as for Method 1 or Method 2, Section 3.6.2.

For Method 2 (Return-return), make sure there is a distance of at least 3 feet (0.9 m) between the 2 connections to the furnace/air handler.

#### CAUTION

If using Method 2, make sure the furnace/air handler blower operation is synchronized with the unit operation! See Section 5.

NOTE: For Method 1, it is not essential to synchronize the furnace blower operation with the unit operation, but we recommend it.

### 3. INSTALLATION (CONT'D)

#### 3.7 CONNECTING THE DUCTS TO THE UNIT

NOTE: All unit ports are created to be connected to ducts having a minimum of 6" diameter, but if need be, they can be connected to bigger sized ducts by using an appropriate transition (e.g.: 6" diameter to 7" diameter transition).

##### Insulated flexible ducts

Use the following procedure to connect the insulated flexible ducts to the ports of the unit (**Exhaust air to outside** and **Fresh air from outside** ports).

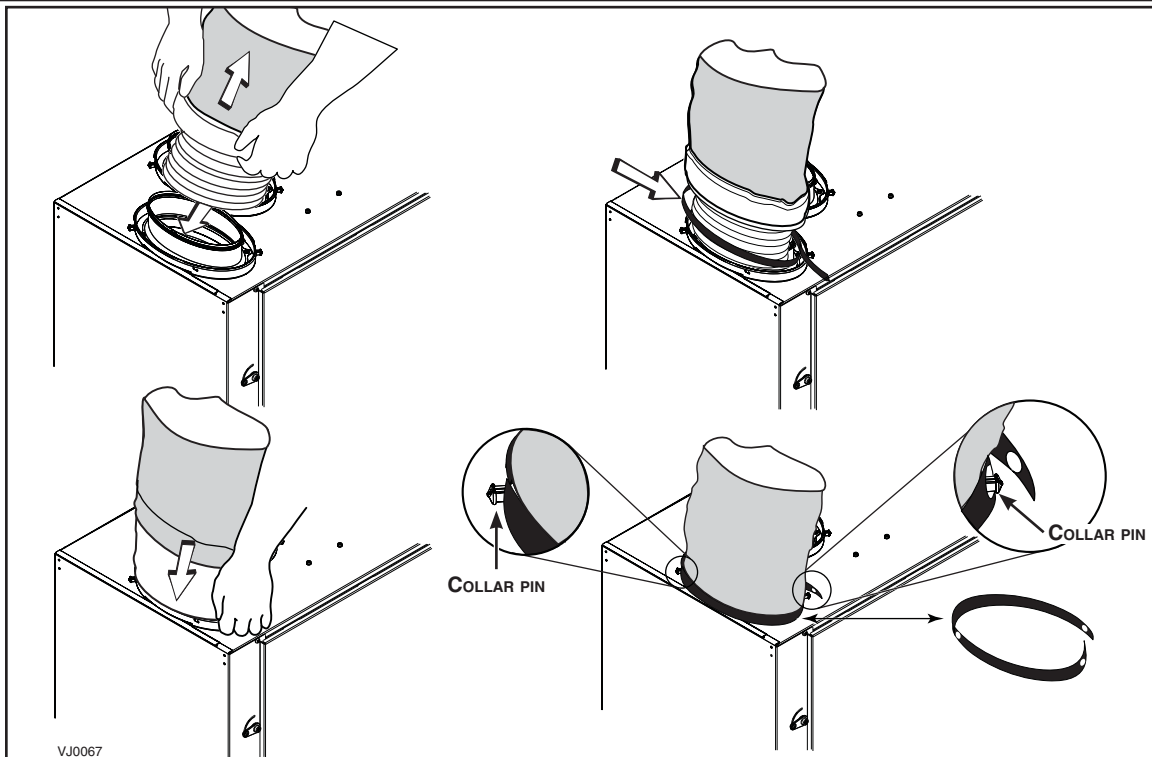
#### CAUTION

If ducts have to go through an unconditioned space (e.g.: attic), always use insulated ducts.

1. Pull back the insulation to expose the flexible duct.
2. Attach the flexible duct to the port using tie wrap.
3. Pull the insulation over the joint and tuck in between the inner and outer rings of the double collar.
4. Pull down the vapor barrier (shaded part in illustrations below) over the outer ring to cover it completely. Fasten in place the vapor barrier using the port strap (included in unit parts bag). To do so, insert one collar pin through vapor barrier and first strap hole, then insert the other collar pin through vapor barrier and center strap hole and close the loop by inserting the first collar pin in the last strap hole.

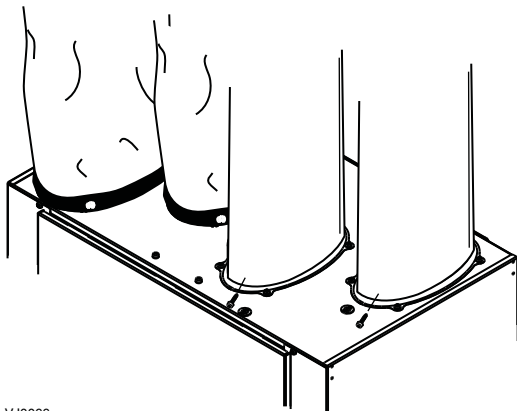
#### CAUTION

Make sure the vapor barrier on the insulated ducts does not tear during installation to avoid condensation within the ducts.



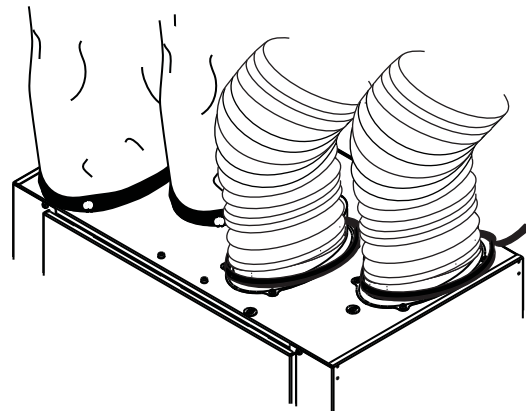
##### Non-insulated rigid ducts

Use metal screws and duct tape to connect the rigid ducts to the unit ports.



##### Non-insulated flexible ducts

Use tie wraps to connect the flexible ducts to the unit ports.



### 3. INSTALLATION (CONT'D)

#### 3.8 INSTALLING TWO EXTERIOR HOODS

Choose an appropriate location to install the exterior hoods:

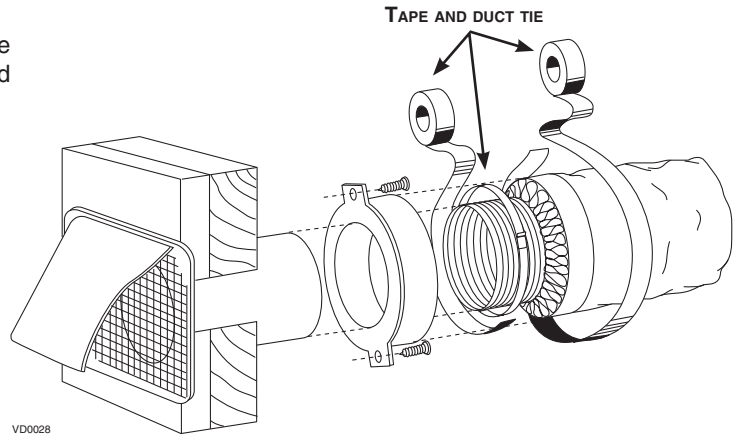
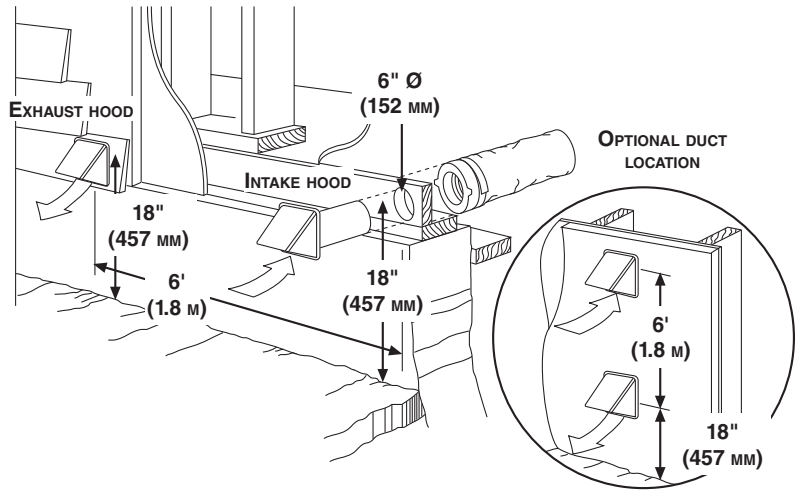
- There must be a minimum distance of 6 feet (1.8 m) between the hoods to avoid cross-contamination
- There must be a minimum distance of 18 inches (457 mm) from the ground

#### ⚠ WARNING

Make sure the intake hood is at least 6 feet (1.8 m) away from any of the following:

- Dryer exhaust, high efficiency furnace vent, central vacuum vent
- Gas meter exhaust, gas barbecue-grill
- Any exhaust from a combustion source
- Garbage bin and any other source of contamination

Refer to figure at right for connecting insulated ducts to the exterior hoods. An "Anti-gust intake hood" should be installed in regions where a lot of snow is expected to fall.

