



506239-01
12/12
Supersedes 05/12

HEALTHY CLIMATE®
HRV & ERV VENTILATORS

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



*HRV3-095
(Y2142)
*HRV3-095-GDX**
(Y2967)



*HRV4-150
(Y5443)
*HRV4-200
(Y5444)
*HRV4-150-GDX**
(Y5445)
*HRV4-200-GDX**
(Y5446)

**Available in
Canada only



*HRV3-195
(Y2143)
*HRV3-300
(Y2144)
Dual-core
(door re-
moved)



ERV3-150
(Y2138)
ERV3-200
(Y2139)

All Units
Conform to
CSA & UL
Standards



HRV3-150-TPD
(Y5447)
HRV3-150-TPF
(Y5448)

**THESE INSTRUCTIONS
MUST REMAIN WITH THE HOME-
OWNER FOR FUTURE REFERENCE**

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



⚠ 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 42.

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**

Dual Hood kit (includes hood assembly, foam gasket, duct splitter, duct insulator, retainer screw assembly, nylon cable tie, screens, labelled Supply/Exhaust.

6" (152 mm) **Y3813**

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**

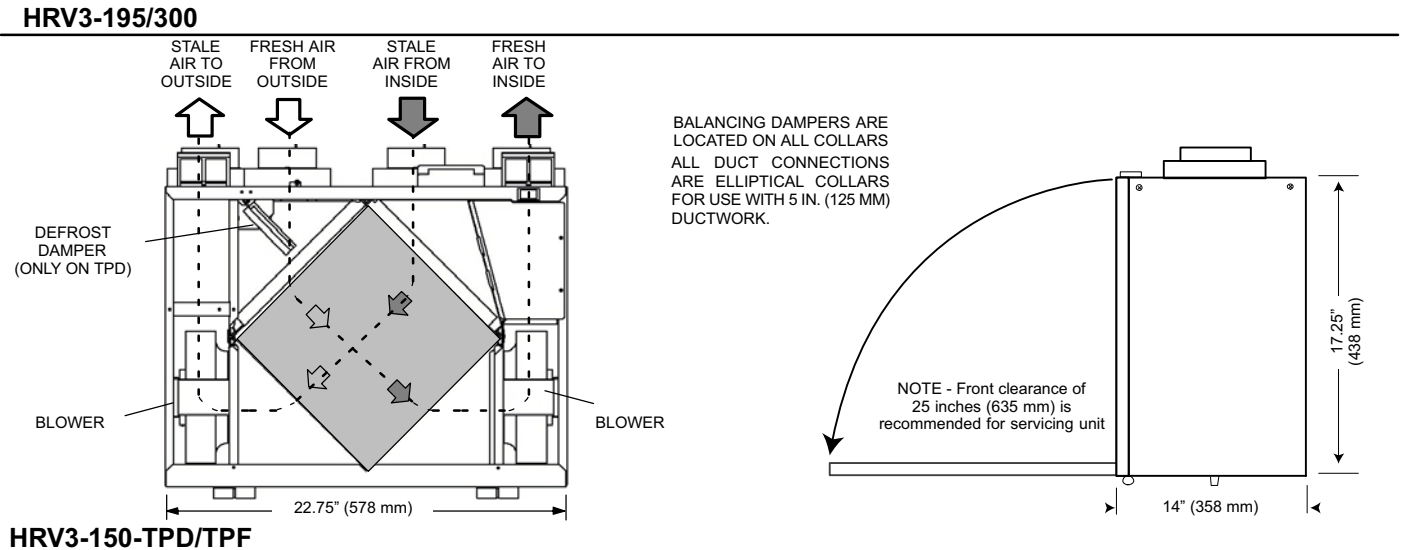
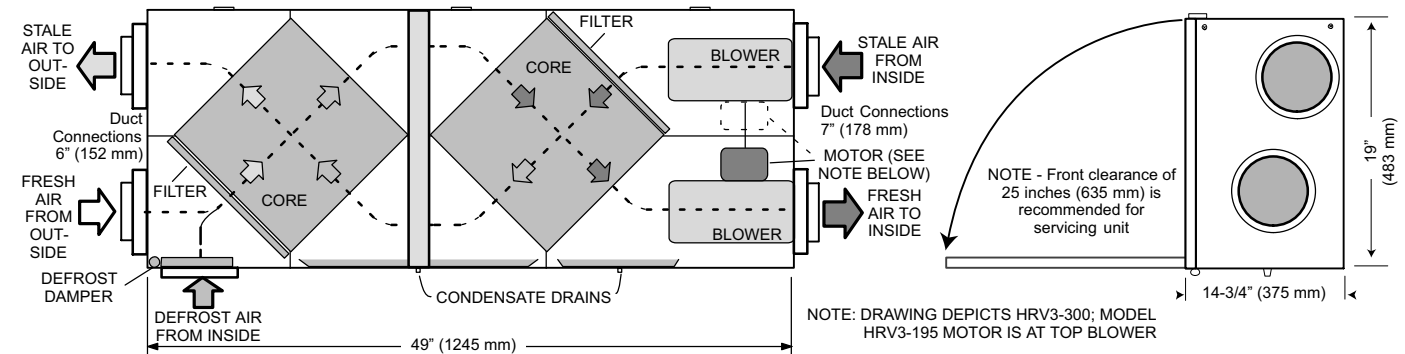
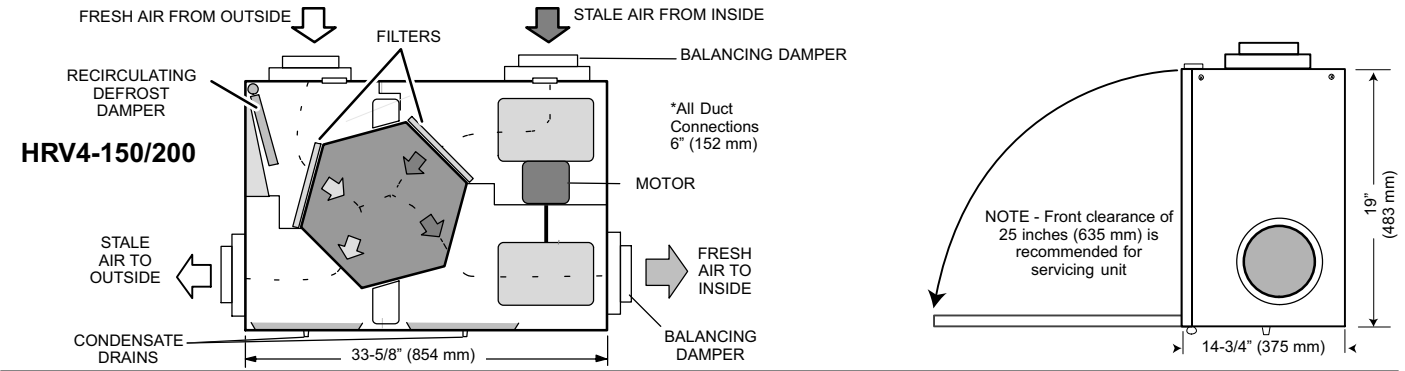
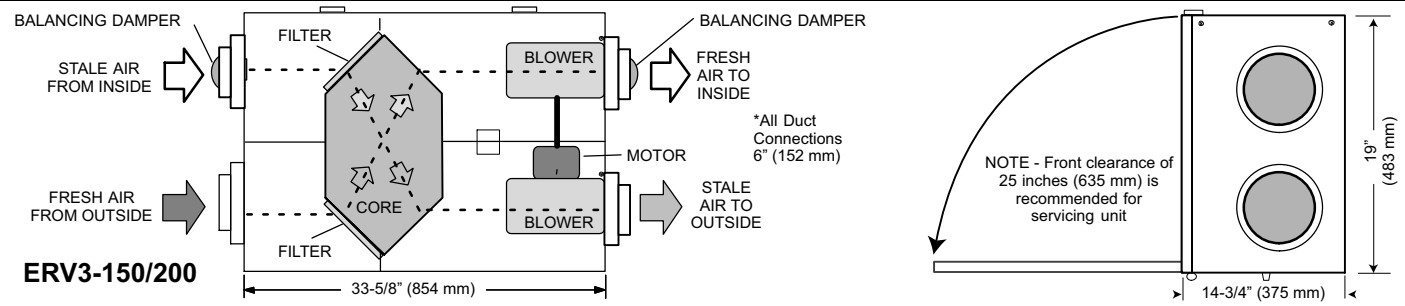
7" (178 mm) 2KW **97E74**

Specifications	Single-Core HRV Units					Dual-Core HRV Units		Single-Core ERV Units	
	HRV3 -150-TPD (Y5447)	HRV3 -150-TPF (Y5448)	HRV3 -095/-095-GDX (Y2142/Y2967)	HRV4 -150/-150-GDX (Y5443/ Y5445)	HRV4 -200/-200-GDX (Y5444/Y5446)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
Energy Star® qualified (Canada Only)	No	No	Yes	Yes	Yes	Yes	Yes	No	No
Cabinet Size (Inches)	14 x 17-1/4 x 22-3/4	14 x 17-1/4 x 22-3/4	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	51	51	52	71	71	106	106	75	75
Shipping Weight	54	54	56	73	73	108	108	77	77
in. w.g. (Pa)	High Speed (HVI Certified)								
0.1 (25)	156 (74)	174 (82)	76 (36)	148 (87)	184 (87)	216 (101)	232 (110)	151 (71)	180 (85)
0.2 (50)	146 (69)	165 (77)	73 (34)	130 (62)	183 (77)	195 (92)	212 (100)	141 (67)	169 (79)
0.3 (75)	134 (63)	154 (73)	70 (33)	116 (55)	146 (69)	181 (85)	202 (95)	132 (62)	157 (74)
0.4 (100)	124 (59)	143 (67)	66 (31)	103 (49)	132 (62)	158 (74)	183 (86)	124 (59)	146 (69)
0.5 (125)	115 (54)	132 (62)	60 (28)	90 (42)	115 (54)	144 (68)	163 (77)	107 (50)	132 (62)
0.6 (150)	104 (49)	120 (56)		72 (34)	92 (43)	125 (59)	144 (68)	98 (46)	118 (55)
0.7 (175)	95 (454)	107 (521)		49 (23)	60 (28)	107 (50)	123 (58)	81 (38)	101 (47)
0.8 (200)	85 (40)	95 (45)				72 (34)	92 (43)	60 (28)	82 (39)
Sensible Effectiveness @ 32°F (0°C)	@ 66 CFM (31 L/s) 74%	@ 66 CFM (31 L/s) 75%	@ 60 CFM (28 L/s) 88%	@ 60 CFM (28 L/s) 85%	@ 59 CFM (28 L/s) 84%	@ 114 CFM (54 L/s) 86%	@ 117 CFM (55 L/s) 90%	@ 63 CFM (30 L/s) 81%	@ 116 CFM (55 L/s) 76%
Sensible Efficiency @ 32°F (0°C)	@ 66 CFM (31 L/s) 61%	@ 66 CFM (31 L/s) 66%	@ 60 CFM (28 L/s) 75%	@ 60 CFM (28 L/s) 75%	@ 59 CFM (28 L/s) 75%	@ 114 CFM (54 L/s) 78%	@ 117 CFM (55 L/s) 79%	@ 63 CFM (30 L/s) 69%	@ 116 CFM (55 L/s) 69%
Sensible Efficiency @ -13°F (-25°C)	@ 76 CFM (31 L/s) 73%	@ 65 CFM (30 L/s) 56%	@ 61 CFM (29 L/s) 68%	@ 65 CFM (31 L/s) 73%	@ 64 CFM (30 L/s) 72%	@ 112 CFM (53 L/s) 72%	@ 132 CFM (62 L/s) 70%	N/A	N/A
Latent Efficiency 95°F (35°C)	N/A	N/A	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	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	2	2	1	1
Number of speeds available with optional wall control	5	5	5	5	5	5	5	5	5
Ventilator Type	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Energy Recovery	Energy Recovery
Heat/Energy Recovery Core	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Enthalpic	Enthalpic
Number of HRV/ERV Cores	1	1	1	1	1	2	2	1	1
Defrost Type	Recirculating	Fan	Recirculating	Recirculating	Recirculating	Damper	Damper	None	None
Door Port Balancing	Yes	Yes	No	Yes	Yes	No	No	No	No
Balancing Damper in Supply & Exhaust Collar	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes
Number of Ports	4	4	4	4	4	5	5	4	4
Pre-Filters (Foam) Supply & Exhaust	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wall Controller Included	Y2166	Y2166	Y2166/Y2171	Y2166/Y2171	Y2166/Y2171	Y2166	Y2166	N/A	N/A
H/C ERV Wall Control- on/off, Service Indicator (Y2165)	N/A	N/A	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	1/20	1/20	1/10	1/10	1/4	1/20	1/10
Motor Type	PSC	PSC	PSC	PSC	PSC	PSC	PSC	PSC	PSC
Fan Watts - High Speed @ 0.3 in. w.g.	110	118	150	110	118	173	333	173	182
Fan Watts - Low Speed @ 0.3 in. w.g.	57	66	60	57	66	100	150	63	70
Amp Rating	1.3	1.4	0.9	1.3	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	Yes	Yes	N/A	N/A

