5. Controls

All units are equipped with an integrated control located on upper left side of the unit. Plug the unit.

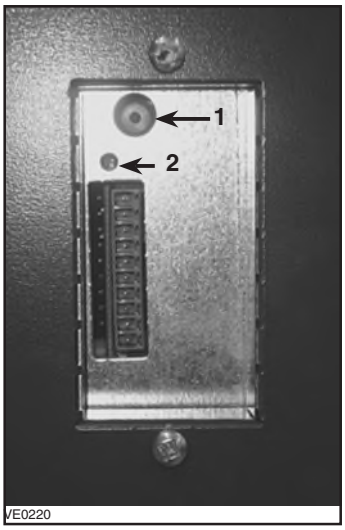
5.1 Booting Sequence

The unit booting sequence is similar to a personnal 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 for 5 seconds, and then will turn RED. 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.

5.2 Integrated Control



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.

LED Color	Results
Amber	Unit is on Low Speed
Green	Unit is on High Speed
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 10 Troubleshooting on page 19 for further details.

NOTE: WHEN USING MAIN CONTROL, THE INTEGRATED CONTROL MUST BE TURNED OFF.

5.3 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 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).

5.4 ELECTRICAL CONNECTION TO MAIN CONTROL

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, if activated, this auxiliary control will override the optional main control.

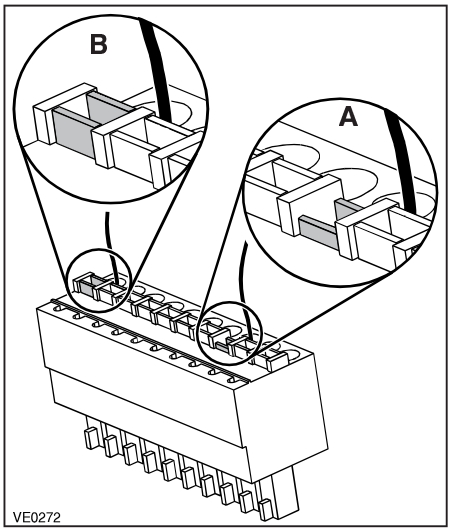
⚠ WARNING

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

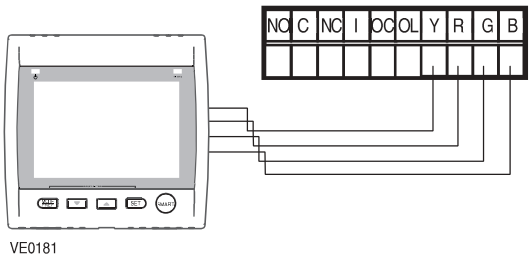
CAUTION

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.

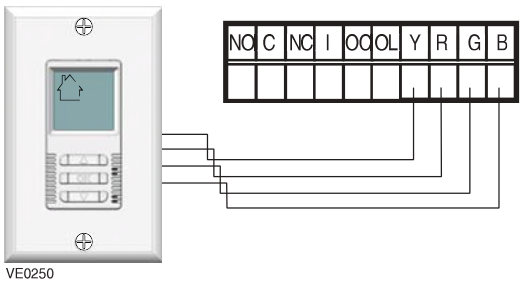
Use the terminal connector included in the installation kit to perform the electrical connection for main and optional wall controls. Check if all wires are correctly inserted in their corresponding holes in the terminal block. (A wire is correctly inserted when its orange receptacle is lower than another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



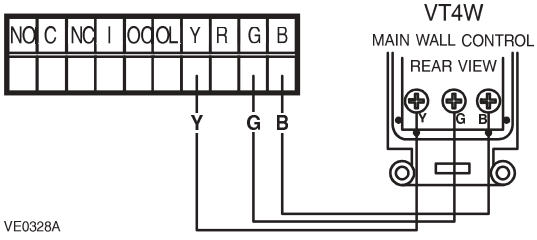
5.4.1 ELECTRICAL CONNECTION TO VT8W MAIN WALL CONTROL



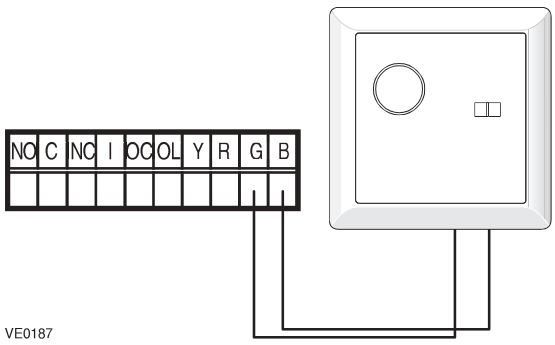
5.4.2 ELECTRICAL CONNECTION TO VT7W MAIN WALL CONTROL