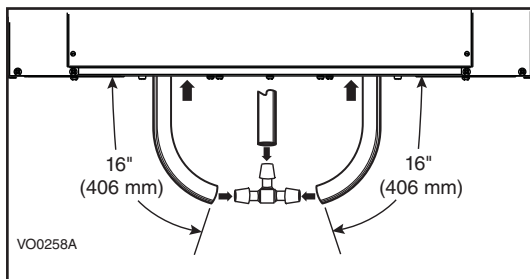


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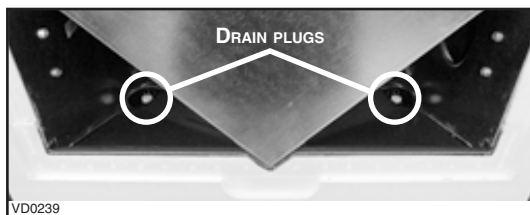
#### 3.9 CONNECTING THE DRAIN

#### CAUTION

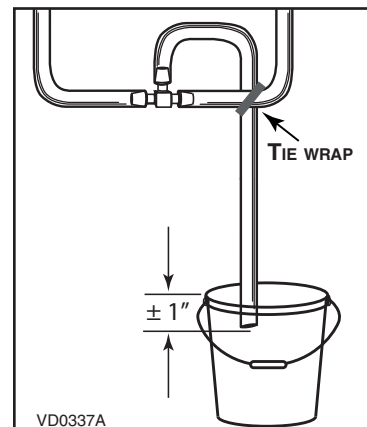
A drain tubing (included) must be installed for all HRV units. For ERV units, it is not required, however, it is recommended for climates where the outdoor temperature typically remains below  $-25^{\circ}\text{C}$  ( $-13^{\circ}\text{F}$ ), (over a 24-hour period) for several days in a row, combined with an indoor humidity of 40% or higher.



Cut 2 sections of the plastic tube, at least 16" (406 mm) long, and attach them to each inner drain fitting, located under the unit. Join both short sections to the "T" junction and main tube as shown.



NOTE: For ERV units, remove both drain plugs inside the unit prior to install tubing.



Make a water trap loop in the tube to prevent the unit from drawing unpleasant odors from the drain source. Make sure this loop is located OVER the "T" as shown. Run the tube to the floor drain or to an alternative drain pipe or pail.

#### IMPORTANT

If using a pail to collect water, locate the tube end approximately 1" from the top of the pail in order to prevent water from being drawn back up into the unit.

## 4. CONTROLS

All units are equipped with an integrated control located under the unit, on the recessed side of electrical compartment. Plug the unit.

### 4.1 UNITS BOOTING SEQUENCE

The unit booting sequence is similar to a personal computer boot sequence. Each time the unit is plugged after being unplugged, or after a power failure, the unit will perform a 30-second booting sequence before starting to operate.

#### 4.1.1 AVS E15 ECM ERV, AVS E15 ECM HRV, 90H-V ECM ERV and 90H-V ECM HRV

During the booting sequence, the integrated control LED will light AMBER for 10 seconds. After that, the LED will light RED for the rest of the booting sequence. During this RED light phase, the unit is checking and resetting the motorized damper position. Once the motorized damper position completely set, the RED light turns off and the booting sequence is done.

NOTE: No command will be taken until the unit is fully booted.

#### 4.1.2 AVS E15 HRV, AVS E10 HRV, 90H-V+ and 60H-V+

During the booting sequence, the integrated control LED will light GREEN (unit set in normal defrost) or amber (unit set in extended defrost) for 3 seconds, and then will shut off for 2 seconds. After that, the LED will light RED for the rest of the booting sequence. During this RED light phase, the unit is checking and resetting the motorized damper position. Once the motorized damper position completely set, the RED light turns off and the booting sequence is done.

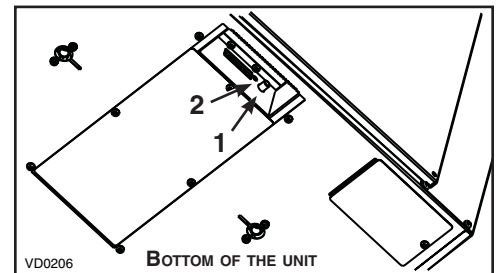
NOTE: No command will be taken until the unit is fully booted.

### 4.2 INTEGRATED CONTROL

Use the push button (1) to control the unit. The LED (2) will then show which mode the unit is in.

Refer to table below to see how to operate the unit using its integrated control.

PRESS ON PUSH BUTTON	LED COLOR	RESULTS
ONCE	AMBER	UNIT IS ON LOW SPEED
TWICE	GREEN	UNIT IS ON HIGH SPEED
THREE TIMES	NO LIGHT	UNIT IS OFF



If a problem occurs during the unit operation, its integrated control LED (2) will blink. The color of the blinking light depends on the type of error detected. Refer to Section 9 *Troubleshooting* on pages 21 to 25 for further details.

**NOTE: When using main control, the integrated control must be turned off.**

## 4. CONTROLS (CONT'D)

### 4.3 SPEED AND DEFROST SETTINGS FOR AVS E15 ECM ERV, AVS E15 ECM HRV, 90H-V ECM ERV AND 90H-V ECM HRV UNITS

The special design of AVS E15 ECM ERV, AVS E15 ECM HRV, 90H-V ECM ERV and 90H-V ECM HRV units offers 4 speed ranges to better meet to different ventilation needs.

Refer to the table below to choose the right speed range according to the size of the house:

NOTE: These CFM values are approximate, they may vary according to the installation static pressure.

SPEED RANGE	CFM VALUES			
	HRV MIN. SPEED	HRV MAX. SPEED	ERV MIN. SPEED	ERV MAX. SPEED
1 HIGH (FACTORY SET)	80 CFM	157 CFM	84 CFM	140 CFM
2 MED-HIGH	66 CFM	132 CFM	67 CFM	120 CFM
3 MED-LOW	53 CFM	106 CFM	53 CFM	105 CFM
4 LOW	40 CFM	80 CFM	40 CFM	80 CFM

These units are factory set to normal defrost. In cold region (outdoor temperature -27°C [-17°F] and lower), it may be necessary to setup extended defrost.

DEFROST TABLE	DEFROST CYCLE
1 FACTORY SET (HRV UNITS)	NORMAL (HRV UNITS)
2	EXTENDED (HRV UNITS)
3 FACTORY SET (ERV UNITS)	NORMAL (ERV UNITS)
4	EXTENDED (ERV UNITS)

#### TO MODIFY THE FACTORY SETTINGS, PROCEED AS FOLLOW:

NOTE: Anytime in setting process, if there is no activation on push button for 60 seconds, the unit will automatically exit setting mode, but the settings made before this 60-second delay will remain.

#### ACTION

- During the first 7 seconds of booting sequence, while the integrated control LED is AMBER, press on push button for about 3 seconds.
- Set the speed range by pressing consecutively on push button the number of times corresponding to the desired speed range. See table below.

NOTE: It is possible to change the selection as many times needed.

- Press on push button for about 3 seconds to access setting defrost mode.
- Press on push button twice to set the unit in extended defrost mode.

NOTE: It is possible to change the selection as many times needed.

- Wait 60 seconds OR press 3 seconds on push button to exit setting mode.

#### RESULT

- The LED will blink RED one time every 3 seconds to indicate the integrated control is in CFM setup mode (HIGH speed).
- Every 3 seconds, the LED will blink RED the number of times corresponding to the chosen speed range. See table below.

SPEED RANGE	PRESS ON PUSH BUTTON	LED BLINKS RED
1 HIGH	ONCE	1 TIME
2 MED-HIGH	TWICE	2 TIMES
3 MED-LOW	THREE TIMES	3 TIMES
4 LOW	FOUR TIMES	4 TIMES

- The LED will blink GREEN one time every 3 seconds to indicate the unit is set in normal defrost mode.
- The LED will blink GREEN twice every 3 seconds to indicate the unit is in extended defrost mode.