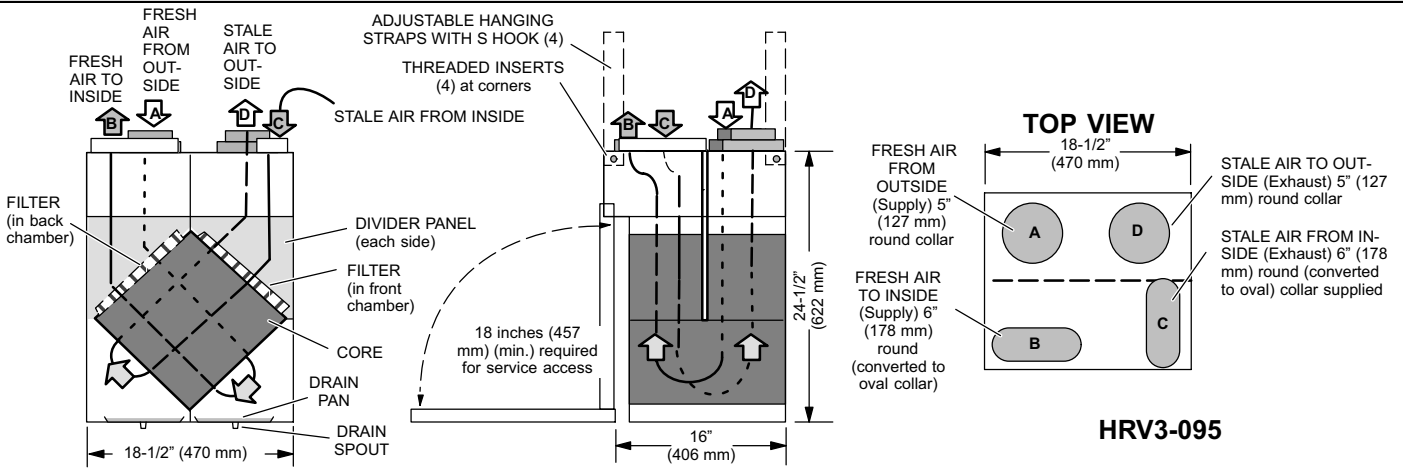
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Specifications	Single-Core HRV Units					Dual-Core HRV Units		Single-Core ERV Units	
	HRV3 -150-TPD (Y5447)	HRV3 -150-TPF (Y5448)	HRV3 -095/-095-GDX (Y2142/Y2967)	HRV4 -150/-150-GDX (Y5443/ Y5445)	HRV4 -200/-200-GDX (Y5444/Y5446)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
OPTIONAL FAN CURVES SPEEDS (FACTORY TESTED)									
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)	CFM (L/s)	CFM (L/s)
0.1 (25)			70 (33)	125 (59)	153 (72)	167 (78)	220 (103)	120 (56)	151 (71)
0.2 (50)			65 (31)	112 (53)	141 (67)	159 (75)	202 (94)	111 (52)	147 (69)
0.3 (75)			50 (24)	103 (49)	131 (62)	150 (71)	186 (87)	103 (48)	129 (61)
0.4 (100)	101 (48)	101 (48)	31 (15)	87(41)	117 (55)	140 (66)	169 (79)	92 (43)	118 (55)
0.5 (125)	91 (43)	91 (43)		83 (39)	96 (45)	124 (58)	158 (74)	80 (38)	104 (49)
0.6 (150)	82 (39)	82 (39)		67 (32)	80 (38)	110 (52)	134 (62)	64 (30)	89 (42)
0.7 (175)	69 (33)	69 (33)		49 (23)		93 (44)	108 (50)	43 (20)	63 (30)
0.8 (200)	60 (28)	60 (28)					79 (37)		
Speed 3-med									
0.1 (25)			65 (31)	112 (53)	144 (68)	142 (67)	194 (91)	97 (46)	133 (63)
0.2 (50)			60 (28)	99 (47)	130 (61)	136 (64)	178 (83)	87 (41)	130 (61)
0.3 (75)	92 (43)	92 (43)	48 (23)	83 (39)	120 (57)	127 (60)	170 (79)	81 (38)	124 (58)
0.4 (100)	82 (39)	82 (39)	30 (14)	76 (36)	106 (50)	118 (55)	154 (72)	72 (34)	114 (54)
0.5 (125)	71 (34)	71 (34)		71 (34)	88 (42)	103 (48)	139 (65)	61 (29)	104 (49)
0.6 (150)	60 (28)	60 (28)		57 (27)		92 (43)	118 (55)	53 (25)	94 (44)
0.7 (175)				40 (19)		72 (34)	94 (44)		80 (38)
0.8 (200)									
Speed 2-med low									
0.1 (25)			62 (29)	87 (41)	127 (60)	115 (54)	170 (79)	73 (34)	112 (53)
0.2 (50)	81 (38)	81 (38)	54 (25)	74 (35)	116 (55)	107 (50)	163 (76)	67 (31)	107 (50)
0.3 (75)	70 (33)	70 (33)	42 (20)	69 (33)	106 (50)	100 (47)	151 (70)	59 (28)	101 (47)
0.4 (100)	60 (28)	60 (28)	26 (12)	57 (27)	97 (46)	90 (42)	136 (63)	51 (24)	96 (45)
0.5 (125)	46 (22)	46 (22)		51 (24)	86 (40)	81 (38)	129 (60)	45 (21)	88 (41)
0.6 (150)				44 (21)		66 (31)	107 (50)		77 (36)
0.7 (175)				32 (15)			88 (41)		60 (28)
0.8 (200)									
Speed 1-low									
0.1 (25)			51 (24)	65 (31)	108 (51)	88 (41)	144 (67)	53 (25)	88 (41)
0.2 (50)	61 (29)	61 (29)	45 (21)	56 (26)	100 (47)	80 (38)	137 (64)	44 (21)	85 (40)
0.3 (75)	49 (23)	49 (23)	33 (16)	40 (19)	91 (43)	73 (34)	134 (62)	38 (18)	80 (38)
0.4 (100)	35 (17)	35 (17)	18 (8)	36 (17)	78 (37)	63 (30)	121 (56)	32 (15)	77 (36)
0.5 (125)				32 (15)		56 (26)	110 (51)		67 (31)
0.6 (150)				30 (14)		43 (20)	95 (44)		
0.7 (175)							84 (39)		
0.8 (200)									
OPTIONAL ACCESSORIES-MUST BE ORDERED EXTRA									
Backdraft Damper 5"	Y3728	Y3728	Y3728	N/A	N/A	N/A	N/A	N/A	N/A
Backdraft Damper 6"	N/A	N/A	N/A	Y3727	Y3727	Y3727	Y3727	Y3727	Y3727
Butterfly Damper, 6"	N/A	N/A	91X09	Included in the unit		N/A	N/A	Included in the unit	
Butterfly Damper, 7"	N/A	N/A	N/A	N/A	N/A	Field Supplied		N/A	N/A
Insulated Flexible Ducting: (Qty Req'd) "Dia.	(2) 5	(2) 5	(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 (same kit w/o Gauge)	N/A	N/A	Y2206						
Digital Handheld Manometer	86N62								
Magnehelic Gauge only (0-0.25")	N/A	N/A	79P83						
Pitot Tube Balancing Kit	N/A	N/A	56N82						
Pitot Tube only	72X52								

Ventilator Dimensions and Flow Diagrams



HRV3-095 Port Configuration & Airflow



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.

Defrost Cycle (HRV)

The HRV has an electronically controlled defrost system. 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 (HRV3-095, HRV3-150-TPD, HRV4-150, HRV4-200)

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.)

Fan Defrost (HRV3-150-TPF)

During defrost cycle, the Fresh Air supply motor will shut off and the Stale Air exhaust motor will continue to run. After the defrost period, the Fresh Air supply motor will resume. Defrost cycle repeats until the temperature rises above 27°F (-3°C).

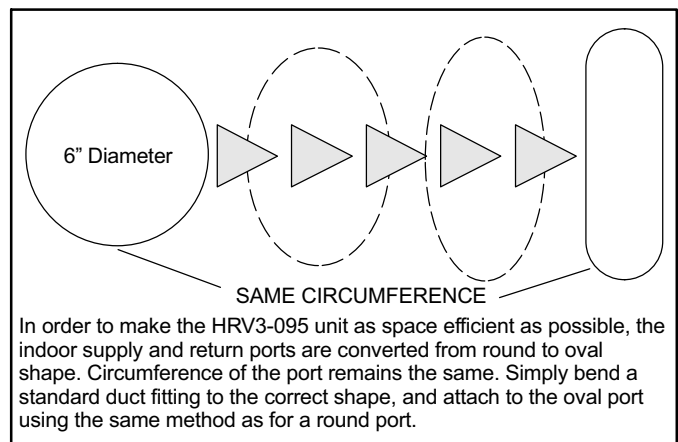


Figure 1. Shaping Ducting to fit Oval Indoor Supply Port

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 28 or 31) 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 41. 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.

**HRV -GDX (Canada only) units come with Y2171 Digital 2-Speed/4-Mode Control (see figure 4, Page 10).

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 41. Upon completion of maintenance, reset service light by pressing and holding RESET button for 5 seconds.