5.4.3 ELECTRICAL CONNECTION TO VT4W MAIN WALL CONTROL

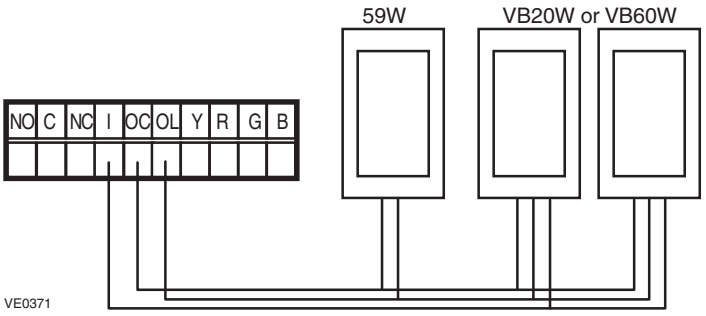


5.4.4 ELECTRICAL CONNECTION TO VT6W MAIN WALL CONTROL

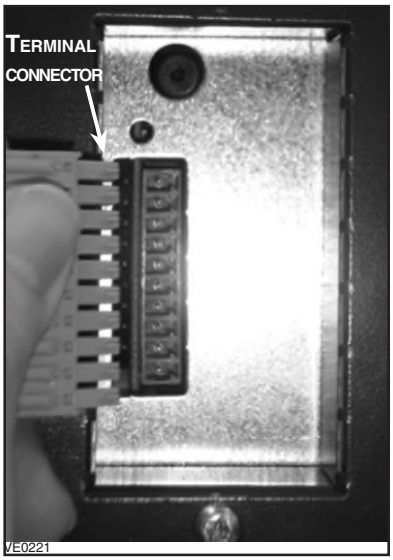


5. Controls (cont'd)

5.5 Electrical Connection to Optional Auxiliary Wall Controls



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



6. Electrical Connection to the Furnace

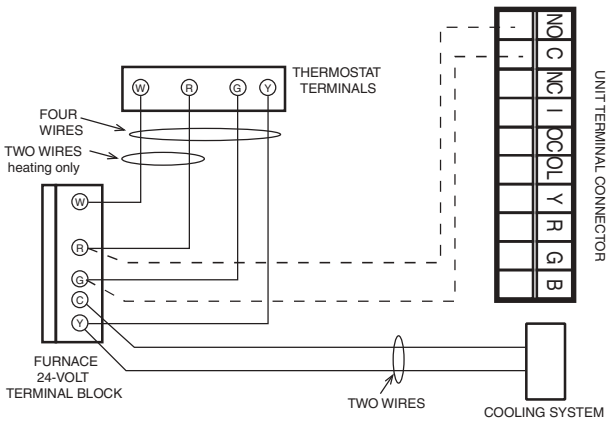
⚠ WARNING

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.

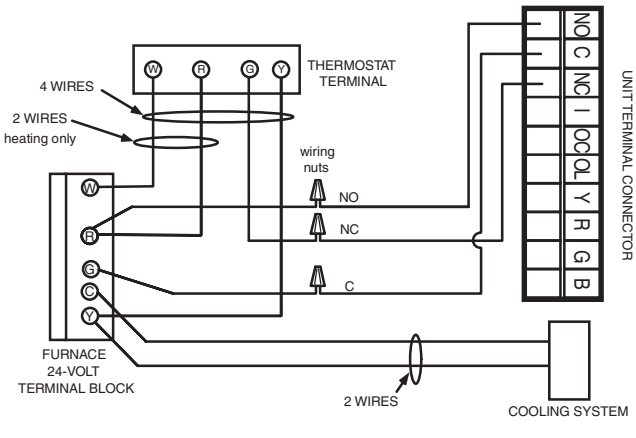
For a furnace connected to a cooling system:

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



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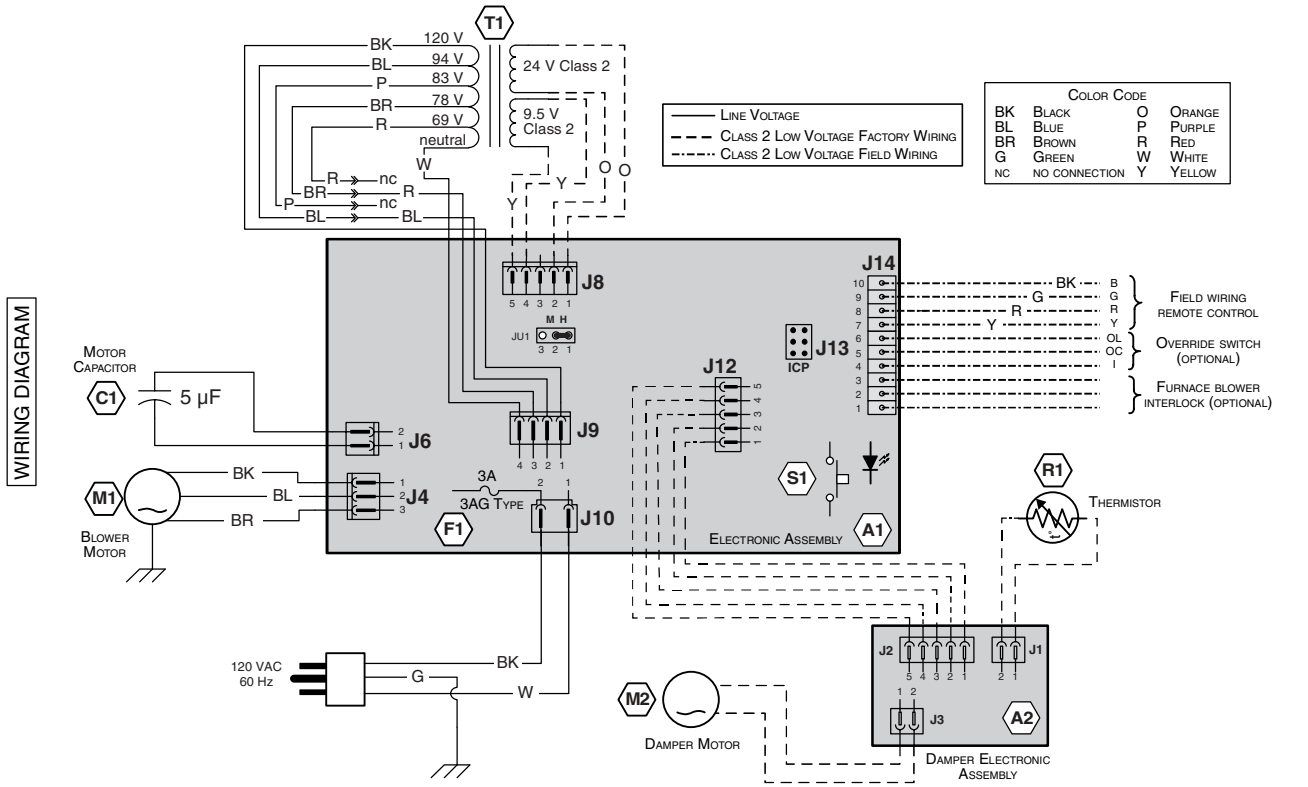
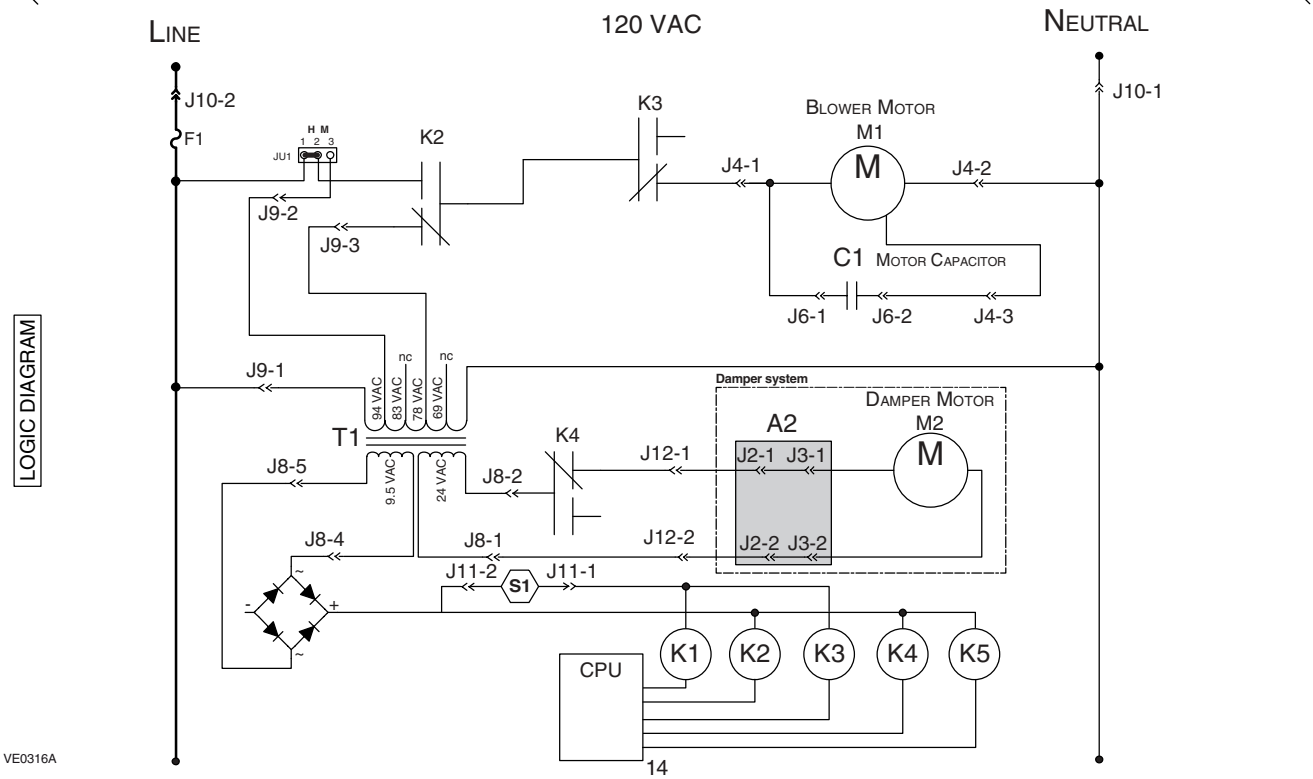
7. Wiring Diagrams