DEFROST TABLE	PRESS ON PUSH BUTTON	LED BLINKS GREEN
1 NORMAL (HRV UNITS)	ONCE	1 TIME
2 EXTENDED (HRV UNITS)	TWICE	2 TIMES
3 NORMAL (ERV UNITS)	THREE TIMES	3 TIMES
4 EXTENDED (ERV UNITS)	FOUR TIMES	4 TIMES

- The LED will blink and shut off, then light RED (the unit returns in its booting sequence).

### 4.4 SETTING EXTENDED DEFROST FOR AVS E15 HRV, AVS E10 HRV, 90H-V+ AND 60H-V+ UNITS

These units are factory set to normal defrost. In cold regions (outdoor temperature -27°C [-17°F] and lower), it may be necessary to setup extended defrost. During the first 2 seconds of booting sequence, while the integrated control LED is GREEN, press on push button for 3 seconds to set the unit in extended defrost; the LED will blink AMBER to show the unit is in extended defrost mode. After that, the LED will shut off, then light RED (the unit returns in its booting sequence).

## 4. CONTROLS (CONT'D)

### 4.5 ELECTRICAL CONNECTION TO MAIN CONTROLS

For more convenience, these units can also be controlled using an optional main wall control.

NOTES: 1. The integrated control must be turned OFF to use an optional main control.

2. If an optional auxiliary control is used, its activation will override the optional main control.

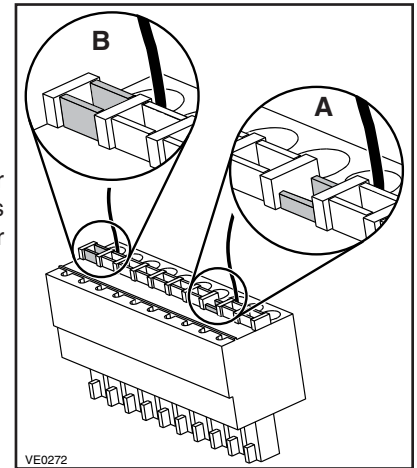
#### ⚠ WARNING

**Always disconnect the unit before making any connections. Failure in disconnecting power could result in electrical shock or damage of the wall control or electronic module inside the unit.**

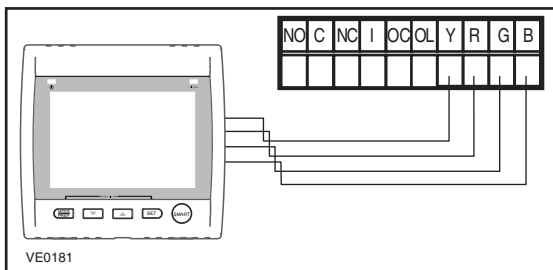
#### CAUTION

**Never install more than one optional main wall control per unit. Make sure that the wires do not short-circuit between themselves or by touching any other components on the wall control. Avoid poor wiring connections. To reduce electrical interference (noise) potential, do not run wall control wiring next to control contactors or near light dimming circuits, electrical motors, dwelling/building power or lighting wiring, or power distribution panel.**

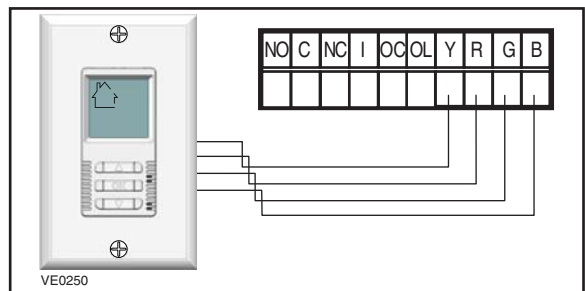
Use the terminal connector included in the installation kit to perform the electrical connection for main and optional wall controls. Check if all wires are correctly inserted in their corresponding holes in the terminal block. (A wire is correctly inserted when its orange receptacle is lower than another one without wire. On picture at right, wire **A** is correctly inserted, but wire **B** is not.)



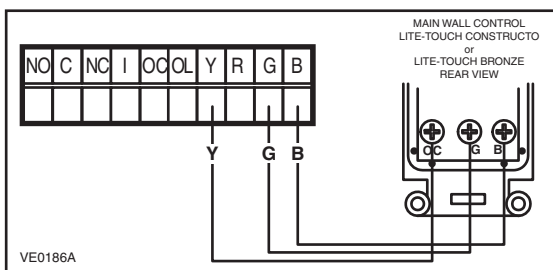
#### 4.5.1 ELECTRICAL CONNECTION TO ALTITUDE (AVS E15 ECM ERV AND AVS E15 ECM HRV UNITS ONLY) OR PLATINUM (90H-V ECM ERV AND 90H-V ECM HRV UNITS ONLY) MAIN WALL CONTROL



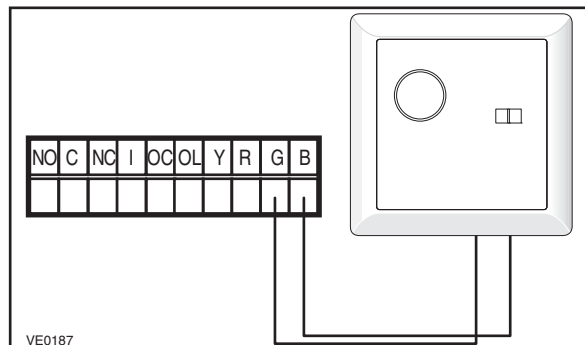
#### 4.5.2 ELECTRICAL CONNECTION TO DECO-TOUCH MAIN WALL CONTROL (ALL UNITS)



#### 4.5.3 ELECTRICAL CONNECTION TO LITE-TOUCH CONSTRUCTO (AVS E15 HRV AND AVS E10 HRV UNITS ONLY) OR LITE-TOUCH BRONZE (90H-V+ AND 60H-V+ UNITS ONLY) MAIN WALL CONTROL



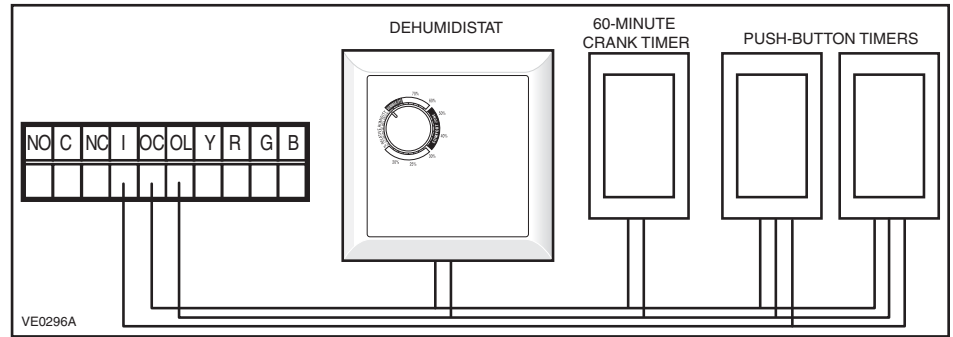
#### 4.5.4 ELECTRICAL CONNECTION TO CONSTRUCTO (AVS E15 HRV AND AVS E10 HRV UNITS ONLY) OR BRONZE (90H-V+ AND 60H-V+ UNITS ONLY) MAIN WALL CONTROL



## 4. CONTROLS (CONT'D)

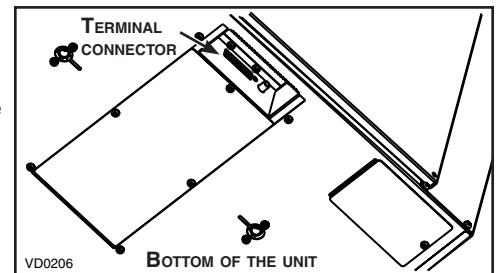
### 4.6 ELECTRICAL CONNECTION TO OPTIONAL AUXILIARY CONTROLS (ALL UNITS)

NOTE: If an optional auxiliary control is activated and then, the Dehumidistat is being activated, the Dehumidistat will override the auxiliary control commands.



Once the control(s) connections have been made, insert the terminal connector in the recessed side of the electrical compartment.

NOTE: For information about the operation of the wall controls, refer to the user guide.