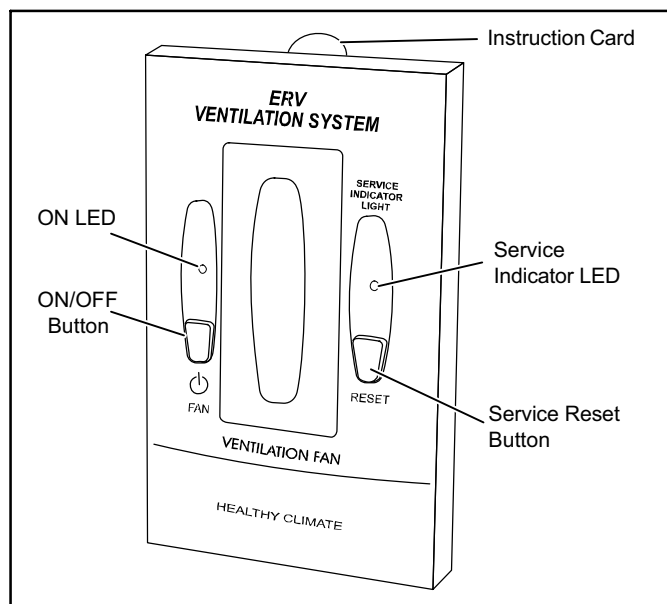


Figure 2. ERV Control (Y2165)

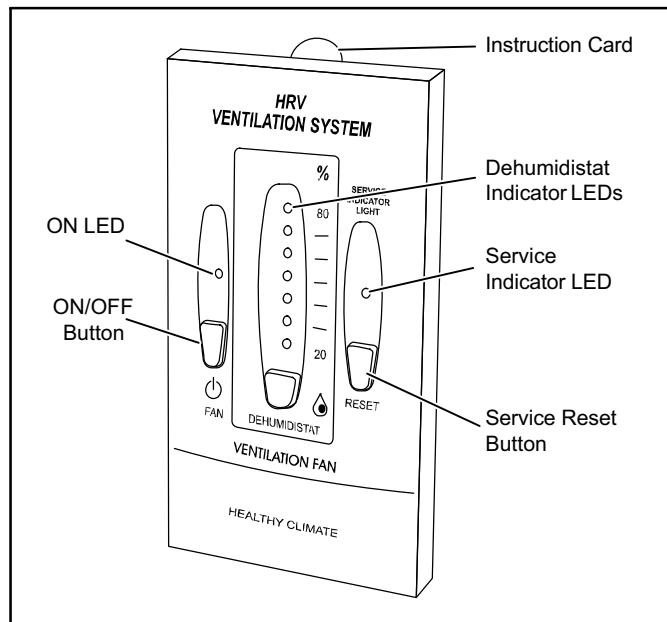


Figure 3. HRV Control (Y2166)

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 8) 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.

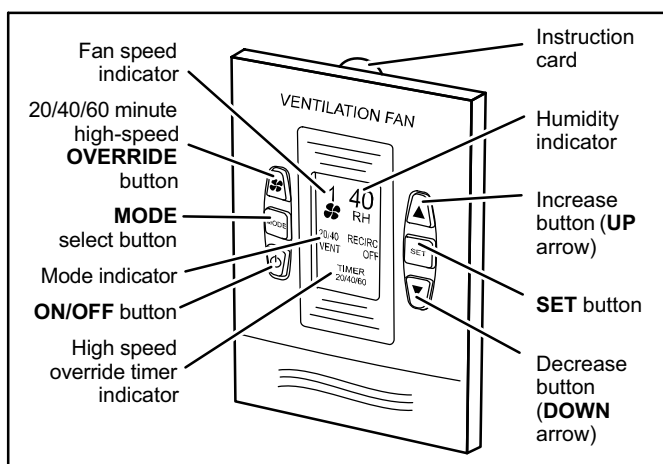


Figure 4. Digital 2-Speed/4-Mode Control (Y2171)

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 10)
 - 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 10] 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 8) 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.

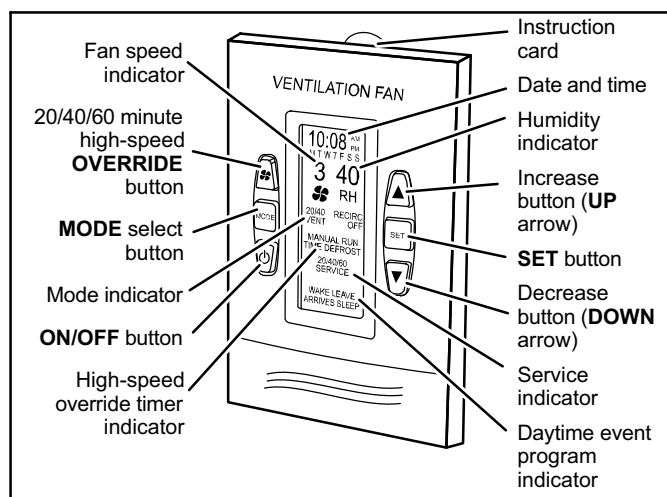


Figure 5. Programmable 5-Speed/4-Mode Control (Y2172)

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.

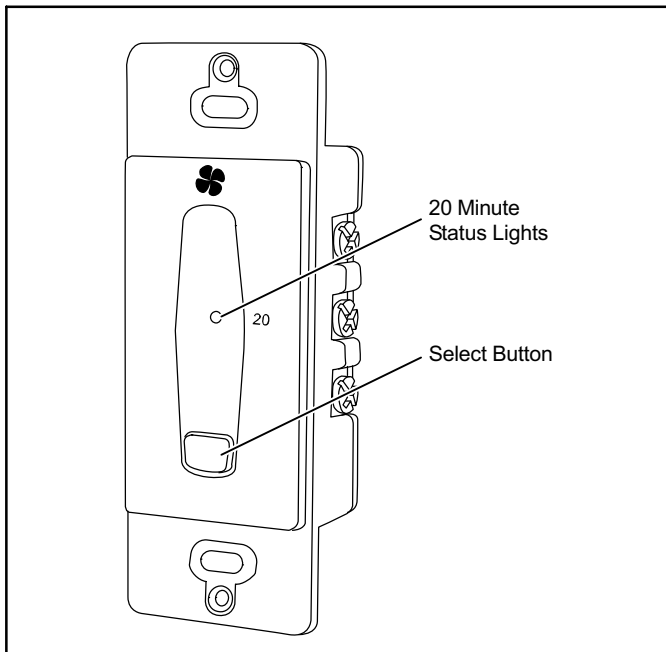


Figure 6. 20 Minute Timer (Y2168)

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.

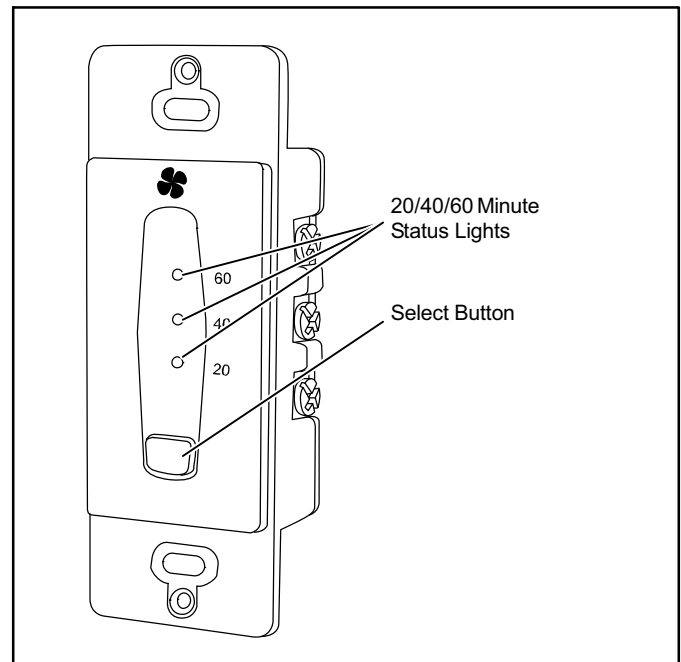


Figure 7. 20/40/60 Minute Timer (Y2169)

Installation Methods

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

- Simplified installation (Page 14)
- Partially dedicated installation (Page 15)
- Fully dedicated installation (Page 16)

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 8 and 9).

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.

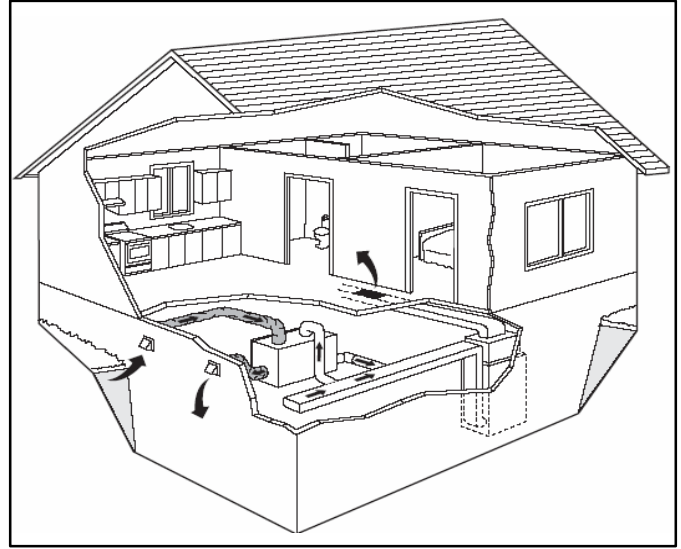
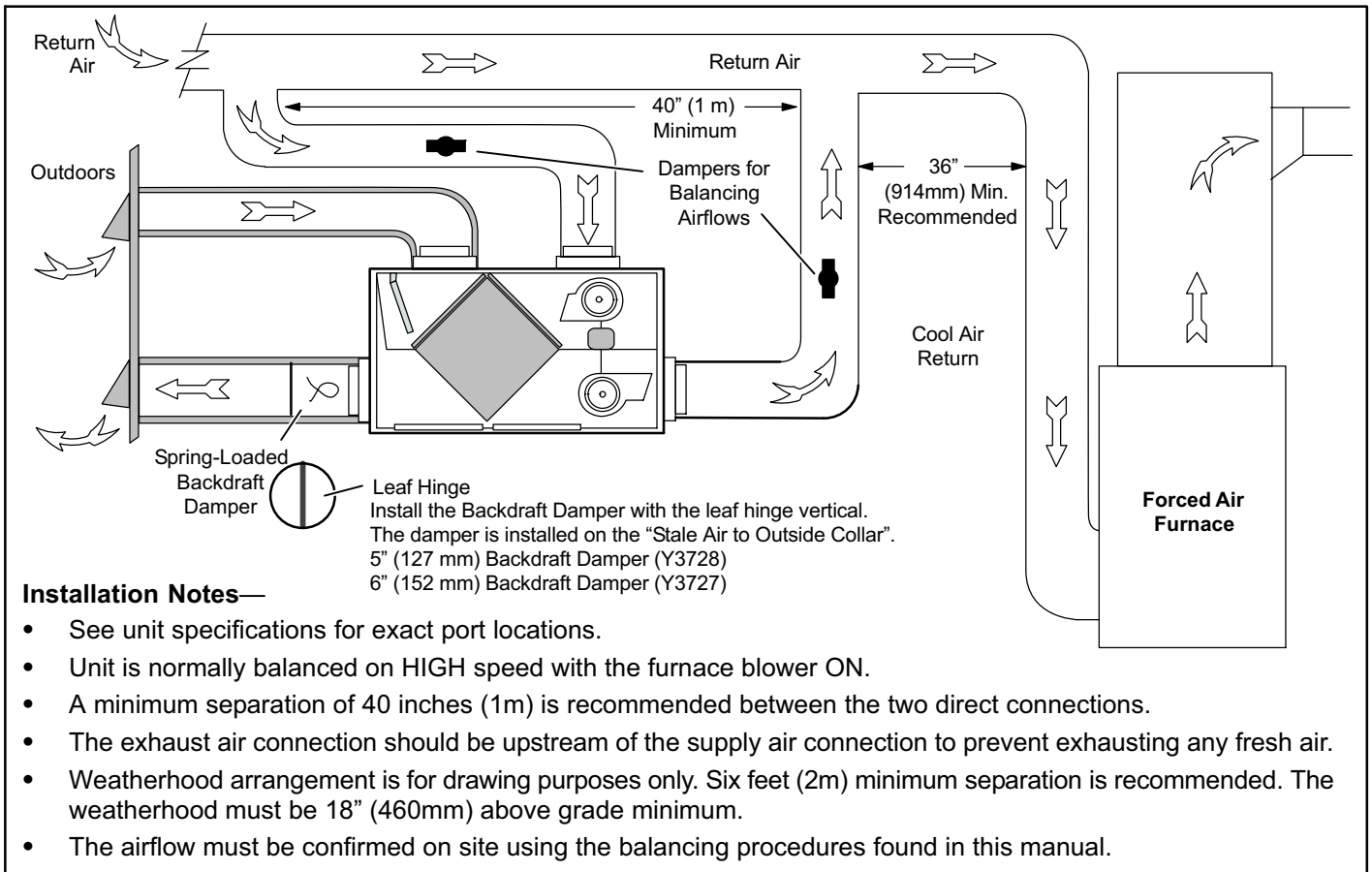


Figure 8. Simplified Installation (Return/Return)



Installation Notes—

- See unit specifications for exact port locations.
- Unit is normally balanced on HIGH speed with the furnace blower ON.
- A minimum separation of 40 inches (1m) is recommended between the two direct connections.
- The exhaust air connection should be upstream of the supply air connection to prevent exhausting any fresh air.
- 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 in this manual.

