



## INSTALLATION GUIDE FOR VENMAR AVS CONSTRUCTO 1.5 AND CONSTRUCTO 2.0



VB0109

RESIDENTIAL USE ONLY

**READ AND SAVE THESE INSTRUCTIONS**



08054 rev. B

## ABOUT THIS MANUAL

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Because of the large amount of models covered by 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 manual 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 manual 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

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### LIMITATION

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For residential (domestic) installation only. This unit must be installed in accordance with all national and local regulations, building codes and safety codes.

### **WARNING**

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#### **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. Before servicing or cleaning the unit, disconnect power cord from electrical outlet.
3. This unit is not designed to provide combustion and/or dilution air for fuel-burning appliances.
4. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
5. Do not use this unit with any solid-state speed control device other than following main wall controls: Lite-Touch Constructo or Constructo, and no other optional wall controls than 60-minute crank timer and/or 20-minute lighted push button and/or Dehumidistat.
6. 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.
7. Do not install in a cooking area or connect directly to any appliances.
8. Do not use to exhaust hazardous or explosive materials and vapors.
9. When performing installation, servicing or cleaning these units, it is recommended to wear safety glasses and gloves.
10. Due to the weight of the unit, two installers are recommended to perform installation.
11. 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**

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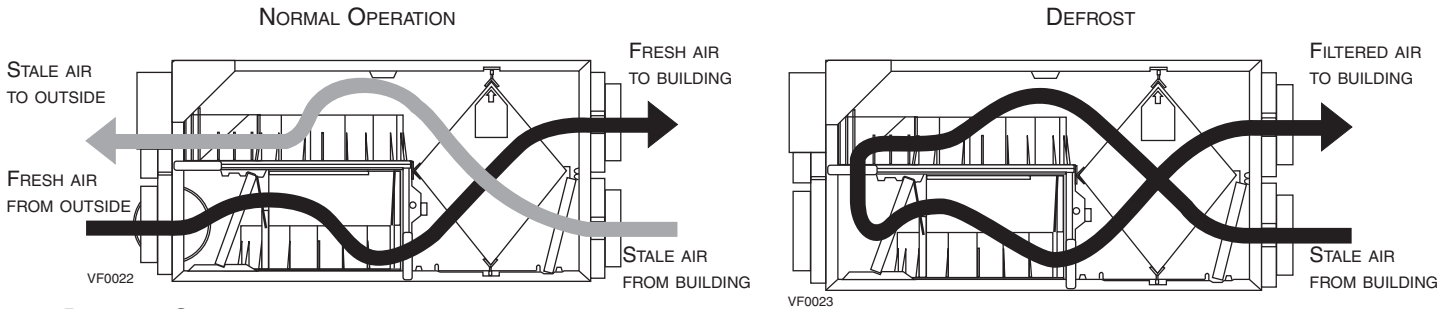
1. To avoid premature clogged filters, turn OFF the unit during construction or renovation.
2. Please read specification label on product for further information and requirements.
3. Be sure to duct air outside – Do not intake / exhaust air into spaces within walls or ceiling or into attics, crawl spaces, 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 local and national codes that are applicable.
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 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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## 1. TECHNICAL DATA

### 1.1 AIR DISTRIBUTION

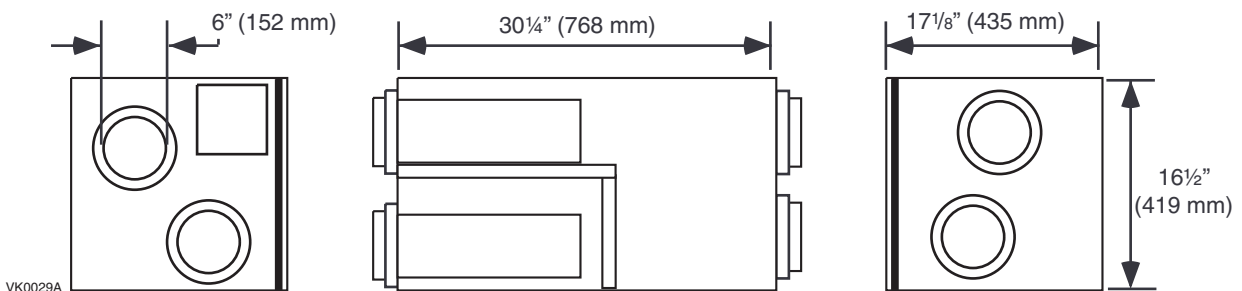


### 1.2 DEFROST CYCLES

OUTSIDE TEMPERATURE		DEFROST CYCLES (MINUTES)		EXTENDED DEFROST CYCLES (MINUTES)	
CELSIUS (°C)	FAHRENHEIT (°F)	DEFROSTING	OPERATION BETWEEN EACH DEFROST CYCLE	DEFROSTING	OPERATION BETWEEN EACH DEFROST CYCLE
-5	23	6	32	10	30
-15	-5	6	32	10	20
-27	-17	6	20	10	15

In a cold region, setup EXTENDED DEFROST by pressing on the push button on the electrical compartment. See section 4.1.2 Setting Extended Defrost on page 10.

### 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.

In every case, bathroom fans and a range hood should 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.

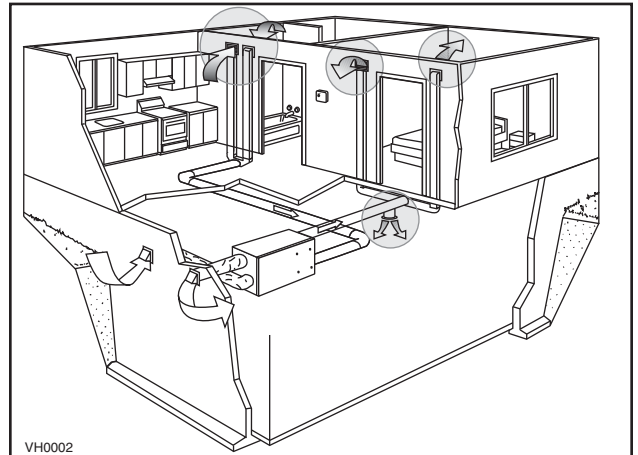
NOTE: An electrical outlet has to be available within 3 feet of the unit.

### 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 outside. Fresh air from outside 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.