## 5. ELECTRICAL CONNECTION TO THE FURNACE

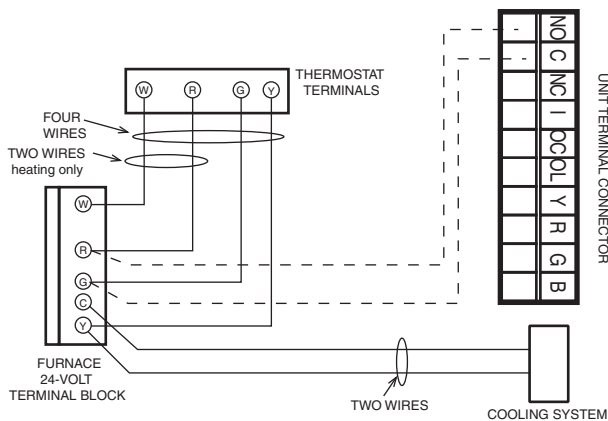
### ⚠ WARNING

Never connect a 120-volt AC circuit to the terminals of the furnace interlock (standard wiring). Only use the low voltage class 2 circuit of the furnace blower control.

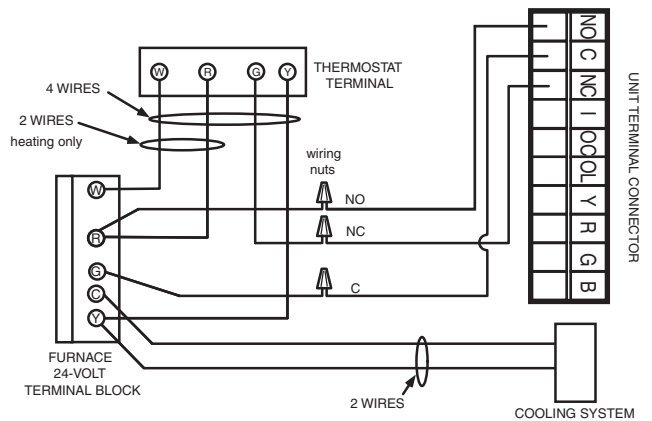
#### For a furnace connected to a cooling system:

On some older thermostats, energizing the “R” and “G” terminals at the furnace has the effect of energizing “Y” at the thermostat and thereby turning on the cooling system. If you identify this type of thermostat, you must use the ALTERNATE FURNACE INTERLOCK WIRING.

STANDARD FURNACE INTERLOCK WIRING



ALTERNATE FURNACE INTERLOCK WIRING

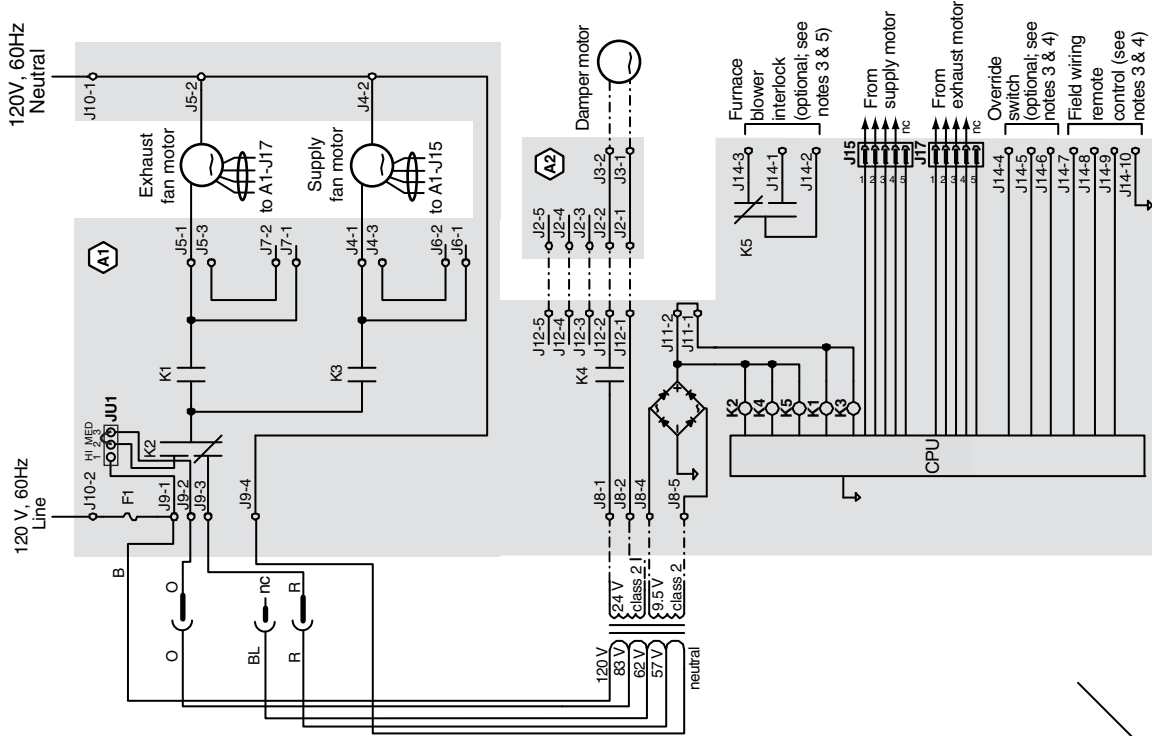


## 6. WIRING DIAGRAMS

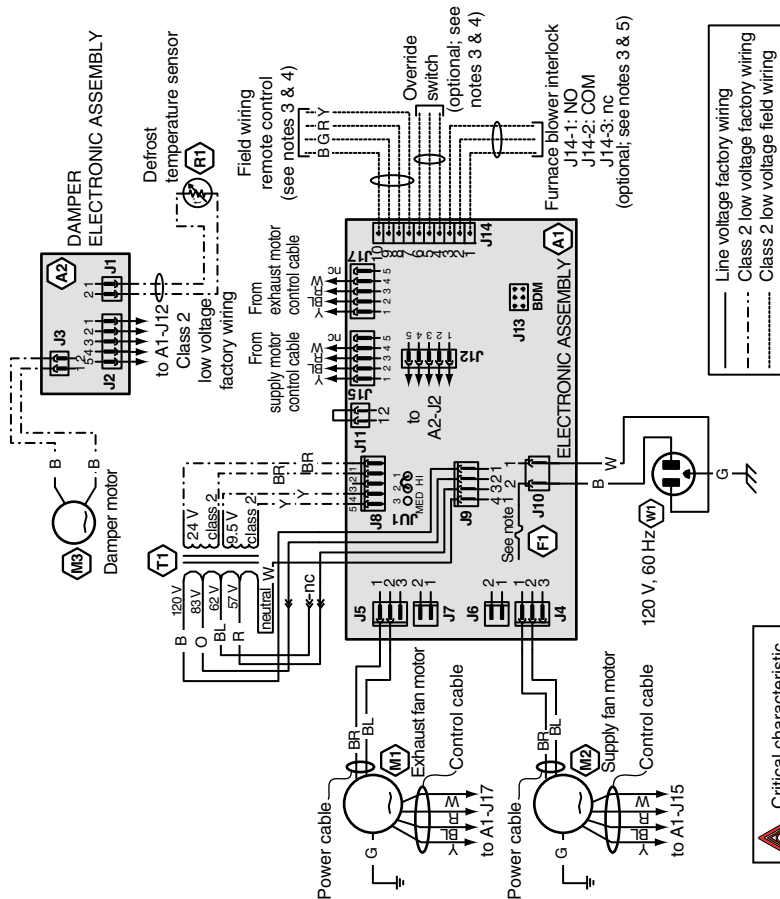
### ⚠ WARNING

- Risk of electric shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.
- This product is equipped with an overload protection (fuse). A blown fuse indicates an overload or a short-circuit situation. If the fuse blows, unplug the product and check the polarity and voltage output from the outlet. Replace the fuse as per the servicing instructions (refer to wiring diagram for proper fuse rating) and verify the product. If the replaced fuse blows, it may be a short-circuit and the product must be discarded or returned to an authorized service center for examination and/or repair.

LOGIC DIAGRAM



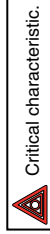
WIRING DIAGRAM



**COLOR CODE**

B	BLACK
BL	BLUE
BR	BROWN
G	GREEN
O	ORANGE
R	RED
W	WHITE
Y	YELLOW
nc	no connection

- NOTES**
1. Use specified UL listed/CSA Certified line fuse (3A, 3AG Type).
  2. If any of the original wire, as supplied, must be replaced, use the same equivalent wire.
  3. Field wiring must comply with applicable codes, ordinances and regulations.
  4. Remote controls (class 2 circuit) available, see instruction manual.
  5. Furnace fan circuit must be class 2 circuit only.