7.1 HRV80T and HRV80S Models

⚠ 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.**



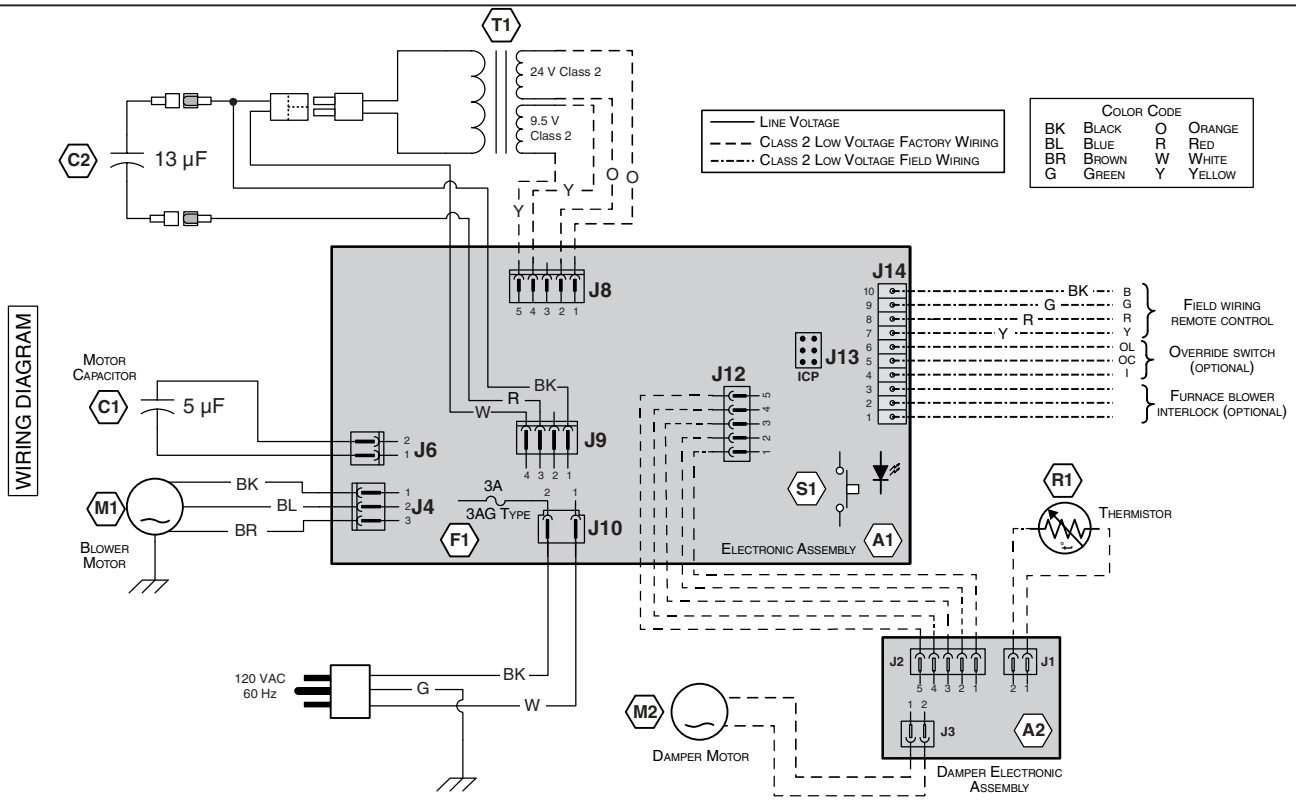


7.2 ERV70T AND ERV70S MODELS

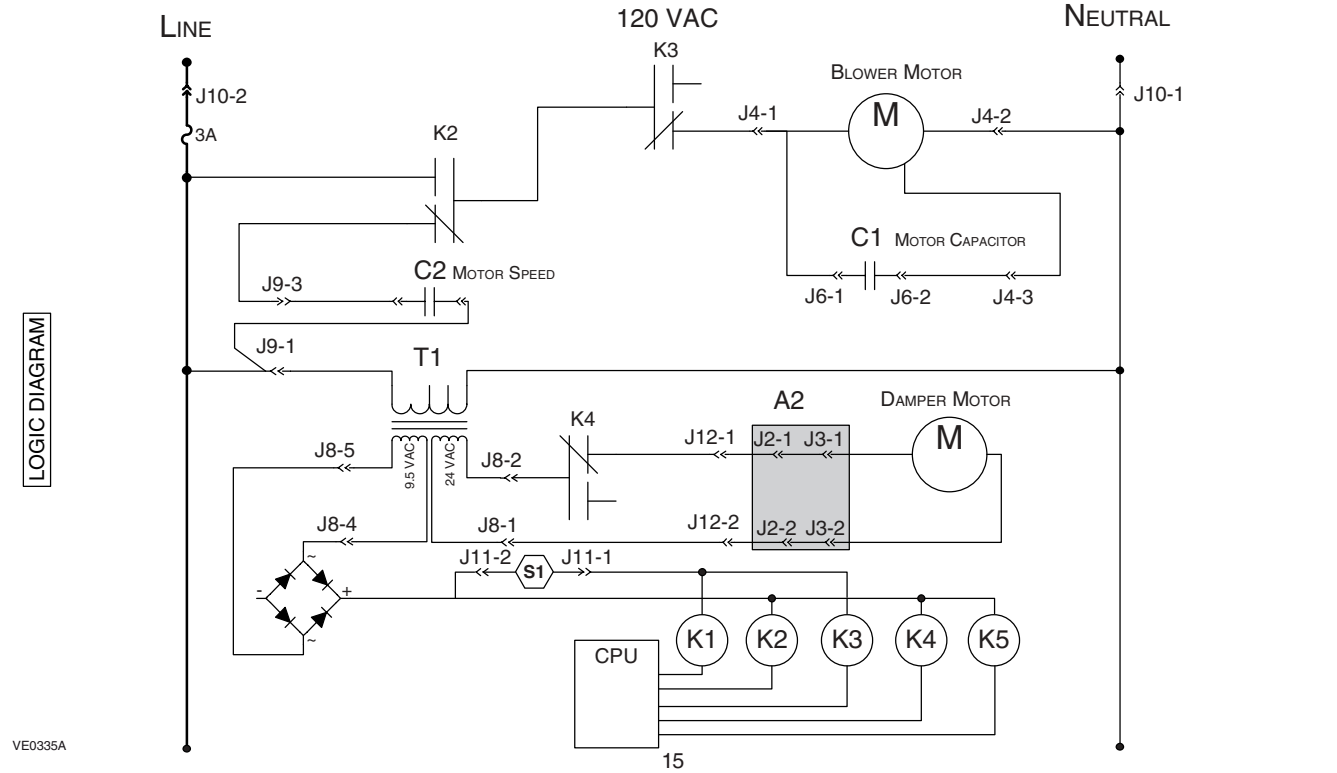
⚠ WARNING

