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HEALTHY CLIMATE®
HRV & ERV VENTILATORS

**INSTALLATION INSTRUCTIONS & HOMEOWNERS GUIDE FOR HEALTHY CLIMATE®
HEAT RECOVERY VENTILATOR (HRV) & ENERGY RECOVERY VENTILATOR (ERV)**



⚠ WARNING

Risk of property damage, injury or death.

Installation, adjustments, alterations, service and maintenance must be performed by a qualified service technician.

Shipping and Packing List

- Package 1 of 1 contains:**
- 1 - Assembled ventilator
 - 1 - Bag assembly containing:
 - 2 - Drain spout assemblies (HRV units only)
 - 1 - Drain tee (HRV units only)
 - 4 - Hanging straps
 - 1 - Installation manual
 - 1 - Warranty card
 - 1 - Wall-mounted remote control

General Information

These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities who have jurisdiction before installation.

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Terms & Definitions

Defrost Mode (HRV)—to ensure reliable operation during cold weather, the HRV will automatically cycle through its defrost mode as needed.

Dehumidistat—a control device that senses the amount of moisture in the air and activates high-speed ventilation when the air moisture level exceeds the set point.

Reset—whenever resetting of the HRV/ERV is required, simply unplug the power cord for 30 seconds. The Self Test will occur when the HRV/ERV is reconnected.

Self Test—each time the HRV/ERV is powered/energized, the self test function will automatically initiate. During the self test, the HRV/ERV will cycle through all the speeds available (1 - 5), test the damper motor operation, and will default back to the previous operational mode and speed selection. Total self test duration is approximately 90 seconds.

Standby Mode—the HRV/ERV is powered/energized and waiting for fan operation to be initiated. For example, the HRV is set to Continuous Ventilation Operational Mode at speed 0.

Thermistor—the HRV/ERV's temperature sensor which measures electrical resistance in a known manner, as outdoor temperatures fluctuate.

HVI—Home Ventilating Institute.

R2000—Canada Home Building Energy Efficiency Standard.

HRAI—Heating Refrigeration Air Conditioning Institute.

Application

The Healthy Climate® Heat Recovery Ventilator (HRV) and Energy Recovery Ventilator (ERV) are designed to provide fresh air while exhausting an equal amount of stale air. Refer to application map on page 36.

The HRV unit is equipped with an aluminum core. The device uses the stale air that is being exhausted to condition the fresh air as it is being brought in.

The ERV unit is equipped with an enthalpic core. This device is designed for use in warm, humid climates with heavy air conditioning loads. The ERV unit transfers both sensible (temperature) and latent (moisture) heat from incoming fresh air to the stale air as it is being exhausted; thus, reducing the air conditioning load. The ERV unit is not suitable for use in climates where the temperature drops below 25°F (-4°C) for more than 5 days continuously.

Required Tools/Materials

Recommended Materials

low voltage control wire	mastic tape
1/2" I.D. drain hose	caulking material
aluminum foil duct tape	zip ties (duct)
fabric flexible duct - class II rated	zip ties

Balancing Tools - Various Options

Pitot Tube Balancing Kit (Case, 8 ft. vinyl tubing, Pitot tube, magnehelic gauge [0 - 0.25"], & mounting plate) **56N82**

Magnehelic Gauge only (0 - 0.25") **79P83**

Pitot Tube only **72X52**

Digital Manometer with resolution of 0 - 0.25" (must read to 1/100ths of an inch) **86N62**

Door Port Balancing Kit for HRV3-150/200, (Y2140/Y2141) only (kit includes case, magnehelic gauge (0 - 0.50"), 2 connection hoses, 4 rubber fittings & instructions) **Y2206**

Door Port Balancing Kit without magnehelic gauge included. To be used with magnehelic gauge (0 - 0.50") or digital manometer (reading down to 0 with resolution of .001") bought separately. (kit includes 2 connection hoses, 4 rubber fittings and instructions). **Y2207**

Optional Accessories

20 Minute Fan Timer **Y2168**

20/40/60 Minute Fan Timer **Y2169**

Digital Control (wall mounted) **Y2171**

Programmable Control (wall mounted) **Y2172**

Weatherhood Kit (includes 2 hoods, 2 screens, 2 12" sleeves, 2 collars and supply/exhaust labels):

5" (127 mm) **92E66**

6" (152 mm) **95P07**

7" (178 mm) **17N11**

Round Diffusers:

4" (102 mm) **92E54**

5" (127 mm) **92E55**

6" (152 mm) **92E56**

8" (203 mm) **56N81**

Kitchen Grille, 6" x 10"(152mm x 254mm)) (May be required by code for kitchen applications; contains removable grease filter) **18N48**

Back Draft Dampers:

5" (127 mm) **Y3728**

6" (152 mm) **Y3727**

Butterfly Balancing Dampers:

6" (152 mm) **91X09**

7" (178 mm) **field supplied**

Duct Heaters:

6" (152 mm) 1KW **97E73**

6" (152 mm) 2KW **20N16**

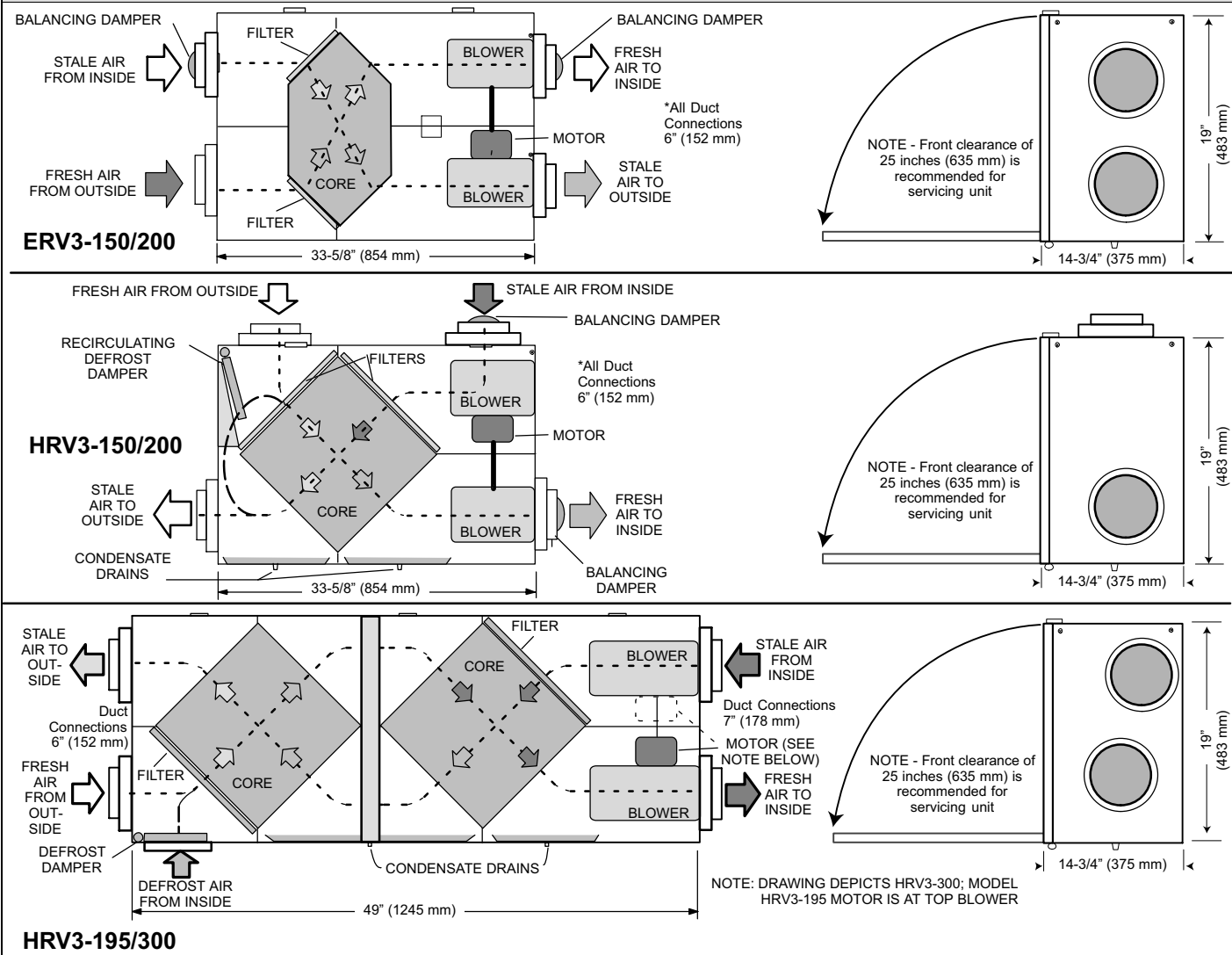
7" (178 mm) 2KW **97E74**

Specifications	Single-Core HRV Units			Dual-Core HRV Units		Single-Core ERV Units	
Model No.	HRV3-095 (Y2142)	HRV3-150 (Y2140)	HRV3-200 (Y2141)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
Energy Star® qualified (Canada Only)	Yes	No	Yes	Yes	Yes	No	No
Cabinet Size (Inches)	16 x 24-1/2 x 18-1/2	14-3/4 x 19 x 33-5/8	14-3/4 x 19 x 33-5/8	14-3/4 x 19 x 49	14-3/4 x 19 x 49	14-3/4 x 19 x 33-5/8	14-3/4 x 19 x 33-5/8
Weight	52	71	71	106	106	75	75
Shipping Weight	56	73	73	108	108	77	77
in. w.g. (Pa)	High Speed (HVI Certified)						
0.1 (25)	76 (36)	144 (68)	207 (97)	216 (101)	265 (125)	151 (71)	180 (85)
0.2 (50)	73 (34)	134 (63)	200 (94)	195 (92)	260 (122)	141 (67)	169 (79)
0.3 (75)	70 (33)	125 (59)	184 (86)	181 (85)	250 (118)	132 (62)	157 (74)
0.4 (100)	66 (31)	113 (53)	171 (80)	158 (74)	235 (110)	124 (59)	146 (69)
0.5 (125)	60 (28)	92 (43)	152 (71)	144 (68)	220 (103)	107 (50)	132 (62)
0.6 (150)		73 (34)	130 (61)	125 (59)	203 (95)	98 (46)	118 (55)
0.7 (175)		59 (28)	116 (55)	107 (50)	186 (87)	81 (38)	101 (47)
0.8 (200)				72 (34)	167 (78)	60 (28)	82 (39)
Sensible Effectiveness @32°F (0°C)	@ 60 CFM (28 L/s) 88%	@ 64 CFM (30 L/s) 73%	@ 66 CFM (31 L/s) 74%	@ 114 CFM (54 L/s) 86%	@ 114 CFM (54 L/s) 90%	@ 63 CFM (30 L/s) 81%	@ 116 CFM (55 L/s) 76%
Sensible Efficiency @32°F (0°C)	@ 60 CFM (28 L/s) 75%	@ 64 CFM (30 L/s) 64%	@ 66 CFM (31 L/s) 64%	@ 114 CFM (54 L/s) 78%	@ 114 CFM (54 L/s) 79%	@ 63 CFM (30 L/s) 69%	@ 116 CFM (55 L/s) 69%
Sensible Efficiency @ -13°F (-25°C)	@ 61 CFM (29 L/s) 68%	@ 74 CFM (35 L/s) 66%	@ 109CFM (51 L/s) 62%	@ 112 CFM (53 L/s) 72%	@ 125 CFM (59 L/s) 75%	N/A	N/A
Latent Efficiency 95°F (35°C)	N/A	N/A	N/A	N/A	N/A	@ 65 CFM (30 L/s) 37%	@ 117 CFM (55 L/s) 41%
Total Efficiency 95°F (35°C)	N/A	N/A	N/A	N/A	N/A	@ 65 CFM (30 L/s) 47%	@ 117 CFM (55 L/s) 50%
Number of speeds available with included wall control	2	2	2	2	2	1	1
Number of speeds available with optional wall control	5	5	5	5	5	5	5
Ventilator Type	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Energy Recovery	Energy Recovery
Heat/Energy Recovery Core	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Enthalpic	Enthalpic
Number of HRV/ERV Cores	1	1	1	2	2	1	1
Defrost Type	Recirculating	Recirculating	Recirculating	Damper	Damper	None	None
Door Port Balancing	No	Yes	Yes	No	No	No	No
Balancing Damper in Supply & Exhaust Collar	No	Yes	Yes	No	No	Yes	Yes
Number of Ports	4	4	4	5	5	4	4
Pre-Filters (Foam) Supply & Exhaust	Yes	Yes	Yes	Yes	Yes	Yes	Yes
H/C HRV Wall Control- on/off, dehumidistat, Service Indicator (Y2166)	Yes	Yes	Yes	Yes	Yes	N/A	N/A
H/C ERV Wall Control- on/off, Service Indicator (Y2165)	N/A	N/A	N/A	N/A	N/A	Yes	Yes
Electrical Characteristics	120 Volts, 60 Hertz, 1 phase						
Fan HP	1/20	1/20	1/10	1/10	1/4	1/20	1/10
Motor Type	PSC	PSC	PSC	PSC	PSC	PSC	PSC
Fan Watts - High Speed @ 0.3 in. w.g.	150	117	164	173	333	173	182
Fan Watts - Low Speed @ 0.3 in. w.g.	60	84	87	100	150	63	70
Amp Rating	0.9	1.4	1.4	1.5	2.9	1.4	1.4
Condensate Drain Connections: Spouts: qty. 2 (1/2" o.d.) Drain Tee: qty. 1 (1/2" o.d.)	Yes	Yes	Yes	Yes	Yes	N/A	N/A

table continued on next page

Specifications		Single-Core HRV Units			Dual-Core HRV Units		Single-Core ERV Units	
Model No.		HRV3-095 (Y2142)	HRV3-150 (Y2140)	HRV3-200 (Y2141)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
OPTIONAL FAN CURVES SPEEDS (FACTORY TESTED)								
Speed 4-med high								
Speed 4-med high	in. w.g. (Pa)	CFM (L/s)	CFM (L/s)	CFM (L/s)	CFM (L/s)	CFM (L/s)	CFM (L/s)	CFM (L/s)
	0.1 (25)	70 (33)	116 (55)	170 (80)	167 (78)	213 (100)	120 (56)	151 (71)
	0.2 (50)	65 (31)	108 (51)	163 (77)	159 (75)	208 (98)	111 (52)	147 (69)
	0.3 (75)	50 (24)	102 (48)	153 (72)	150 (71)	203 (95)	103 (48)	129 (61)
	0.4 (100)	31 (15)	94 (44)	143 (67)	140 (66)	197 (93)	92 (43)	118 (55)
	0.5 (125)		83 (39)	130 (61)	124 (58)	188 (88)	80 (38)	104 (49)
	0.6 (150)		69 (32)	112 (53)	110 (52)	179 (84)	64 (30)	89 (42)
	0.7 (175)			90 (42)	93 (44)	162 (76)	43 (20)	63 (30)
	0.8 (200)					147 (69)		
Speed 3-med								
Speed 3-Med	0.1 (25)	65 (31)	91 (43)	143 (67)	142 (67)	185 (87)	97 (46)	133 (63)
	0.2 (50)	60 (28)	86 (40)	136 (64)	136 (64)	184 (86)	87 (41)	130 (61)
	0.3 (75)	48 (23)	80 (38)	128 (60)	127 (60)	180 (85)	81 (38)	124 (58)
	0.4 (100)	30 (14)	72 (34)	112 (53)	118 (55)	175 (82)	72 (34)	114 (54)
	0.5 (125)		61 (29)	103 (48)	103 (48)	169 (79)	61 (29)	104 (49)
	0.6 (150)		50 (24)	89 (42)	92 (43)	159 (75)	53 (25)	94 (44)
	0.7 (175)			72 (34)	72 (34)	146 (69)		80 (38)
	0.8 (200)					117 (55)		
Speed 2-med low								
Speed 2- Med Low	0.1 (25)	62 (29)	71 (33)	114 (54)	115 (54)	172 (81)	73 (34)	112 (53)
	0.2 (50)	54 (25)	65 (31)	108 (51)	107 (50)	168 (79)	67 (31)	107 (50)
	0.3 (75)	42 (20)	56 (26)	99 (47)	100 (47)	162 (76)	59 (28)	101 (47)
	0.4 (100)	26 (12)	50 (24)	91 (43)	90 (42)	159 (75)	51 (24)	96 (45)
	0.5 (125)		39 (18)	78 (37)	81 (38)	151 (71)	45 (21)	88 (41)
	0.6 (150)			66 (31)	66 (31)	146 (69)		77 (36)
	0.7 (175)					135 (63)		60 (28)
	0.8 (200)					109 (51)		
Speed 1-low								
Speed 1 - Low	0.1 (25)	51 (24)	53 (25)	88 (41)	88 (41)	151 (71)	53 (25)	88 (41)
	0.2 (50)	45 (21)	43 (20)	80 (38)	80 (38)	144 (68)	44 (21)	85 (40)
	0.3 (75)	33 (16)	36 (17)	73 (34)	73 (34)	138 (65)	38 (18)	80 (38)
	0.4 (100)	18 (8)		63 (30)	63 (30)	131 (62)	32 (15)	77 (36)
	0.5 (125)			54 (25)	56 (26)	122 (57)		67 (31)
	0.6 (150)				43 (20)	109 (51)		
	0.7 (175)					81 (38)		
	0.8 (200)							
OPTIONAL ACCESSORIES-MUST BE ORDERED EXTRA								
Backdraft Damper 5"		Y3728	N/A	N/A	N/A	N/A	N/A	N/A
Backdraft Damper 6"		N/A	Y3727	Y3727	Y3727	Y3727	Y3727	Y3727
Butterfly Damper, 6"		91X09	Included in the unit		N/A	N/A	Included in the unit	
Butterfly Damper, 7"		N/A	N/A	N/A	Field Supplied	Field Supplied	N/A	N/A
Insulated Flexible Ducting: (Qty Req'd) Diameter in inches		(2) 5	(2) 6	(2) 6	(2) 6	(2) 6	(2) 6	(2) 6
COMMON ACCESSORIES - AS REQUIRED, BASED ON USER APPLICATION								
Door Port Balancing Kit		Y2206						
Door Port Bal. Kit w/o Gauge		Y2207						
Digital Handheld Manometer		86N62						
Magnehelic Gauge only (0-0.25")		79P83						
Pitot Tube Balancing Kit		56N82						
Pitot Tube only		72X52						

Ventilator Dimensions and Flow Diagrams



Defrost Cycle (HRV)

The HRV has an electronically controlled defrost (Recirculating or Damper type) mechanism. The defrost cycle is activated when the outdoor temperature drops below 27°F (-3°C). There are three levels of defrost mode based on the outdoor temperature. Incoming fresh air is measured to set the defrost times and the run times while in the defrost mode. The three defrost settings are:

- At 27°F (-3°C) HRV runs in defrost for 3 minutes and runs in ventilation for 25 minutes
- At -4°F (-20°C) HRV runs in defrost for 4.5 minutes and runs in ventilation for 17 minutes
- At -31°F (-35°C) HRV runs in defrost for 7 minutes and runs in ventilation for 15 minutes

No remote device can override this defrost mode or selected speed until the cycle is complete. After the cycle is completed the HRV defaults to previous settings. If the cycle is completed and the thermistor continues to measure defrost temperature the defrost cycle is repeated.