AVS E15 ECM ERV, AVS E15 ECM HRV, 90H-V ECM ERV & 90H-V ECM HRV UNITS

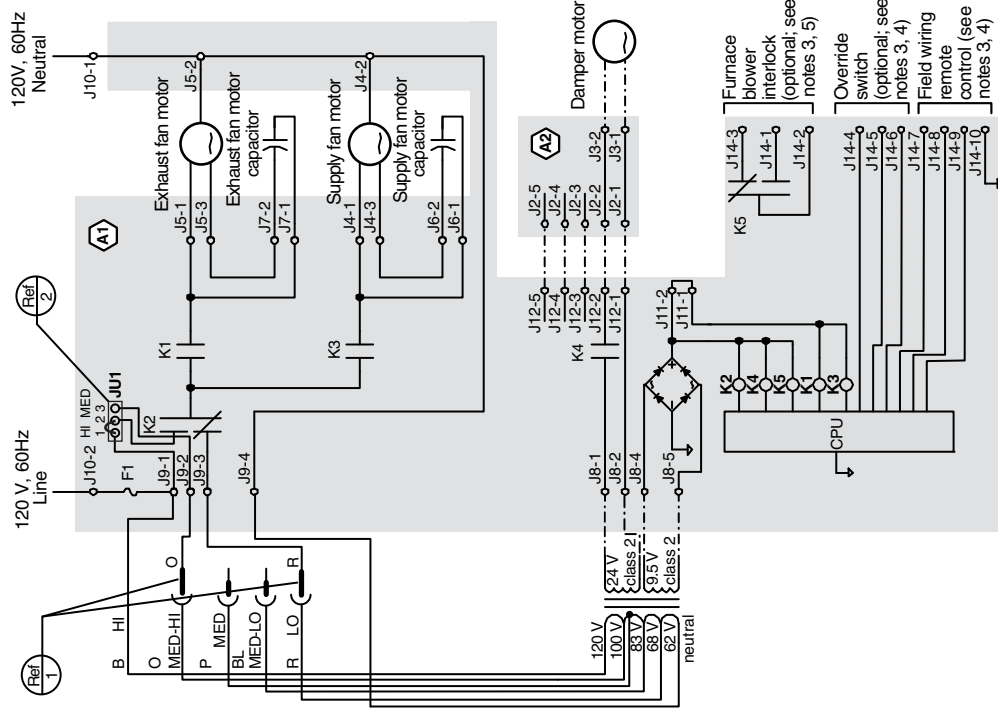


# 6. WIRING DIAGRAMS (CONT'D)

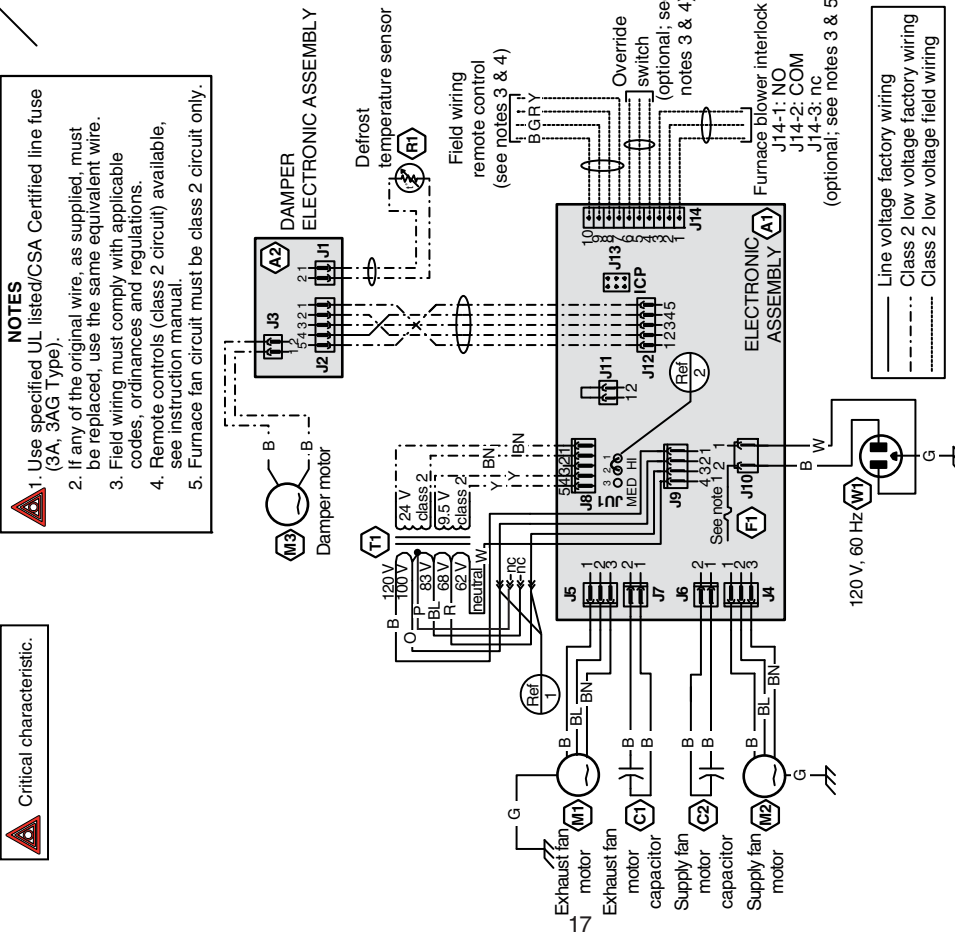
## ⚠ WARNING

- Risk of electric shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.
- This product is equipped with an overload protection (fuse). A blown fuse indicates an overload or a short-circuit situation. If the fuse blows, unplug the product and check the polarity and voltage output from the outlet. Replace the fuse as per the servicing instructions (refer to wiring diagram for proper fuse rating) and verify the product. If the replaced fuse blows, it may be a short-circuit and the product must be discarded or returned to an authorized service center for examination and/or repair.

LOGIC DIAGRAM



WIRING DIAGRAM



- NOTES**
1. Use specified UL listed/CSA Certified line fuse (3A, 3AG Type).
  2. If any of the original wire, as supplied, must be replaced, use the same equivalent wire.
  3. Field wiring must comply with applicable codes, ordinances and regulations.
  4. Remote controls (Class 2 circuit) available, see instruction manual.
  5. Furnace fan circuit must be class 2 circuit only.

**⚠ Critical characteristic.**

- Line voltage factory wiring
- Class 2 low voltage factory wiring
- Class 2 low voltage field wiring

**COLOR CODE**

B	BLACK
BL	BLUE
BN	BROWN
G	GREEN
O	ORANGE
P	PURPLE
R	RED
W	WHITE
Y	YELLOW
nc	no connection

**FAN MOTORS SPEED SELECTION**

**CAUTION:** You can change REF 1 or REF 2, but not both at the same time. If you do change REF 1 and REF 2 you will inverse fan motor speeds.

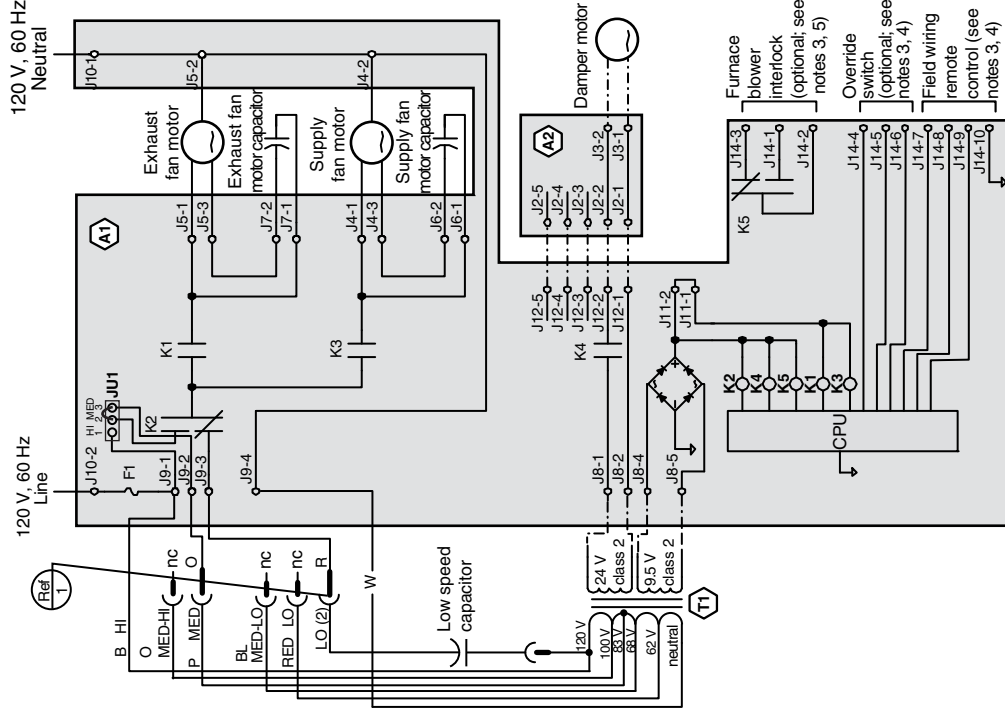
REF 1 ORG	REF 1 RED	REF 2	FAN SPEEDS	CFM MAX
Factory shipped ORG to ORG	RED to RED	3 2 1	HI (120V) & LO (62V)	160
ORG to ORG	RED to RED	3 2 1	MED-HI (100V) & LO (62V)	140

# 6. WIRING DIAGRAMS (CONT'D)

## WARNING

- Risk of electric shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.
- This product is equipped with an overload protection (fuse). A blown fuse indicates an overload or a short-circuit situation. If the fuse blows, unplug the product and check the polarity and voltage output from the outlet. Replace the fuse as per the servicing instructions (refer to wiring diagram for proper fuse rating) and verify the product. If the replaced fuse blows, it may be a short-circuit and the product must be discarded or returned to an authorized service center for examination and/or repair.