Figure 9. 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 10 and 11).

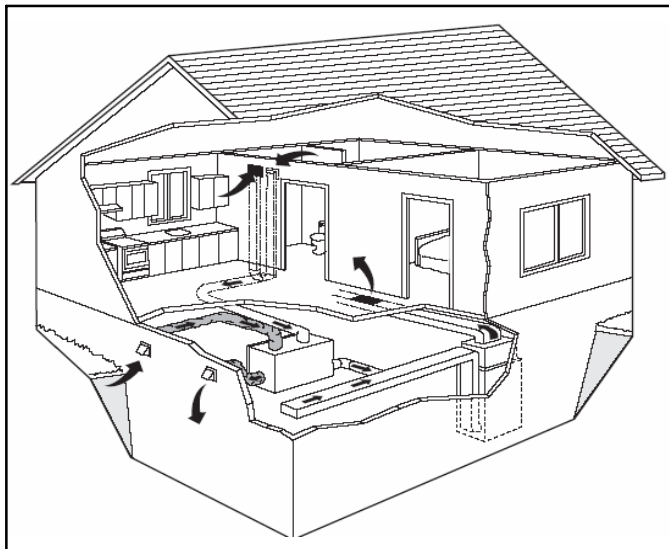


Figure 10. Partially Dedicated System

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 12.)

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 24.)

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.

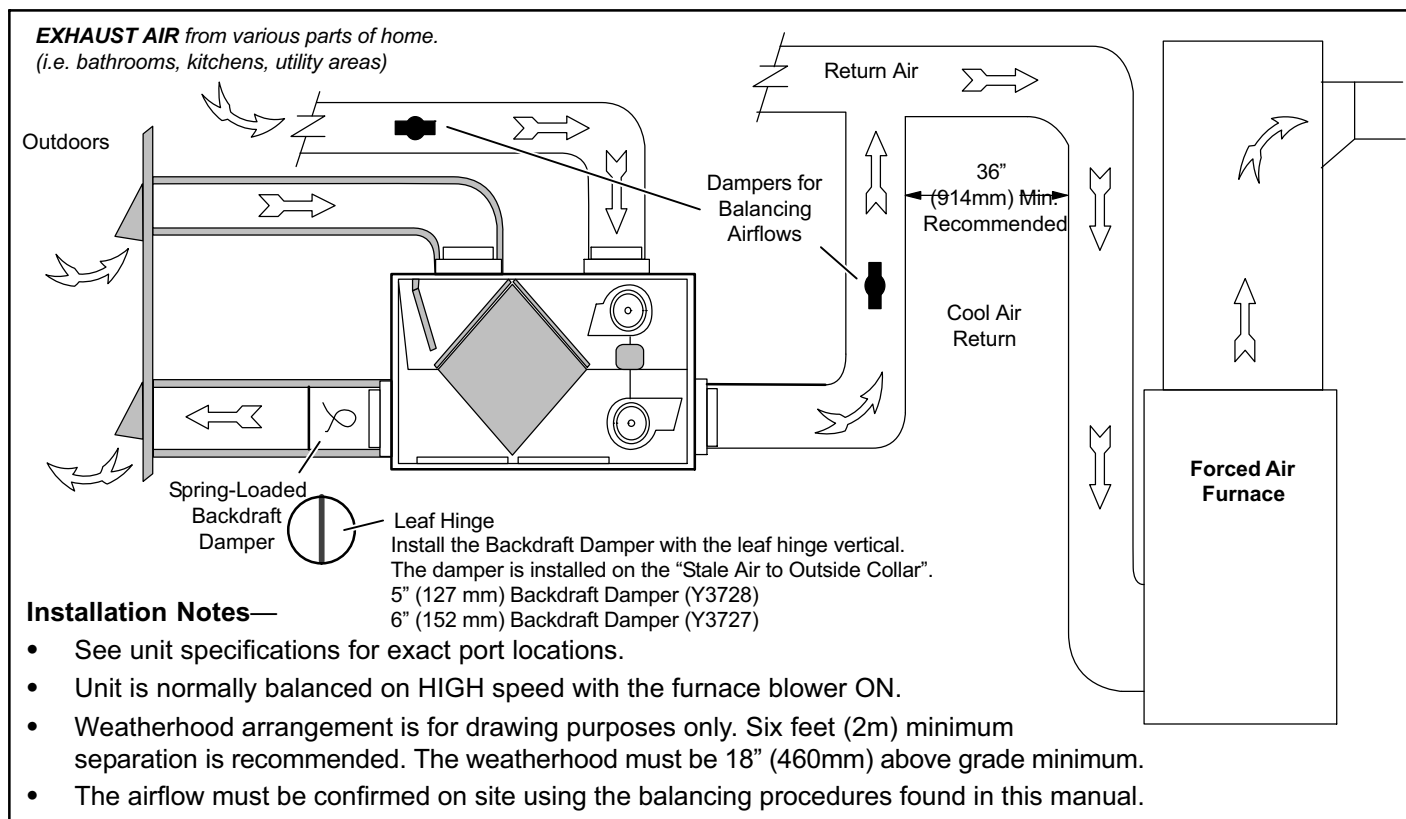


Figure 11. Direct Connection of Supply Air Stream to the Furnace Cold Air Return (Stale air drawn from key areas of home)

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 12 and 13).

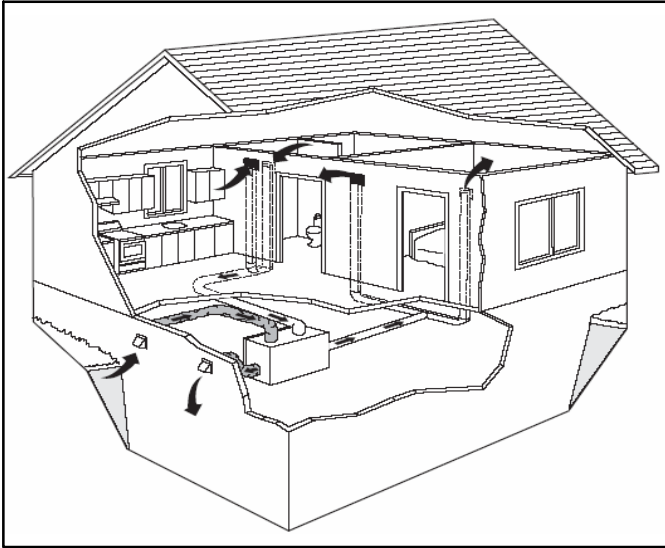


Figure 12. Fully Dedicated System

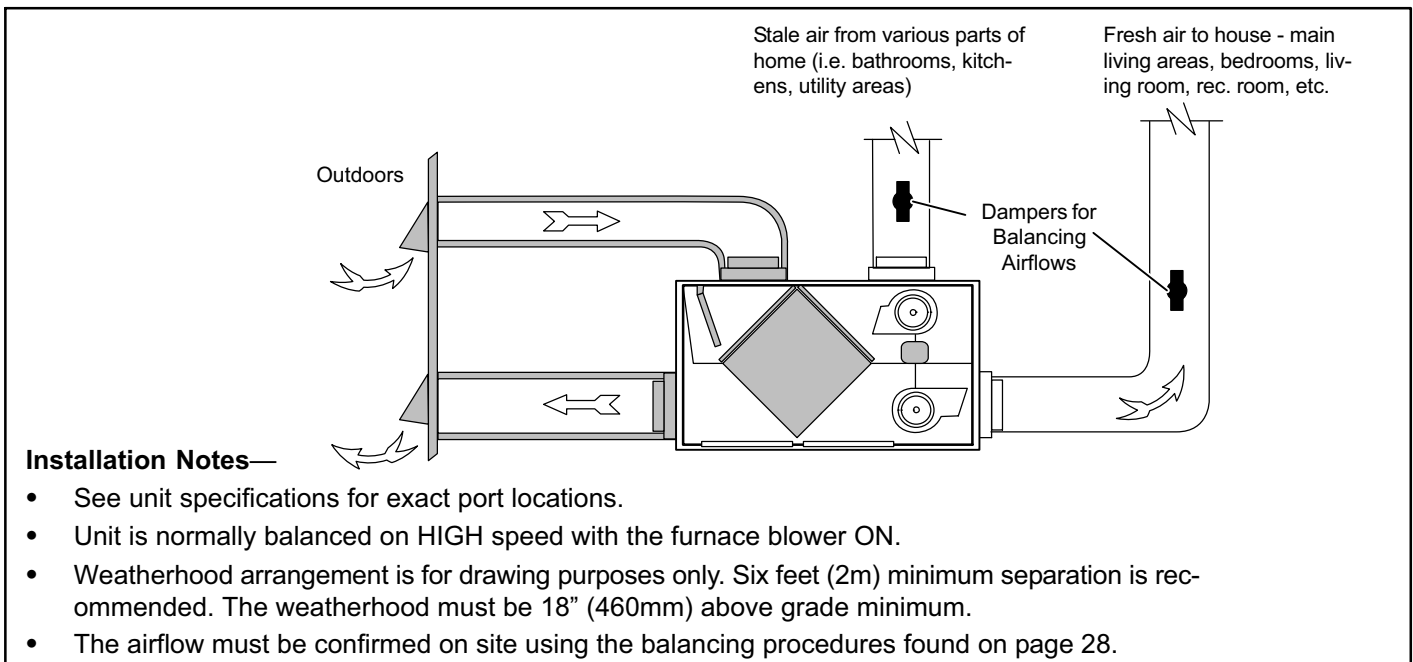
Stale air ducts should be installed in areas of the home where the poorest indoor air quality exists (bathrooms and kitchen). Each location with a stale air duct should have a timer to initiate high-speed ventilation. (Refer to "Optional Timers" on page 12.)

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 19.) 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 28.

Figure 13. Fully Dedicated System (Not connected to forced air system)

⚠ 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.

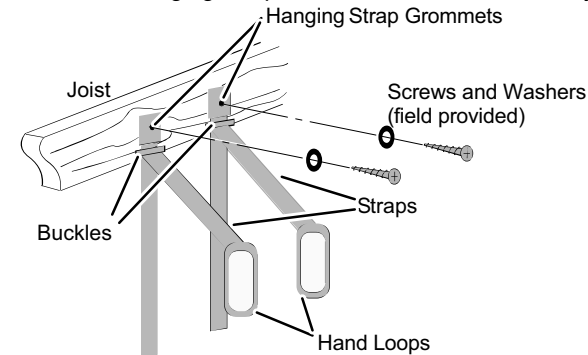
HRV3-195 & HRV3-300 defrost cycles will draw in air surrounding the defrost intake opening and distribute throughout the home.

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.

