

## 2. INSTALLATION (CONT'D)

### 2.8 INSTALLING 2 EXTERIOR HOODS

#### ⚠ WARNING

Make sure intake hood is located at least 10 feet away from any of the following:

- Dryer exhaust, central vacuum vent
- Gas meter exhaust, gas barbecue-grill
- Any exhaust vents or chimney from a combustion source
- Garbage bin and any other source of contamination such as parking lots, streets

For multifamily buildings only:

Make sure exhaust hood is located at least 3 feet away from any of the following:

- Property lines
- Operable openings into buildings (door, window)
- Intake and exhaust hood(s) shall be protected with corrosion-resistant screens, louvers or grilles having openings not less than 1/4 inch and not larger than 1/2 inch.
- Install hood(s) at least at 18 inches away from the ground OR depth of expected snow accumulation, whichever is greater.

To minimize cross-contamination of exhausted stale air into the fresh air intake:

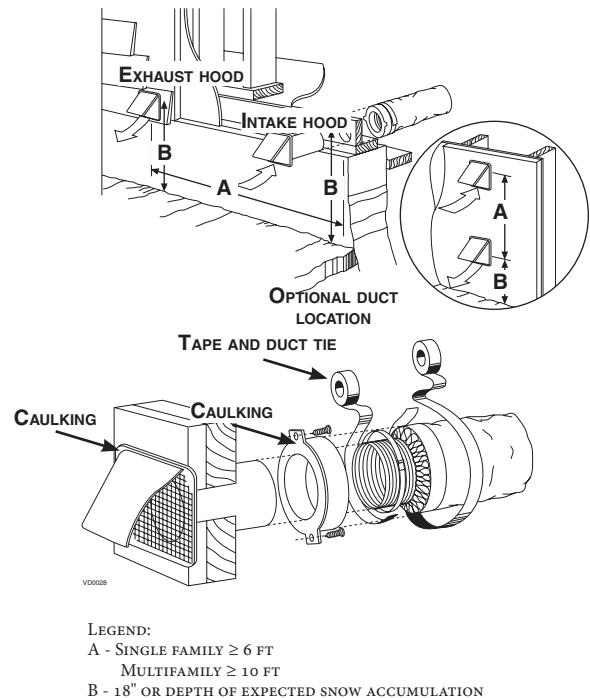
Single detached, attached homes and townhouses:

- Maintain a 6 feet minimum separation distance between outdoor air intake and exhaust hoods OR use an approved factory-built intake/exhaust combination termination fitting.

Multifamily buildings:

- Maintain a 10 feet minimum separation distance between outdoor air intake and exhaust hoods OR use an approved factory-built intake/exhaust combination termination fitting.

Ignoring these recommendations could significantly degrade the quality of the incoming air which, in some cases, could result in health consequences. In the event of a conflict between our recommendations and any local requirements, the latter shall have priority.



Refer to figure above 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.

### 2.9 INSTALLING A TANDEM® TRANSITION\* KIT

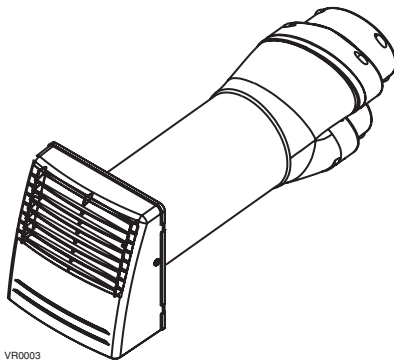
#### CAUTION

**If using a Tandem Transition, a backdraft damper must be installed on the stale air to outdoors duct. If this causes an interruption in the duct insulation, insulation must be added around the backdraft damper to avoid condensation.**

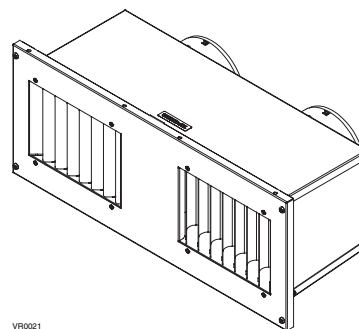
If desired, a Tandem transition kit can be used instead of 2 exterior hoods.

- An additional backdraft damper (not included) must be installed on the stale air to outdoors duct following common best practice. Should the backdraft damper cause an interruption in the insulation of the stale air to outdoors duct, make sure that insulation is added around the backdraft damper to avoid condensation.
- Follow the instructions included with the tandem termination kit.

\*Patented.