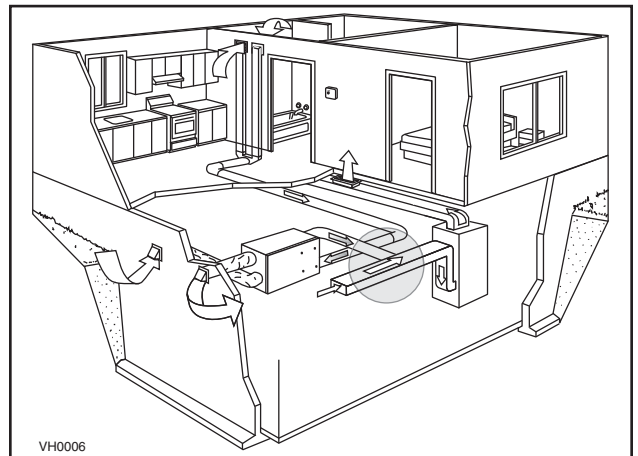


### 2.2 CENTRAL DRAW POINT (CONNECTION TO A FORCED AIR SYSTEM.)

Stale air coming from the registers located at the highest level of the house is exhausted to the outside. 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.

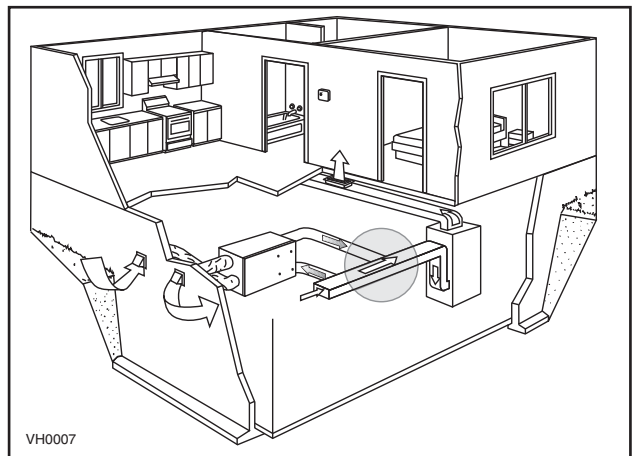


### 2.3 SIMPLIFIED INSTALLATION (CONNECTION TO A FORCED AIR SYSTEM)

Stale air is exhausted to the outside. 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.

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, door latches, power cord, etc.
- Remove the hardware kit from the unit. Inspect the interior of the unit for damage. Ensure that heat recovery core, core filters, insulation, dampers, etc. are all intact.

#### 3.2 LOCATING THE UNIT

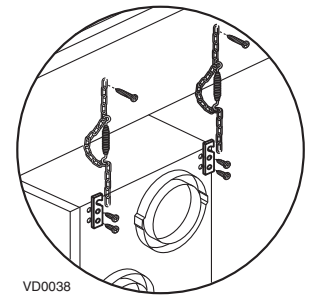
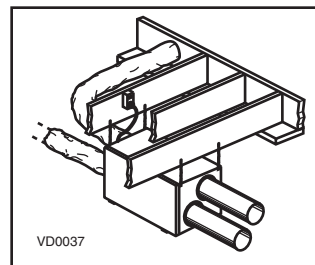
Choose an appropriate location for the unit.

- Within an area of the house where the ambient temperature is between 10°C (50°F) and 50°C (122°F) (basement, furnace room, closet, etc.).
- Away from living areas (dining room, living room, bedroom), if possible
- So as to provide easy access to the interior of the unit, for 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.

#### CAUTION

**Make sure the unit is level.**

Hang the unit with the four chains and springs provided. See illustrations beside.



#### 3.3 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.

#### 3.4 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)
7" Ø (178 MM)	185 CFM (87 L/S OR 314 M <sup>3</sup> /H)	270 CFM (127 L/S OR 459 M <sup>3</sup> /H)
8" Ø (203 MM)	260 CFM (123 L/S OR 442 M <sup>3</sup> /H)	380 CFM (179 L/S OR 645 M <sup>3</sup> /H)

### 3. INSTALLATION (CONT'D)

#### 3.4 CALCULATING DUCT SIZE (CONT'D)

NOTE: Examples 3.4.1 and 3.4.2 use imperial units. The same calculation applies to metric units.

##### 3.4.1 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 figure beside.)

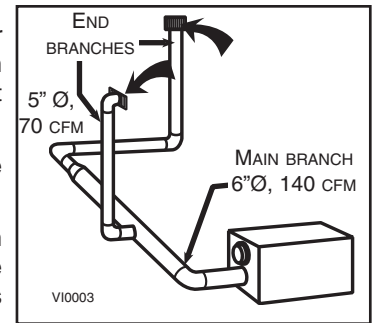
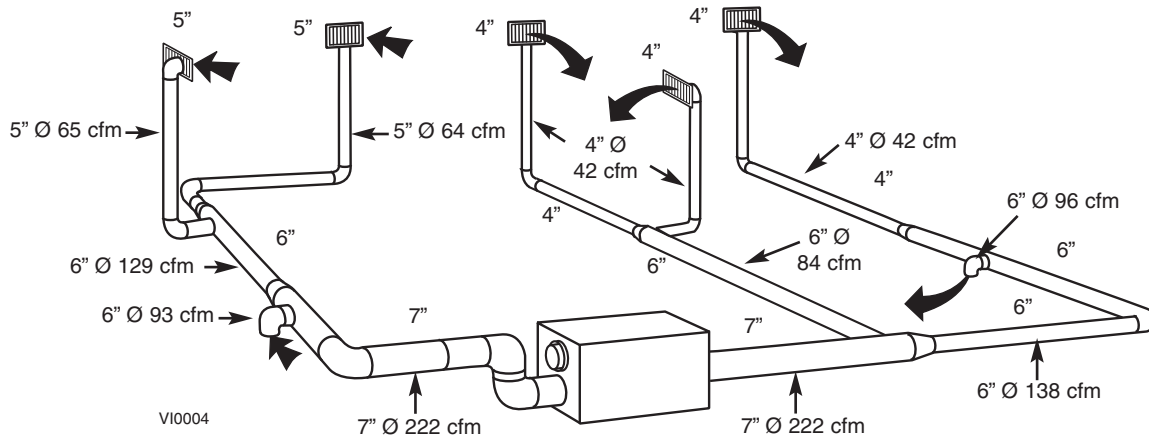
**Solution:** Simplified method. (For a more detailed method of calculating duct size, refer to the ASHRAE or HRAI HANDBOOK.)

Main duct: Table on page 5 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 on page 5 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.

##### 3.4.2 Example of a design for a fully ducted system with a unit having a high speed performance of 222 cfm.



#### 3.5 INSTALLING THE DUCTWORK AND REGISTERS

##### 3.5.1 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. INSTALLATION (CONT'D)

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

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

###### Stale air exhaust ductwork

Same as for Fully Ducted System, described on point 3.5.1)

#### ⚠ 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

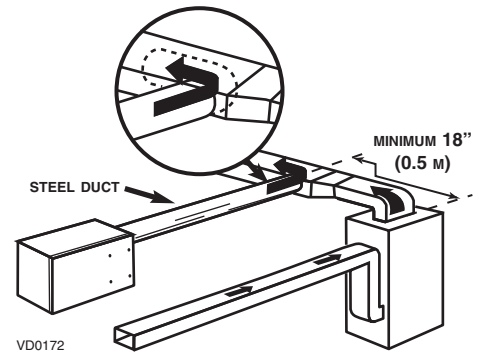
When performing duct connections to the furnace supply duct, this duct must be sized to support the additional airflow produced by the HRV. Also, use a steel duct.