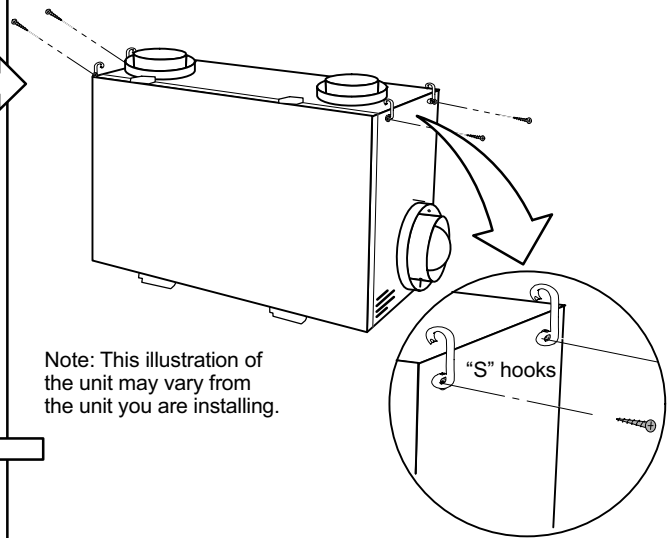
Suspending the Unit using adjustable hanging straps

Use 4 screws and 4 washers (field provided) to attach the hanging straps to the floor joists. The washer must be wider than the eyelet of the grommet on the hanging strap. By design, the adjustable hanging straps reduce the possibility of noise, resonance, and harmonics.

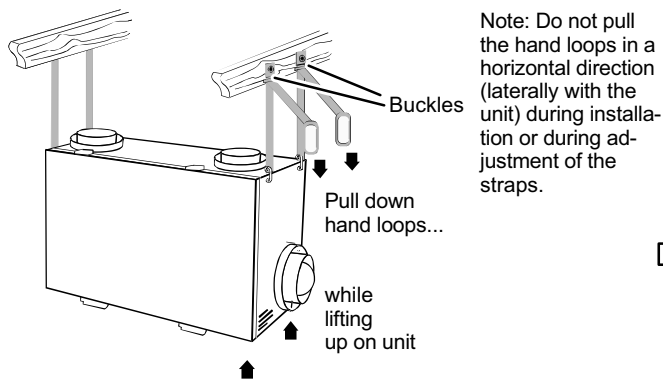
Step 1. Insert the screws and washers (field provided) through the Hanging Strap Grommets and fasten to the joists.



Step 2. Unscrew the 4 machine screws located on the upper side of the unit. Attach the "S" hooks and reinsert the machine screws.



Step 3. Hook the bottom grommets of the straps through the "S" hooks. Pull down vertically on the hand loops while lifting up the bottom of the cabinet. Repeat at opposite end of the unit,



Step 4. Level the unit from left to right and front to back.
 - Adjust the unit down by lifting up on the buckles.
 - Adjust the unit up by pulling down vertically on the hand loops while lifting up the bottom of the cabinet.

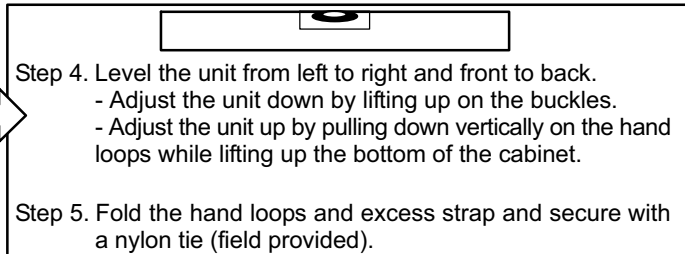


Figure 14. Suspending unit using provided Hanging Straps (HRV unit shown)

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 15). 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.

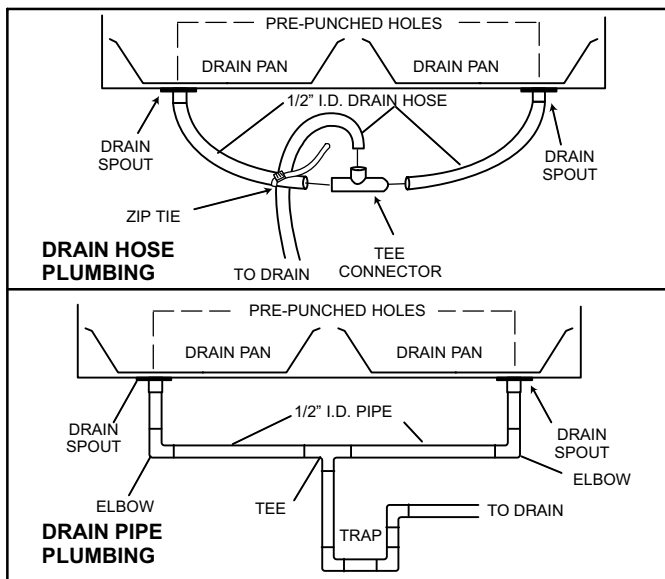


Figure 15. "P" Trap (HRV unit only)

Construct a P-Trap using the plastic tee connector (see Drain Hose Plumbing, figure 15). 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. 15 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 28.)

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**

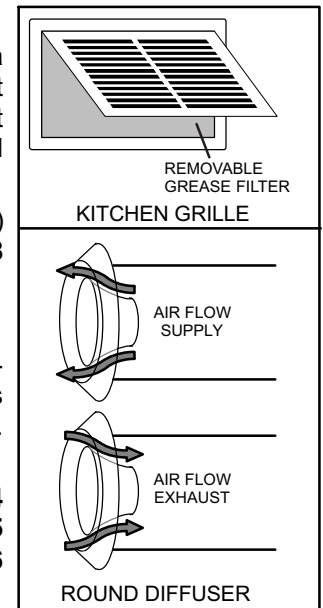


Figure 16. Kitchen Grille & Round Diffuser

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**

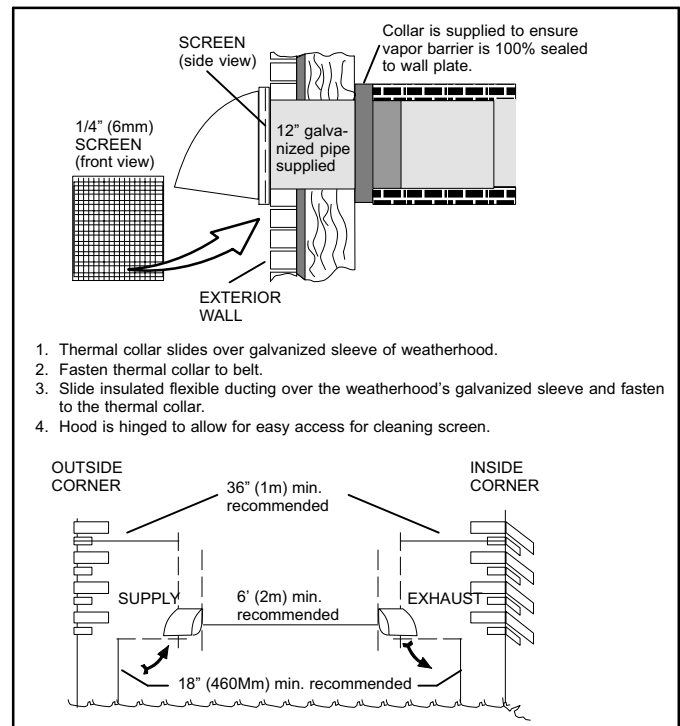


Figure 17. Weatherhood Installation

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.

Units with Dual Hood Kit

The Dual Hood Kit (Y3813) offers the benefit of requiring only one 6" hole in the exterior wall to complete the connections for fresh air intake and stale air exhaust. The pressure drop/airflow charts should be referred to when matching the Dual Hood to the HRV / ERV.

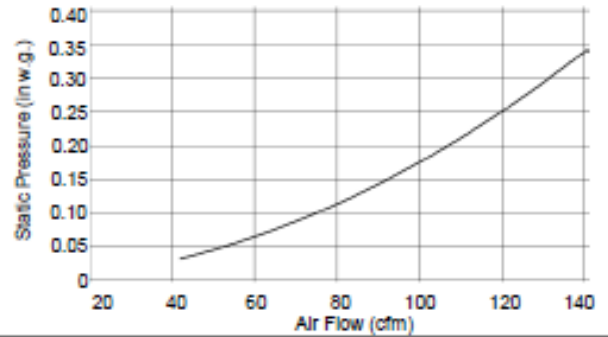
Equipment Performance with the Dual Hood

These charts and table illustrate the External Static Pressure (ESP) and the corresponding airflows of Lennox HRVs and ERVs, when using the Dual Hood in the system. Perform all calculations for duct sizing in the usual manner (taking into account measured and equivalent lengths).

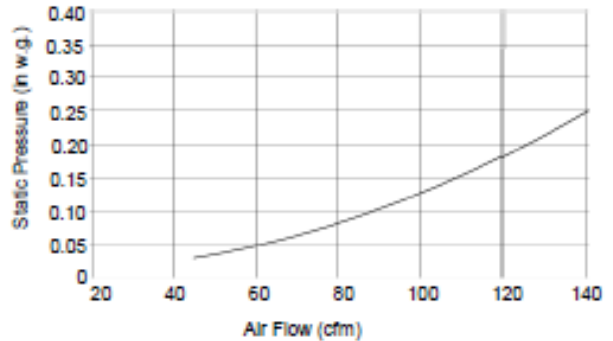
Model	Airflow (cfm) See Note			Compatible with Dual Hood?
	0.3	0.4	0.5	
HRV3-150-TPD	115	104	95	Yes
HRV3-150-TPF	120	107	100	Yes
HRV3-095	66	60	n/a	Yes
HRV4-150	90	80	72	Yes
HRV4-200	120	107	100	Yes
HRV3-195	125	114	107	Yes
HRV3-300	n/a	n/a	n/a	NO
ERV3-150	107	98	81	Yes
ERV3-200	125	118	101	Yes

Note — Normal system design ESP is 0.3 to 0.5

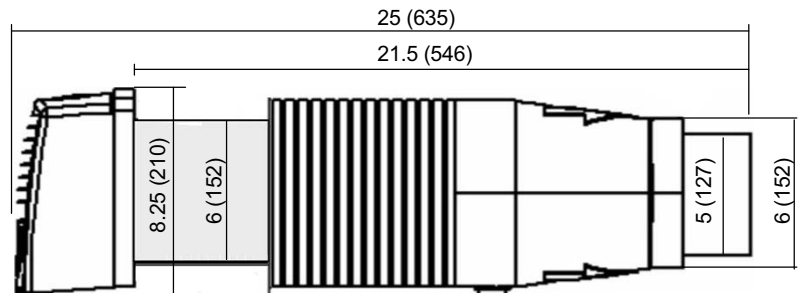
Intake Airflow Chart



Exhaust Airflow Chart



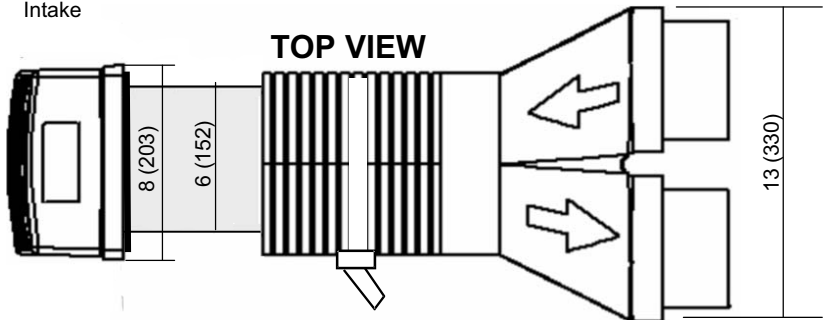
Stale Air Exhaust



SIDE VIEW

inches (mm)

Fresh Air Intake



TOP VIEW

Component Rating

All plastic components are rated UL 94V-0.
Foam components are rated 5/50 Flame spread/smoke development.