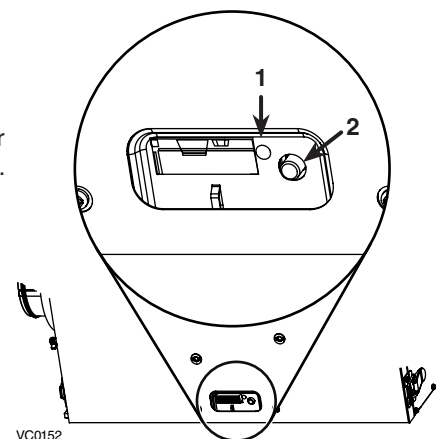
Tandem VTYIK1



Tandem V14695

### 3. CONTROLS

The ERV100S unit is equipped with an integrated control. The electronic device is located under the unit, in front of the electrical compartment. Refer to the figure at right for steps 3.1 up to 3.4. Plug the unit.



#### 3.1 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 booting sequence before starting to operate.

During the booting sequence, the integrated control LED (1 in above illustration) will light up and remain GREEN or AMBER for 3 seconds, and will then shut off\*; the booting sequence is done.

\* or will light up in the color of the previous mode to show the unit resumed to it, if the unit is controlled by its integrated control.

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

If a problem occurs during the unit operation, or if the unit turns in Protection Mode, its LED (1) will blink. The color and the blinking pattern depend on the type of error detected, or if the unit is in Protection Mode.

Refer to the sticker on the unit and Section 9 Troubleshooting on page 22 for further details.

#### 3.2 INTEGRATED CONTROL

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

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

LED COLOR	RESULTS
AMBER	UNIT IS ON LOW SPEED
GREEN	UNIT IS ON HIGH SPEED
NO LIGHT	UNIT IS OFF OR CONTROLLED BY A MAIN CONTROL

#### 3.3 SETTING EXTENDED DEFROST

These units are factory set to normal defrost. In cold region (outdoor temperature -17°F and lower), it may be necessary to setup extended defrost. During the first 3 seconds of booting sequence, the integrated control LED shows the current defrost mode (refer to table at right).

LED COLOR	DEFROST MODE
GREEN	NORMAL
AMBER	EXTENDED

Within the first 3 seconds of booting sequence, press on push button until the LED starts to blink, then release the push button; the LED will blink AMBER 5 times. After that, the LED will shut off, then turn RED (the unit returns in its booting sequence).

### 3. CONTROLS (CONT'D)

#### 3.4 ELECTRICAL CONNECTION TO WALL CONTROLS

For more convenience, the ERV100S unit can also be controlled using an optional main 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 operation.

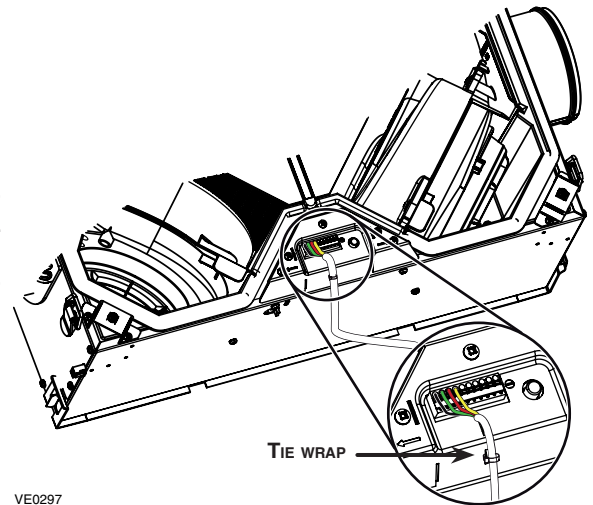
#### ⚠ WARNING

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

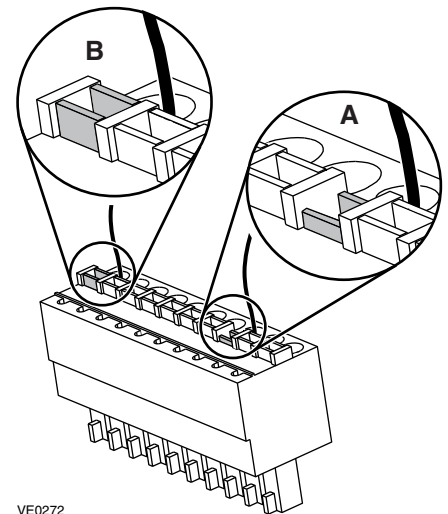
#### CAUTION

**Never install more than one 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.**

Open the unit door. Insert the terminal connector (included in the installation kit) under the unit, on the electrical compartment front face. Use this terminal connector to perform the electrical connection for main and optional wall controls, then secure the cable(s) with a tie wrap (see illustration at right).