- **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.**

WIRING DIAGRAM



LOGIC DIAGRAM



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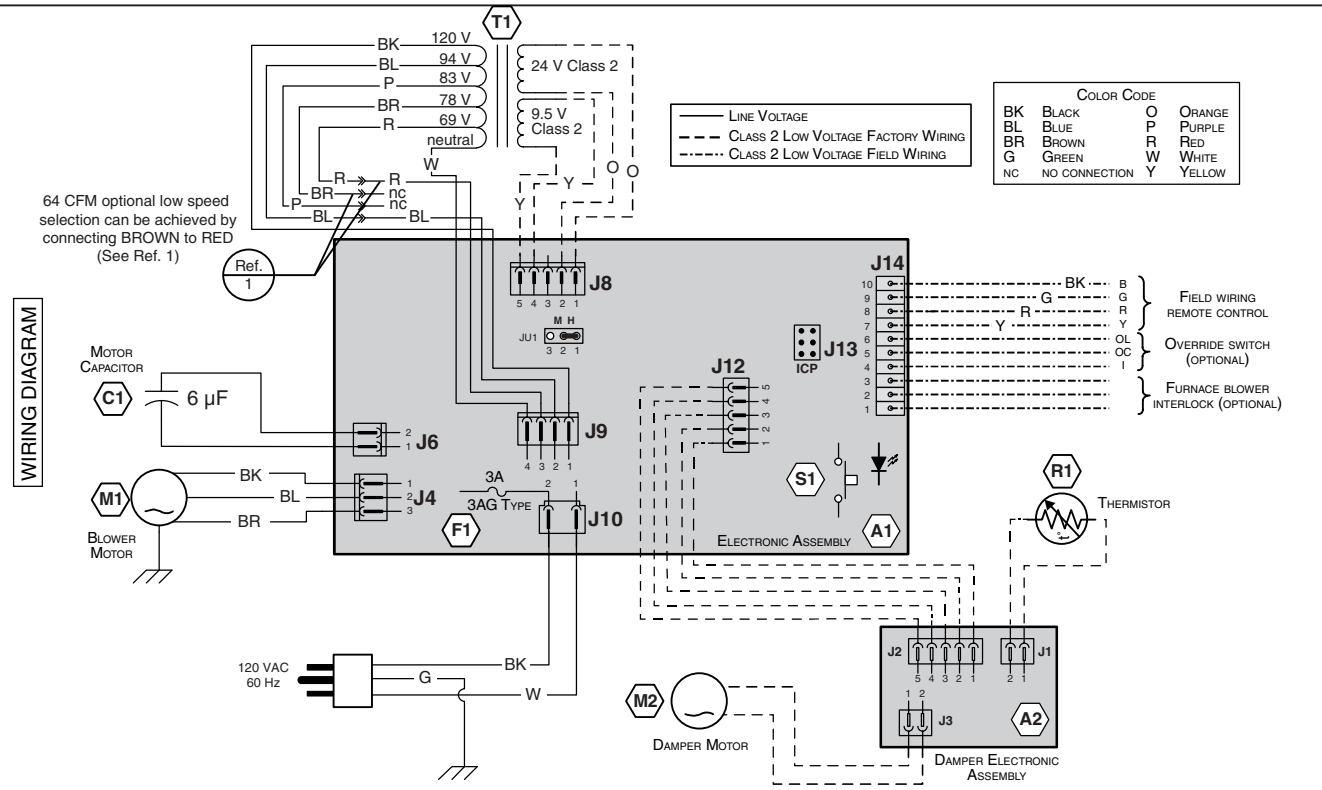
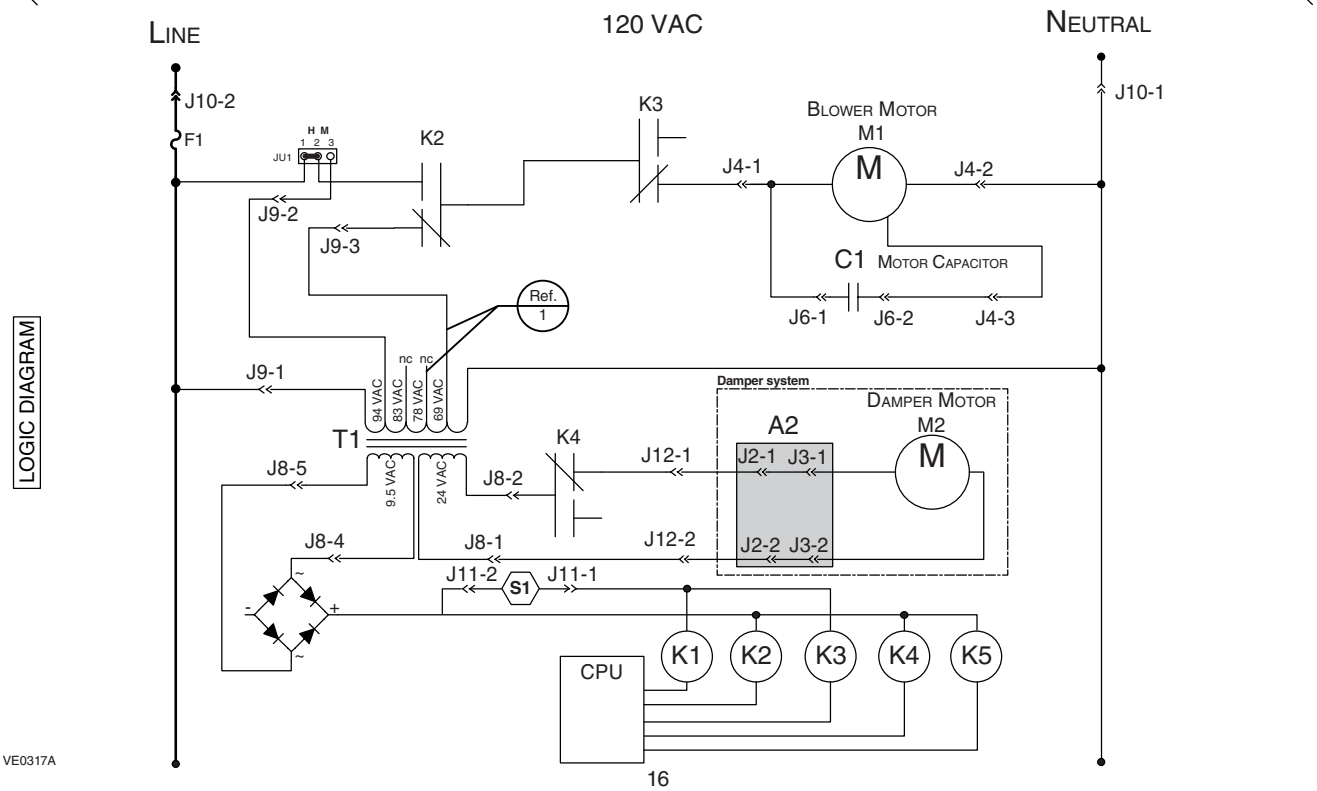
7.3 HRV90T AND HRV90S MODELS