###### Fresh air distribution ductwork

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

###### Method 1: Supply side connection

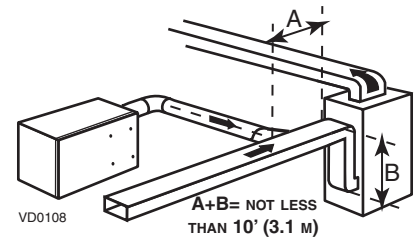
- Cut an opening into the furnace supply duct at least 18 inches (0.5 m) from the furnace/air handler.
- Connect this opening to the **Fresh air distribution** port of the HRV (use **steel duct**, see figure beside).
- Make sure the HRV duct form an elbow inside the furnace/air handler ductwork.
- If desired, interlock (synchronize) the furnace/air handler blower operation (see *Section 5*).



###### 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 HRV (see figure beside).

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*).



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

#### ⚠ WARNING

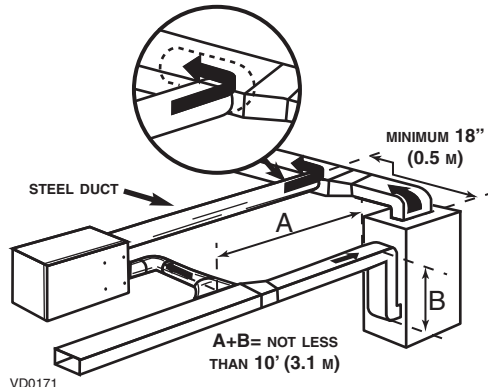
When performing duct connections, always use approved tools and materials. Respect all corresponding laws and/or safety regulations. Please refer to your local building code.

#### CAUTION

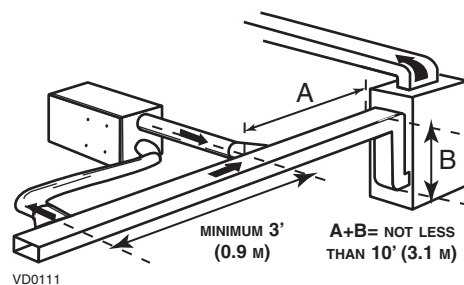
When performing duct connections to the furnace supply duct (Method 1), this duct must be sized to support the additional airflow produced by the HRV. Also, use a steel duct. For a Return-Return installation, the furnace blower must be in operation when the HRV is in operation.

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 HRV.

### 3. INSTALLATION (CONT'D)

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

##### 3.5.3 SIMPLIFIED INSTALLATION (AS ILLUSTRATED IN SECTION 2.3) (CONT'D)

##### Fresh air distribution

### CAUTION

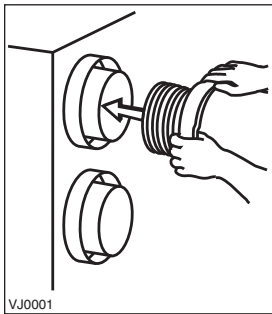
**If using Method 2, make sure the furnace/air handler blower operation is synchronized with the unit operation! See Section 5.**

- Same instructions as for Method 1 or Method 2, Section 2.7.2.  
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.  
NOTE: For Method 1, it is not essential to synchronize the furnace blower operation with the unit operation, but we recommend it.

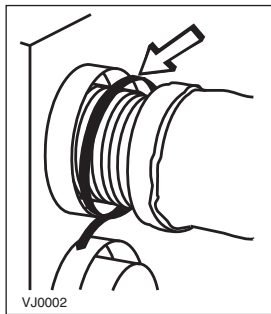
#### 3.6 CONNECTING THE DUCTS TO THE UNIT

##### Insulated flexible ducts

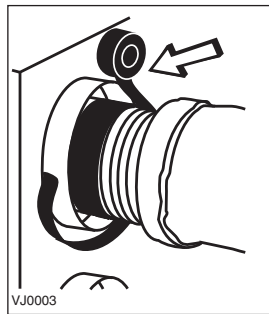
Use the following procedure for connecting the insulated flexible ducts to the ports of the unit (**Exhaust air to outside** and **Fresh air from outside** ports).



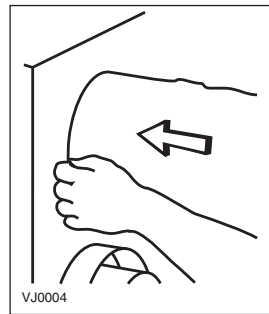
Pull back the insulation to expose the flexible duct.



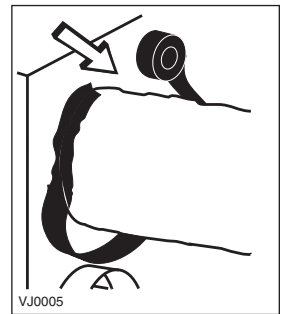
Attach the flexible duct to the port using tie wrap.



Pull the insulation over the joint and tuck in between the inner and outer rings of the double collar.



Pull the vapor barrier over the insulation and over the outer ring of the double collar.



Apply duct tape to the joint making an airtight seal. Avoid compressing the insulation when pulling the tape tightly around the joint. Compressed insulation loses its R value and causes water dripping due to condensation on the exterior surface of the duct.

### CAUTION

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

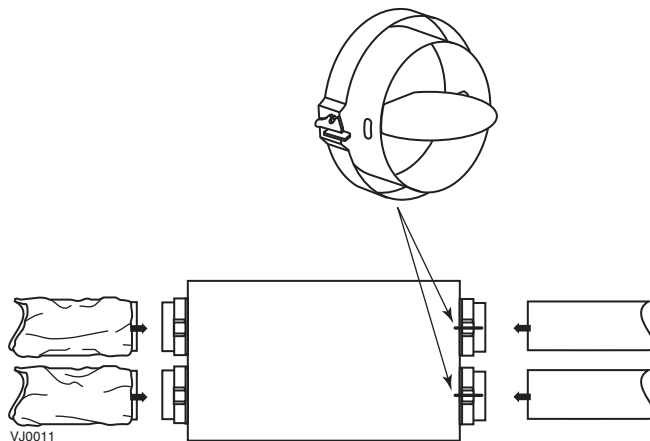
##### Rigid ducts

### CAUTION

**Do not use screws to connect the rigid ducts to the unit ports.**

Use duct tape to connect the rigid ducts to the unit ports.