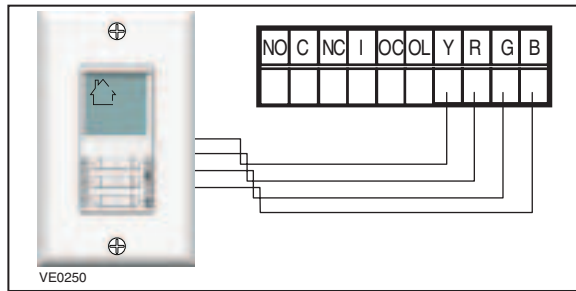
Check if all wires are correctly inserted in their corresponding holes in the terminal block. (A wire is correctly inserted when its orange receptacle is lower than another one without wire. On illustration at right, wire **A** is correctly inserted, but not wire **B**.) Splice back the end of the cable to access the 4 wires. Strip the end of each wire. Connect each wire to its corresponding terminal: YELLOW wire to "Y", RED wire to "R", GREEN wire to "G" and BLACK wire to "B". Connect the auxiliary control cable, if installed (not shown).



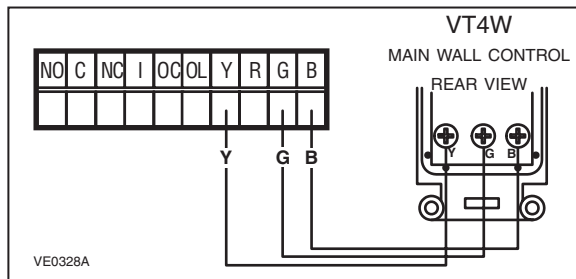
### 3. CONTROLS (CONT'D)

#### 3.4 ELECTRICAL CONNECTION TO WALL CONTROLS (CONT'D)

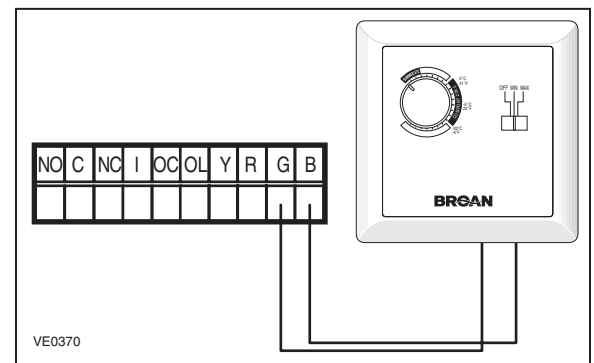
##### 3.4.1 ELECTRICAL CONNECTION TO VT7W MAIN WALL CONTROL



##### 3.4.2 ELECTRICAL CONNECTION TO VT4W MAIN WALL CONTROL

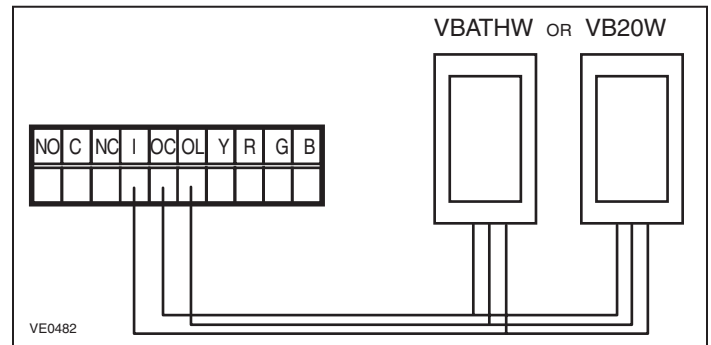


##### 3.4.3 ELECTRICAL CONNECTION TO VT6W MAIN WALL CONTROL



##### 3.4.4 ELECTRICAL CONNECTION TO OPTIONAL AUXILIARY WALL CONTROLS (VBATHW AND VB20W)

NOTE: If an optional auxiliary wall control is activated, this control will override the main wall control commands.



Once the wall control(s) connections have been made and checked, close the unit door.

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

## 4. ELECTRICAL CONNECTION TO THE FURNACE

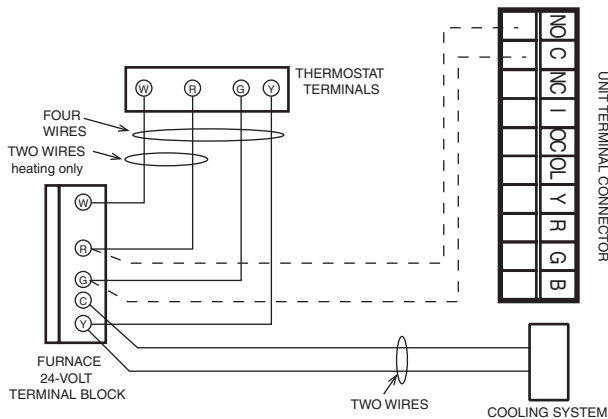
### ⚠ WARNING

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:

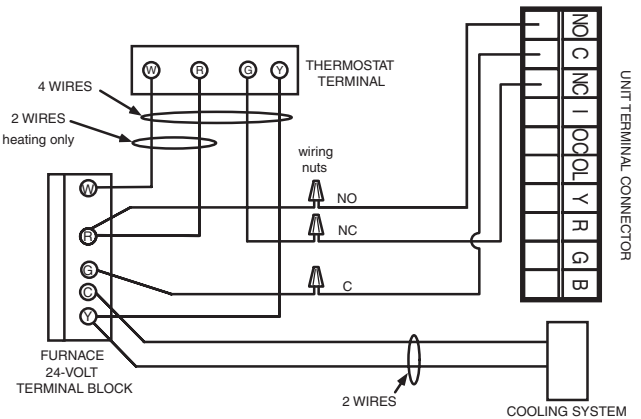
On some older thermostats, energizing the “R” and “G” terminals at the furnace has the effect of energizing “Y” at the thermostat and thereby turning on the cooling system. If you identify this type of thermostat, you must use the ALTERNATE FURNACE INTERLOCK WIRING.

STANDARD FURNACE INTERLOCK WIRING



VE0108A

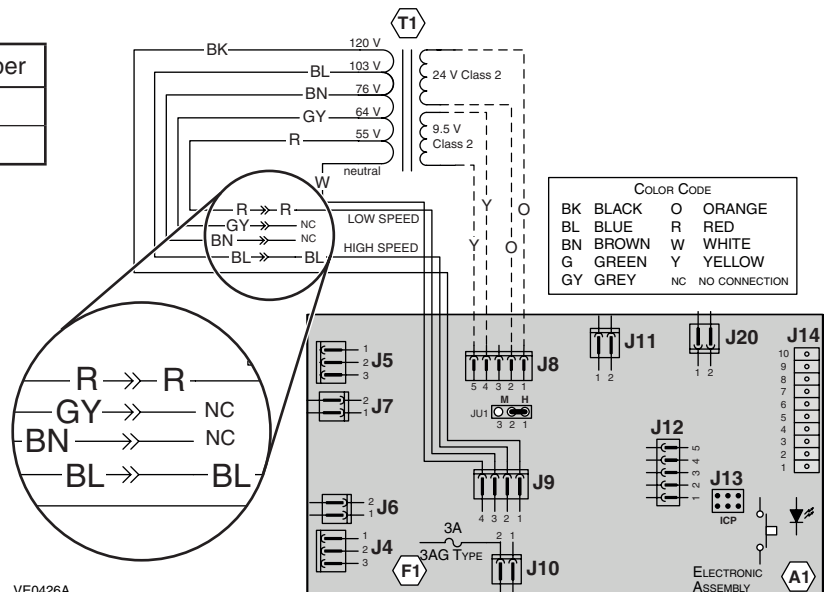
ALTERNATE FURNACE INTERLOCK WIRING



## 5. SPEED SELECTION

The factory set high speed value for these units is 100 CFM, and low speed value is approximately 50 CFM. To change these values, the transformer wire taps connections must be changed (see table and illustration below).

	Speed	Connection	JU1 Jumper
High Speed	100 CFM	BL-BL	H (1-2)
	85 CFM	BN-BL	M (2-3)
Low Speed	65 CFM	GY-R	
	50 CFM	R-R	



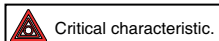
VE0426A

## 6. WIRING DIAGRAM

### A 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 from the outlet. Discontinue using the unit and contact technical support.