IMPORTANT

Contact your local building authority before installation of the Dual Hood kit to verify compliance with local building codes.

Refer to the installation instruction (507040-01) which come with the Dual Hood for complete installation instructions.

Figure 18. Dual Hood Dimensions and ratings

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.

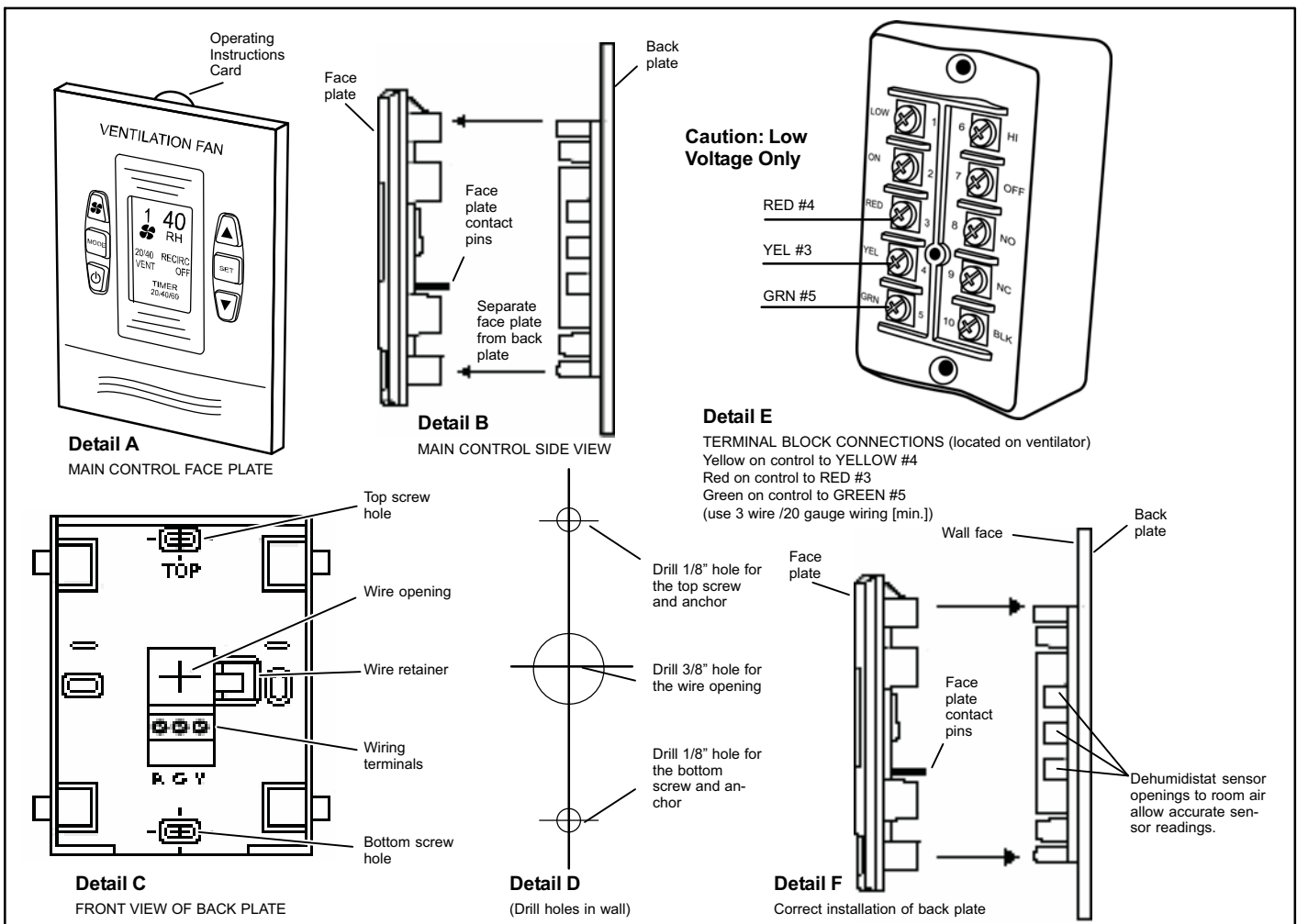


Figure 19. Main Control Installation

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.

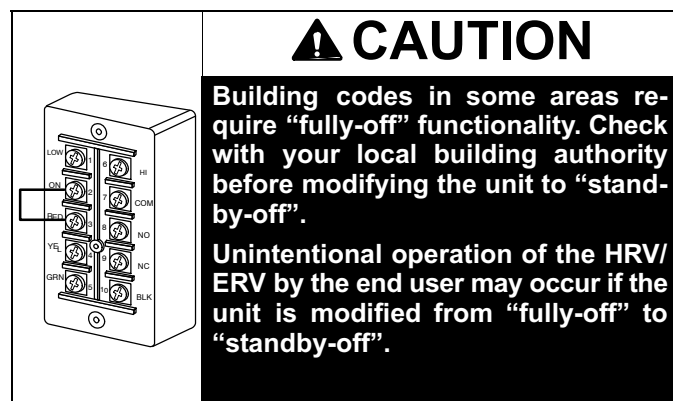


Figure 20. Terminal Block on HRV/ERV

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).

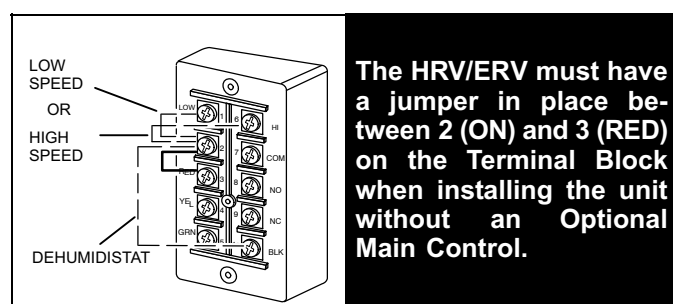


Figure 21. Adding Dry Contact Controls on Terminal Block on HRV/ERV

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.

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.

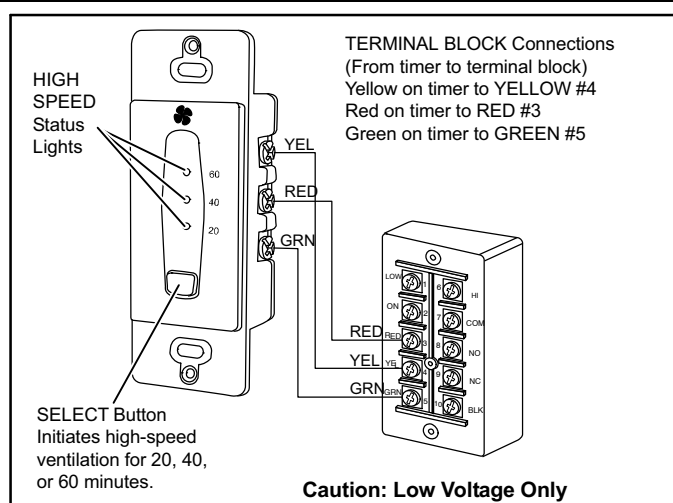


Figure 22. 20 or 20/40/60 Minute Timer Installation

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 its 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).

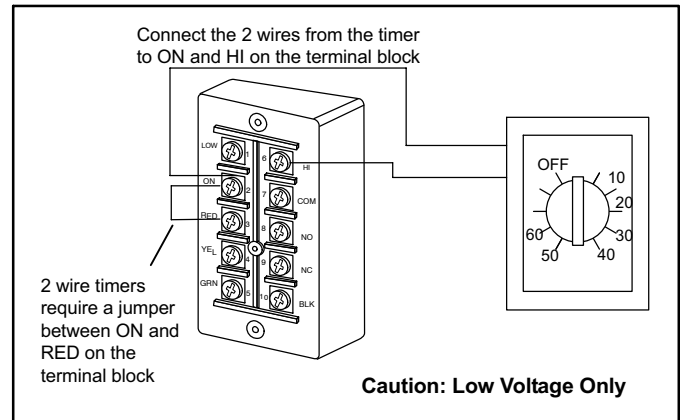


Figure 23. Mechanical Timer Installation

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.

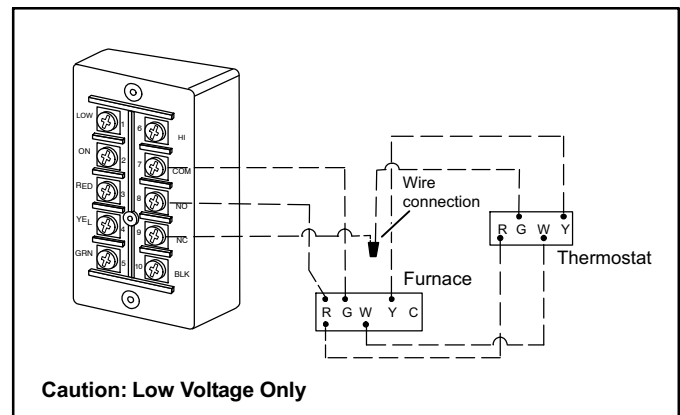


Figure 24. Interlocking HRV/ERV Unit Blower to the Air Handler/Furnace Blower

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.

Figures 25 thru 27 (Page 25 thru Page 27) show wiring diagrams for the units described in this manual.

WARNING

Electric Shock Hazard

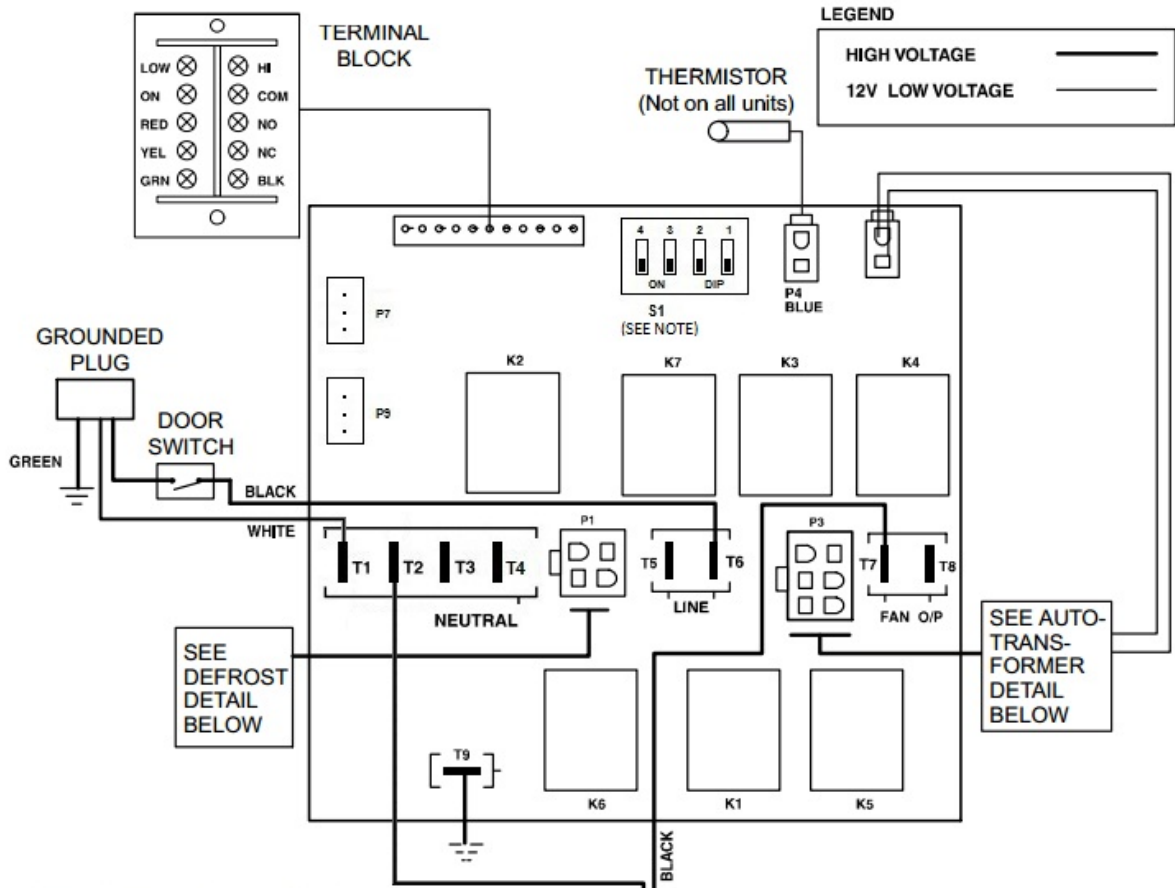
Can cause injury or death.