Make sure both balancing dampers are left in a fully open position before connecting the ducts to these ports (**Fresh air to building port** and **Exhaust air from building port**) as shown below.



### 3. INSTALLATION (CONT'D)

#### 3.7 INSTALLING 2 EXTERIOR HOODS

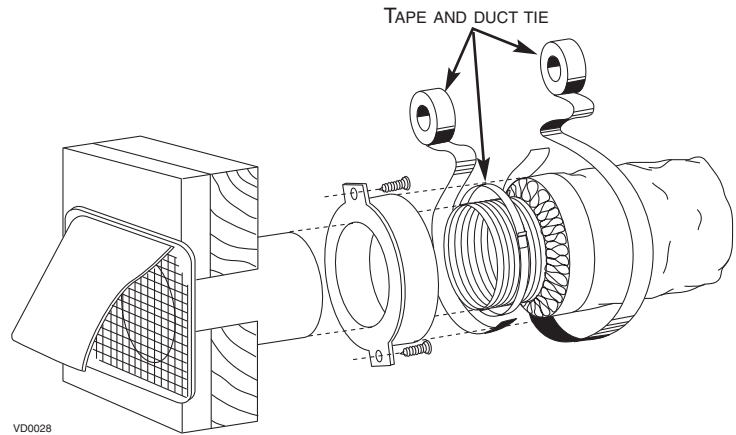
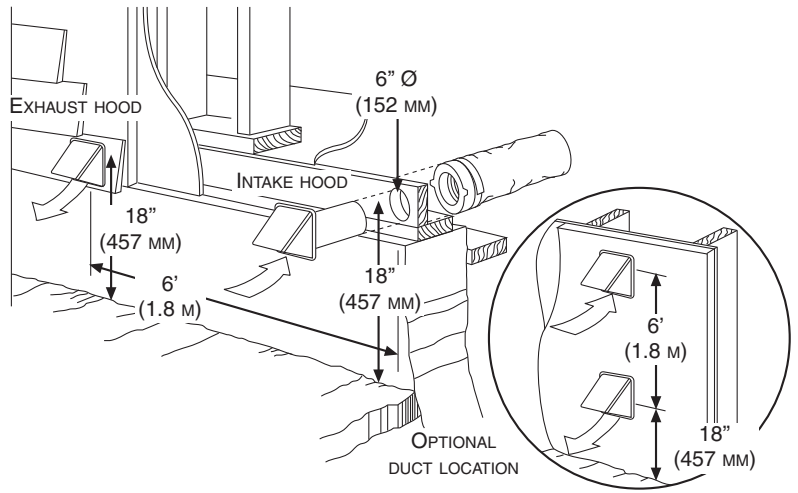
Choose an appropriate location to install the exterior hoods:

- 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

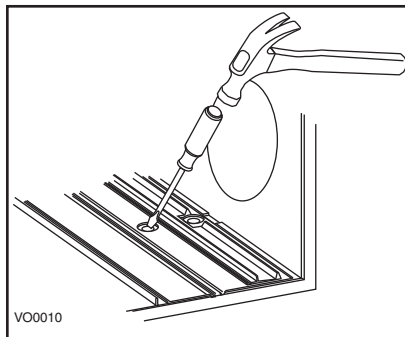
Make sure the intake hood is at least 6 feet (1.8 m) away from the following:

- 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 sources of contamination

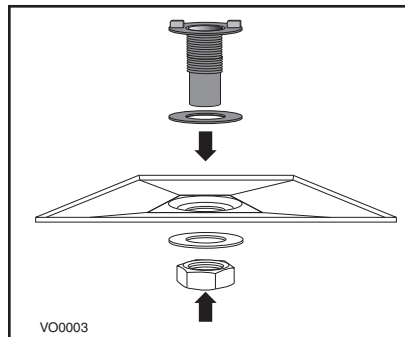
Refer to figure beside for connecting insulated ducts to the exterior hoods. An "Anti-gust intake hood" should be installed in regions where a lot of snow is expected to fall.



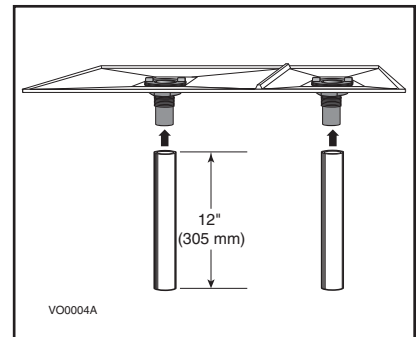
#### 3.8 CONNECTING THE DRAIN



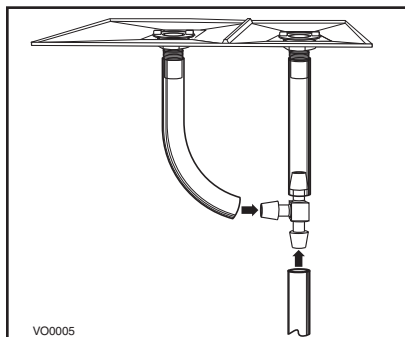
From the inside of the unit, punch both knock-out sections located at the bottom of the unit.



In order to keep the drain pan intact, hand tighten both plastic drain fittings to the unit using the gaskets, washers and nuts as shown.

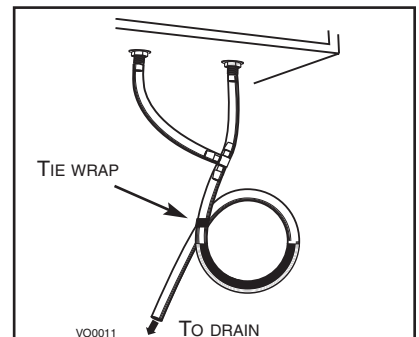


Cut 2 sections of the plastic tube, about 12" (305 mm) long, and attach them to each drain fitting.



Join both short sections to the "T" junction and main tube as shown.

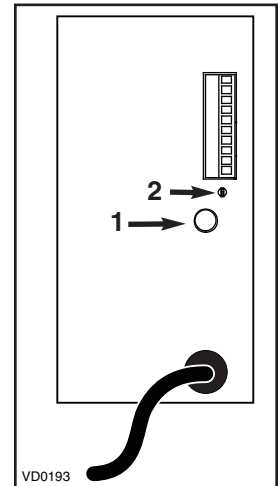
Make a water trap loop in the tube to prevent the unit from drawing unpleasant odors from the drain source. Make sure this loop is located **BELOW** the "T" as shown. This will prevent water from being drawn back up into the unit in case of negative pressure. Run the tube to the floor drain or to an alternative drain pipe or pail. Be sure there is a slight slope for the run-off.



## 4. CONTROLS

### 4.1 INTEGRATED CONTROL

All units are equipped with an integrated control, located in front of the electrical compartment. Use the push button (1) to control the unit. The LED (2) will then show on 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 last page for further details.