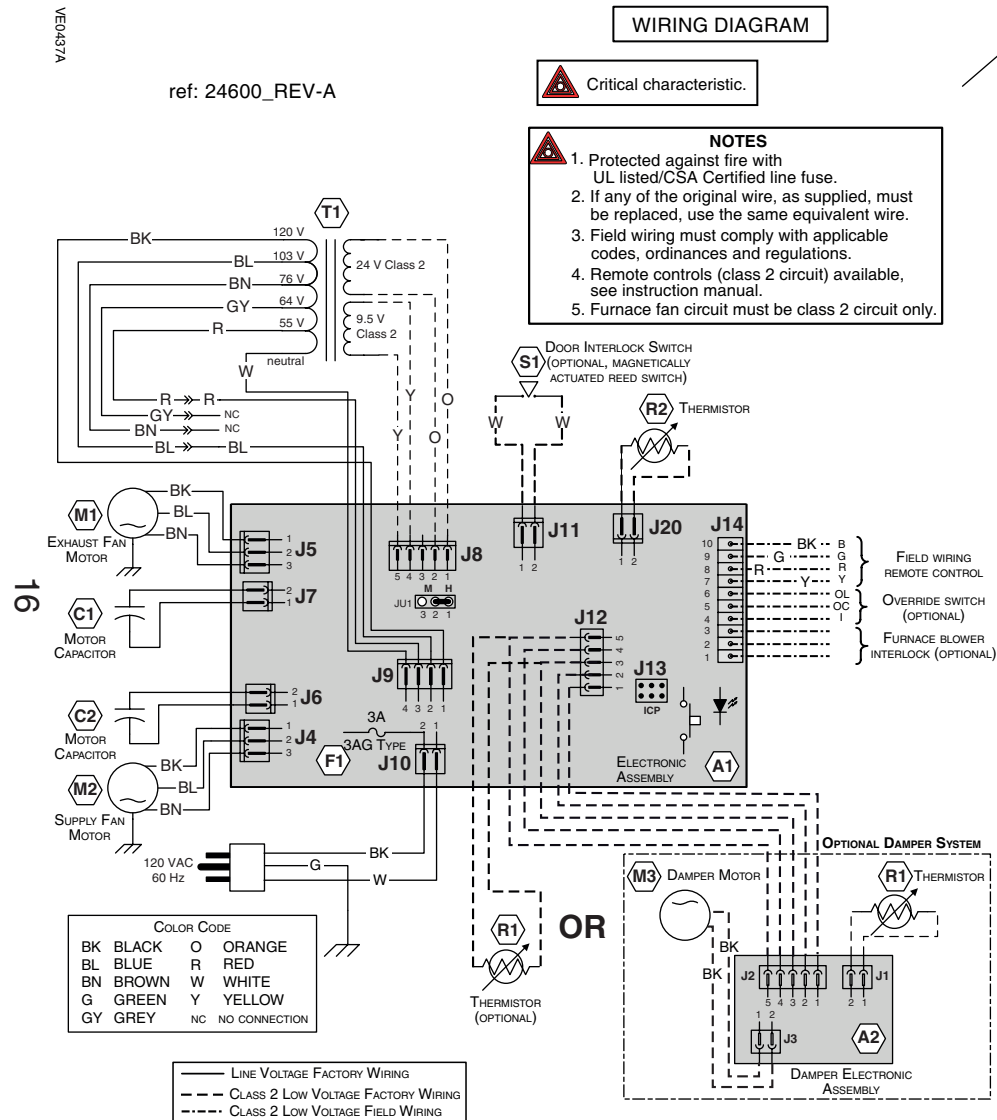
WIRING DIAGRAM



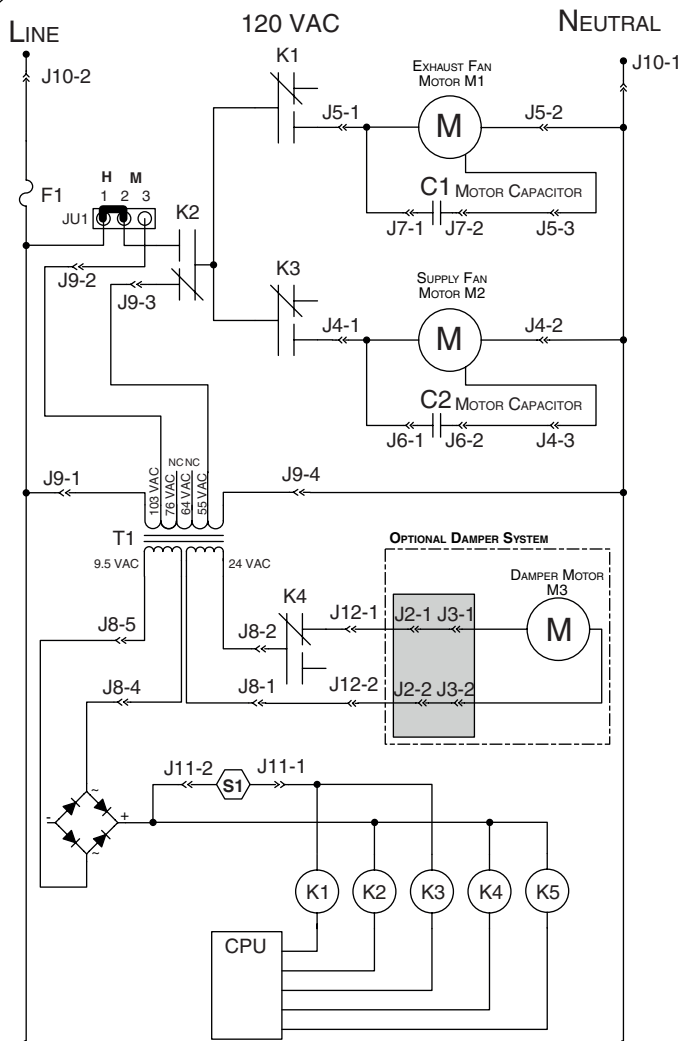
Critical characteristic.