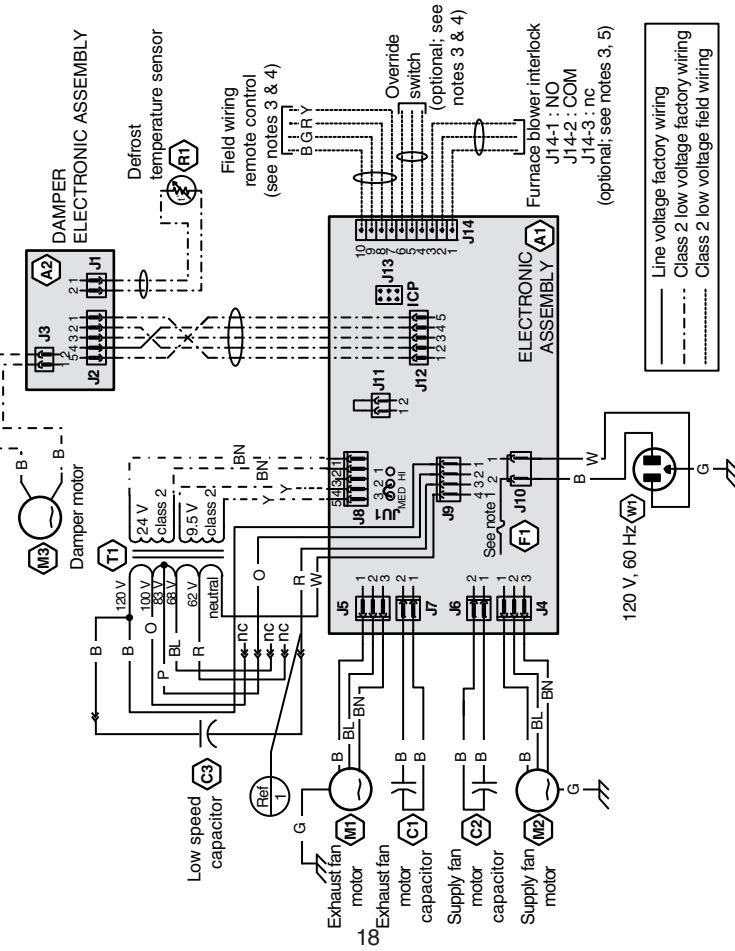
LOGIC DIAGRAM



WIRING DIAGRAM

- NOTES**
1. Use specified UL listed/CSA Certified line fuse (3A, 3AG Type).
  2. If any of the original wire, as supplied, must be replaced, use the same equivalent wire.
  3. Field wiring must comply with applicable codes, ordinances and regulations.
  4. Remote controls (class 2 circuit) available, see instruction manual.
  5. Furnace fan circuit must be class 2 circuit only.

**▲** Critical characteristic.



**COLOR CODE**

B	BLACK	P	PURPLE
BL	BLUE	R	RED
BN	BROWN	W	WHITE
G	GREEN	Y	YELLOW
O	ORANGE	nc	no connection

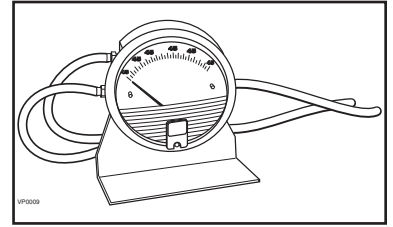
**FAN MOTORS SPEED SELECTION**

REF 1 RED	CFM MAX
Factory set C3 to RED	50
RED to RED	65
BLUE to RED	85

## 7. BALANCING THE UNIT

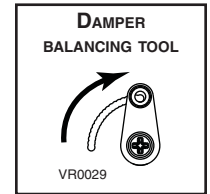
### 7.1 WHAT YOU NEED TO BALANCE THE UNIT

- A magnehelic gauge capable of measuring 0 to 1 inch of water (0 to 249 Pa) and 2 plastic tubes.
- The balancing chart of the unit.



### 7.2 PRELIMINARY STAGES TO BALANCE THE UNIT

- Seal all the unit ductwork with tape. Close all windows and doors.
- Turn off all exhaust devices such as range hood, dryer and bathroom fans.
- Make sure the balancing dampers are fully open by setting both damper balancing tools completely vertical.
- Make sure all filters are clean (if it is not the first time the unit is balanced).



### 7.3 BALANCING PROCEDURE

#### 1. Set the unit to high speed.

NOTE: Make sure that the furnace/air handler blower is ON if the installation is in any way connected to the ductwork of the cold air return. If not, leave furnace/air handler blower OFF. If the outdoor temperature is below 0°C/32°F, make sure the unit is not running in defrost while balancing. (By waiting 10 minutes after plugging the unit in, you are assured that the unit is not in a defrost cycle.)

#### 2. Place the magnehelic gauge on a level surface and adjust it to zero.

#### 3. Connect tubing from gauge to EXHAUST air flow pressure taps (the ones with arrows, see insets in illustration at right).

Be sure to connect the tubes to their appropriate *high/low* fittings. If the gauge drops below zero, reverse the tubing connections.

#### 4. Note the CFM value from balancing chart on unit.

#### 5. Repeat steps 3 and 4, but to FRESH air flow pressure taps.

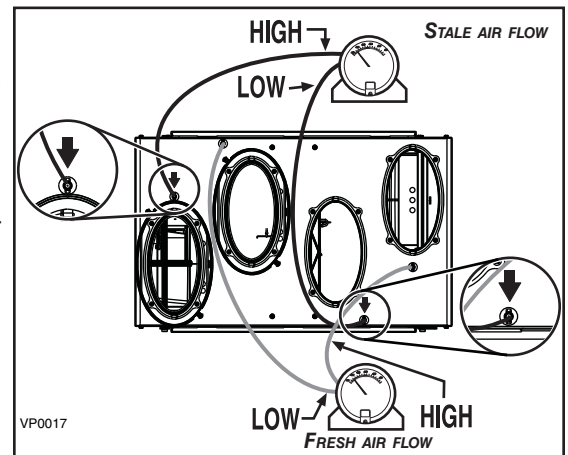
#### 6. Match highest CFM value to lowest by adjusting the balancing damper corresponding to the highest value.

See example below:

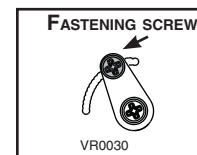
FLOW	FRESH	EXHAUST
CFM	IN. W.G.	IN. W.G.
120	0.71	0.73
<b>125</b>	<b>0.67</b>	<b>0.70</b>
130	0.63	0.67
135	0.59	0.64
140	0.55	0.61
145	0.51	0.58
<b>150</b>	<b>0.47</b>	0.55

EXHAUST READING VALUES

FRESH READING VALUES



In that case, there is 150 CFM in FRESH air and 125 CFM in EXHAUST air. Then, adjust (close) the FRESH air balancing damper until the FRESH air flow matches the EXHAUST air flow: 125 CFM (**0.67 in. w.g.**) with magnehelic gauge connected to FRESH air flow pressure taps).