⚠ WARNING

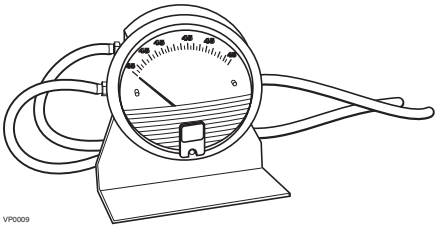
- **Risk of electric shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.**
- **This product is equipped with an overload protection (fuse). A blown fuse indicates an overload or a short-circuit situation. If the fuse blows, unplug the product and 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.**





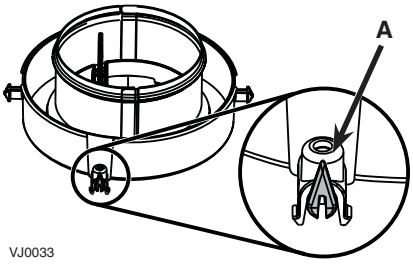
8. Balancing the Unit

8.1 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, **located on the unit door.**

8.2 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 (their adjusment pin (**A**) must be set vertical, see illustration at right).
- Make sure all filters are clean (if it is not the first time the unit is balanced).

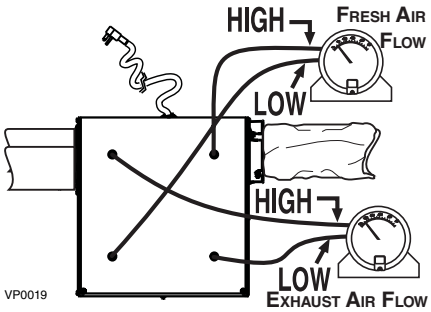
8.3 Balancing Procedure

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 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 on unit door).
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.

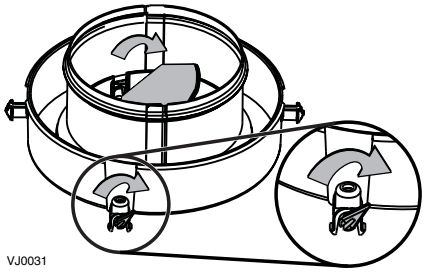
6. Match highest CFM value to lowest by adjusting the balancing damper corresponding to the highest value. To do so, rotate the adjusment pin.