ERV's have no defrost cycle and are not recommended where outdoor temperatures fall below 25°F (-4°C) continuously for more than 5 days.

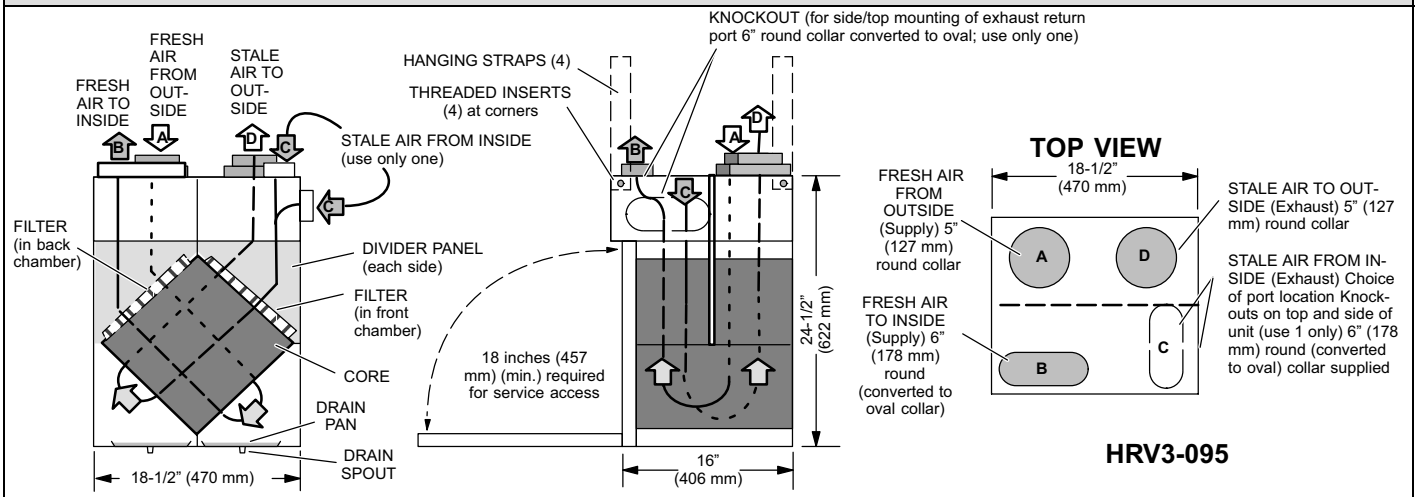
Recirculating Damper Defrost - 4 Port Models (HRV3-095/150/200)

During defrost a motor driven damper door mechanism closes off the supply air from outside allowing exhaust air to recirculate through the unit's core. During defrost cycle no ventilation is occurring. After the defrost period, the damper operates in the opposite direction to reopen the fresh air port. Defrost cycle repeats until the temperature rises above 27°F (-3°C).

Damper Defrost - 5 port Models (HRV3-195/300)

During defrost a motor driven damper door mechanism closes off the supply air from outside allowing a fifth port to open enabling warm air to be drawn in from around the unit. During defrost cycle stale air exhaust is still occurring. After the defrost period, the damper operates in the opposite direction to reopen the fresh air port. Defrost cycle repeats until the temperature rises above 27°F (-3°C). (The defrost port can also be ducted to another location.)

HRV3-095 Port Configuration & Airflow



Port Specifications

The HRV3-095 Heat Recovery Ventilator (HRV) has been designed to allow the installer to choose between two possible positions on the cabinet for the indoor exhaust (stale air from inside) port. The same specifications apply to both HRV3-095 unit setups, regardless of which port position is selected.

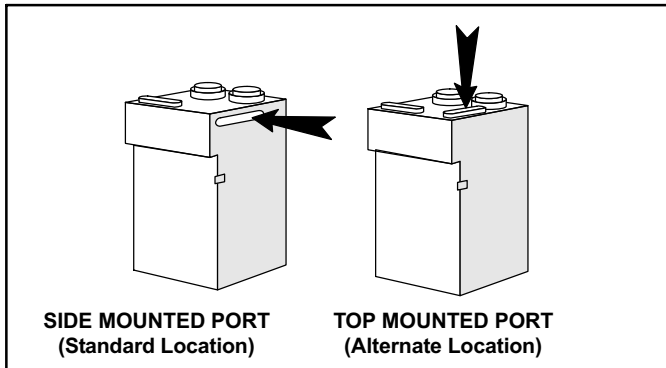


Figure 1. Standard & Alternate Port Locations

Variable Port Location

The stale air from inside return port collar is not factory installed. Installer may choose either side-mounted or alternate top-mounted port by simply removing one of the two knock-out plates and attaching a port collar (supplied). To remove knock-out plate, insert a utility knife into the knock-out slits and trace them completely to puncture protective film underneath. Then, cut the solid tabs between the slits, using tin snips or side cutters, and remove the knock-out plate. If any protective film still blocks the opening, remove it now.

In order to make the HRV3-095 unit as space efficient as possible, the indoor supply and return ports are converted from round to oval shape. Circumference of the port remains the same. Simply bend a standard duct fitting to the correct shape, and attach to the oval port using the same method as for a round port.

HRV3-095 Air Flow Direction

The top half of the unit is divided front to back. This unique configuration allows the air to actually travel through the core twice, making the HRV3-095 unit almost as efficient as a double core unit.

Stale air enters the front right side port. The air will pass down the front half of the core, then up the back half of the core and out the right rear port.

Fresh outdoor air will enter the left rear port and pass down the back half of the core. It will then pass up the front half of the core, and out the left front port.

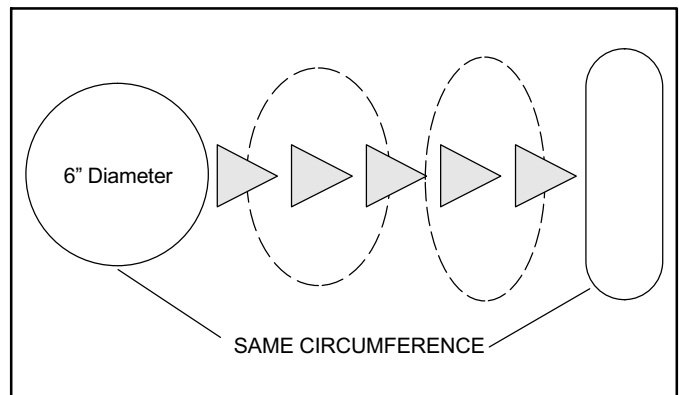


Figure 2. Shaping Ducting to fit Oval Indoor Supply Port

Requirements

Connecting appliances to the HRV/ERV unit

The following appliances should not be connected to the HRV/ERV unit:

- clothes dryer
- range top
- stove top fan
- central vacuum system

NOTE - Failure to follow this instruction will void the HRV/ERV unit warranty.

DANGER

Risk of Carbon Monoxide Poisoning and/or Explosion.

Can cause injury or death.

Combustion and flue gases from heating appliances must never be allowed to enter living spaces.

HRV/ERV unit must be properly balanced (see page 24 or 26) to prevent negative pressure in structure. Negative pressure can cause back-drafting of combustion gases in other household appliances such as Gas Furnaces, Oil Furnaces, Hot Water Heaters, Wood Stoves, Fireplaces, etc.

(5-Port HRV models only) Defrost cycles will cause negative pressure in equipment room. Install ductwork and route to areas that do not contain appliances with vented combusted gases.

Never connect a return or supply duct to other heating units such as fireplaces, wood stoves.

CAUTION

Potential equipment malfunction or damage.

May require repairs and/or void warranty.

Do not interconnect HRV/ERV to other appliances such as Stove Vents, Clothes Dryer Vents, Central Vacuum Systems, Auxiliary Fans, etc.

Controlling the HRV/ERV

Today's modern, air tight homes require fresh outdoor air to maintain a healthy indoor air environment. The amount of ventilation required in a home depends upon:

- the number of occupants and their activity levels.
- the way the home was built,
- personal preferences for fresh air.

The HRV/ERV introduces fresh air to your home while recovering energy from the air it exhausts. Specifically, an HRV/ERV that is properly installed, operated, and maintained will:

- exhaust stale, contaminated air,
- recover the majority of the energy from the exhausted stale air,
- use the recovered energy to preheat or precool outside air that is drawn into the house,
- distribute the fresh air throughout the house.

How much ventilation is needed?

During seasons when windows and doors are closed (winter and summer, if air conditioned) the HRV/ERV should be set to operate continuously on low speed with the option of going to high speed as the need arises. For example, if a large number of people are present in the home, the unit should be switched temporarily to high speed. Conversely, when the home is unoccupied, an intermittent operational mode (e.g. 20 minutes on / 40 minutes off) may be used.

Electronics

All units include a Wall Control. Optional controls can be installed at the time of the installation or at a later date, providing a number of choices for upgrading the basic features of the ventilation system.

Dehumidistat Operation

Often, well insulated and air tight homes will have high indoor humidity levels during the heating season. High humidity levels are apparent from the visible condensation on windows. The amount of condensation on the windows will increase as outdoor temperatures drop.

The HRV/ERV will reduce indoor humidity levels when outdoor air is drier than indoor air. This usually occurs during the heating season when outdoor temperatures are less than 59°F (15°C).

HRV controls include a dehumidistat function which can be set to achieve a dehumidification effect from the HRV during the winter heating season. High-speed ventilation will be initiated upon exceeding the dehumidistat set point. Once the humidity in the house is reduced, the HRV will revert back to its previous setting.

It is recommended that the unit be operated for the first few days without use of the dehumidistat function to observe if a further dehumidification effect will be required. The dehumidistat operates in % of RH (relative humidity) with 80 being high and 20 being low. Set the Dehumidistat to 80% RH to disable. If, after a few days, further dehumidification is required (the house is too humid), set the humidity level to a lower setting. Comfortable humidity levels range between 30 and 50% RH, depending on personal preference.

The dehumidistat should be off for all seasons except the heating season (set to 80% RH).

Synchronizing the Humidity Setting

The optional wall controls (Y2171 and Y2172) have a feature that allows the controls to be synchronized with other humidity instruments in the home. To synchronize:

1. Turn off the control with the ON/OFF button.

2. Simultaneously press and release the ON/OFF button and the 20/40/60 minute high-speed override button.
3. Use the Up/Down arrow buttons to adjust the Humidity Indicator on the display screen to the number of degrees difference between your humidity measuring device. Minus is indicated by flashing.
4. Press the MODE button.

Dehumidistat Disable Feature

The new auto dehumidistat function prevents unwanted

use of the dehumidistat when outdoor temperature exceeds 59°F (15°C).

The dehumidistat function will be disabled if the outdoor temperature exceeds 59°F (15°C) for a 24-hour period.

The dehumidistat function will be re-enabled if the unit is unplugged for 3 minutes or if the outdoor temperature drops below 59°F (15°C) for a 24-hour period. The dehumidistat disable feature is permanently enabled in the ERV unit.

Ventilation Controls (included)

ERV Ventilation Control (Y2165)

Home ventilation provided by the ERV unit is easily controlled with included ERV Ventilation System control.

Key features—

- ON/OFF button with ON LED
- Service indicator
- Connect to 3-wire, 20-gauge (min.), low-voltage wire.

UNIT ON/OFF Control—Press and release the ON/OFF button. “ON” indicator light illuminates; press again to turn OFF.

Service Indicator LED—After 4 months, a “SERVICE” indicator will appear. Refer to Homeowner Maintenance Information, page 35. Upon completion of maintenance, reset service light by pressing and holding RESET button for 5 seconds.

HRV Ventilation Control (Y2166)

Home ventilation provided by the HRV unit is easily controlled with included HRV Ventilation System control.

Key features—

- ON/OFF button with ON LED
- Dehumidistat with LED indications
- Service indicator
- Connect to 3-wire, 20-gauge (min.), low-voltage wire.

UNIT ON/OFF Control—Press and release the ON/OFF button. “ON” indicator light illuminates; press again to turn OFF.

Humidity Control—Unit will produce a dehumidifying effect when outdoor humidity levels are lower than indoor humidity levels. Dehumidistat should not be used when outdoor temperatures are above 59°F (15°C). Press and release DEHUMIDISTAT button until the DEHUMIDISTAT LED is at the desired setting. After seconds, the dehumidistat light will either flash or be on continuously. A flashing light indicates the humidity level is higher than the setting and the unit is operating on high-speed ventilation. A continuous light indicates the humidity level is lower than the setting.

NOTE - Only 1 dehumidistat should be active on a system.

Service Indicator LED—After 4 months, a “SERVICE” indicator will appear. Refer to Homeowner Maintenance Information, page 35. Upon completion of maintenance, reset service light by pressing and holding RESET button for 5 seconds.

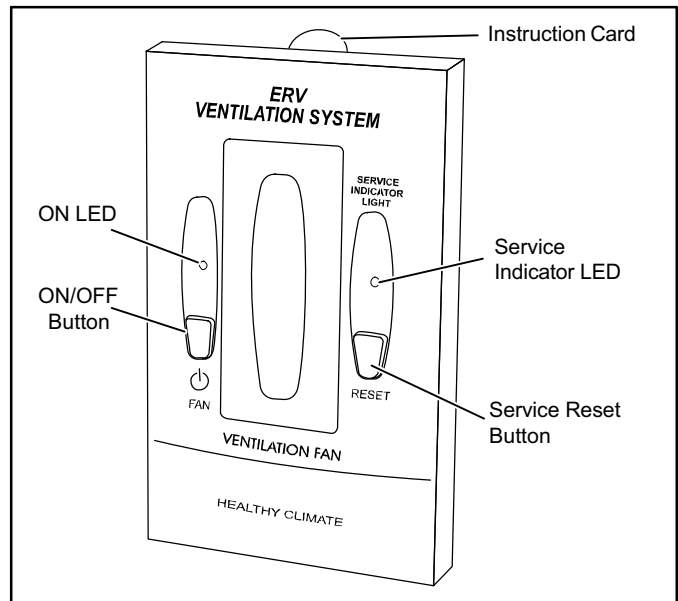


Figure 3. ERV Control (Y2165)

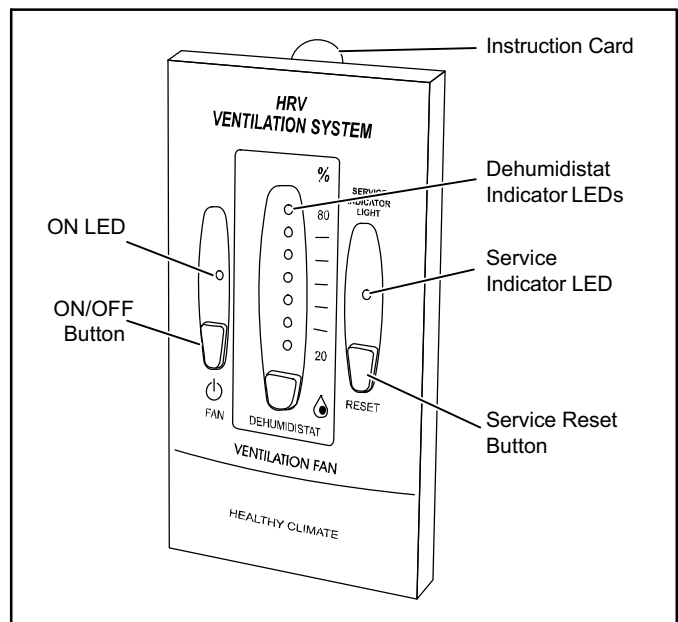


Figure 4. HRV Control (Y2166)

Ventilation Controls (optional)

* **NOTE:** Recirculation is available on HRV3-095, HRV3-150, HRV3-200 only.

4-Mode Descriptions

The two optional digital controls have 4 operational modes and 2 or 5 speeds on each mode to adjust indoor ventilation levels. Experiment with the ventilation levels in the home to evaluate the best amount of ventilation to suit the homeowner needs and preferences.

1. Continuous Ventilation Mode (VENT)

This is the most popular mode since it provides continuous ventilation within the home. You may, for example, select Continuous Ventilation at high speed for high household activity levels, or Continuous Ventilation at low speed for lower activity levels.

2. 20 minutes ON, 40 minutes OFF Mode (20/40)

This mode provides 20 minutes of ventilation each hour. Use this mode in low speed for low household activity levels or if the home is unoccupied.

3. 20 minutes ON, 40 minutes, Recirculation Mode* (20/40/RECIRC)

This mode provides 20 minutes of ventilation each hour and 40 minutes of recirculated air. Use this mode if the HRV is NOT connected to a forced air system (forced air system already circulates household air).

4. Continuous Recirculation Mode* (RECIRC)

This mode recirculates household air (no ventilation). Use this mode if the HRV is NOT connected to a forced air system.

Synchronizing the Humidity Setting on Digital Controls

Either optional control has a feature that allows it to be synchronized with other humidity instruments in the home. To synchronize:

1. Turn off the control by pressing ON/OFF.
2. Simultaneously press and release ON/OFF and the 20/40/60 minute high-speed OVERRIDE buttons.
3. Use the UP/DOWN arrows to adjust the Humidity Indicator on the display screen to the number of degrees difference between your humidity measuring device. Minus is indicated by flashing.
4. Press MODE.

Digital 2-Speed/4-Mode Control (Y2171)

This fully-digital device allows control of when and how much fresh air will enter the home.

Key features—

- 2-speed fan setting (Low-1/High-2)

- Standby setting (Fan speed 0)
- Electronic dehumidistat
- Four selectable modes of operation (see “4-Mode Descriptions” in left column of this page)
 - Continuous Ventilation (VENT)
20 min. On / 40 min. Off (20/40)
 - 20 min. On / 40 min. Recirculate* (20/40/RECIRC)
 - Continuous Recirculation* (RECIRC)
- 20 / 40 / 60 High speed override button
- Instruction card inserted in control
- Easy-to-read LCD screen
- Connect to 3-wire, 20-gauge (min.), low-voltage wire

Setting the Control

1. Press and release MODE until FAN symbol appears on the screen. Press SET.
2. Use UP/DOWN arrows to select desired fan speed (0, 1, 2). Press SET.
3. Use UP/DOWN arrows to select the desired operational mode (VENT, 20/40, 20/40 RECIRC*, RECIRC*, OFF). Press SET.