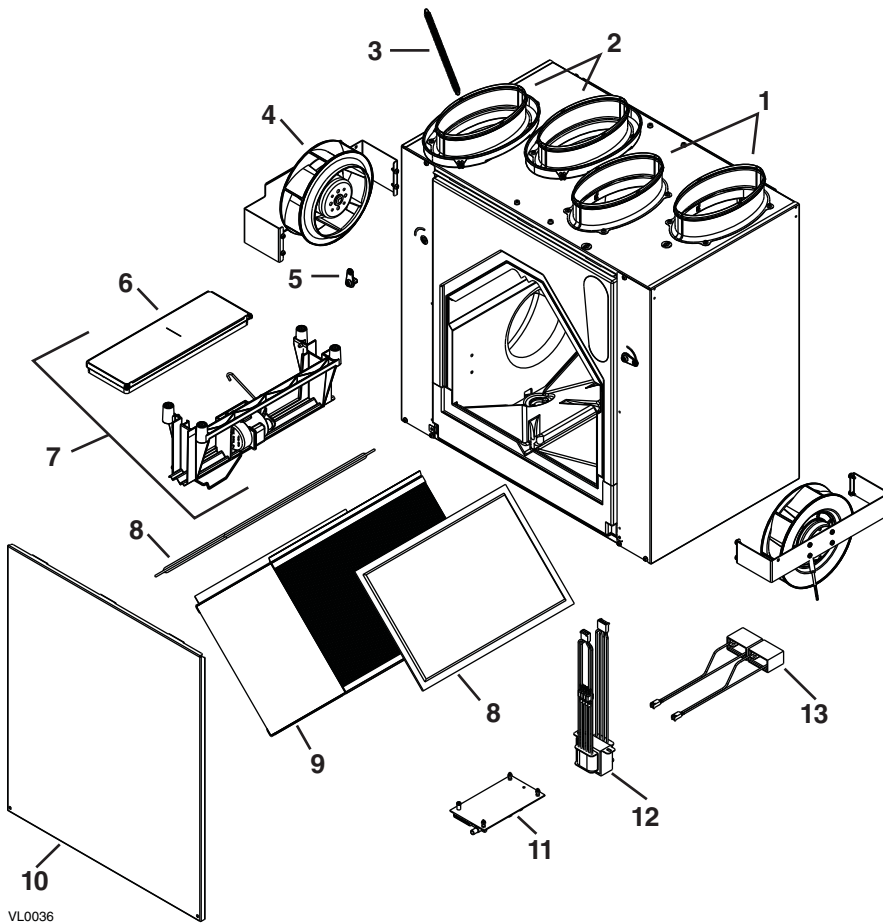
#### 7. Secure both dampers in place with a fastening screw (included).

#### 8. Write the required air flow information on a label and affix it near the unit for future reference (date, maximum speed air flows, your name, phone number and business address).

NOTES: 1. Use conversion chart provided with the unit to convert magnehelic gauge readings to equivalent cfm values.

2. The unit is considered balanced even if there is a difference of  $\pm 10$  cfm (or  $\pm 5$  l/s or  $17$  m<sup>3</sup>/h) between the two air flows.

## 8. SERVICE PARTS



VL0036

### REPLACEMENT PARTS AND REPAIR

In order to ensure your ventilation unit remains in good working condition, you must use the manufacturer genuine replacement parts only. The manufacturer genuine replacement parts are specially designed for each unit and are manufactured to comply with all the applicable certification standards and maintain a high standard of safety. Any third party replacement part used may cause serious damage and drastically reduce the performance level of your unit, which will result in premature failing. The manufacturer recommends to contact a certified service depot for all replacement parts and repairs.

ITEM	DESCRIPTION	QTY.	AVS E15 ECM ERV	AVS E15 ECM HRV	AVS E15 HRV	AVS E10 HRV	90H-V ECM ERV	90H-V ECM HRV	90H-V+	60H-V+
1	OVAL PORT	2	--	18206	18206	18206	18206	18206	18206	18206
2	DOUBLE COLLAR OVAL PORT	2*	18207	18207	18207	18207	18207	18207	18207	18207
3	EXHAUST DAMPER SPRING	1	18221	18221	18221	18221	18221	18221	18221	18221
4	MOTOR ASSEMBLY	2	18198	18198	18197	18197	18198	18198	18197	18197
5	BALANCING TOOL	2	18220	18220	18220	18220	18220	18220	18220	18220
6	DEFROST DAMPER	1	18200	18200	18200	18200	18200	18200	18200	18200
7	DAMPER SYSTEM ASS'Y (INCLUDING ITEM 6)	1	18199	18199	18199	18199	18199	18199	18199	18199
8	CORE FILTER	2	18204	18205	18204	18204	18204	18205	18204	18204
9	HEAT RECOVERY CORE	1	--	18202	62178	62178	--	18202	62178	62178
	ENERGY RECOVERY CORE	1	18042	--	--	--	18042	--	--	--
10	DOOR ASSEMBLY	1	18209	18209	18209	18209	18208	18208	18208	18208
11	PCB	1	18216	18216	62255	62255	18216	18216	62255	62255
12	TRANSFORMER	1	18218	18218	18219	62362	18218	18218	18219	62362
13	CAPACITOR 5 $\mu$ F	2	--	--	16042	--	--	--	16042	--
	CAPACITOR 6 $\mu$ F	2	--	--	--	61550	--	--	--	61550
14**	THERMISTOR KIT	1	15749	15749	15749	15749	15749	15749	15749	15749
15**	HARDWARE KIT	1	08917	08304	08304	08304	08917	08304	08304	08304
16**	CAPACITOR 17 $\mu$ F	1	--	--	--	62177	--	--	--	62177
17**	PCB CONNECTOR	1	16416	16416	16416	16416	16416	16416	16416	16416



\* Quantity of 4 for E15 ECM ERV units only.

\*\* Not shown.

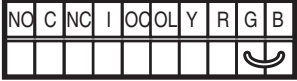

## 9. TROUBLESHOOTING

If the unit does not work properly, reset the unit by unplugging it for one minute and then replug it. If it is still not working properly, refer to the table below.

If the LED of the unit is flashing, this means the unit sensors have detected a problem. See the table below to know where the problem occurs on the unit.			
LED SIGNAL	ERROR TYPE	ACTION	UNIT STATUS
LED flashes GREEN	<ul style="list-style-type: none"> <li>Outdoor thermistor error.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure J12 connector is properly connected and its wires are not damaged. If they are correct, replace the thermistor.</li> </ul>	Unit works but will defrost frequently.
LED flashes AMBER	<ul style="list-style-type: none"> <li>Damper error.</li> </ul>	<ul style="list-style-type: none"> <li>Go to point 7 in next table.</li> </ul>	Unit does not work.
LED flashes RED	<ul style="list-style-type: none"> <li>Motor error or bad contact of J11 connector.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure J11 connector is properly connected. If it is properly connected, see Section 8 A or 8 B, according to unit model.</li> </ul>	Unit does not work.

	PROBLEMS	POSSIBLE CAUSES	YOU SHOULD TRY THIS
1	The error code E1 is displayed on Altitude, Platinum or Deco-Touch wall control screen.	<ul style="list-style-type: none"> <li>Unit not compatible with control.</li> <li>The wires may be in reverse position.</li> <li>The wires may be misconnected.</li> <li>The wires may be broken.</li> </ul>	<ul style="list-style-type: none"> <li>Check table on page 2 for control compatibility.</li> <li>Ensure that the color coded wires have been connected to their appropriate places.</li> <li>Ensure the wires are correctly connected.</li> <li>Inspect every wire and replace any damaged ones. If wires are hidden into walls, test the control using a shorter wire.</li> </ul>
2	There is no outside temperature displayed on Altitude or Platinum wall control screen   .	<ul style="list-style-type: none"> <li>The unit is in error.</li> <li>RED wire in control cable damaged or misconnected.</li> </ul>	<p>NOTE: At its very start-up or after a power failure, it takes some minutes before the outdoor temperature appears on screen. The shortest delay is obtained when the wall control is set on MIN or MAX in VENT Mode.</p> <ul style="list-style-type: none"> <li>Check the unit LED to see if it is flashing; if so, refer to the previous table.</li> <li>Ensure the RED wire is not damaged and is properly connected.</li> </ul>
3	Altitude, Platinum or Deco-Touch wall control screen alternates between normal display and E3.	<ul style="list-style-type: none"> <li>The Altitude, Platinum or Deco-Touch wall control may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>Replace the Altitude, Platinum or Deco-Touch wall control.</li> </ul>
4	The wall control does not work.	<ul style="list-style-type: none"> <li>Unit integrated control is set to low or high speed (AMBER or GREEN continuous LED).</li> <li>Unit not compatible with control.</li> <li>The wires may be in reverse position.</li> <li>The wires may be misconnected.</li> <li>The wires may be broken.</li> <li>Defective wall control.</li> </ul>	<ul style="list-style-type: none"> <li>Press on the integrated push button until the LED turns off.</li> <li>Check table on page 2 for control compatibility.</li> <li>Ensure that the color coded wires have been connected to their appropriate places.</li> <li>Ensure the wires are correctly connected.</li> <li>Inspect every wire and replace any damaged ones.</li> <li>Replace the wall control.</li> </ul>