See example below:

Pressure	Fresh	Exhaust
in. w.g.	CFM	CFM
0.16	47	42
0.18	54	48
0.2	60	55
0.22	66	61
0.24	72	68
0.26	78	74
0.28	84	81
0.3	90	88

Exhaust reading values

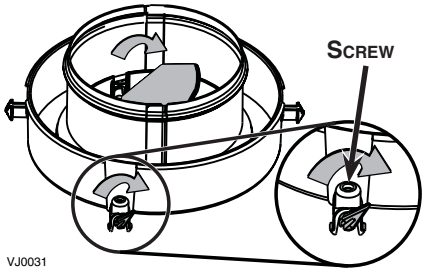
Fresh reading values



In that case, there is 78 CFM in FRESH air and 61 CFM in EXHAUST air. Then, using the adjusment pin, adjust (close) the FRESH air balancing damper until the FRESH air flow matchs the EXHAUST air flow: 60 CFM (0.2 in. w.g.) with magnehelic gauge connected to FRESH air flow pressure taps).

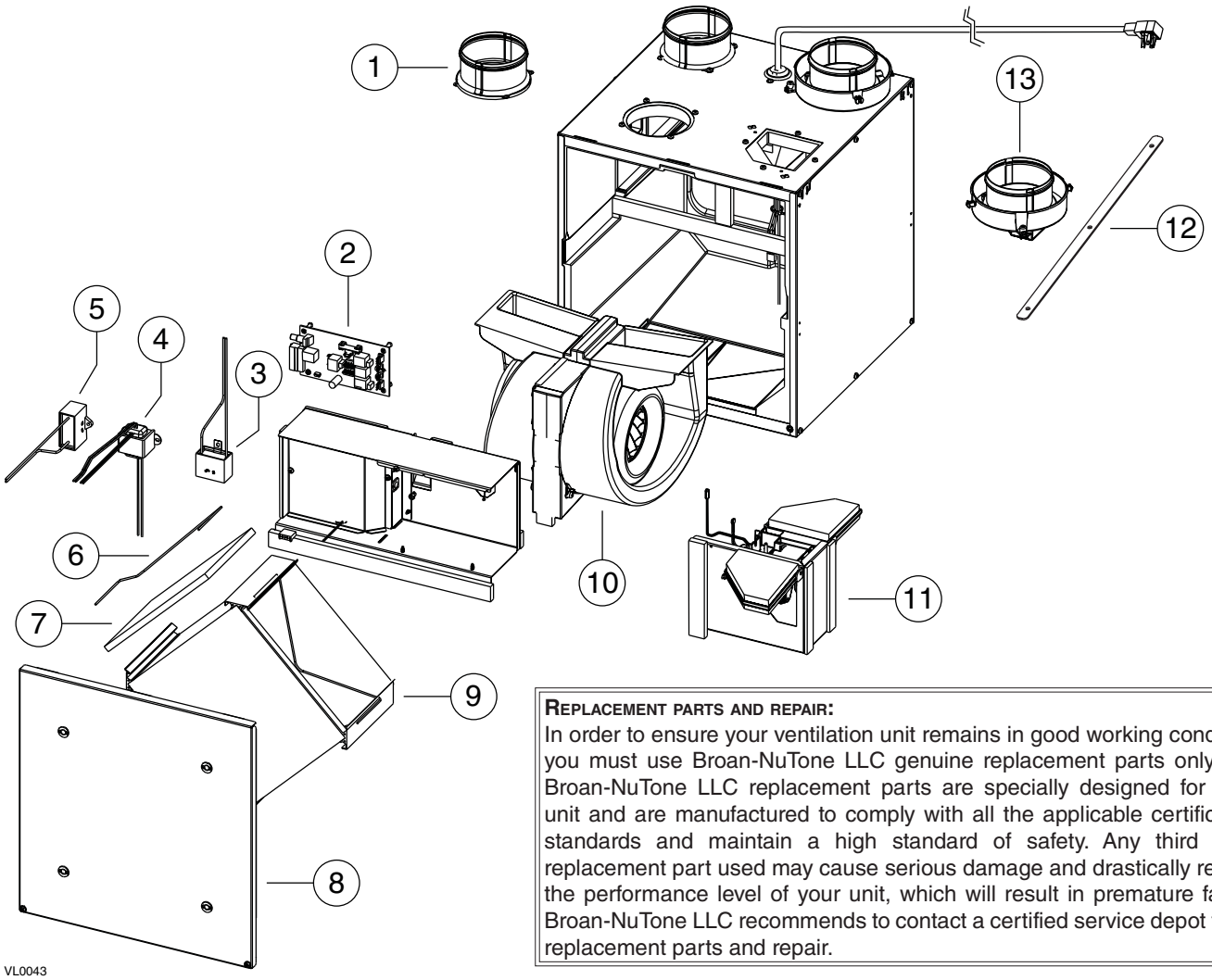
7. Secure both dampers in place with a fastening screw (included in the hardware kit).

8. 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 ±10 cfm (or ± 5 l/s or 17 m³/h) between the two air flows.