20/40/60 Minute High Speed Timer Override—This function temporarily initiates high-speed ventilation for 20, 40, or 60 minutes. Press OVERRIDE once for 20, twice for 40, and three times for 60 minutes.

Setting Dehumidistat—Refer to “Dehumidistat Operation” (Page 7) before setting the dehumidistat.

1. Press and release MODE until “RH” and a number flashes. Use UP/DOWN arrows to select desired number. Press MODE to exit.
2. Press MODE again to return to operational features.

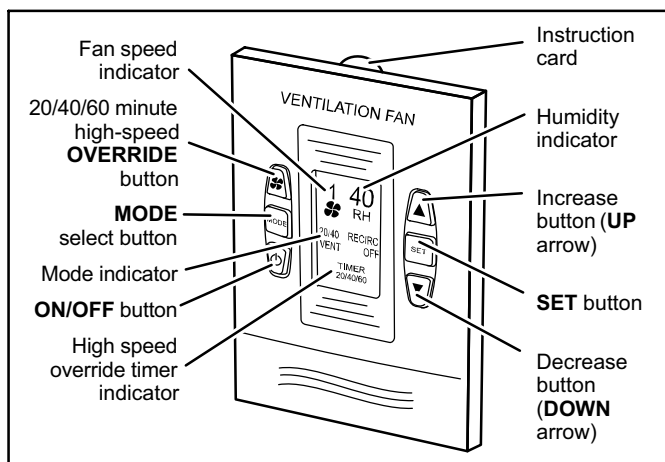


Figure 5. Digital 2-Speed/4-Mode Control (Y2171)

Ventilation Controls (optional) - continued

* NOTE: Recirculation is available on HRV3-095, HRV3-150, HRV3-200 only.

Programmable 5-Speed/4-Mode Control (Y2172)

The optional Programmable 5-Speed/4-Mode Control is fully digital and allows programming that determines when, and how much, fresh air will be entering the home.

Key features—

- 24/7 programmable ventilation
- 4 programmable events per day
- 5-speed fan setting
- Electronic dehumidistat
- Four selectable modes of operation (see “4-Mode Descriptions” on page 9)
 - Continuous Ventilation (VENT)
20 min. On / 40 min. Off (20/40)
 - 20 min. On / 40 min. Recirculate* (20/40/RECIRC)
 - Continuous Recirculation* (RECIRC)
- 20 / 40 / 60 High speed override button
- Service/Maintenance reminder display
- Easy-to-read, backlit LCD screen
- Connect to 3-wire, 20-gauge (min.), low-voltage wire

Setting Date & Time—

1. Press and release MODE until “TIME” and “SET” appear on the screen. Press SET.
2. The day of the week letter flashes. Use UP/DOWN arrows to find the correct day of the week. Press SET.
3. The hour and “AM” or “PM” flashes. Use UP/DOWN arrows to find the correct hour. Press SET.
4. The minutes will flash. Use UP/DOWN arrows to find the correct minute. Press SET to complete entry.

Programming the Control—

1. Press and release MODE until “PROGRAM SET” appears. Press SET.
2. Weekday letters (MTWTF) flash. Press SET.
3. “WAKE” flashes. Press SET.
4. “AM” or “PM” flashes. Use UP/DOWN arrows to find desired time (in 20 minute intervals). Press SET.
5. “FAN” flashes. Use UP/DOWN arrows to find desired fan speed (0 - 5). Press SET.
6. “OFF” flashes. Use UP/DOWN arrows to find desired operation mode (VENT, 20/40, 20/40/RECIRC*. RECIRC*, OFF). Press SET button two times. (Refer to “4-Mode Descriptions” [Page 9] for a description of operational modes.)
7. “LEAVE” flashes. Repeat steps 4 to 6 to program up to 4 events per day.
8. “ARRIVE” flashes. Repeat steps 4 to 6 to program up to 4 events per day.
9. “SLEEP” flashes. Repeat steps 4 to 6 to program up to 4 events per day.
10. “Weekend” letters (SS) flash. Press SET. Repeat step 3 to 9.

Running the Programmed Setting—After the programming has been completed, activate the program:

- Press the MODE button until “PROGRAM” and “RUN” are indicated.

Setting the Dehumidistat—See “Dehumidistat Operation” (Page 7) before setting the dehumidistat.

1. Press and release MODE until “RH” and a number flashes. Use UP/DOWN arrows to find the desired number (RH set point). Press the MODE button to exit.
2. Press MODE again to return to operational features.

! IMPORTANT

Only one main control can be installed on the system.

Manually Setting the Control—

1. Press and release MODE until “MANUAL” and “RUN” flashes. Press SET.
2. Use UP/DOWN arrows to select the desired fan speed (0 - 5) using the UP/DOWN arrows. Press SET.
3. Use UP/DOWN arrows to select the desired operation mode (VENT, 20/40, 20/40 RECIRC*. RECIRC*, OFF) using the UP/DOWN arrows. Press SET.
4. The control will remain in the “MANUAL RUN” position until you change back to “PROGRAM RUN” (refer to “Running the Programmed Setting” above).

20/40/60 Minute high-speed Override Button—This function temporarily initiates high-speed ventilation for 20, 40, or 60 minutes. Press OVERRIDE once for 20, twice for 40, and three times for 60 minutes.

Service Indicator—After 4 months, a “SERVICE” indicator will appear. To reset the service indicator:

- Press and release the UP/DOWN arrows simultaneously. “SERVICE” icons will flash for 5 seconds.
- Press SET within the 5 seconds and the service indicator will reset.

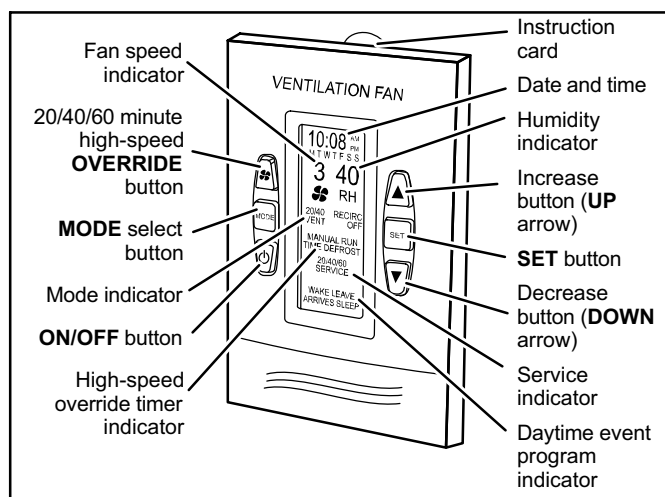


Figure 6. Programmable 5-Speed/4-Mode Control (Y2172)

Optional Timers

The timer will override the Operational Mode (regardless of the setting) and initiate high-speed ventilation. Upon completion of the timer cycle, the HRV/ERV will return to preselected operational mode and speed setting.

20 Minute Timer (Y2168)

Initiates high-speed ventilation for 20 minutes. The 20 minute status light indicate high-speed operation.

Lockout Mode is useful to disable the timer. Set lockout by holding the SELECT button for 5 seconds; similarly, unlock by holding the SELECT button for 5 seconds.

Connect to 3-wire, 20-gauge low-voltage wire and is installed in a standard 2" x 4" electrical box.

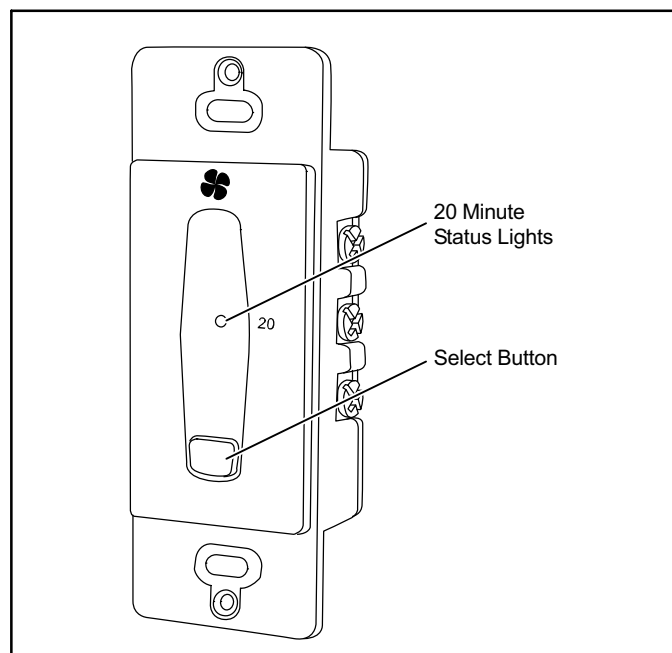


Figure 7. 20 Minute Timer (Y2168)

20/40/60 Minute Timer (Y2169)

Initiates high-speed ventilation for 20, 40, or 60 minutes. The 20/40/60 minute status lights indicate high-speed operation.

Lockout Mode is useful to disable the timer. Set lockout by holding the SELECT button for 5 seconds; similarly, unlock by holding the SELECT button for 5 seconds.

Connect to 3-wire, 20-gauge (min.) low-voltage wire and is installed in a standard 2" x 4" electrical box.

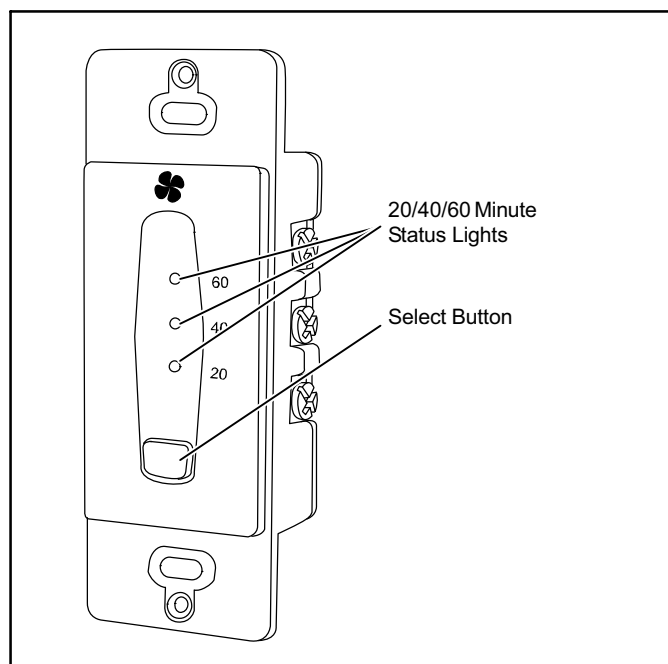


Figure 8. 20/40/60 Minute Timer (Y2169)

Installation Methods

There are three methods of installation for the HRV/ERV:

- Simplified installation (Page 13)
- Partially dedicated installation (Page 14)
- Fully dedicated installation (Page 15)

Sizing the Ductwork

The installer must ensure all ductwork is sized and installed as designed to ensure the system will perform as intended.

The amount of air (cfm) that the HRV/ERV unit will deliver is directly related to the total external static pressure (E.S.P.) of the system. Static pressure is a measure of resistance imposed on the blower by length of ductwork plus the number of fittings used in the ductwork.

Installing Ducting Between the HRV/ERV Unit and Living Areas in the House

A well designed and installed ducting system will allow the HRV/ERV to operate at its maximum efficiency.

All ducts should be kept short and have as few bends or elbows as possible to maximize airflow. Forty-five degree elbows are preferred to 90° elbows. Use “Y” tees instead of straight tees whenever possible.

All duct joints must be fastened with screws, rivets or duct sealant and wrapped with mastic or quality duct tape to prevent leakage. Mastic is preferred but if duct tape is used it should be the aluminum foil type.

Galvanized (rigid) ducting from the HRV/ERV to the living areas in the house is recommended whenever possible although flexible duct can be used in moderation, if necessary.

A short length (approximately 12” [300mm]) of non-metallic flexible insulated duct should be connected between the HRV/ERV and the supply/exhaust duct system to avoid possible noise transfer through the duct system.

All ducts running through attics and unheated spaces must be sealed and insulated to code.

IMPORTANT

Applications such as greenhouses, atriums, swimming pools, saunas, etc. have unique ventilation requirements which should be addressed with an isolated ventilation system.

Installation Methods—Simplified (Return/Return)

Simplified Installation (Return/Return Method)

The simplified method draws stale air from the cold air return duct of the air handler/furnace and introduces an equal amount of fresh air farther downstream into the cold air return (see figures 9 and 10).

Key points

- The HRV/ERV unit must be balanced.
- It is mandatory (to eliminate recirculation) that either the furnace blower run continuously or HRV/ERV unit operation be interlocked with the furnace blower.
- The duct configuration may change depending on the HRV/ERV model. See specifications for your unit.
- Check local codes and authority having jurisdiction for acceptance.

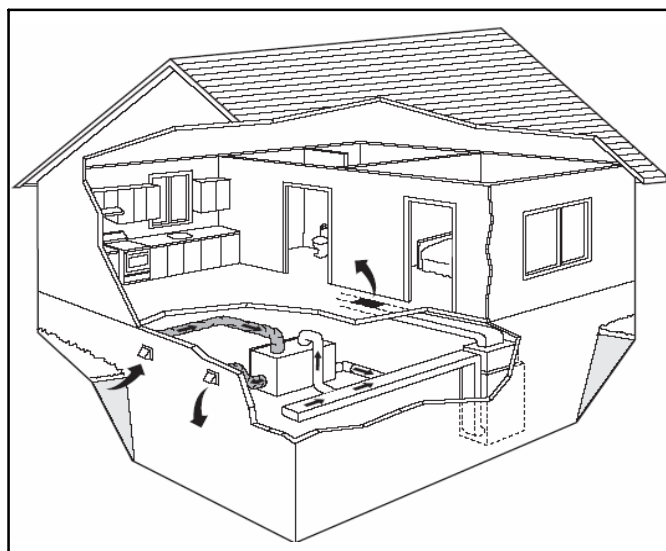


Figure 9. Simplified Installation (Return/Return)

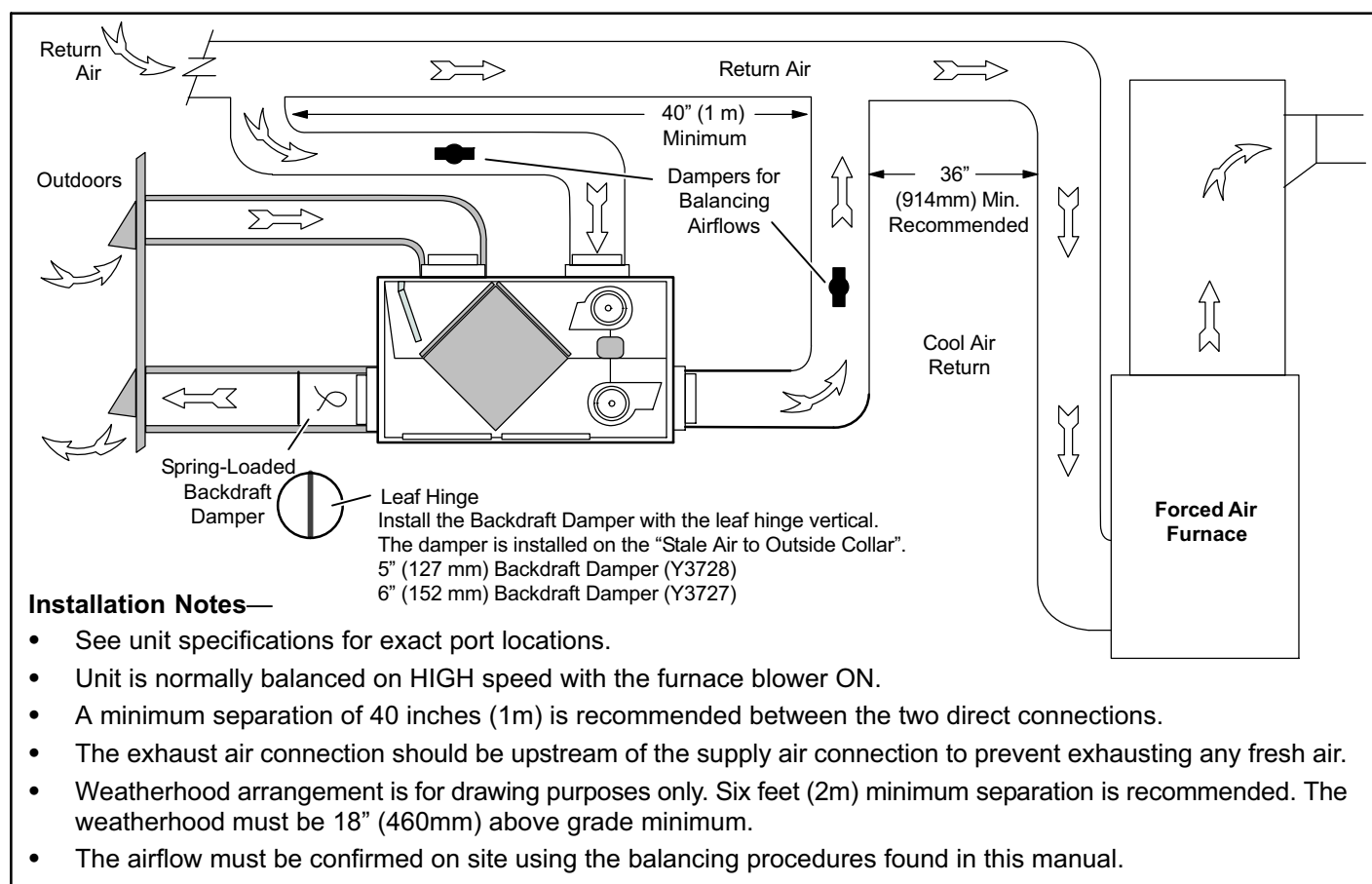


Figure 10. Direct Connection of both HRV/ERV Supply Air Stream & Exhaust Air Stream to Furnace Cold Air Return

Installation Methods—Partially Dedicated

Partially Dedicated Installation

The partially dedicated installation draws stale air from specific points in the house and introduces an equal amount of fresh air into the cold air return (see figures 11 and 12).