#### NOTES

1. Protected against fire with 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.



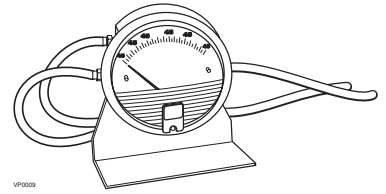
LOGIC DIAGRAM



## 7. BALANCING THE UNIT

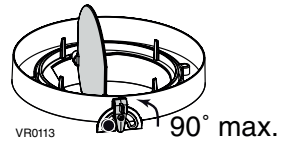
### 7.1 WHAT YOU NEED TO BALANCE THE UNIT

- A magnehelic gauge capable of measuring 0 to 0.5 inch of water (0 to 125 Pa) and 2 plastic tubes.
- The balancing chart located on the unit door.



### 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. Both are located on the Exhaust air to outdoor port and on Fresh air from outdoor port (see step 2.2). Ensure that the lever rotation won't exceed 90° maximum to avoid the damper not closing properly.
- Make sure all filters are clean (if it is not the first time you balance the unit).



#### **Make sure the unit is not running in defrost mode while balancing.**

When the outdoor temperature is below 32°F, the defrost mode can be activated. During defrost cycle, it is not possible to balance the unit since there is no flow in one direction.

To cancel the defrost cycle, use the auxiliary control or jump OC-OL on unit terminal block; this will set the unit on high speed ventilation without defrost for the next 20 minutes. Once the 20 minutes of high speed ventilation is completed, the unit will perform an extended defrost. If installed, do not forget to remove the jumper between OL and OC on terminal block.

Another way to avoid the defrost cycle is to wait 10 minutes after plugging the unit in; this procedure ensures that the unit is not in a defrost cycle.

NOTE: Both units start in defrost mode within the first minute of operation.

### 7.3 BALANCING PROCEDURE

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

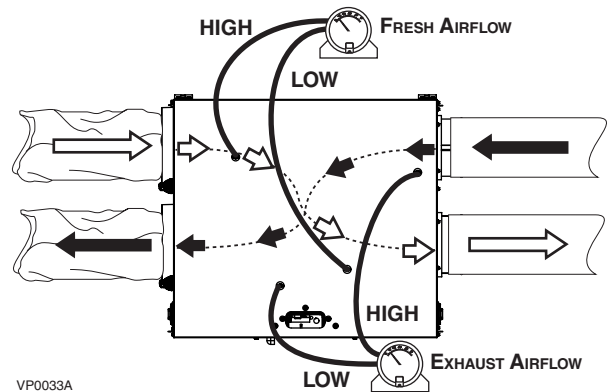
Make sure that the furnace/air handler blower is ON if the installation is in any way connected to the ductwork of the cold air return. If not, leave furnace/air handler blower OFF.

#### 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 and fresh airflow pressure taps (see diagram 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. Measure both flows; adjust higher flow to equal the lower one, using balancing damper lever.



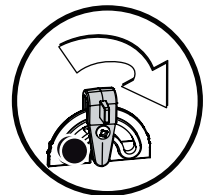
#### **CAUTION**

When loosening or tightening the damper lever locking screw, never use an electric screwdriver or drill, use a standard screwdriver.