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.

Figure 25. Residential Wiring Diagram
 HRV3-095, HRV4-150, HRV4-200, HRV3-195, HRV3-300, ERV3-150, ERV3-200

CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY



NOTE S1:

DIP 1 "ON" (illustrated) **disables** the R2000 defrost cycle
 DIP 1 "OFF" **enables** the R2000 defrost cycle

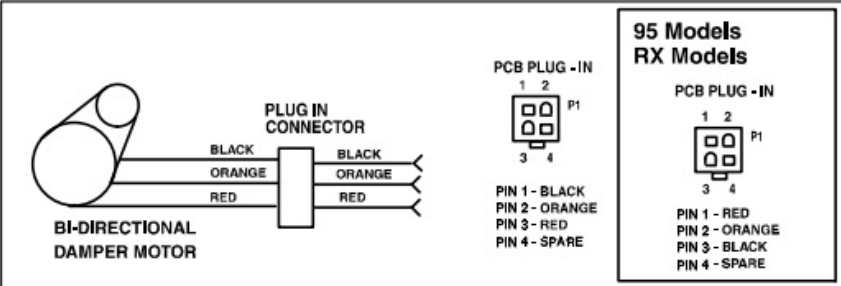
DIP 2 "ON" (illustrated) **enables** recirculating defrost
 DIP 2 "OFF" **disables** recirculating defrost

DIP Switches 3 and 4 are unused and should be left in the "ON" position as illustrated.

Note: If any of the original wire supplied with the unit must be replaced, use only TEW certified wire

IMPORTANT: Control low voltage is 12VAC
 DO NOT CONNECT EXTERNAL POWER SOURCES TO THE UNIT.

DEFROST DETAILS



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

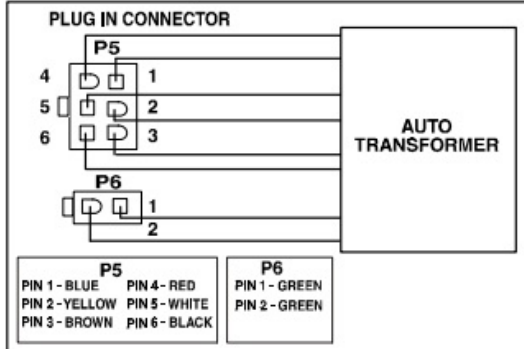


Figure 26. Residential Wiring Diagram HRV3-150-TPD

CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY

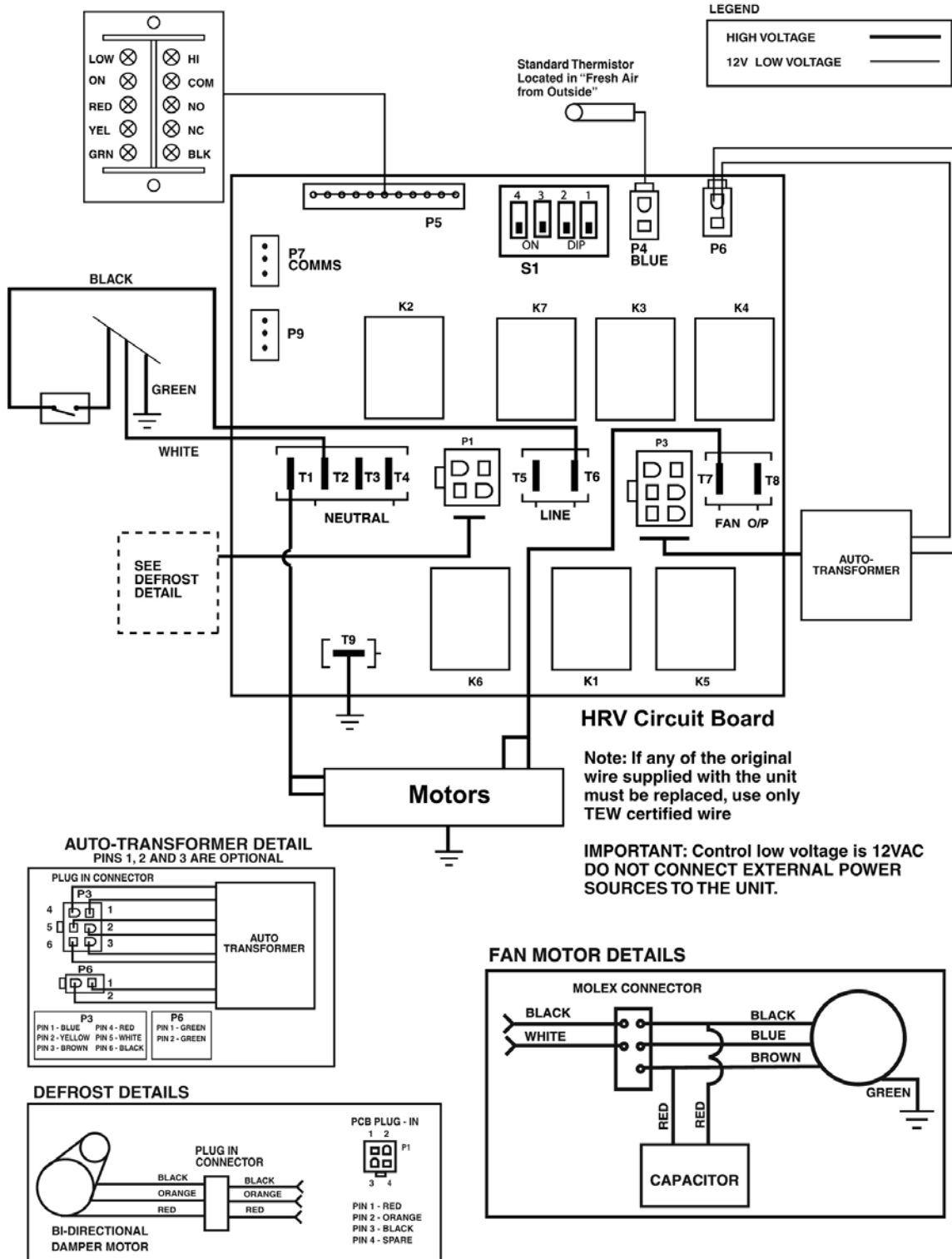
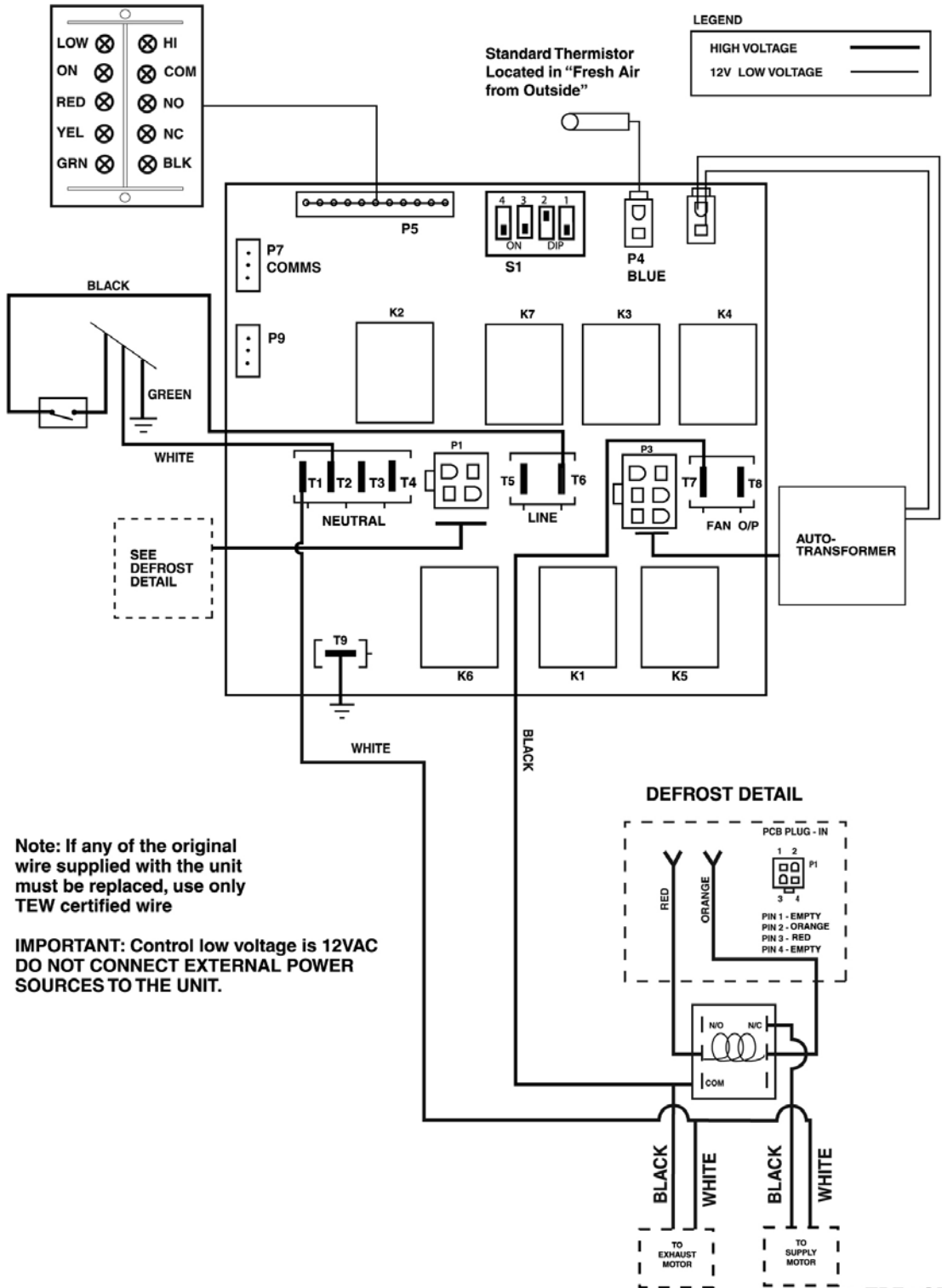


Figure 27. Residential Wiring Diagram HRV3-150-TPF

CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY



Note: If any of the original wire supplied with the unit must be replaced, use only TEW certified wire

IMPORTANT: Control low voltage is 12VAC
DO NOT CONNECT EXTERNAL POWER SOURCES TO THE UNIT.