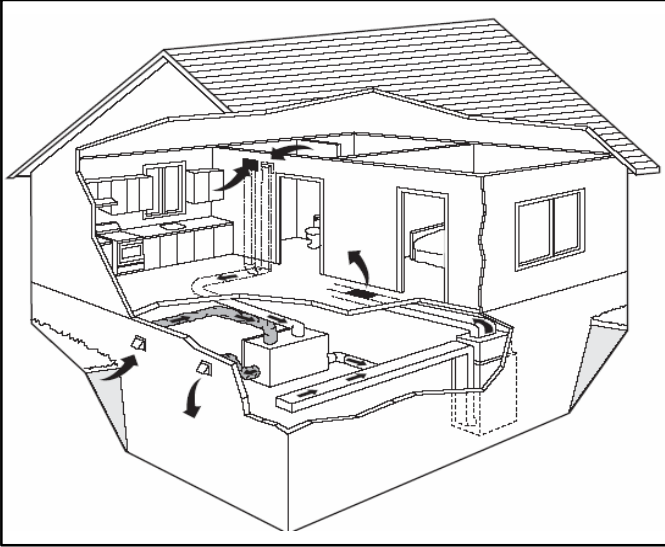


Figure 11. Partially Dedicated System

Stale air ducts should be installed in areas of the home where the poorest indoor air quality exists (bathrooms and kitchen). Each location with a stale air duct should have a timer to initiate high-speed ventilation. (Refer to Optional Timers on page 11.)

The air handler/furnace blower should be running when the HRV is operating to evenly distribute the fresh air throughout the house. (Refer to Interlocking the HRV to an Air Handler/Furnace Blower on page 22.)

Key points

- The HRV/ERV must be balanced.
- It is recommended that the furnace blower run continuously or HRV/ERV operation be interlocked with the furnace blower to evenly distribute the fresh air throughout the house.
- The duct configuration may change depending on the HRV/ERV model. See specifications for your unit.
- Check local codes and authority having jurisdiction for acceptance.

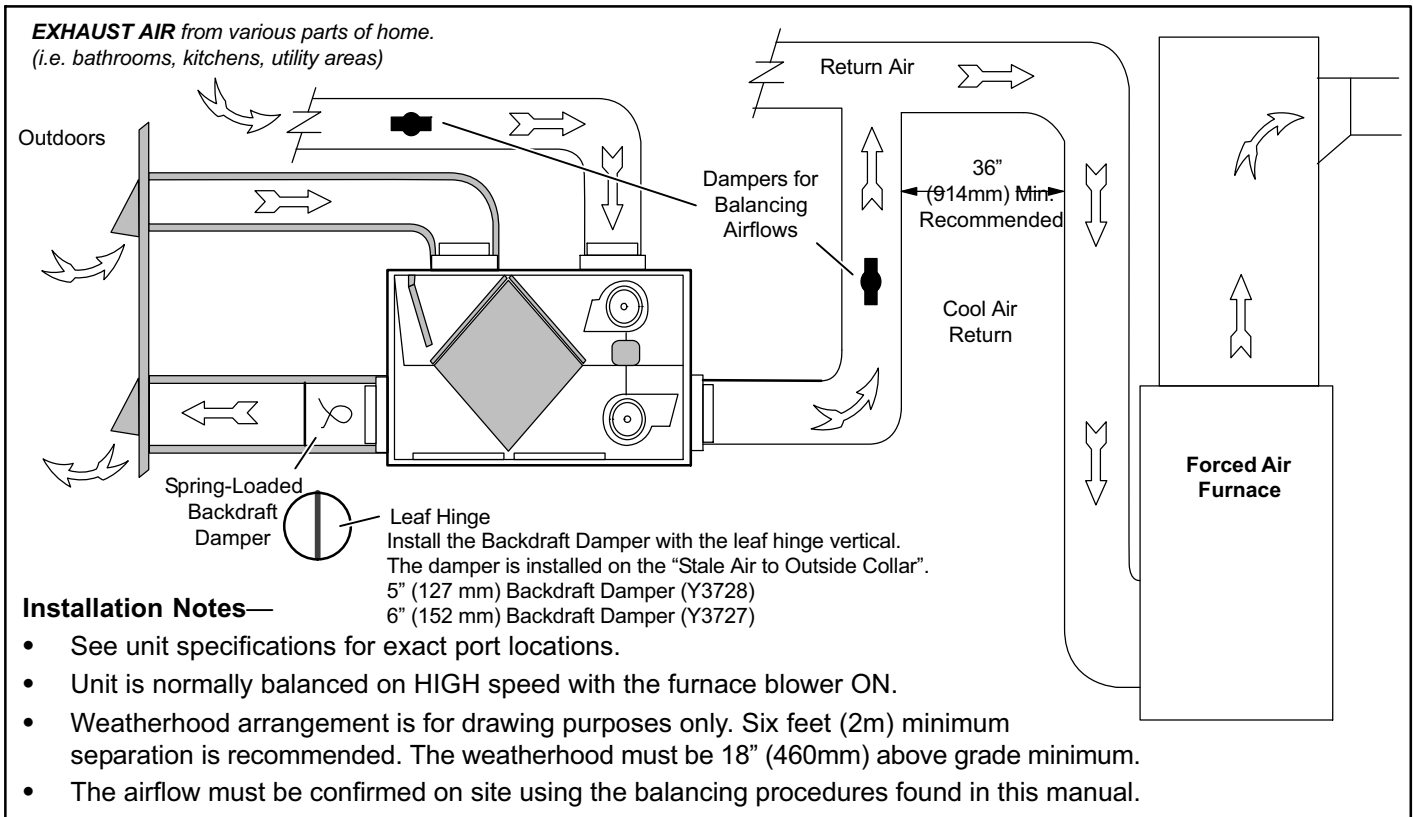


Figure 12. Direct Connection of Supply Air Stream to the Furnace Cold Air Return (Stale air drawn from key areas of home)

Installation Methods—Fully Dedicated

Fully Dedicated Installation

The fully dedicated installation draws stale air from specific points in the house and delivers fresh air to specific locations of the house. This system is not connected to an air handler/furnace (see figures 13 and 14).

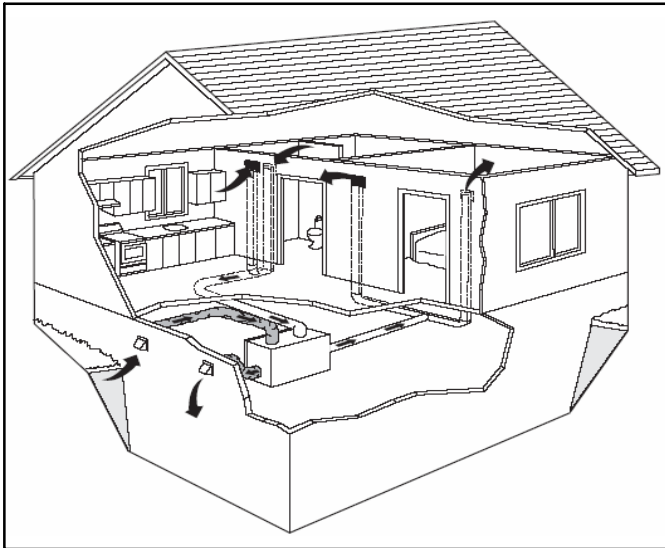


Figure 13. Fully Dedicated System

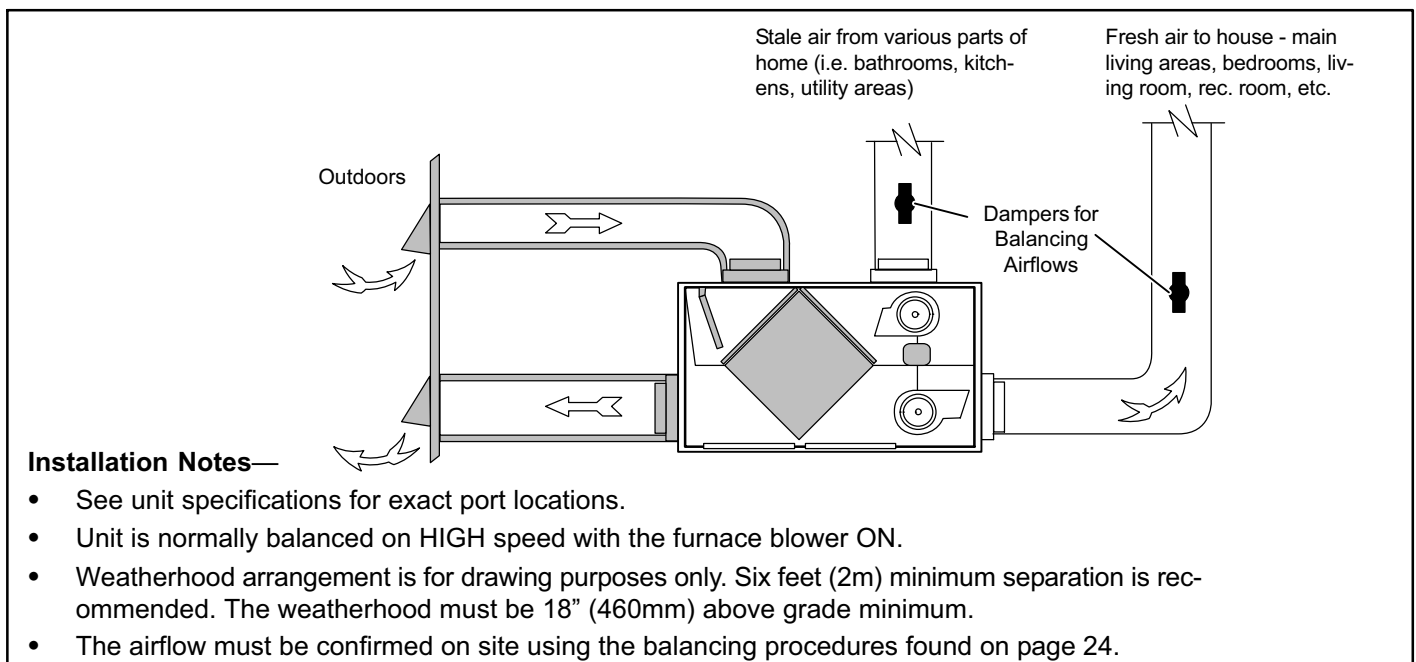
Stale air ducts should be installed in areas of the home where the poorest indoor air quality exists (bathrooms and kitchen). Each location with a stale air duct should have a timer to initiate high-speed ventilation. (Refer to "Optional Timers" on page 11.)

Fresh air ducts should be installed to all bedrooms and living areas, excluding bathrooms, kitchen, and utility areas. Grilles should be located high on a wall or in ceiling locations. Grilles that diffuse the air comfortably are recommended. (Refer to "Grilles" on page 17.) Special care should be taken in locating grilles if the floor is the only option available. Areas such as under baseboard heaters will help to temper the air.

Optional inline duct heaters are available for mounting in the supply air duct work to add heat if required.

Key points

- The HRV/ERV must be balanced.
- The duct configuration may change depending on the HRV/ERV model. See specifications for your unit.
- Check local codes and authority having jurisdiction for acceptance.



Installation Notes—

- See unit specifications for exact port locations.
- Unit is normally balanced on HIGH speed with the furnace blower ON.
- Weatherhood arrangement is for drawing purposes only. Six feet (2m) minimum separation is recommended. The weatherhood must be 18" (460mm) above grade minimum.
- The airflow must be confirmed on site using the balancing procedures found on page 24.

Figure 14. Fully Dedicated System (Not connected to forced air system)

Installing HRV/ERV unit

⚠ WARNING



Electric Shock Hazard.

Can cause injury or death.

Disconnect all remote electrical power supplies before servicing. Unit may have multiple power supplies.

Unit must be connected to a grounded power supply in accordance with national and local codes.

⚠ CAUTION

Potential Water Damage.

Condensation can accumulate and cause water damage to equipment, finished surfaces and structures.

Unit must be installed level to ensure proper condensation drainage.

If possible, avoid installing units above areas or equipment that are sensitive to water damage. Otherwise, the use of an auxiliary drain pan under the installation is recommended.

Connect condensate drains in accordance with national and local codes.

P-Trap and tubing must be located below the HRV door with a minimum of 1/4" per foot downward slope away from unit.

Location Selection

It is recommended that the HRV/ERV unit be located in a conditioned space where it will be possible to conveniently service the unit. Typically the HRV/ERV unit would be located in the mechanical room or an area close to the outside wall where the weather hoods will be mounted. If a basement area is not convenient or does not exist, a utility or laundry room may be used.

Attic installations are not normally recommended for HRV/ERV units due to:

- the complexity of work to install,
- freezing conditions in the attic,
- difficulty of access for service and cleaning.

Sufficient clearance at the front of the access door is required for servicing the air filters and core. A minimum of 25" (635mm) clearance is recommended so the door can be opened. Four PVC reinforced polyester hanging straps are provided for hanging the HRV/ERV unit from the basement floor joists.

Consideration should be given to unforeseen events such as a clogged drain line or water intrusion due to rain. This may cause water to form below the HRV/ERV. The use of an auxiliary drain pan under the installation should be considered.

⚠ CAUTION

Potential poor air quality results.

HRV3-195 & HRV3-300 defrost cycles will draw in air surrounding the defrost intake opening and distribute throughout the home.

Avoid locating defrost intake duct/opening in an area that may draw in undesirable temperatures or poor air quality. This is often achieved by drawing in air from a conditioned living space through a dedicated duct installed on the defrost intake fitting.

Suspending the Unit

The hanging straps should be attached to the unit at the top end corners (mounting screws are already located on the HRV/ERV case). Securely fasten the other end of the straps to the floor joists with wide head nails (not supplied), making sure the UNIT IS LEVEL. The straps are designed to reduce the possibility of noise, resonance or harmonics; therefore using the full length of the strap between the HRV/ERV unit and the floor joists is recommended.

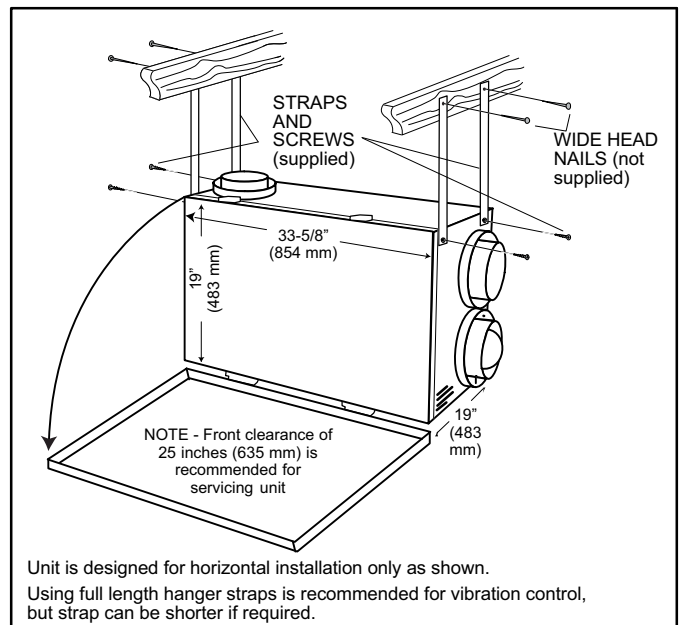


Figure 15. Suspending unit using provided Hanging Straps (HRV unit shown)

Installing Drain Connection (HRV unit only)

During a defrost cycle, the HRV unit may produce some condensation. This water should flow into a nearby drain, or be taken away by a condensate pump.

CAUTION

Potential Freeze Conditions leading to Water Damage.

Condensation can accumulate and cause water damage to equipment, finished surfaces and structures.

Do not install HRV or route condensate drain lines in areas that can be subjected to freezing.

Potential Water Damage.

Unit must be installed level to ensure proper condensation drainage. Avoid installing units above areas or equipment that are sensitive to water damage.

Connect condensate drains in accordance with national and local codes.

P-Trap and tubing must be located below the HRV door with a minimum of 1/4" per foot downward slope away from unit.

The HRV cabinet has prepunched holes for the drain (see figure 16). Insert the drain spout and its O-ring seal through the hole in the drain pan. HAND TIGHTEN the washer and lock nut which hold the drain spout in place.

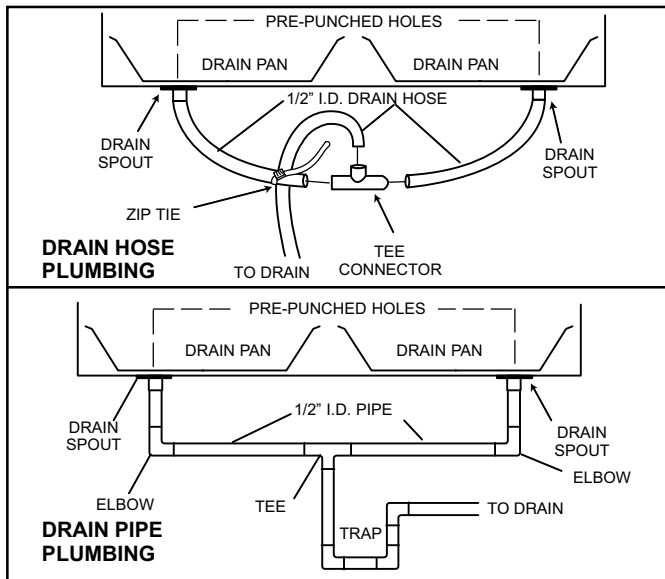


Figure 16. "P" Trap (HRV unit only)

Construct a P-Trap using the plastic tee connector (see Drain Hose Plumbing, figure 16). Cut two lengths of hose and connect each piece to an end of the "T" fitting, then connect the other ends to the two drain spouts. Position

the "T" fitting to point upward, and connect the drain line. Tape or fasten base to avoid any kinks. This creates a "trap" which will hold some condensate and prevent odors from being drawn up the hose and into the fresh air supply of the HRV unit. (Fig. 16 also shows Drain Pipe Plumbing.)

NOTE - Secondary drain pan may be required to protect from condensate leakage, especially when unit is installed above living space.

Installing Grilles

Use adjustable grilles or diffusers to balance the flow rates into and out of various rooms. The grilles should not be adjusted after balancing the unit.

Install grilles or diffusers high on the wall or in the ceiling. Kitchen grilles must never be connected to a range hood. Install grilles at least 4 feet (1.2 m) horizontally away from the stove.

Install field-supplied balancing dampers external to the unit to balance the amount of stale air being exhausted with the amount of fresh air being brought into the house. (Refer to Air Flow Balancing on page 24.)

CAUTION

Potential equipment malfunction or damage.

May require repairs and/or void warranty.

Do not install intake grille within 4 feet (1.2 m) of a kitchen stove or cooking surface that emit cooking vapors.

Kitchen Grille

The kitchen grille includes a removable grease filter. Most building codes require that kitchen grilles be equipped with a washable grease filter.