#### 4.1.1 BOOT SEQUENCE

The unit boot 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. During the booting sequence, the integrated control LED will light GREEN (unit set in normal defrost) or AMBER (unit set in extended defrost) for 5 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.

#### 4.1.2 SETTING EXTENDED DEFROST

The unit is factory set to normal defrost. In cold region (outside temperature  $-27^{\circ}\text{C}$  [ $-17^{\circ}\text{F}$ ] and lower), it may be necessary to setup extended defrost. During the first 5 seconds of booting sequence, while the integrated control LED is GREEN, press on push button until the LED turns AMBER (about 3 seconds).

## 4. CONTROLS (CONT'D)

### 4.2 ELECTRICAL CONNECTION TO OPTIONAL WALL CONTROLS

For more convenience, this unit 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, if activated, this auxiliary control will override the optional main control.

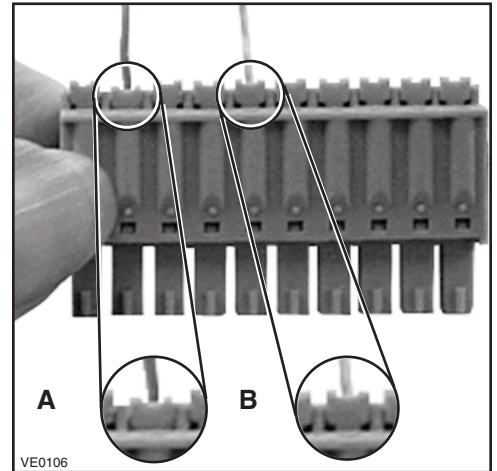
#### **⚠ WARNING**

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.

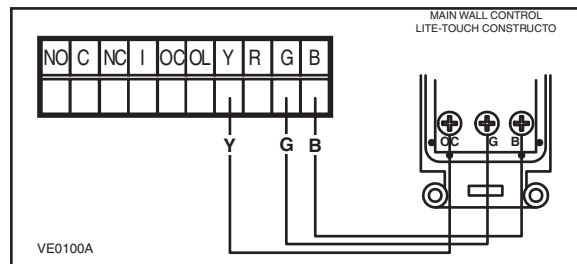
#### **CAUTION**

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.

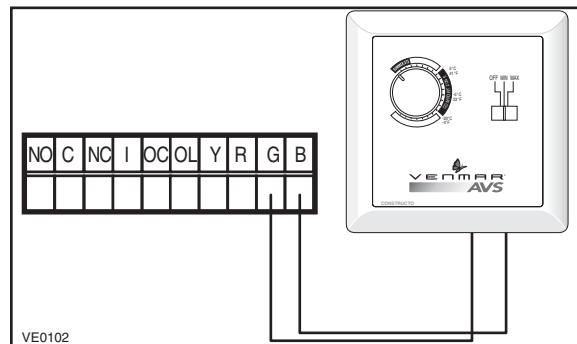
Use the terminal connector included in the installation kit to perform the electrical connection for main and optional wall controls. Check if all wires are correctly inserted in their corresponding holes in the terminal block. (A wire is correctly inserted when its orange receptacle is lower than another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



#### 4.2.1 ELECTRICAL CONNECTION TO LITE-TOUCH CONSTRUCTO MAIN WALL CONTROL



#### 4.2.2 ELECTRICAL CONNECTION TO CONSTRUCTO MAIN WALL CONTROL

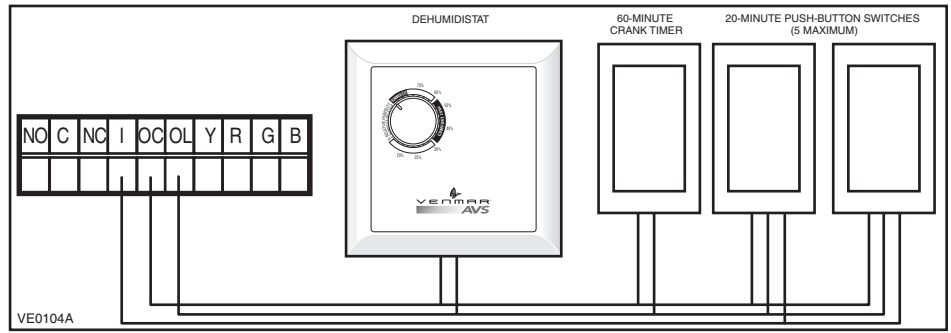


## 4. CONTROLS (CONT'D)

### 4.2 ELECTRICAL CONNECTION TO OPTIONAL WALL CONTROLS (CONT'D)

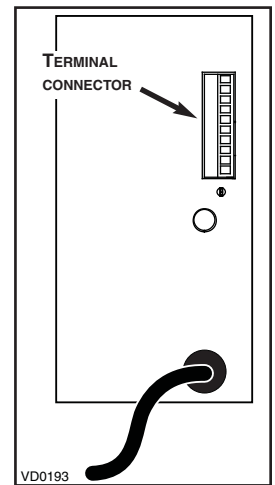
#### 4.2.3 ELECTRICAL CONNECTION TO OPTIONAL AUXILIARY WALL CONTROLS

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



Once the wall control(s) connections have been made, insert the terminal connector on the electrical compartment front face.

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



## 5. ELECTRICAL CONNECTION TO THE FURNACE

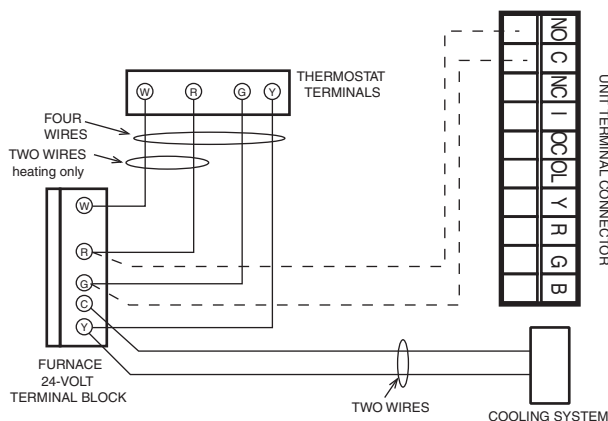
### ⚠ WARNING

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:

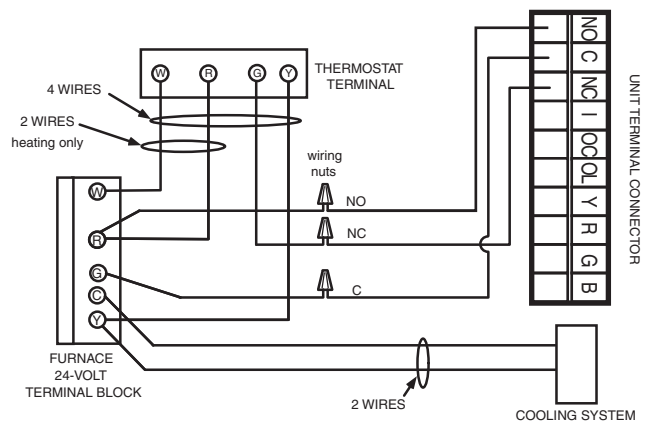
On some older thermostats, energizing the “R” and “G” terminals at the furnace has the effect of energizing “Y” at the thermostat and thereby turning on the cooling system. If you identify this type of thermostat, you must use the ALTERNATE FURNACE INTERLOCK WIRING.