#### **CAUTION**

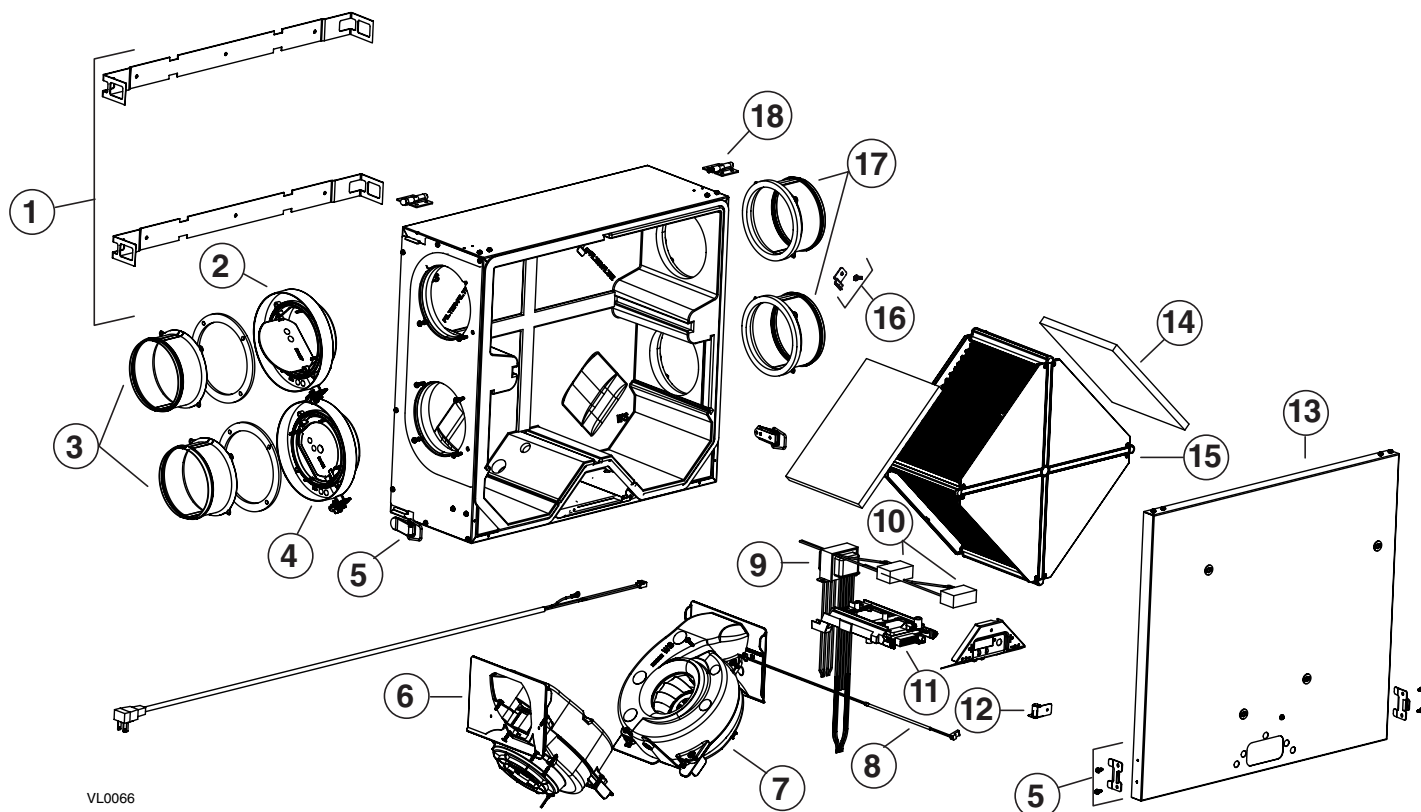
Make sure to turn the damper lever to the right direction (opposite to its stopper, see illustration at right). Securing the lever in wrong position may cause freezing into the unit.



5. Secure both damper levers in place using their locking screw, then shut all the pressure taps with the small plastic plugs included in the hardware kit.
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).

NOTE: The unit is considered balanced even if there is a difference of  $\pm 10$  cfm between the two air flows.

## 8. SERVICE PARTS



VL0066

No.	DESCRIPTION	PART No.	ERV100S
1	INSTALLATION BRACKETS KIT (2)	SV61240	1
2	BALANCING AND BACKDRAFT DAMPER PORT KIT	SV61219	1
3	5" METAL PORT KIT FOR COLD SIDE	SV61236	2
4	ADJUSTABLE PORT KIT	SV61215	1
5	DOOR METAL KEEPERS AND LATCHES KIT	SV61218	1
6	COLD SIDE BLOWER KIT (INCL. 1 CAPACITOR)	SV61235	1
7	WARM SIDE BLOWER KIT (INCL. 1 CAPACITOR)	SV61234B	1
8	WARM SIDE THERMISTOR	SV61233	1
9	TRANSFORMER KIT	SV61232	1
10	CAPACITORS 5 $\mu$ F (2)	SV16042	1
11	ELECTRONIC BOARD KIT	SV61230	1
12	MAGNET WITH BRACKET KIT	SV61241	1
13	DOOR ASSEMBLY	SV63498	1
14	FILTER KIT (2)	SV21029	1
	OPTIONAL MERV 8 FILTERS (2)	V21030	1
15	ERV CORE	SV61223	1
16	CORE LOCKING DEVICE KIT	SV61237	1
17	5" METAL PORT KIT FOR WARM SIDE	SV61217	2
18	DOOR METAL HINGES KIT (2)	SV61228	2
*	TERMINAL CONNECTOR	SV16416	1
*	COLD SIDE THERMISTOR KIT	SV61221	1
*	OPTIONAL HARDWARE KIT	V61239	1

\* NOT SHOWN.