6" (152 mm) x 10" (254 mm)
18N48

Round Diffuser

The round diffuser is a fully adjustable grille which provides superior, quite air distribution. These diffusers are available:

4" (102 mm) **92E54**
5" (127 mm) **92E55**
6" (152 mm) **92E56**
8" (203 mm) **56N81**

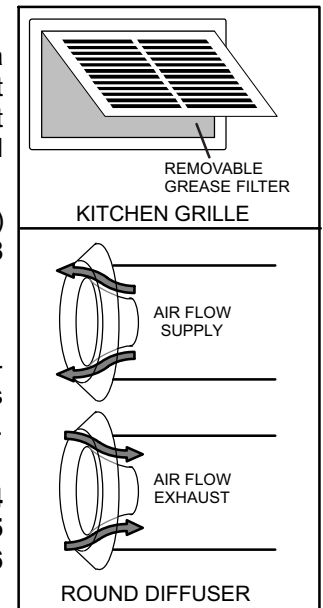


Figure 17. Kitchen Grille & Round Diffuser

Installing Weatherhoods

Installing Ducting from Weatherhoods to the (HRV/ERV) Unit

The inner and outer liners of the flexible insulated duct must be clamped to the sleeve of the weatherhoods (as close to the outside as possible) and the appropriate port on the HRV/ERV. It is very important that the fresh air intake line be given special attention to make sure it is well sealed. A good bead of high quality caulking (preferably acoustical sealant) will seal the inner flexible duct to both the HRV/ERV port and the weatherhood prior to clamping.

To minimize airflow restriction, the flexible insulated duct that connects the two outside weatherhoods to the HRV/ERV unit should be stretched tightly and be as short as possible.

Twisting or folding the duct will severely restrict airflow.

Hard (rigid) ducting which has been sealed and insulated should be used for runs over 10' (3.3m). Refer to local building codes.

Intake Weatherhood Requirements

Observe the following when installing the intake weatherhood:

1. Should be located upstream (if there are prevailing winds)
2. At least 6' (2m) from the exhaust weatherhood
3. At least 6' (2m) away from dryer vents and furnace exhaust (medium or high efficiency furnaces)
4. A minimum of at least 6' (2m) from driveways, oil fill pipes, gas meters, or garbage containers
5. At least 18" (457mm) above the ground, or above the depth of expected snow accumulation
6. At least 3' (1m) from the corner of the building
7. DO NOT locate in a garage, attic or crawl space
8. AFTER installing the weatherhood, its outside perimeter must be sealed with exterior caulking

Exhaust Weatherhood Requirements

Observe the following when installing the exhaust weatherhood:

1. At least 6' (2m) from the ventilation air intake
2. At least 18" (457mm) above ground or above the depth of expected snow accumulation
3. At least 3' (1m) away from the corner of the building
4. Not near a gas meter, electric meter, or a walkway where fog or ice could create a hazard
5. Not into a garage, workshop, or other unheated space
6. AFTER installing the weatherhood, its outside perimeter must be sealed with exterior caulking

Weatherhoods

Fixed covered weatherhoods have a built-in bird screen with a 1/4" (6mm) mesh to prevent foreign objects from entering the ducting labeled SUPPLY and EXHAUST.

5" (127 mm) Part no. **92E66**

6" (152 mm) Part no. **95P07**

7" (203 mm) Part no. **17N11**

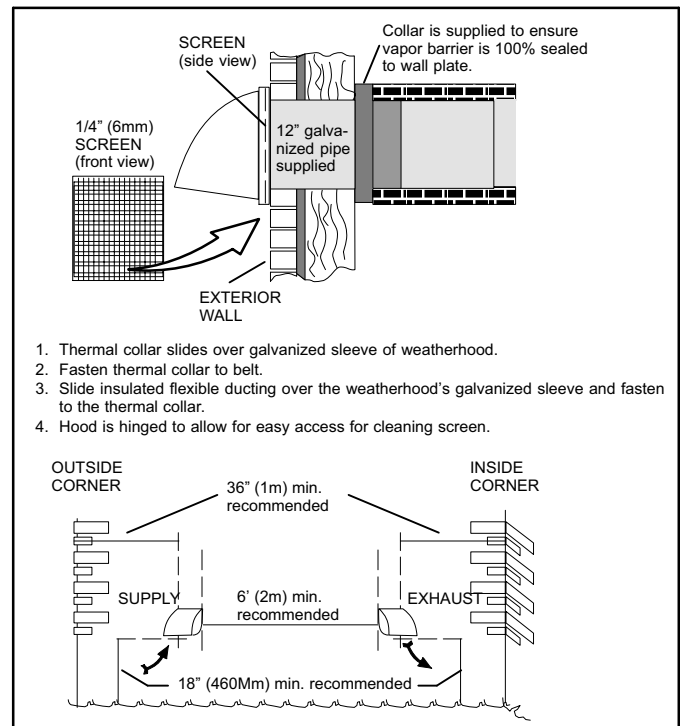


Figure 18. Weatherhood Installation

CAUTION

Potential equipment malfunction or damage.

May require repairs and/or void warranty.

Snow accumulation may block airway of weatherhoods. Install intake and exhaust weatherhoods at least 18 inches (457 mm) above the ground or above the depth of expected snow accumulation.

Install intake and exhaust weatherhoods with at least 6 feet distance between openings to prevent short circuit air routes. Local codes may require a greater distance between openings.

Installing Main Control

The main control may be installed onto a 2" x 4" electrical switch box or it may be surface-mounted onto a wall.

Only one master control should be installed to a ventilation system (Note, the face plate on this illustration may not be exactly the same as yours).

1. Remove the Operating Instructions card from the top of the control (see figure 19, detail A).
2. Separate the faceplate from the back plate by firmly pulling apart (detail B). Be careful not to damage faceplate contact pins.
3. Place the back plate of the control in the desired location on the wall and pencil mark the wall in the center of the wire opening, top screw hole and bottom screw hole (detail C).
4. Remove the back plate and drill a 3/8" opening in the wall to allow for the wire opening and a 1/8" hole for the wall anchors for the top and bottom screw holes (detail D).
5. Pull 3 wires (20 gauge, min.) through the opening in the wall and the wire opening of the back plate (detail C).

6. Connect red, green and yellow to the wiring terminals located on the back plate (detail C).
7. Secure a single wire to the wire retainer located on the back plate (detail C).
8. Attach the back plate to the wall using the 2 supplied screws and anchors.
9. Attach the faceplate to the back plate (detail B). BE CAREFUL to correctly align the faceplate to avoid damaging the faceplate contact pins.
10. Insert the Operating Instructions card into the control (detail A).
11. Connect the 3 wires (20 gauge, min.) to the terminal block located on the ventilator (detail E).

! IMPORTANT

Inspect contact pins for damage or misalignment. Pins must be perpendicular to printed circuit board and evenly spaced for proper alignment to face plate.

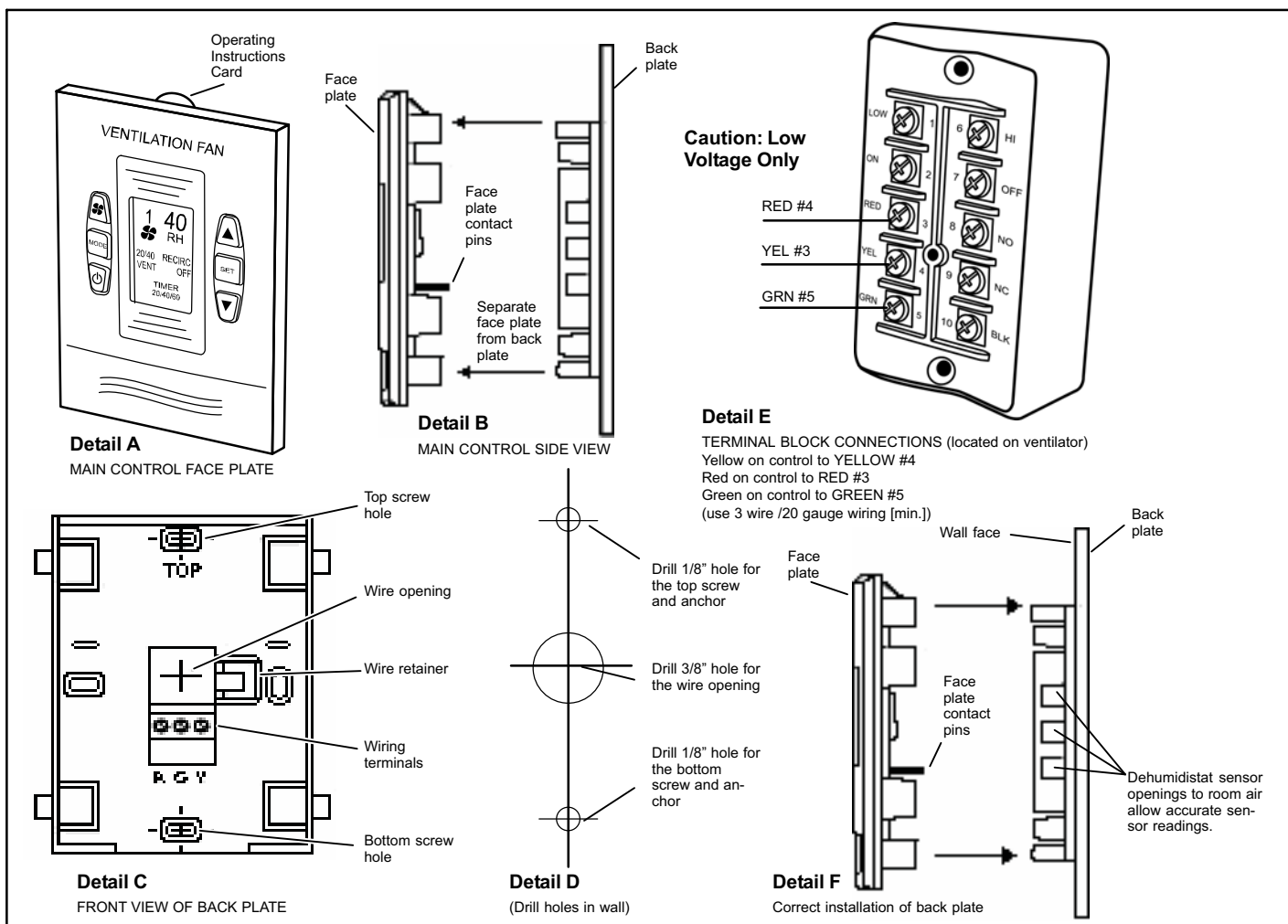


Figure 19. Main Control Installation

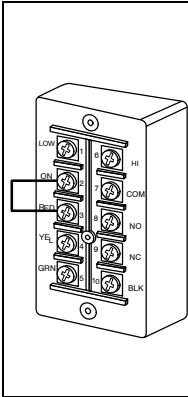
Setting “Standby” when using an Optional Main Control

The HRV/ERV will be “fully-off” when the OFF position is selected on the optional Main Control. Timers and/or other controls will not function when the HRV/ERV is in the OFF position.

The “fully-off” feature can be modified to “standby-off” by adding a jumper on the Terminal Block between 2 (ON) and 3 (RED) (see figure 20).

“Standby” can also be achieved by setting the main control to the ON position and selecting speed 0 (see note). Timers and/or additional controls will initiate high speed ventilation when activated.

NOTE - Speed 0 is not available on all controls.



⚠ CAUTION

Building codes in some areas require “fully-off” functionality. Check with your local building authority before modifying the unit to “standby-off”.

Unintentional operation of the HRV/ERV by the end user may occur if the unit is modified from “fully-off” to “standby-off”.

Figure 20. Terminal Block on HRV/ERV

Operating HRV/ERV without an Optional Main Control & Adding Dry Contact Controls

A Jumper must be in place between 2 (ON) and 3 (RED) on the Terminal Block to activate the HRV/ERV for timers and/or dry contact controls.

Adding Dry Contact Controls (see figure 21):

Low speed

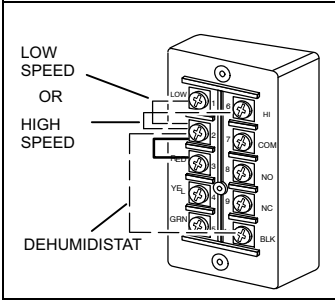
A jumper between 2 (ON) and 1 (LOW) initiates low speed ventilation.

High speed

A jumper between 2 (ON) and 6 (HI) initiates high speed ventilation.

Dehumidistat

A dry contact for a dehumidistat is connected between 2 (ON) and 10 (BLK).



The HRV/ERV must have a jumper in place between 2 (ON) and 3 (RED) on the Terminal Block when installing the unit without an Optional Main Control.

Figure 21. Adding Dry Contact Controls on Terminal Block on HRV/ERV

Installing/Operating Fan Timers

Installing 20 or 20/40/60 minute fan timers

NOTES –

- Timers mount in standard 2" x 4" electrical boxes.
- Wire multiple timers individually back to the unit.
- Use 3 wire 20-gauge (min.) low-voltage wire.

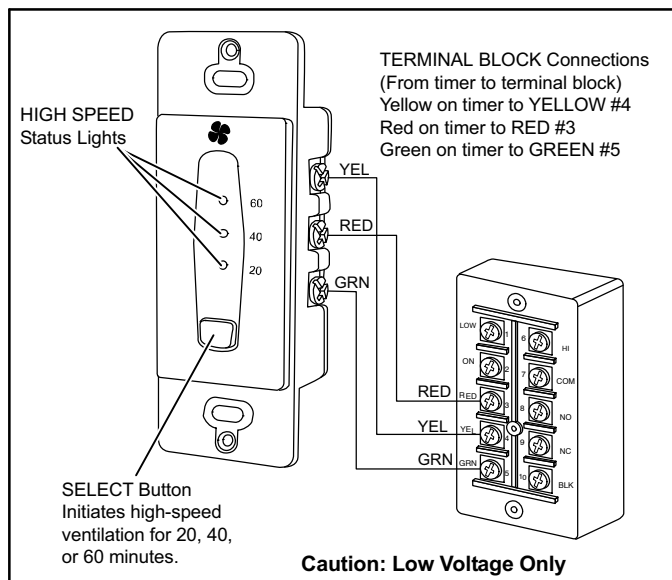


Figure 22. 20 or 20/40/60 Minute Timer Installation

Operating 20 or 20/40/60 minute fan timers

Press and release the select button to activate a 20, 40, or 60 minute high-speed override cycle. The high-speed status light will illuminate and the unit will run on high-speed ventilation for the selected time.

The high-speed status light will dim after 10 seconds of run time.

The high-speed status light will flash during the last 5 minutes of the cycle.

All timers connected to the unit will illuminate for the duration of the override when the select button is pressed.

Lockout mode

The timer can be set to lockout mode (timers disabled) as follows: press and hold SELECT for 5 seconds; then the high-speed status light will flash; then release the button. The timer is now in lockout mode. If SELECT is pressed during lockout mode, the high-speed status light will momentarily illuminate but no override will be initiated.

If lockout mode is initiated when the timer is activated, the timer will continue it's timed sequence but will not allow any further overrides to be initiated. To unlock lockout mode, press and holding SELECT for five seconds; then the high-speed status light will stop flashing; release the button. The timer will now operate normally.

Installing mechanical timers

The mechanical timer is a two-wire "dry contact" timer. A jumper wire must be connected between ON and RED. Connect the 2 timer wires to ON and HI (see figure 23).

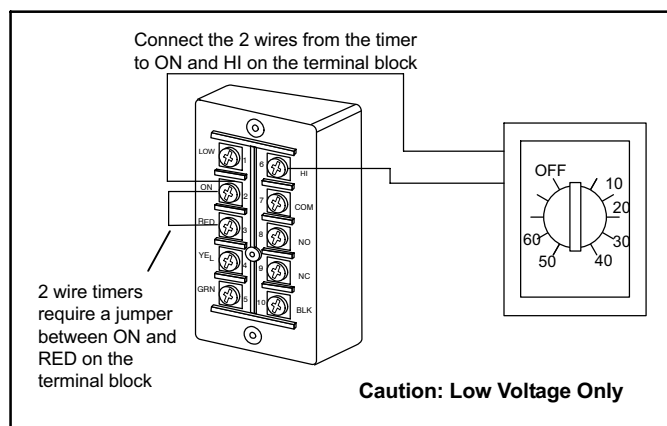


Figure 23. Mechanical Timer Installation

Interlocking the HRV/ERV Blower to Air Handler/Furnace Blower

Connecting the HRV/ERV unit as illustrated will ensure the air handler/furnace blower motor is operating whenever the HRV/ERV blower is ventilating.

The HRV/ERV unit must be interlocked to the furnace/air handler with a simplified (return/return) installation and should be interlocked with a partially dedicated installation (see figure 24).

⚠ CAUTION

Potential equipment malfunction or damage.
May require repairs and/or void warranty.
When interconnecting HRV/ERV ductwork with HVAC duct system, HRV/ERV blower must be interlocked with HVAC blower. System air circulation must not be allowed to backflow through HRV/ERV.

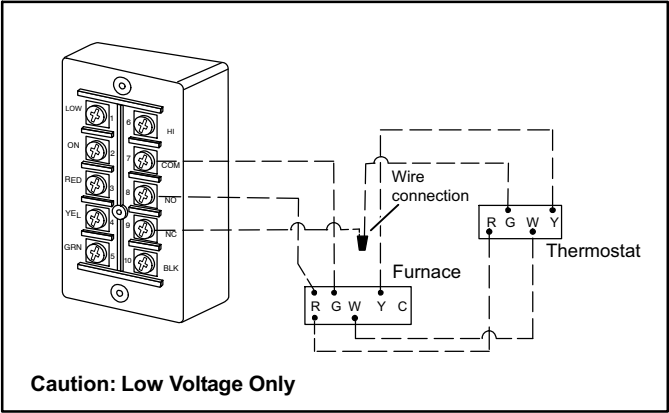


Figure 24. Interlocking HRV/ERV Unit Blower to the Air Handler/Furnace Blower

Electrical Connections

Plug the HRV/ERV directly into a standard designated 120VAC electrical outlet. Use of an extension cord is NOT RECOMMENDED for this appliance.

If further wiring is required, then a licensed electrician

should make all electrical connections. It is recommended that a separate 15 amp/120 volt circuit be used.

Figure 25 (Page 23) shows a typical wiring diagram.