#### STANDARD FURNACE INTERLOCK WIRING



VE0108A

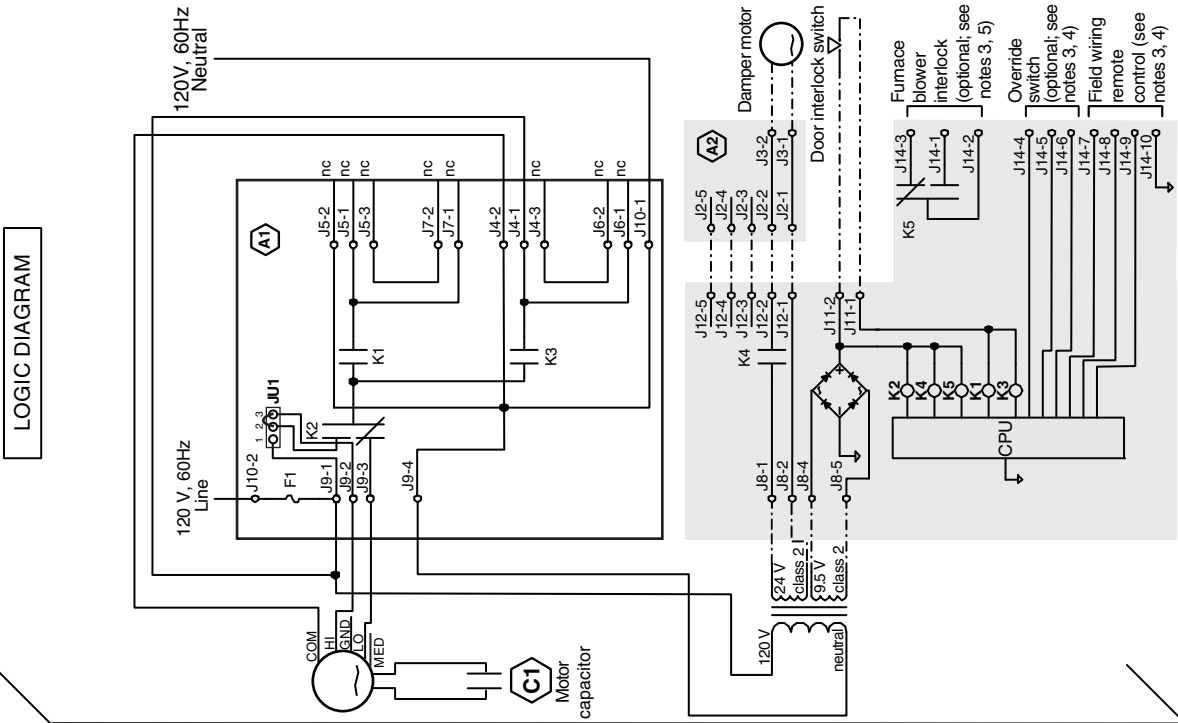
#### ALTERNATE FURNACE INTERLOCK WIRING



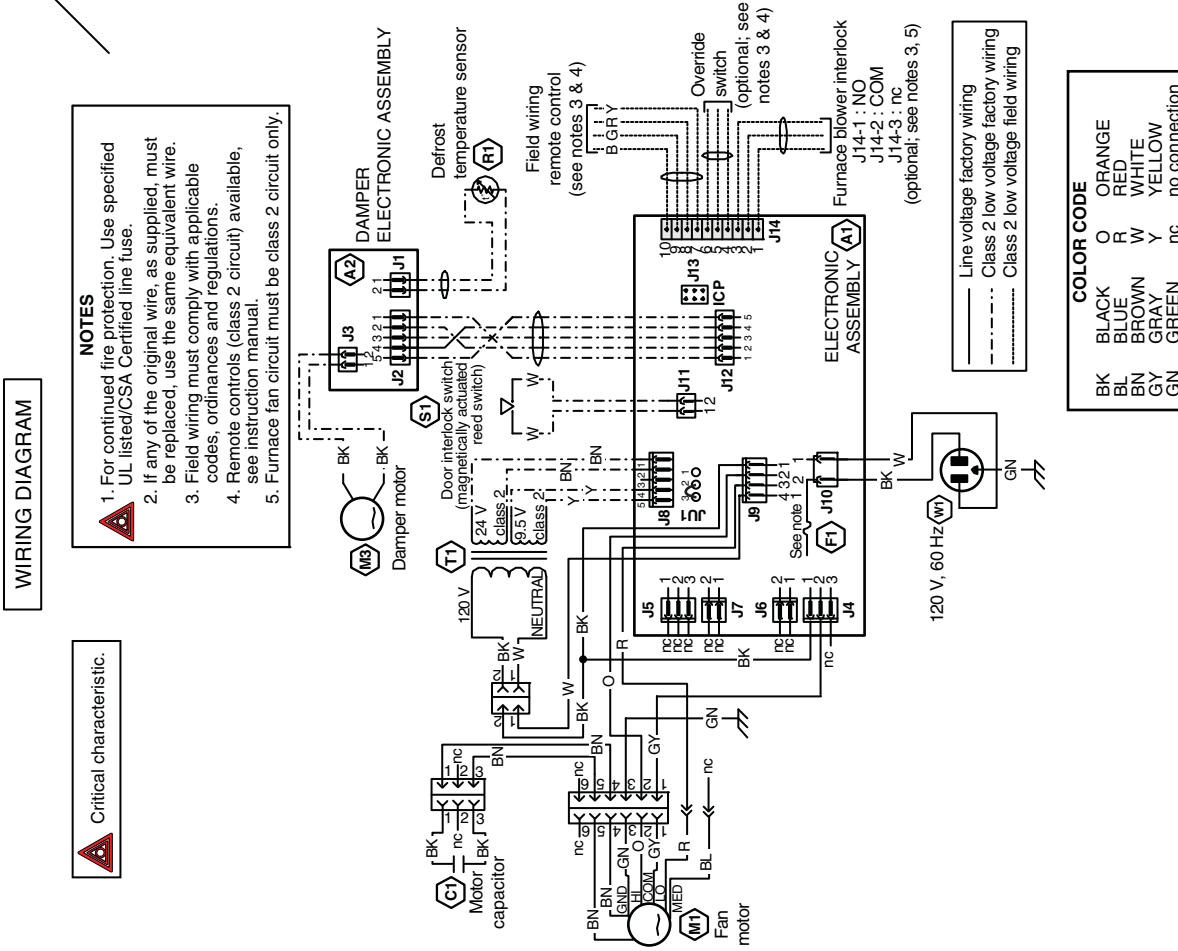
# 6. WIRING DIAGRAM

## ⚠ WARNING

Risk of electrical shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.