9. Service Parts



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

Item	Part No.	Description	HRV80T	HRV80S	ERV70T	ERV70S	HRV90T	HRV90S
1	SV18854	4" Round Metal Port	2	2	2	2	2	2
2	SV19206	Electronic Board (HRV)	1	1			1	1
	SV19207	Electronic Board (ERV)			1	1		
3	SV16042	Capacitor 5 µF	1	1	1	1		
	SV61550	Capacitor 6 µF					1	1
4	SV17244	Transformer			1	1		
	SV62480		1	1			1	1
5	SV19211	Capacitor 13 µF	1	1	1	1	1	1
6	SV19208	Filter Retaining Wires (pair)	1	1	1	1	1	1
7	SV18883	Core Filters (pair)	1	1	1	1	1	1
8	SV21527	Door Assembly	1	1	1	1	1	1
9	SV19199	Heat Recovery Core	1	1			1	1
	SV19200	Energy Recovery Core			1	1		
10	SV18867	Blower Assembly	1	1	1	1		
	SV62176	Blower Assembly					1	1
11	SV18868	Vertical Ports Damper System	1		1		1	
	SV18881	Horiz. Ports Damper System*		1		1		1
12	SV19212	4" Ports Straps	2	2	2	2	2	2
13	SV18855	4" Double Collar Port with Damper	2	2	2	2	2	2
14	SV19213	Hardware Kit*	1	1	1	1	1	1
15	SV16416	PCB Connector*	1	1	1	1	1	1

* Part not shown.

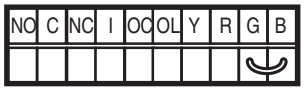
10. TROUBLESHOOTING

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 integrated control LED of the unit is flashing, this means the unit sensors 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	Thermistor error	Replace damper system.	Unit works but will defrost frequently
LED flashes AMBER	Damper error	Go to point 6	Unit does not work

	Problems	Possible causes	You should try this
1	The error code E1 is displayed on VT8W or VT7W wall control screen.	• The wires may be in reverse position. • The wires may be broken. • The wires may have a bad connection.	• Ensure that the color wires have been connected to their appropriate places. • Inspect every wire and replace any that are damaged. • Ensure the wires are correctly connected.
2	There is no outdoor temperature displayed on VT8W wall control screen --.	• The unit thermistor is defective (the integrated control LED of the unit must flash GREEN).	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. • Replace the unit damper system.
3	The VT8W or VT7W wall control screen alternates between normal display and E3.	• The VT8W or VT7W wall control may be defective.	• Replace the VT8W or VT7W wall control.
4	On VT8W wall control, there is an important difference between temperature displayed and real temperature.	• The unit thermistor is defective. • The unit damper has been blocked or broken.	• Replace the unit thermistor. • Check for the proper operation of the unit damper; replace if necessary.
5	Unit does not work.	• The circuit board may be defective. • The fuse may be defective.	• 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. • Check if fuse F1 (located on PCB) is blown. In that case, replace fuse F1 as per wiring diagram specifications.
6	The wall control does not work.	• Unit integrated control set to low or high speed (AMBER or GREEN continuous LED). • Unit not compatible with control. • The wires may be in reverse position. • The wires may be misconnected. • The wires may be broken. • Defective wall control.	• Press on the integrated push button until the LED turns off. • Check table on page 2 for control compatibility. • Ensure that the color coded wires have been connected to their appropriate places. • Ensure the wires are correctly connected. • Inspect every wire and replace any that are damaged. • Replace the wall control.



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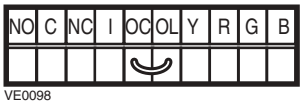
10. TROUBLESHOOTING (CONT'D)

	Problems	Possible causes	You should try this
7	The damper system does not work (**AMBER error code**).	**At power up, no RED LED**.	• See point 5.
		At power up, LED lights RED and there is a clicking sound coming from electrical compartment, but damper does not move: • Ice or other things hindering the damper movement. • J12 unconnected or bad contact. • Wrong connection of J8. • The transformer may be defective (no 24 VAC between J8-1 and J8-2). • The damper actuator may be defective.	 • Remove ice or hindering elements. • Check J12 connection (both harness side and board side). • Check J8 connection. • 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. • Replace the damper system.
		Damper moves but does not stop when supposed to: • Damper motor turns on reverse side. • Bad connection of J12 connector. • Damper PCB defective or damper motor stripped gear. • The main PCB is defective.	 • Facing the damper motor shaft, the motor should turn counterclockwise. If not, replace the damper system. • Check J12 connection (both harness side and board side). • Replace the damper system. • Replace the main PCB.
8	Optional auxiliary control does not work OR its indicator light does not stay on.	• The wires may be in reverse position. • The wires may be misconnected. • The wires may be broken. • The auxiliary control may be defective.	• Ensure that the color coded wires have been connected to their appropriate places. • Ensure the wires are correctly connected. • Inspect every wire and replace any that is damaged. If wires are hidden into walls, test the control using a shorter wire. • Jump the **OL** and **OC** terminals. If the unit switch to high speed, remove the 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 auxiliary control.
9	The blower motor does not work.	• The fuse may be defective. • The motor or capacitor may be defective. NOTE: The unit must be unplugged to perform this test.	• Check if fuse F1 (located on PCB) is blown. In that case, replace fuse F1 as per wiring diagram specifications. • Using a multimeter, check the ohms value on motor connector. For BLUE and BLACK motor wires, the right value is ± 68 ohms. For BLUE and BROWN motor wires, the right value is ± 58 ohms. For BROWN and BLACK motor wires, the right value is ± 126 ohms. If the ohms values are the same, the motor is not defective. Replace the motor capacitor.
10	The integrated control push button does not work.	• The 30-second boot sequence is not completed.	• See Section 5.1 Booting Sequence.



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