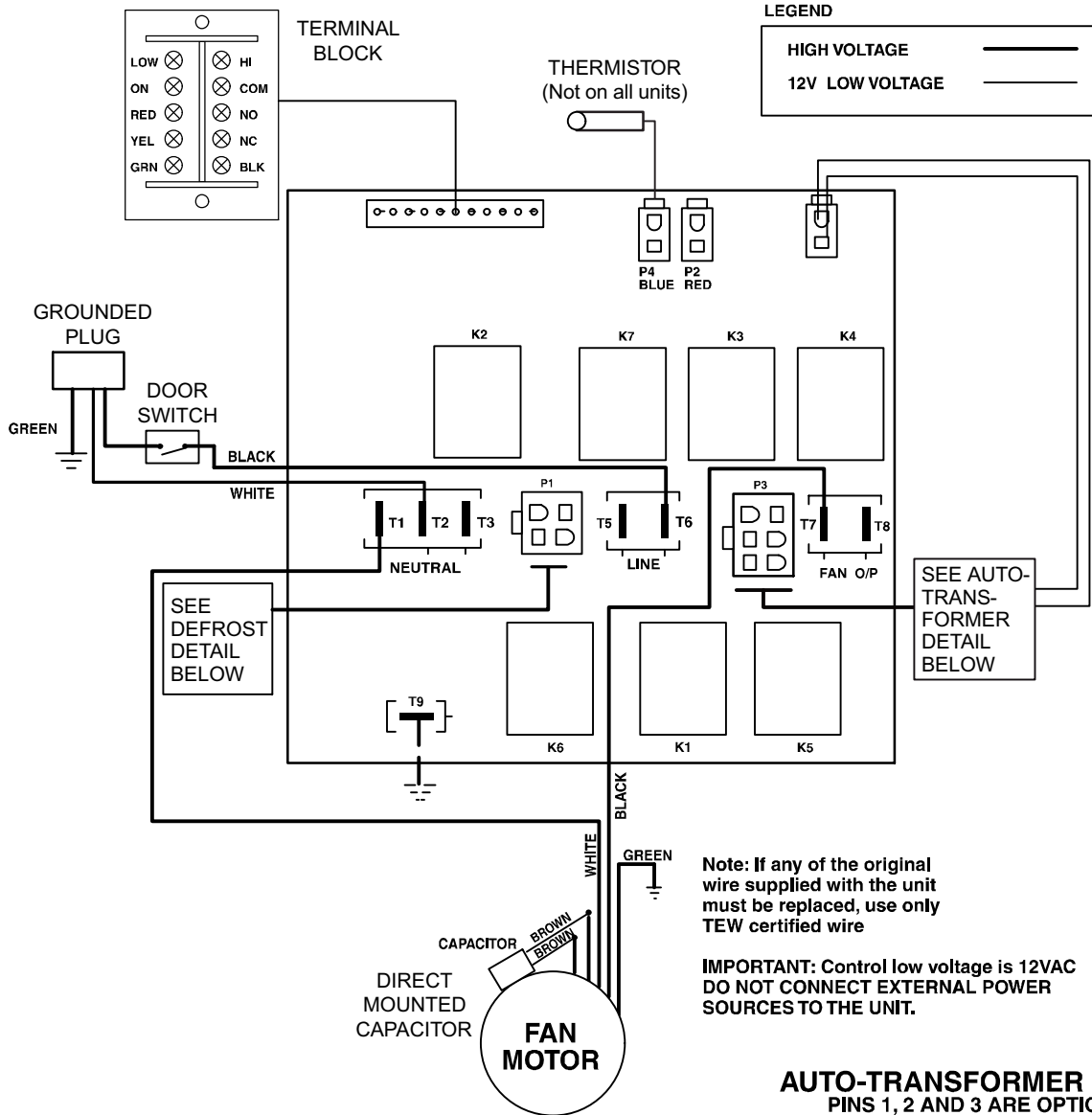
⚠ WARNING

Electric Shock Hazard
Can cause injury or death.

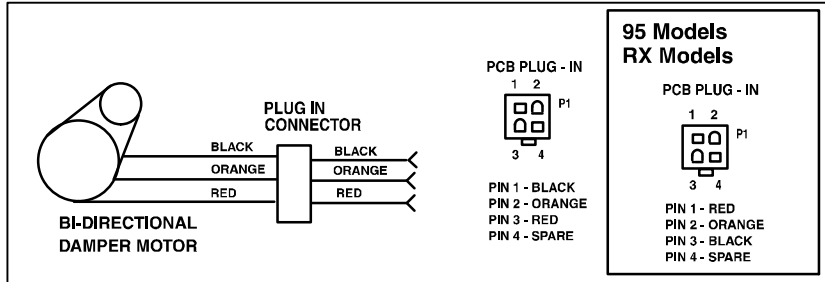
Confirm the polarity of the 120 Volt supply source at the receptacle for the HRV/ERV device. The door safety switch of the HRV/ERV can cause an electrical shock hazard if the polarity is not properly wired. The grounding means of the HRV/ERV device should also be confirmed.

The proper polarity and ground can be checked at the receptacle using a 3-prong plug device called a 'polarity tester'. Another method to check for proper polarity is to use a volt-ohm meter to check for voltage from hot (black) to ground (chassis) at the HRV/ERV.

CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY



DEFROST DETAILS



AUTO-TRANSFORMER DETAIL
 PINS 1, 2 AND 3 ARE OPTIONAL

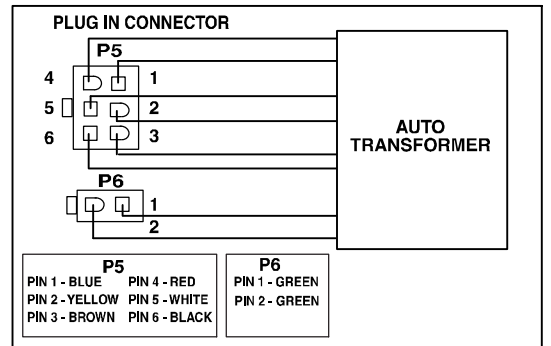


Figure 25. Wiring Diagram

Airflow Balancing Using Pitot Tube

It is necessary to have balanced airflow in HRV/ERV units. The volume of air brought in from the outside must equal the volume of air exhausted by the unit if the airflow is not properly balanced, then:

1. The HRV/ERV unit may not operate at its maximum efficiency.
2. A negative or positive air pressure may occur in the house.
3. The (HRV) unit may not defrost properly.
4. Failure to balance HRV/ERV units properly may void warranty.

DANGER

Risk of Carbon Monoxide Poisoning and/or Explosion.

Can cause injury or death.

Combustion and flue gases from heating appliances must never be allowed to enter living spaces.

HRV/ERV unit must be properly balanced (see page 24 or 26) to prevent negative pressure in structure. Negative pressure can cause back-drafting of combustion gases in other household appliances such as Gas Furnaces, Oil Furnaces, Hot Water Heaters, Wood Stoves, Fireplaces, etc.

(5-Port HRV models only) Defrost cycles will cause negative pressure in equipment room. Install ductwork and route to areas that do not contain appliances with vented combusted gases.

Never connect a return or supply duct to other heating units such as fireplaces, wood stoves.

CAUTION

Potential Condensation Damage.

Condensation can cause damage to building structures.

Ensure proper HRV/ERV balancing. Excessive positive pressure in a home can force warm/moist indoor air through wall insulation towards external walls. In cold weather, this may cause unseen condensation to collect on the interior surfaces of external walls.

Excessive negative pressure may have several undesirable effects. In some geographic locations, soil gases such as methane and radon may be drawn into the home through basement/ground contact areas. In humid geographic areas, it may also cause condensation to form on inside walls.

Read the application warning in Clearances and Requirements section of this manual (see page 6).

Prior to balancing, ensure that:

1. All sealing of the duct system has been completed.
2. All of the HRV/ERV system components are in place and functioning properly.
3. Balancing dampers are fully open.
4. Unit is on HIGH speed.
5. Airflow in branch lines to specific areas of the house should be adjusted first prior to balancing the unit. A smoke pencil used at the grilles is a good indicator of each branch line's relative airflow.
6. Return air handling unit to appropriate fan speed for normal operation.
7. A field-supplied balancing damper for the stale air side is required for system balancing.

Balancing procedure

The following is a method of field balancing an HRV/ERV system using a Pitot tube, which is advantageous in situations when flow stations are not installed in the duct system. Procedure should be performed with the HRV/ERV unit set on high speed.

1. Operate all mechanical systems that have influence on the ventilation system at high speed. These systems include the HRV/ERV unit itself and the air handler/furnace (if applicable). This will provide the maximum pressure that the system will need to overcome, and allow for, an accurate system balance.
2. Drill two small holes in the duct (about 3/16"), one hole 3 feet downstream of any elbows or bends, and another 1 foot upstream of any elbows or bends. These are recommended distances but the actual installation may limit the amount of straight duct.
3. Connect the Pitot tube to a magnehelic gauge or digital manometer (e.g. part no. 86N62) that is capable of reading from 0 to 0.25 in. of water (0-62 Pa), preferably to 3 digits of resolution. The tube coming out of the end of the Pitot is connected to the high-pressure side of the gauge; the tube coming out of the branch of the Pitot is connected to the low-pressure (or reference) side of the gauge.
4. Insert the Pitot tube into the duct, pointing the tip into the airflow.
5. For general balancing, it is sufficient to move the Pitot tube around in the duct to take an average or typical reading. Repeat this procedure in the other (supply or return) duct.
6. Determine which duct has the highest airflow (highest reading on the gauge). Then damper that airflow back to match the lower reading from the other duct. The flow should now be balanced.

Actual airflow can be determined from the gauge reading. The value read on the gauge is called the velocity pressure. The Pitot tube comes with a chart that will give the airflow velocity based on the velocity pressure indicated by the gauge. This velocity will be either feet per minute or meters per second. To determine the actual airflow, multiply the velocity by the cross-sectional area of the duct being measured.

This is an example for determining the airflow in a 6" duct with a Pitot tube reading of 0.025 inches of water. From the chart, this equates to 640 feet per minute.

The 6" duct has a cross-sectional area equal to:

$$[3.14 \times (6"/12)^2]/4 = 0.2 \text{ sq. ft.}$$

The airflow is then 640 (ft./min.) x 0.2 (sq. ft.) = 128 cfm.

The cross sectional area of some common round duct is:

- 5" diameter duct has 0.14 sq. ft. cross-section area
- 6" diameter duct has 0.20 sq. ft. cross-section area
- 7" diameter duct has 0.27 sq. ft. cross-section area

The accuracy of the airflow reading will be affected by how close to any elbows or bends the readings are taken. Increase accuracy by taking an average of multiple readings as outlined in the literature supplied with the Pitot tube.

Installations where the HRV/ERV is ducted directly to the

return of an air handler may require additional dampening on the fresh air to building duct. Figure 26 shows details of the built-in balancing collars supplied on the HRV3-150/200 and ERV3-150/200.

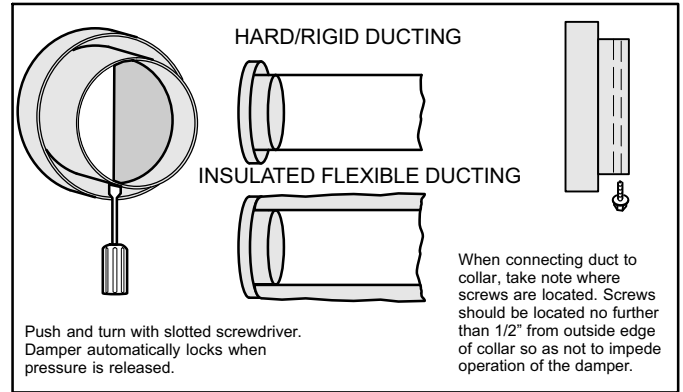


Figure 26. Built-In Balancing Collars (HRV3-150/200 & ERV3-150/200 only)

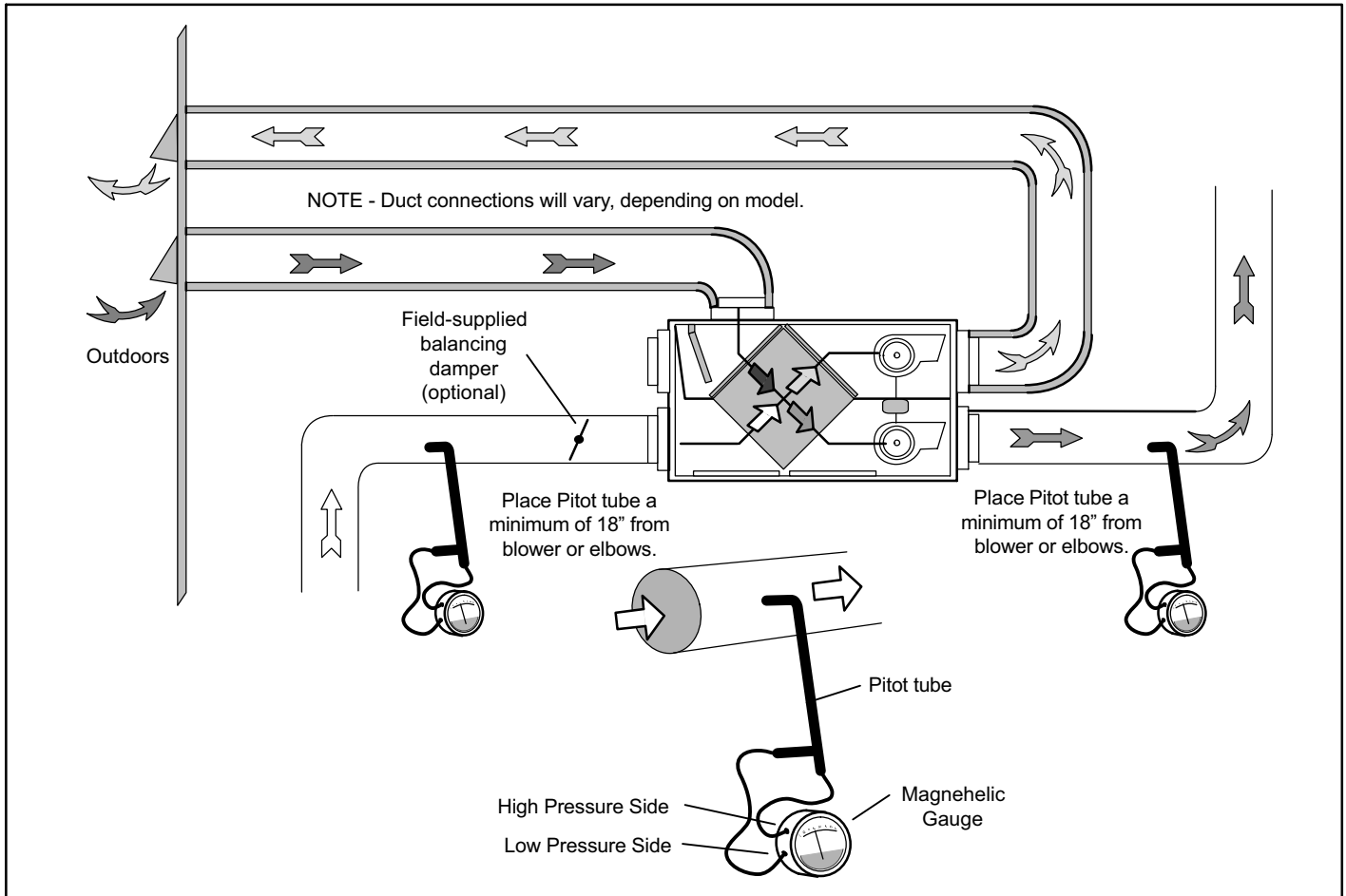


Figure 27. Placement of Pitot Tube in HRV/ERV System

Airflow balancing Using the Door Ports

! IMPORTANT

Door port balancing is only available for models HRV3-150 and HRV3-200.

The model HRV3-150 and HRV3-200 door ports are designed to quickly measure the airflows for balancing. Use the balancing ports shown in figure 28 and the Magnehelic Door Port Balancing Kit (part no. Y2206) which consists of:

- 1 Pressure Gauge
- 2 Connection Hoses
- 4 Rubber Fittings
- Instruction Page

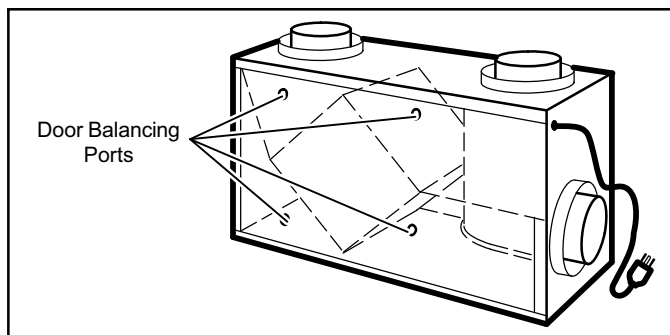


Figure 28. Door Balancing Ports

Normally the HRV would be balanced on high speed. If the HRV is connected to a forced air system, both systems should be set to run at the highest operational speed when balancing is performed.

Use the magnehelic gauge kit for door port balancing.

Balancing Procedure

1. Remove balancing port covers.
2. Insert one end of each connection hose into a rubber fitting. (Use light pressure until fitting is snug).

3. Attach the connection hoses to pressure gauge.
4. Measure Fresh air – connect hoses to door ports (see figure 29); measure fresh air and record reading.

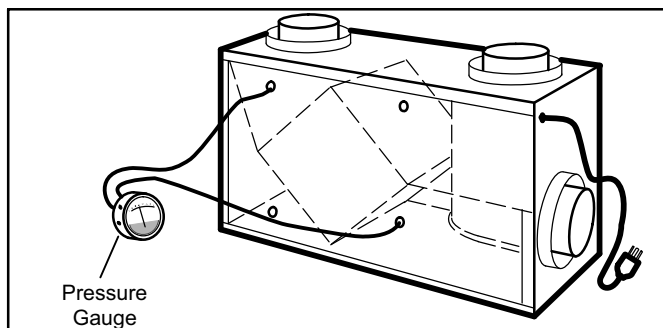


Figure 29. Measuring Fresh Air

5. Measure Stale air – connect hoses to door ports (see figure 30); measure stale air and record reading.

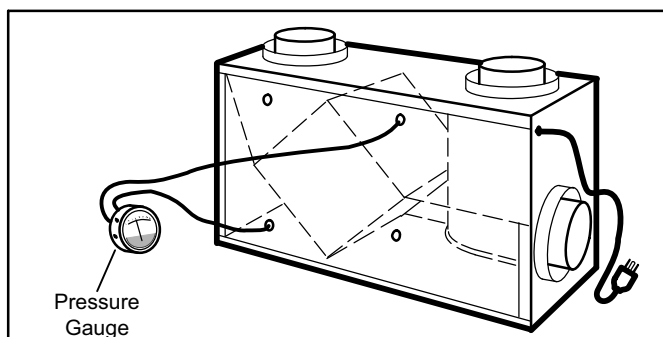


Figure 30. Measuring Stale Air

6. Refer to the table 1 for the conversion of gauge reading to airflow reading.
7. Damper the airflows as required to balance the system. The fresh airflow must equal the stale airflow.
8. Repeat steps 4 to 7 as required to confirm airflows.