LOGIC DIAGRAM



WIRING DIAGRAM

- NOTES**
1. For continued fire protection, Use specified UL listed/CSA Certified line fuse.
  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

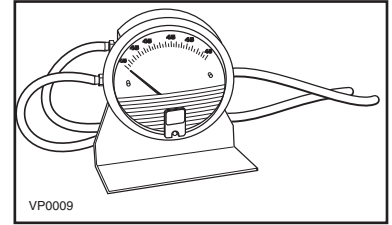
**COLOR CODE**

BK	BLACK	O	ORANGE
BL	BLUE	R	RED
BN	BROWN	W	WHITE
GY	GRAY	Y	YELLOW
GN	GREEN	nc	no connection

## 7. BALANCING THE UNIT

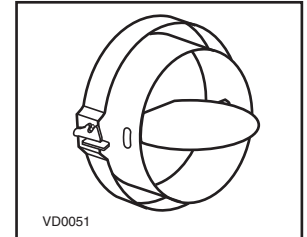
### 7.1 WHAT YOU NEED TO BALANCE THE UNIT

- A magnehelic gauge capable of measuring 0 to 0.5 inch of water (0 to 125 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 integrated balancing dampers are fully open.
- 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.

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 outside 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 (see diagram beside).

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

NOTE: It is suggested to start with the exhaust air flow reading because the exhaust has typically more restriction than the fresh air, especially in cases of fully ducted installations or source point ventilation. Place the magnehelic gauge upright and level. Record equivalent AIR FLOW of the reading according to the balancing chart.

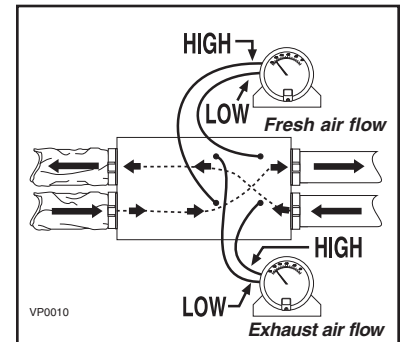
#### 4. Move tubing to FRESH air flow pressure taps (see diagram). Adjust the fresh air balancing damper until the FRESH air flow is approximately the same as the EXHAUST air flow. If FRESH air flow is less than EXHAUST air flow, then go back and adjust the exhaust balancing damper to equal the FRESH air flow.

#### 5. Secure both dampers in place with tape or with a fastening screw.

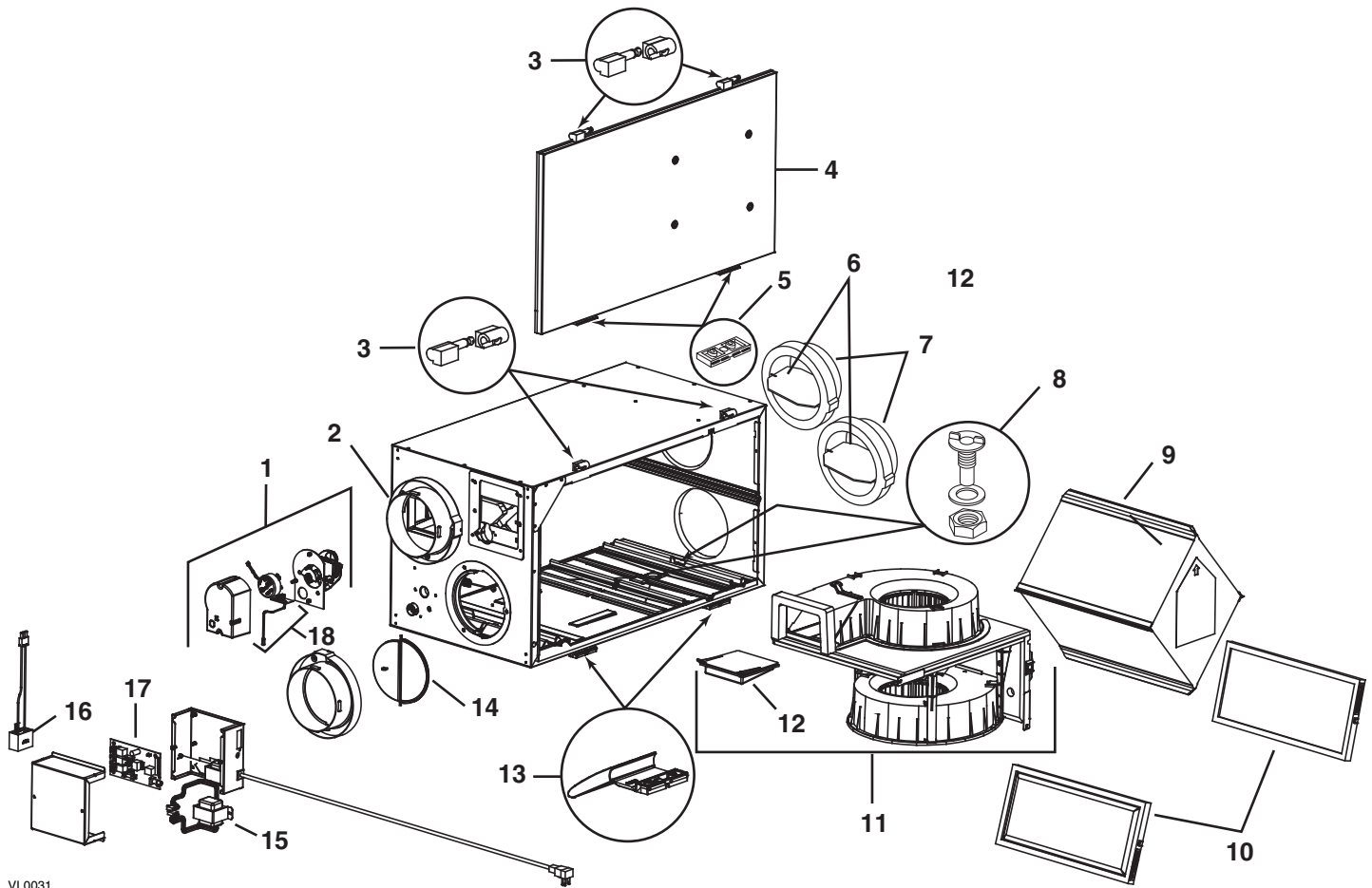
#### 6. Write the required air flow information on a label and stick it near the unit for future reference (date, maximum speed air flows, your name, phone number and business address).