### REPLACEMENT PARTS AND REPAIR

In order to ensure your ventilation unit remains in good working condition, you must use the Broan-NuTone LLC genuine replacement parts only. The Broan-NuTone LLC 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. Also, Broan-NuTone LLC recommends to contact a Broan-NuTone LLC certified service depot for all replacement parts and repairs.



## 9. TROUBLESHOOTING

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

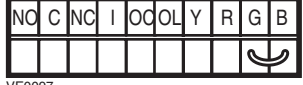

If the LED of the unit is flashing, this means the unit sensors have detected a problem. See the table below to know where the problem occurs on the unit.			
LED SIGNAL	ERROR TYPE	ACTION	UNIT STATUS
LED flashes GREEN (double blink every 2 seconds).	Outdoor thermistor error.	<ul style="list-style-type: none"> <li>Ensure J12 connector is properly connected and its wires are not damaged. If they are correct:</li> <li>Replace the fresh air from outdoor thermistor.</li> </ul>	Unit works but will defrost frequently.
LED flashes GREEN (2 blinks per second; faster blink).	Building side thermistor error.	<ul style="list-style-type: none"> <li>Ensure J20 connector is properly connected and its wires are not damaged. If they are correct:</li> <li>Replace the thermistor in the warm side blower.</li> </ul>	Unit does not work.
LED flashes RED (one blink every 2 seconds).	Cold side motor error, open door or magnetic switch bad contact.	<ul style="list-style-type: none"> <li>Using a flat blade screwdriver, jump J11 while pushing once on push button at the same time. If the LED is still flashing, go to point 8 in next table for motor diagnosis.</li> </ul>	Unit does not work.
LED flashes RED (2 blinks per second; faster blink).	Unit is on protection mode or is in error because it has been in protection mode for an abnormal time.	<ul style="list-style-type: none"> <li>If outdoor temperature is colder than -13°F, it could be normal for the unit to enter in protection mode.</li> <li>To see if the unit is in error, wait 5 minutes, unplug the unit, wait 1 minute and plug it back. Wait for the booting sequence to be done, then see if it still shows this error. If yes, press and hold the push button during 7 seconds to reset this error. Another LED signal can happen; refer to the appropriate LED color code and blinks. If no, go to point 9 in next table.</li> </ul>	Unit exhaust air without entering fresh air for a 2-hour period, then resume to its previous operation mode and stops flashing RED. If LED continues to flash RED when back to previous mode, the unit is in error. Go to point 9 in next table.

### ⚠ WARNING

**Risk of electric shocks. Electronic board connections must be checked by qualified personnel only.**

	PROBLEMS	POSSIBLE CAUSES	YOU SHOULD TRY THIS
1	The error code E1 is displayed on VT8W or VT7W 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 that is damaged. If wires are hidden into walls, test the control using a shorter wire.</li> </ul>
2	There is no outdoor temperature displayed on VT8W 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 properly connected.</li> </ul>
3	VT8W or VT7W wall control screen alternates between normal display and E3.	<ul style="list-style-type: none"> <li>The VT8W or VT7W wall control may be defective.</li> </ul>	<ul style="list-style-type: none"> <li>Replace the VT8W or VT7W wall control.</li> </ul>
4	The main wall control does not work.	<ul style="list-style-type: none"> <li>Unit integrated control 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 that are damaged.</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>Unplug the product from the outlet. Check if fuse F1 (located on the PCB) is blown. In that case, discontinue using the unit and contact technical support.</li> <li>Check the connection of J10, J9, and J8 connector(s).</li> <li>With unit powered and J9 connected, check if there is about 9.5 VAC between transformer connector J8-4 and J8-5 (YELLOW wires). If no, 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. 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 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 auxiliary 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>Ensure the wires are correctly connected.</li> <li>Inspect every wire and replace any that is damaged. 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 switch to high speed, remove the auxiliary control and test it right beside the unit using another shorter wire. If it works here, change the wire. If it doesn't, change the auxiliary control.</li> </ul> 
7	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 check for supply motor capacitor validity.</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>
	B. 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 supply 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, check validity of 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>
8	Unit shows protection mode error (different than being in protection mode).	<ul style="list-style-type: none"> <li>Wrong selection of defrost cycle.</li> <li>Defective motor or damper.</li> <li>Stale airflow choked (unbalanced unit, filters or outdoor port clogged, etc.).</li> <li>Inside temperature too low (around 64°F).</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 3.2 or 3.4, according to the unit model.</li> <li>Inspect the complete unit, make sure both motors are running, make sure the damper system closes and seal properly.</li> <li>Inspect the complete ducting, clean the filters, stale air inside grille, etc., balance the unit).</li> <li>Unit is using the inside temperature to defrost itself, so a very low room temperature can harm the defrost system of the unit.</li> </ul>