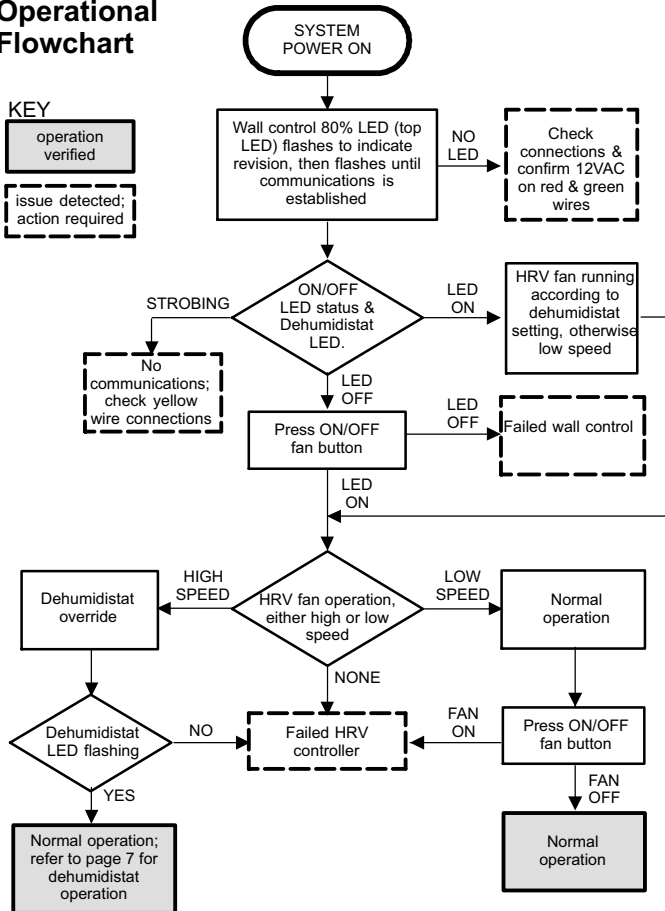
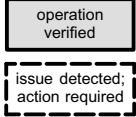
Table 1. Airflow Balancing Reference

Model HRV3- 150				Model HRV3-200			
Reading from manometer		Airflow numbers		Reading from manometer		Airflow numbers	
Water Column (inches)	Pressure (in. w.g.)	Supply (CFM)	Exhaust (CFM)	Water Column (inches)	Pressure (in. w.g.)	Supply (CFM)	Exhaust (CFM)
0.100	24.9	93	80	0.100	24.9	98	91
0.105	26.2	96	83	0.110	27.4	102	96
0.110	27.4	99	86	0.120	29.9	107	101
0.115	28.7	102	89	0.130	32.4	111	107
0.120	29.9	105	92	0.140	34.9	115	112
0.125	31.1	108	96	0.150	37.4	120	117
0.130	32.4	111	99	0.160	39.9	124	122
0.135	33.6	114	102	0.170	42.4	128	127
0.140	34.9	117	105	0.180	44.9	133	132
0.145	36.1	120	108	0.190	47.3	137	137
0.150	37.4	123	111	0.200	49.8	141	142
0.160	39.9	130	117	0.210	52.3	145	147
0.170	42.4	136	123	0.220	54.8	149	152
0.180	44.9	142	129	0.230	57.3	153	156
0.190	47.3	148	135	0.240	59.8	157	161
0.200	49.8	154	141	0.250	62.3	161	166
0.210	52.3	160	147	0.260	64.8	165	171
0.220	54.8	166	154	0.270	67.3	169	175
0.230	57.3	172	160	0.280	69.8	173	180
0.240	59.8	178	166	0.290	72.3	177	184
0.250	62.3	184	172	0.300	74.8	181	189
0.260	64.8	191	178	0.310	77.2	182	193
0.270	67.3	197	184	0.320	79.7	189	198
0.280	69.8	203	190	0.330	82.2	192	202
0.290	72.3	209	196	0.340	84.7	196	207
0.300	74.8	215	202	0.350	87.2	200	211
0.310	77.2	221	209	0.360	89.7	203	215

Sequence of Operation

HRV Operational Flowchart

KEY

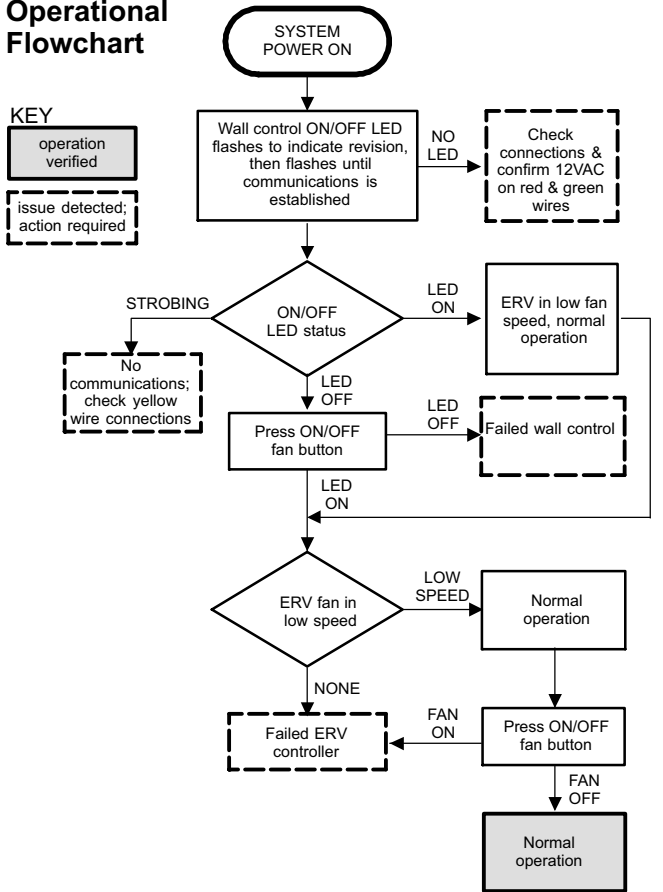
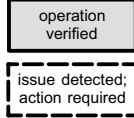


NOTES:

- 1) Upon activation of a button, the corresponding LED illuminates bright for 5 seconds; then remains dim.
- 2) System power ON means HRV/ERV unit plugged into 120 VAC.
- 3) System includes HRV/ERV unit and wall control.

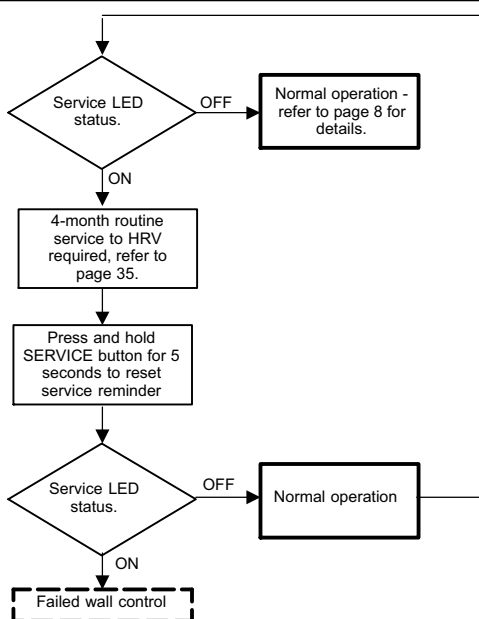
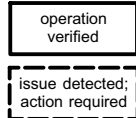
ERV Operational Flowchart

KEY



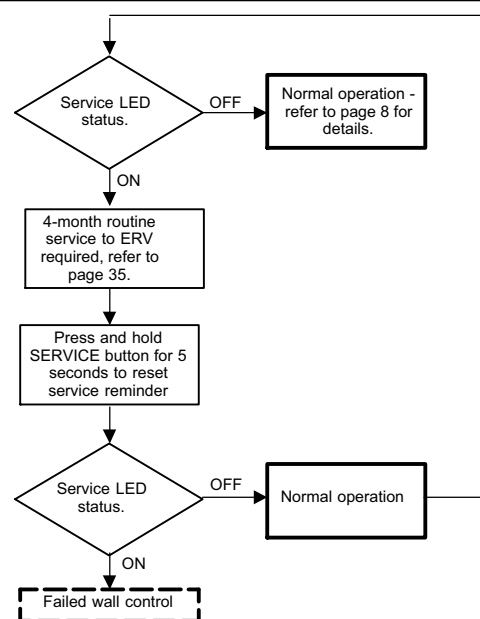
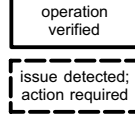
HRV Service Indicator Functions

KEY



ERV Service Indicator Functions

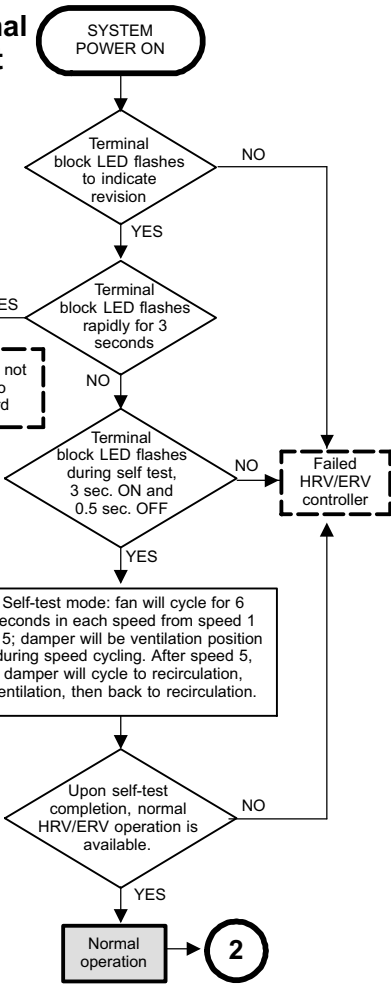
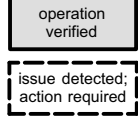
KEY



Sequence of Operation (continued)

Self-Test Operational Flowchart

KEY



NOTES:

- 1) System includes HRV/ERV unit and terminal block.
- 2) System power ON means HRV unit plugged into 120VAC.
- 3) Dry contact is energized when HRV/ERV is in ventilation mode and results in a closed connection between terminal 7 (COM) and 8 (NO) of the terminal block
- 4) Low speed refers to speed 1.
- 5) High speed refers to speed 5.
- 6) Ventilation position refers to damper open to outdoor air.
- 7) Recirculation position refers to damper closed to outdoor air.
- 8) No fan operation results in damper in recirculation position.
- 9) Humidity disable results in 4 consecutive readings of outdoor temperature greater than 60°F (15°C).

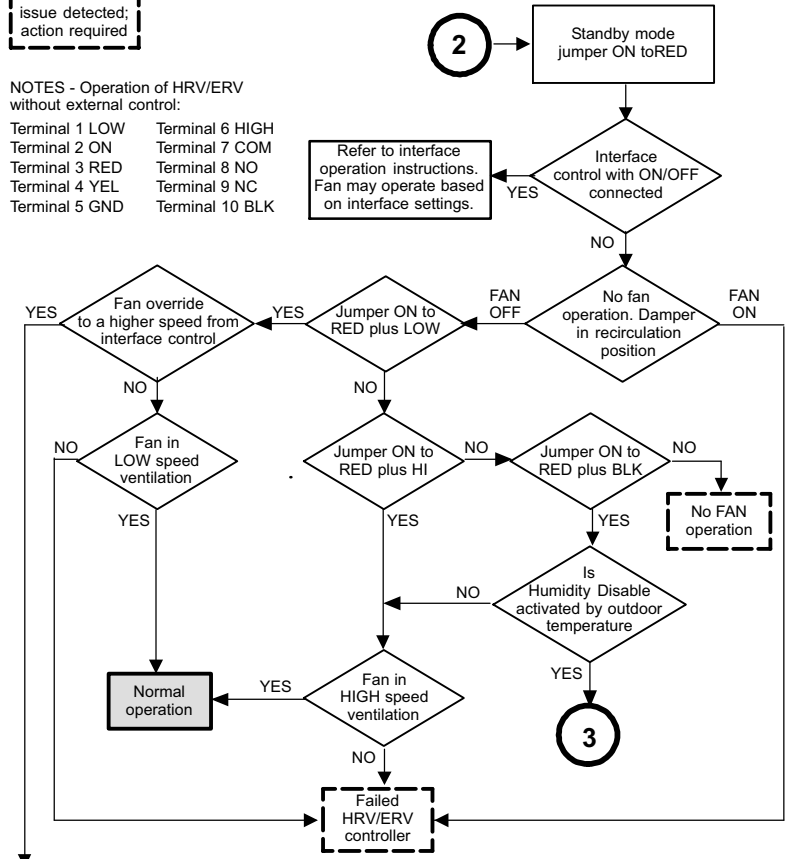
Terminal Block Operation

KEY



NOTES - Operation of HRV/ERV without external control:

Terminal 1 LOW	Terminal 6 HIGH
Terminal 2 ON	Terminal 7 COM
Terminal 3 RED	Terminal 8 NO
Terminal 4 YEL	Terminal 9 NC
Terminal 5 GND	Terminal 10 BLK



High Speed Overrides

Low Fan operation can be overridden to higher speeds by an external control setting or function such as:

- A) Y2169 20/40/60 minute timer manually activated - running speed 5
- B) Y2168 20 minute timer manually activated - running speed 5
- C) Y2166 climate control with dehumidistat activated by humidity level - running speed 5
- D) Defrost mode auto-activated function - running speed 4 (HRV only)

Standby mode – Jumper 2 (ON) to 3 (RED)

Low speed fan – Jumper 2 (ON) to 3 (RED) to 1 (LOW)

HI speed fan – Jumper 2 (ON) to 3 (RED) to 6 (BLK)

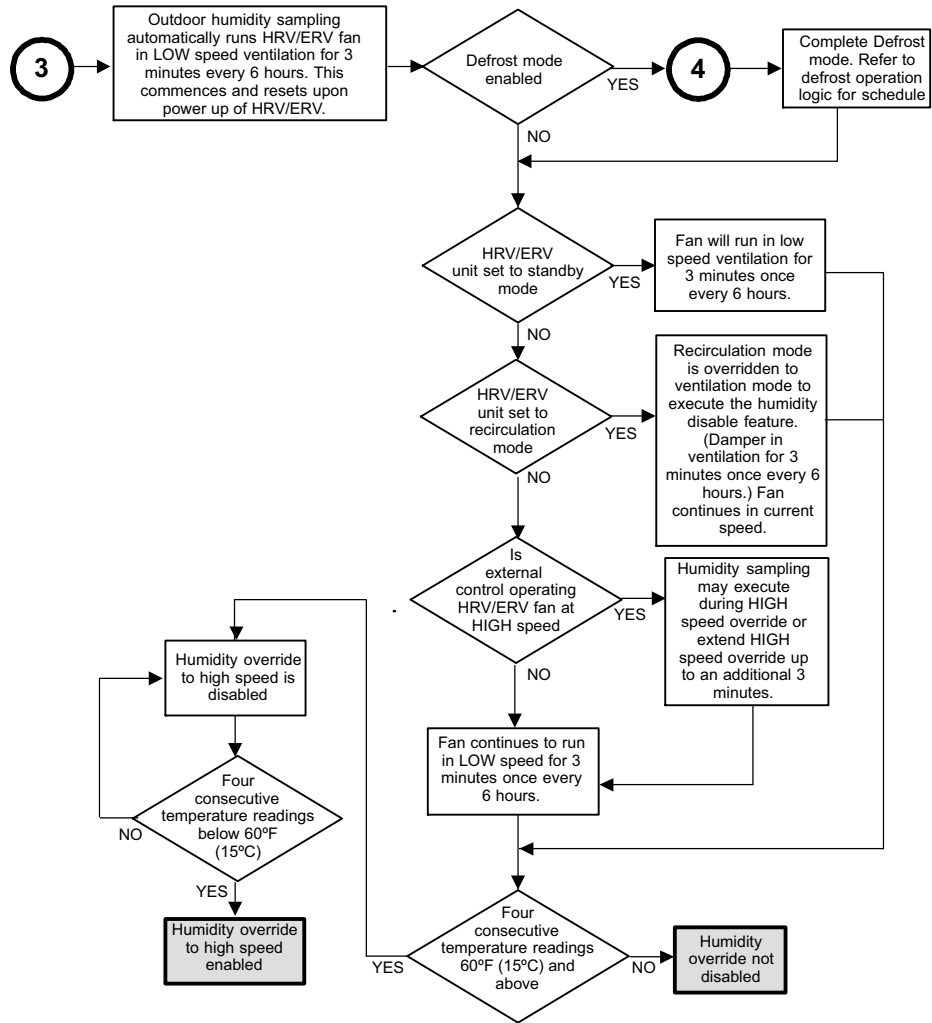
Dehumidistat Disable

KEY

- operation verified
- issue detected; action required

NOTES:

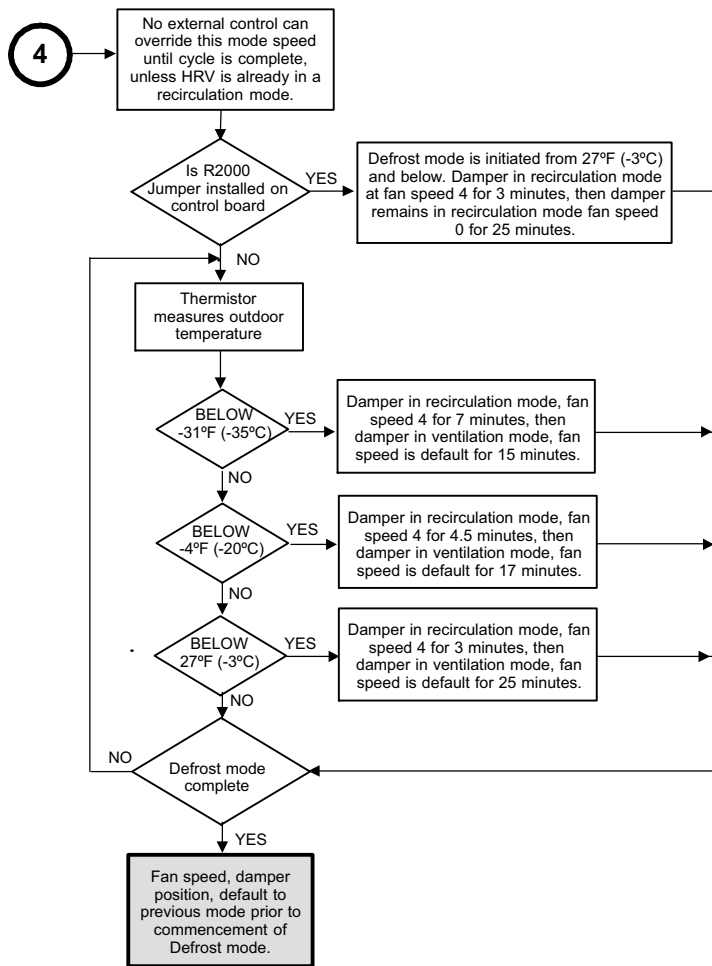
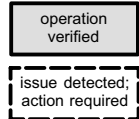
- 1) Humidity disable is an automatic operation which cannot be overridden by any control.
- 2) When Defrost mode is enabled (HRV), the damper is in recirculation mode (damper closed to outdoor air).