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



VL0031

ITEM	DESCRIPTION	QUANTITY	HRV CONSTRUCTO 1.5	HRV CONSTRUCTO 2.0
1	DAMPER SYSTEM ACTUATOR (INCLUDING 18)	1	17235	17235
2	DOUBLE COLLAR PORT	2	02257	02257
3	HINGE ASSEMBLY (KIT)	1	13036	13036
4	DOOR ASSEMBLY (INCLUDING 3 AND 5)	1	13346	13346
5	DOOR LATCHES (KEEPER) AND SCREWS	2 4	00887 00601	00887 00601
6	BALANCING DAMPER	2	02253	02253
7	BALANCING DOUBLE COLLAR PORT	2	02256	02256
8	DRAIN CONNECTOR KIT	1	03203	03203
9	HEAT RECOVERY CORE	1	03322 (CANADA) 03311 (U.S.A.)	03322 (CANADA) 03311 (U.S.A.)
10	BASIC FILTER	2	02300	02300
11	BLOWER ASSEMBLY (INCLUDING 12)	1	17236	17237
12	SQUARE DAMPER KIT	1	17243	17243
13	DOOR LATCHES AND SCREWS	2 4	00886 00601	00886 00601
14	DAMPER NO 1 (KIT)	1	17245	17245
15	TRANSFORMER	1	17244	17244
16	CAPACITOR 7.5 $\mu$ F	1	17240	17240
17	ELECTRONIC BOARD	1	17241	17241
18	THERMISTOR KIT	1	17242	17242

## 9. TROUBLESHOOTING

If the integrated control LED of the unit is flashing, this means the unit sensors detected a problem. See the list below to know where on the unit the problem occurs.

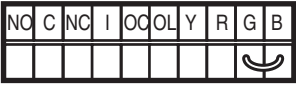
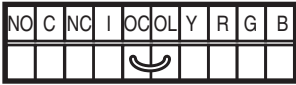
LED flashes GREEN.  
LED flashes AMBER.

- Thermistor error.
- Damper error.

Replace the thermistor kit.  
Go to Point 6.

### WARNING

**A few diagnosis procedures may require the unit to be in operation while proceeding. Open the unit door and bypass its magnetic switch by putting the door white magnet on it. Be careful with moving and/or live parts.**

Problems	Possible causes	You should try this
1. Unit does not work.	<ul style="list-style-type: none"> <li>•The circuit board may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>•Unplug the unit. Disconnect the main control and the optional(s) control(s) (if need be). Jump G and B terminals. 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>
		 <p>VE0097</p>
2. The damper actuator does not work.	<ul style="list-style-type: none"> <li>•The fuse may be defective.</li> <li>•The damper actuator or the integrated damper port mechanism may be defective.</li> <li>•The circuit board or the transformer may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>•Check fuse F1 if it is blown. In that case, replace fuse F1.</li> <li>•Unplug the unit. Disconnect the main control and the optional controls(s) (if need be). Wait 10 seconds and plug the unit back. Check if the damper opens. If not, use a multimeter and check for 24V AC on J12-1 and J12-2 (in electrical compartment). If there is 24V AC, replace the entire port assembly. NOTE: It is normal to experience a small delay (7-8 seconds) before detecting the 24V AC signal at starting-up. This signal will stay during 17-18 seconds before disappearing.</li> <li>•If there is no 24V AC, check for 24V AC between J8-1 and J8-2. If there is 24V AC replace the circuit board, and if there is no 24V AC, change the transformer.</li> </ul>
3. The wall control does not work OR its indicator flashes.	<ul style="list-style-type: none"> <li>•The wires may be in reverse position.</li> <li>•The wires may be broken.</li> <li>•The wire in the wall OR the wall control 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>•Inspect every wire and replace any that are damaged.</li> <li>•Remove the wall control and test it right beside the unit using another shorter wire. If the wall control works there, change the wire. If it does not, change the wall control.</li> </ul>
4. The Dehumidistat does not work OR the 20-minute push-button timer does not work OR its indicator light does not stay on.	<ul style="list-style-type: none"> <li>•The wires may be in reverse position.</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>•Jump the OL and OC terminals. If the unit switch 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.</li> </ul>
		 <p>VE0098</p>
5. The motor does not work.	<ul style="list-style-type: none"> <li>•The circuit board may be defective.</li> <li>•The motor may be defective.</li> <li>•The motor capacitor may be defective</li> </ul>	<ul style="list-style-type: none"> <li>•Press on the integrated control push button until the unit turn on low speed (the LED will light AMBER). Using a multimeter, check the voltage on J9-4 and J9-3. Refer to Section 6 <i>Wiring Diagram</i>. The reading must be 120 volts A.C. Then set the unit on high speed by pressing on the integrated control push button one more time (the LED will light GREEN). Using a multimeter, check the voltage on J9-4 and J9-2. The reading must be 120 volts A.C. Check also between J4-2 and J4-1, the reading must be 120 volts A.C. Refer to Section 6 <i>Wiring Diagram</i>. Check if the fuse F1 is intact. If all the readings correspond to the right voltage values, the circuit board is not defective. If one or both readings are different, change the circuit board.</li> <li>•Using a multimeter, check for 120 volts A.C. for the following speeds: High Speed: between GREY and Orange wires; Low/Medium Speed: between GREY and RED/BLUE wires. Refer to Section 6 <i>Wiring Diagram</i>.</li> <li>•Unplug the unit. Check for continuity between Pin 5 on the 6-pin connector (brown leads) and Pin 3 of the capacitor connector. Also check for continuity between Pin 4 on the 6-pin connector (brown leads) and Pin 1 of the capacitor connector. Refer to Section 6 <i>Wiring Diagram</i>.</li> </ul>
6. The defrost cycle does not work (the fresh air duct is frozen OR the fresh air distributed is very cold.	<ul style="list-style-type: none"> <li>•Ice deposits may be hindering the damper operation.</li> <li>•The damper rod or the port damper itself may be broken.</li> <li>•The damper actuator or circuit board may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>•Remove the ice.</li> <li>•Inspect these parts and replace if necessary.</li> <li>•See point 2.</li> </ul>
7. The integrated control push button does not work.	<ul style="list-style-type: none"> <li>•The 30-second boot sequence is not completed.</li> </ul>	<ul style="list-style-type: none"> <li>•See <i>Section 4.1.1 Boot Sequence</i>.</li> </ul>