## 9. TROUBLESHOOTING (CONT'D)

	PROBLEMS	POSSIBLE CAUSES	YOU SHOULD TRY THIS
5	Unit does not work (LED not lit on power up).	<ul style="list-style-type: none"> <li>Unit is unplugged.</li> <li>No power to power outlet.</li> <li>The fuse may be defective.</li> <li>J10, J9, or J8 connector(s) may be unplugged.</li> <li>The transformer may be defective (no 9.5 VAC between J8-4 and J8-5).</li> <li>The PCB may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>Make sure the unit is plugged.</li> <li>Test the power outlet with another electrical device (e.g.: a lamp). If it does not work, call an electrician.</li> <li>Check if fuse F1 (located on the PCB) is blown. In that case, replace fuse F1 as per product nameplate.</li> <li>Check the connection of J10, J9, and J8 connectors.</li> <li>With unit powered on and J9 connected, check if there is about 9.5 VAC between transformer connector J8-4 and J8-5 (YELLOW wires). If not, change the transformer.</li> <li>Unplug the unit. Disconnect the main control and the auxiliary control(s) (if need be). Jump <b>G</b> and <b>B</b> terminals. <small>VE0097</small> Plug the unit back and wait about 10 seconds. If the motors run on high speed and the damper opens, the circuit board is not defective.</li> </ul> 
6	The Dehumidistat OR other auxiliary control does not work.	<ul style="list-style-type: none"> <li>The wires may be in reverse position.</li> <li>The wires may be misconnected.</li> <li>The wires may be broken.</li> <li>The Dehumidistat or push button may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the color coded wires have been connected to their appropriate places.</li> <li>Ensure the wires are correctly connected.</li> <li>Inspect every wire and replace any damaged ones. If wires are hidden into walls, test the control using a shorter wire.</li> <li>Jump the <b>OL</b> and <b>OC</b> terminals. If the unit switches to high speed, remove the Dehumidistat or push button and test it right beside the unit using another shorter wire. If it works here, change the wire. If it doesn't, change the Dehumidistat or the push button. <small>VE0098</small></li> </ul> 
7	The damper system does not work ( <b>AMBER error code</b> ).	<p><b>At power up, no RED LED.</b>  <b>At power up, LED lights up in RED and there is a clicking sound coming from electrical compartment, but damper does not move:</b></p> <ul style="list-style-type: none"> <li>Ice or other things hindering the damper movement.</li> <li>J12 unconnected or bad contact.</li> <li>Wrong connection of J8.</li> <li>The transformer may be defective (no 24 VAC between J8-1 and J8-2).</li> <li>The damper actuator may be defective.</li> </ul> <p><b>Damper moves but does not stop when supposed to:</b></p> <ul style="list-style-type: none"> <li>Bad connection of J12 connector.</li> <li>Damper defective.</li> <li>The main PCB is defective.</li> </ul>	<ul style="list-style-type: none"> <li>See point 5.</li> <li>Remove ice or hindering elements.</li> <li>Check J12 connection (both harness side and board side).</li> <li>Check J8 connection.</li> <li>With unit powered and J9 connected, check if there is about 20-24 VAC between transformer connector J8-1 and J8-2 (ORANGE wires). If no, change the transformer.</li> <li>Replace the damper system.</li> <li>Check J12 connection (both harness side and board side).</li> <li>Replace the damper system.</li> <li>Replace the main PCB.</li> </ul>

## 9. TROUBLESHOOTING (CONT'D)

**Table 8 A only applies for AVS E15 HRV, AVS E10 HRV, 90H-V+ and 60H-V+ units.**

	PROBLEMS	POSSIBLE CAUSES	YOU SHOULD TRY THIS
8 A	The supply motor does not work, but exhaust motor works.	<ul style="list-style-type: none"> <li>The supply motor may be defective.</li> <li>The supply motor capacitor or the PCB may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>Plug supply motor to J5 connector and exhaust motor to J4 connector. If the LED flashes RED, the supply motor is defective. If exhaust motor works, plug back supply motor to J4 connector and exhaust motor to J5 connector, then test the supply motor capacitor.</li> <li>Plug supply motor capacitor to J7 connector and exhaust motor capacitor to J6 connector. If the LED flashes RED, the supply motor capacitor is defective. If there is no change, the PCB is defective.</li> </ul>
	The LED flashes RED.	<ul style="list-style-type: none"> <li>The exhaust motor may be defective.</li> <li>The exhaust motor capacitor may be defective.</li> <li>Transformer wire(s) bad connection.</li> <li>The transformer or the PCB may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>Plug exhaust motor to J4 connector and supply motor to J5 connector. If supply motor works but exhaust motor does not, exhaust motor is defective. If exhaust motor works, plug back supply motor to J4 connector and exhaust motor to J5 connector, then check for exhaust motor capacitor validity.</li> <li>Plug exhaust motor capacitor to J6 connector and exhaust motor capacitor to J7 connector. If exhaust motor works but supply motor does not, the exhaust motor capacitor is defective. If there is no change, test transformer or PCB.</li> <li>Check J8 and J9 connectors, as well as BLUE and RED wire connections from J9.</li> <li>Move JU1 jumper from pins 2 and 3 to pins 1 and 2. Set the unit on high speed. If exhaust motor works, the transformer is defective. If it still does not, change the PCB.</li> </ul>

## 9. TROUBLESHOOTING (CONT'D)

**Table 8 B only applies for AVS E15 ECM HRV, AVS E15 ECM ERV, 90H-V ECM HRV and 90H-V ECM ERV units.**  
**For all of the aforementioned units having a RED flashing LED, follow these few steps before proceeding to troubleshooting:**

- **Unplug the unit.**
- **Unplug the green control terminal connector.**
- **Remove the unit door in order to see the motors, making sure that there is no risk of injury.**
- **Plug unit back and wait until the booting sequence is completed.**
- **Press the integrated control push-button, and observe the LED and motors.**
- **Proceed to troubleshooting.**

	PROBLEMS	POSSIBLE CAUSES	YOU SHOULD TRY THIS
8 B	The LED flashes RED as soon as the unit is set to low speed.	<ul style="list-style-type: none"> <li>• The J11 connector may be misconnected or there may be a bad contact.</li> </ul>	<ul style="list-style-type: none"> <li>• Check J11 wires connection.</li> </ul>
	The exhaust motor does not run at all (not even a pulse when hitting the button) and LED flashes RED after 20 seconds.	<ul style="list-style-type: none"> <li>• The J5 connector may be misconnected.</li> <li>• The JU1 jumper may be mispositioned.</li> <li>• The PCB may be defective.</li> <li>• The motor may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Check J5 wires connection.</li> <li>• Check that JU1 jumper is positioned in H (pins 1-2).</li> <li>• Invert J4 and J5 connectors. If the issue is now with the supply motor, replace PCB. If the issue remains with the exhaust motor, replace motor.</li> <li>• Replace exhaust motor.</li> </ul>
	The exhaust motor is running at a wrong speed and LED flashes RED after 20 seconds.	<ul style="list-style-type: none"> <li>• The J17 connector may be misconnected.</li> <li>• The JU1 jumper may be mispositioned.</li> <li>• The PCB may be defective.</li> <li>• The motor may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Check J17 wires connection.</li> <li>• Check that JU1 jumper is positioned in H (pins 1-2).</li> <li>• Invert J17 and J15 connectors. If the issue is now with the supply motor, replace PCB. If the issue remains with the exhaust motor, replace motor.</li> <li>• Replace exhaust motor.</li> </ul>
	The supply motor does not run at all (not even a pulse when hitting the button) and LED flashes RED after 20 seconds.	<ul style="list-style-type: none"> <li>• The J4 connector may be misconnected or there may be a bad contact.</li> <li>• The JU1 jumper may be mispositioned.</li> <li>• The PCB may be defective.</li> <li>• The motor may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Check J4 wires connection.</li> <li>• Check that JU1 jumper is positioned in H (pins 1-2).</li> <li>• Invert J4 and J5 connectors. If the issue is now with the exhaust motor, replace PCB. If the issue remains with the supply motor, replace motor.</li> <li>• Replace supply motor.</li> </ul>
	The supply motor is running at a wrong speed and LED flashes RED after 20 seconds.	<ul style="list-style-type: none"> <li>• The J15 connector may be misconnected.</li> <li>• The JU1 jumper may be mispositioned.</li> <li>• The PCB may be defective.</li> <li>• The motor may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Check J15 wires connection.</li> <li>• Check that JU1 jumper is positioned in H (pins 1-2).</li> <li>• Invert J17 and J15 connectors. If the issue is now with the exhaust motor, replace PCB. If the issue remains with the supply motor, replace motor.</li> <li>• Replace supply motor.</li> </ul>