Sequence of Operation (continued)

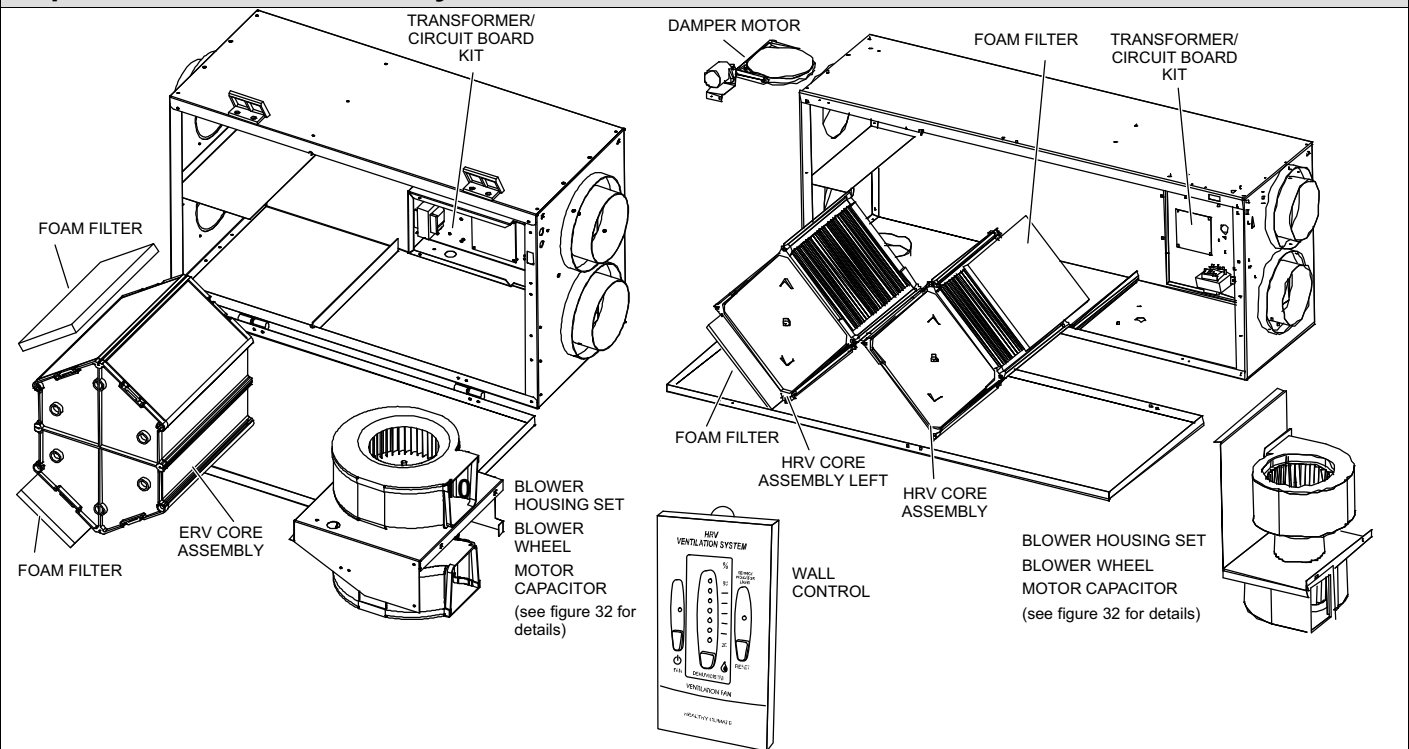
Defrost Mode (HRV)

KEY



Troubleshooting		
Symptom	Cause	Solution
Poor airflow(s)	<p>Mesh on outside hoods plugged</p> <p>Filters plugged</p> <p>Core obstructed</p> <p>House grilles closed or blocked</p> <p>Dampers closed (if installed)</p> <p>Poor power supply at site</p> <p>Ductwork is restricting HRV/ERV</p> <p>Improper speed control setting</p> <p>HRV/ERV airflow improperly balanced</p>	<p>Clean exterior hoods or vents</p> <p>Remove and clean filter</p> <p>Remove and clean core</p> <p>Check and open grilles</p> <p>Open and adjust dampers</p> <p>Have electrician check supply voltage at house</p> <p>Check duct installation</p> <p>Increase the speed of the HRV/ERV</p> <p>Have contractor balance the HRV/ERV</p>
Supply air feels cold	<p>Poor location of supply grilles; airflow may irritate occupants</p> <p>Outdoor temperature extremely cold</p>	<p>Locate the grilles high on the walls or under the baseboards; install ceiling mounted diffuser or grilles so as not to direct airflow onto occupants (e.g. over a sofa).</p> <p>Turn down the HRV/ERV supply speed. A small duct heater (1kw) could be used to temper the supply air.</p> <p>Placement of furniture or closed doors restricting movement of air in home; consider rearranging.</p> <p>If supply air is ducted into furnace return, the furnace fan may need to run continuously to distribute ventilation air comfortably.</p>
Dehumidistat is not operating	<p>Outdoor temperature is above 59°F (15°C)</p> <p>Improper low-voltage connection</p> <p>External low voltage is shorted out by a staple or nail</p> <p>Check dehumidistat setting; it may be OFF</p>	<p>Dehumidistat is functioning normally (see Auto Dehumidistat Disable in this manual).</p> <p>Check that the correct terminals have been used,</p> <p>Check external wiring for a short.</p> <p>Set the dehumidistat at the desired level.</p>
Humidity levels are too high; condensation is appearing on windows	<p>Dehumidistat set too high</p> <p>HRV/ERV unit is undersized to handle a hot tub, indoor pool, etc. (occupant lifestyle)</p> <p>Moisture coming into the home from an unvented or unheated crawl space</p> <p>Moisture remaining in washroom and/or kitchen areas</p> <p>Condensation seems to form in the spring and fall seasons</p> <p>HRV/ERV is set at too low a speed</p>	<p>Set dehumidistat at lower level.</p> <p>Cover pool, hot tub, when not in use.</p> <p>Avoid hanging clothes to dry indoors, storing wood indoors, and venting dryer inside.</p> <p>Vent crawl space and place a vapor barrier on the floor of the crawl space.</p> <p>Ducts from washroom should be sized to remove moist air as effectively as possible; use of a bathroom fan for short periods will remove additional moisture.</p> <p>On humid days, as seasons change, some condensation may appear but the home's air quality will remain high with some HRV/ERV use.</p> <p>Increase speed of HRV/ERV.</p>
Humidity levels are too low	<p>Dehumidistat control set too low</p> <p>Blower speed of HRV/ERV is too high</p> <p>Occupant lifestyle issue</p> <p>HRV/ERV airflows may be improperly balanced</p>	<p>Set dehumidistat at higher level.</p> <p>Decrease HRV/ERV blower speed.</p> <p>Humidity may have to be added through use of humidifiers.</p> <p>Have a contractor balance HRV/ERV airflows.</p>
HRV units and/or ducts frosting up	<p>HRV air flows are improperly balanced</p> <p>Malfunction of the HRV defrost system</p>	<p>Note – minimal frost build-up is expected on cores before unit initiates defrost cycle functions.</p> <p>Have HVAC contractor balance the HRV airflows.</p> <p>Ensure damper defrost is operating during self-test.</p>
Condensation or ice build-up in insulated duct to the outside	<p>Incomplete vapor barrier around insulated duct</p> <p>Hole or tear in outer duct covering</p>	<p>Tape and seal all joints.</p> <p>Tape any holes or tears made in the outer duct covering.</p> <p>Ensure that the vapor barrier is complete sealed.</p>
Water in the bottom of the HRV/ERV unit	<p>Drain pans plugged</p> <p>Improper connection of HRV/ERV drain lines</p> <p>HRV/ERV is not level</p> <p>Drain lines obstructed</p> <p>HRV/ERV heat exchange core is not properly installed</p>	<p>Ensure o-ring on drain nozzle sits properly.</p> <p>Look for kinks in the drain line.</p> <p>Check water drain connections.</p> <p>Make sure water drains properly from pan(s).</p>

Replacement Parts Summary



Replacement Parts	HRV3-095 (Y2142)	HRV3-150 (Y2140)	HRV3-200 (Y2141)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
Motor / Capacitor	Y2146	Y2173	Y2145	Y2145	Y2147	Y2145	Y2145
Blower Housing Set	Y2149	Y2148	Y2148	Y2150	Y2150	Y2148	Y2148
Blower Wheel CW red dot	Y2153	Y2151	Y2152	Y2152	Y2152	Y2151	Y2152
Blower Wheel CCW	Y2156	Y2154	Y2155	Y2155	Y2155	Y2154	Y2155
Core Assembly	Y2159	Y2158	Y2158	Y2159	Y2159	Y2157	Y2157
Core Assembly Left	-	-	-	Y2160	Y2160	-	-
Foam Filter Set (2)	Y2163	Y2162	Y2162	Y2162	Y2162	Y2161	Y2161
Transformer / Circuit board kit	Y2164	Y2164	Y2164	Y2164	Y2174	Y2164	Y2164
Damper Motor	74N94	74N94	74N94	74N94	74N94	-	-
Wall Control with the Unit	Y2166	Y2166	Y2166	Y2166	Y2166	Y2165	Y2165

Blower Assembly Service (Dealer Only)

To Remove Blower Assembly (figure 31)

⚠ WARNING



Electric Shock Hazard.

Can cause injury or death.

Disconnect all remote electrical power supplies before servicing. Unit may have multiple power supplies.

Unit must be connected to a grounded power supply in accordance with national and local codes.

1. Unplug the HRV/ERV and open the service door.
2. Remove core.
3. Remove ¼ inch sheet metal screws on front lip of cabinet.
4. Remove two Phillips head screws on right side panel.
5. Remove ¼ inch sheet metal screws securing electrical box to blower divider panel.
6. Remove ground wire and black and white wire from circuit board leading to the motor, and pull wires to remove from the electrical box.
7. Remove assembly (blower, motor, blower panel) by sliding left and down.

To Assemble Blower Assembly

Follow the above steps in reverse order.

⚠ IMPORTANT

Note motor rotation before disassembling the motor assembly. Mark rotation on blower divider panel with a marker.

To Replace Motor (figure 32)

1. Remove both blower end caps by applying pressure.
2. Remove blower wheels by loosening Allen screw on motor shaft.
3. Remove nuts from motor “through bolts”.

Ensure motor is replaced with proper rotation. The blower wheels are designed to “scoop” air and discharge towards the blower outlets.

To Assemble Motor

Follow the above steps in reverse order.

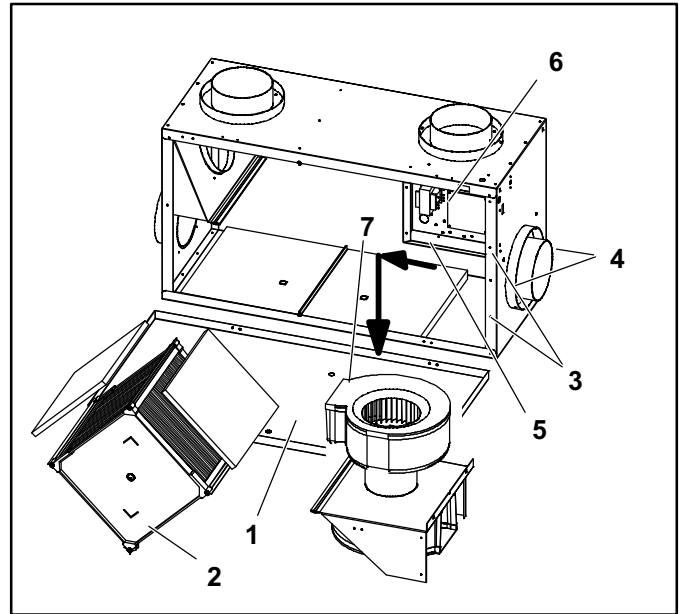


Figure 31. Removing Blower Assembly

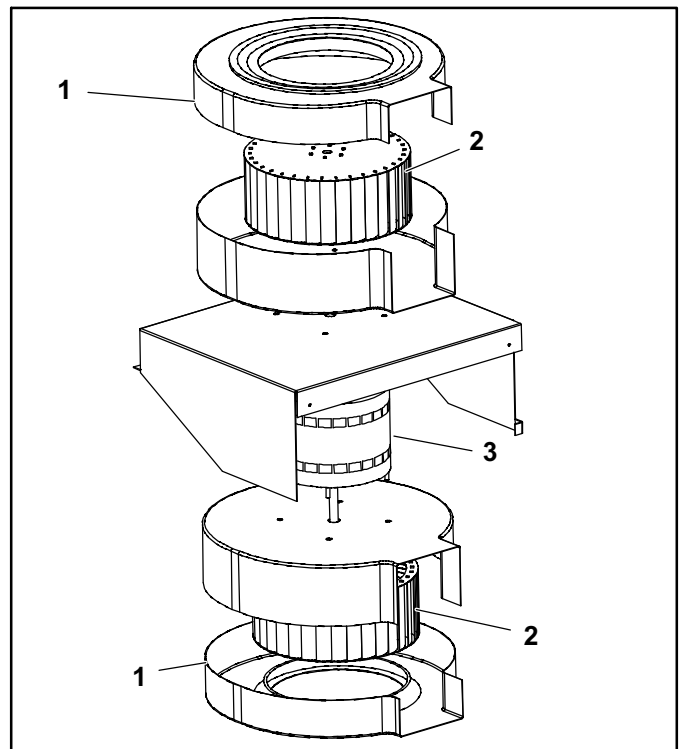


Figure 32. Replacing Motor

Homeowner Maintenance Information

WARNING

Risk of property damage, injury or death.

Installation, adjustments, alterations, service and maintenance must be performed by a qualified service technician.

WARNING



Electric Shock Hazard.

Can cause injury or death.

Disconnect all remote electrical power supplies before servicing. Unit may have multiple power supplies.

Unit must be connected to a grounded power supply in accordance with national and local codes.

1. **Inspect exterior hoods and vents at least once a month**—make sure exhaust and fresh air supply hoods are not blocked or restricted by leaves, grass, or snow. In winter, it is especially important to make sure snow is not blocking the hoods or that frost has not built up on the wire mesh (bird screen).

IMPORTANT – Blockage of hoods or vents may cause an airflow imbalance.

2. **Clean air filters three times a year**—the standard filters equipped with the HRV/ERV are removable and washable:
 - A Remove power to the unit.
 - B Open access door.
 - C Slide the core out.
 - D Remove filter clips if present.
 - E Remove filters off the core.
 - F Rinse filters with water or a combination of mild soap and water. Do not clean in the dishwasher.
 - G To reassemble, place clean filter(s) – wet or dry – back into their positions against the core and return clips to their original position.
 - H Slide core back into its original position.

IMPORTANT

Vacuum the ERV core or rinse with warm water.

DO NOT use cleaning solutions for the ERV core.

Soak and rinse the HRV core in warm soapy water.

DO NOT use bleach or chlorine.

DO NOT use pressure washer to clean the HRV or ERV core.

DO NOT use dishwasher to clean the HRV or ERV core.

3. **Clean core and inside of cabinet three times a year**
 - A Remove power to the unit.
 - B Open access door.

- C Carefully grip ends of core and pull evenly outward. Core may be snug, but will slide out of the channel.

- D Remove filters as above.

- E HRV Core—wash core in warm soapy water (do not use dishwasher).

ERV Core—vacuum the core or rinse with warm water (do not use soap, dishwasher, pressure wash).

- F Install clean filters.

- G Wipe down the inside of the cabinet with a damp cloth to remove dirt, bugs, and any debris.

4. **Install clean core as follows:**

- A Install the bottom flange of the core guide into the bottom “H” channel approximately 1/4” (6mm).

- B Install the left or right side flange of the core guide approximately 1/4” (6mm) followed by the other side flange.

- C Install the top flange of the core guide into the top “H” channel approximately 1/4” (6mm).

- D With all four corners in place and the core straight and even, push hard in the center of the core until the core stops on the back of the cabinet. **NOTE** – Core will appear to stick out from cabinet approximately 1/8” (3mm). This is designed this way so that the access door will fit tight against the core.

5. **Motors are maintenance free.**

6. **Clean drain (condensate) line at least once a year**—inspect drain line, drain spout, and “P” trap for blockage, mold, or kinks in the line. Flush with warm soapy water and replace line if worn, bent, or cannot be cleaned.

7. **Clean duct system if required**—the duct system from outside to and from the HRV/ERV unit may accumulate dirt. Wipe and vacuum the inside of the duct once every year. (A capable HVAC service company will best perform this procedure.)

8. **Clean the blowers** *NOTE - A capable HVAC service company will best perform this procedure.*—blowers may accumulate dirt causing an imbalance and/or excessive vibration of the HRV/ERV unit. A reduction in the airflow may also occur. In new construction, this may result within the first year due to heavy dust and may occur periodically thereafter over time depending on the outdoor conditions.

- A Unplug the HRV/ERV unit; open the service door.

- B Remove the core.

- C Remove ducting (metal and/or flexible insulated type) from the ports which are connected immediately inline with the fan assembly.

- D Use a small brush and insert through the large opening of the fan assembly and then through the smaller opening in the end of the fan assembly.

- E Scrub individual fan blades until clean. Avoid moving or damaging balancing flat weight (clip is usually found on one or more of the fan blades).

- F Vacuum and wipe out.

- G Reassemble. Be sure ducting is attached firmly. Seal and tape insulation and moisture barrier.

Application Map—HRV/ERV Ventilators