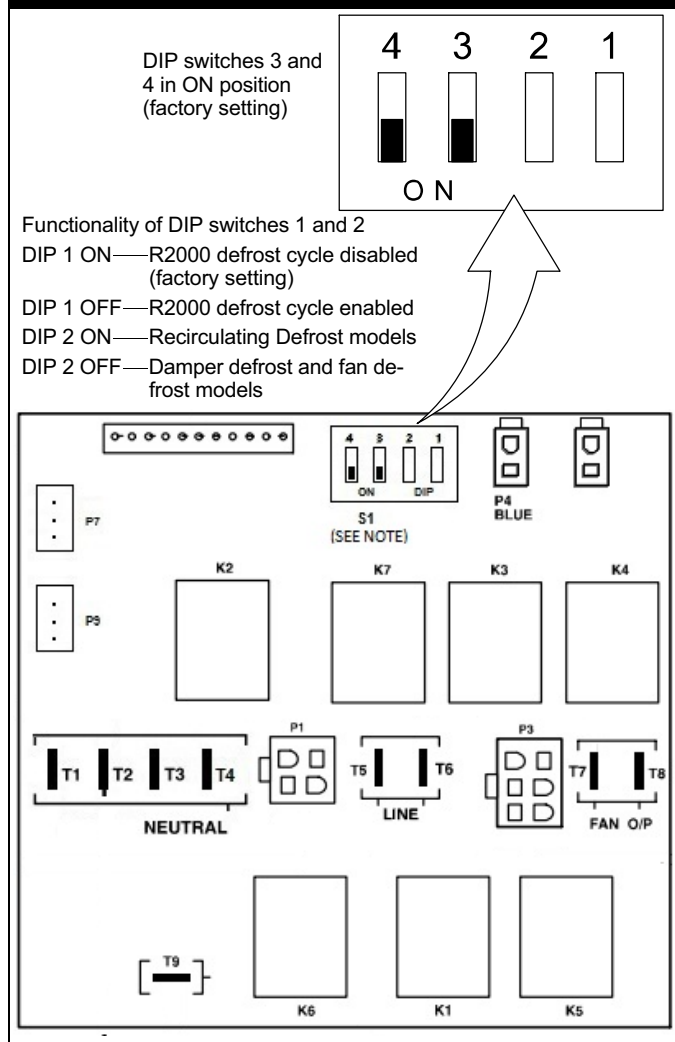
Installer Selectable High Speed Settings

The circuit board on this unit has adjustable DIP switches to select the maximum air flow at high speed. Adjusting high speed can be useful to accurately satisfy the calculated ventilation rate. The chart below indicates how to adjust high speed to High Speed 4 and High Speed 3. Refer to the specification pages in the manual for the air flow rates for Speeds 5, 4 and 3. The factory setting is High Speed 5.

NOTE - Low speed is not adjustable.

Description	Switch Position 1	Switch Position 2	Switch Position 3	Switch Position 4
High Speed 5 factory setting	Factory setting ON	Leave on factory set- ting	ON	ON
High Speed 4			OFF	ON
High Speed 3			ON	OFF

The orientation of the circuit board in the electrical box may differ from this illustration



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 28 or 31) 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 7).

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 29 shows details of the built-in balancing collars supplied on the HRV3-150/200 and ERV3-150/200.

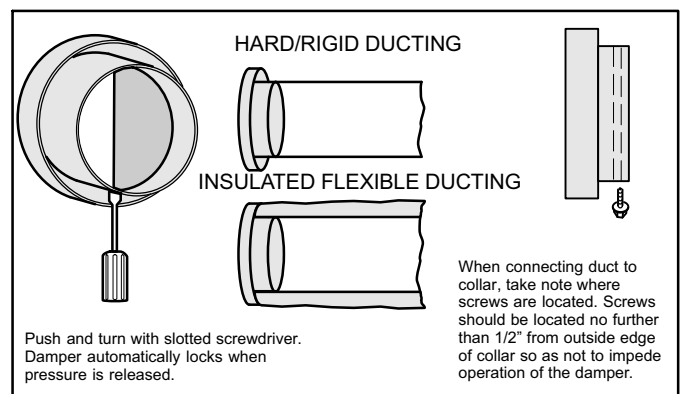


Figure 29. Built-In Balancing Collars (HRV3-150/200 & ERV3-150/200 only)

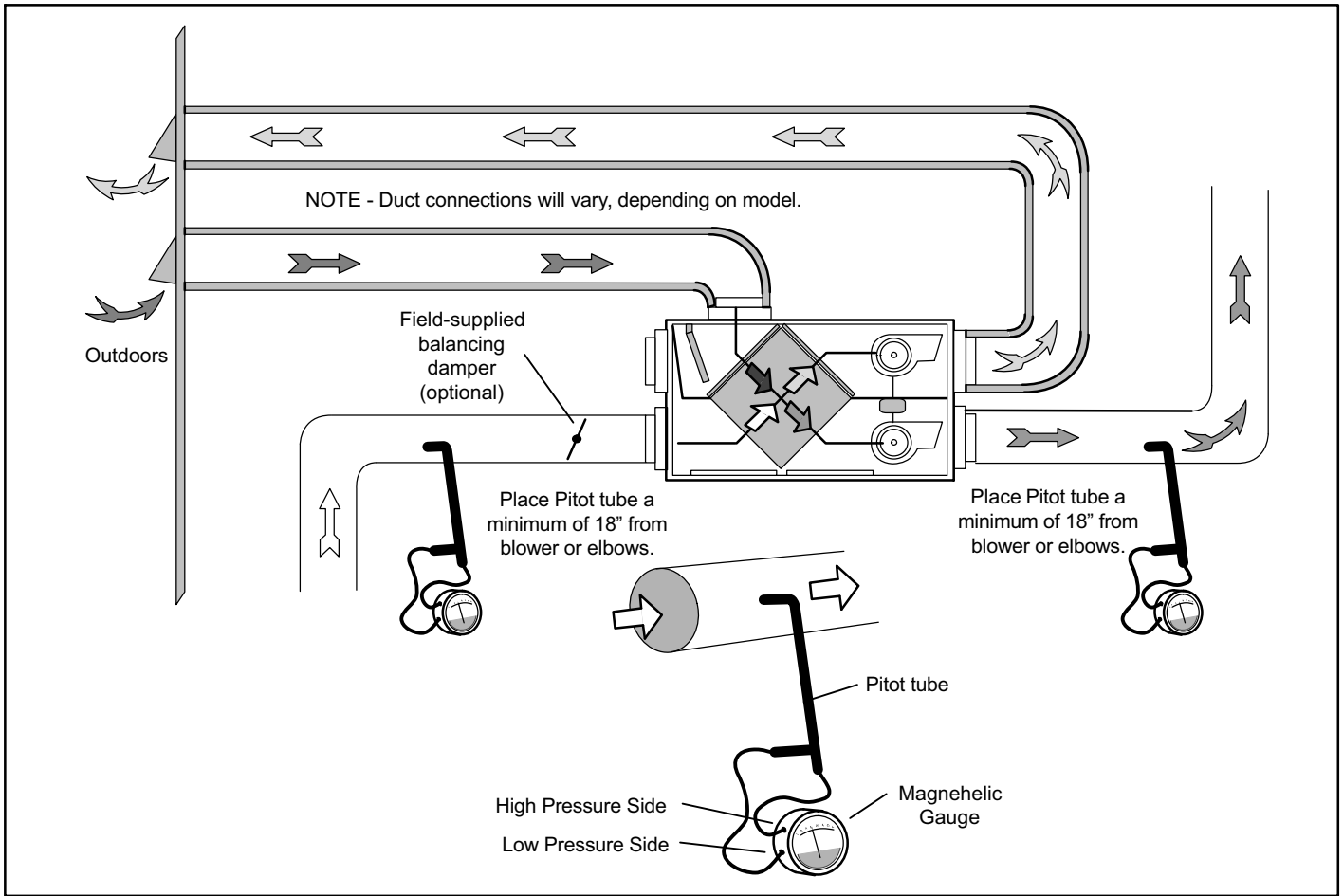


Figure 30. Placement of Pitot Tube in HRV/ERV System

Airflow balancing using the door ports

Available on Selected Models

Door balancing ports (available only for HRV4-150, HRV4-200, HRV3-150-TPD, and HRV3-150-TPF) are designed to be used in conjunction with a Magnehelic Gauge or Digital Manometer to measure the stale and fresh airflows for balancing.

NOTE - Door port balancing on the HRV3-150-TPD and HRV3-150-TPF requires a Magnehelic Gauge with a scale of 0 to 1.00" w.c. HRV4-150 and HRV4-200 require a Magnehelic Gauge with a scale of 0 to 0.50" w.c.

Balancing Procedure

1. Prepare the airflow measuring device (Magnehelic Gauge or Digital Manometer) by connecting the hoses to the low and high pressure side of the gauge.
2. Insert the hoses into the rubber fittings from the optional Door Port Adapter Kit (Y2206 or Y2207). Use light pressure and rotate until fitting is snug. Do not extend the hose past the rubber fitting.
3. Open the HRV Door. Remove the 4 Door Port Covers by carefully pushing them out from the back side of the door (use the blunt end of a large drill bit etc.).

4. Close the HRV Door. Initiate power and operate the HRV on high speed. Operate the forced air system on high speed (if the HRV is connected to the forced air system).
5. **Measure Stale air**—Insert the 2 rubber fittings from the gauge to the STALE AIR Balancing Ports (see figure 32). Seal the FRESH AIR Balancing Ports (upper left and lower right) with tape. Record your reading.
6. **Measure Fresh air**—Insert the 2 rubber fittings from the gauge to the FRESH AIR Balancing Ports (see figure 31). Seal the STALE AIR Balancing Ports (upper right and lower left) with tape. Record your reading.
7. Refer to the Airflow Balancing Reference (see tables 1, 2, 3) for your model and determine the FRESH AIR and STALE AIR flow rates.
8. Damper down the higher airflow and repeat Steps 5 to 7 as required until both airflows are identical (balanced).
9. Remove the tape and rubber fittings and reinstall the 4 Door Port Covers.

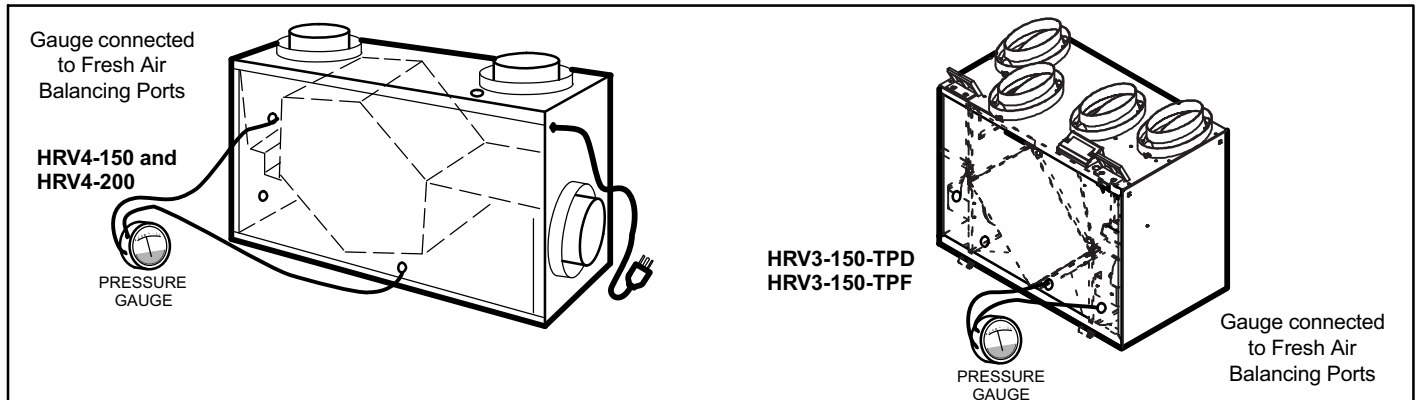


Figure 31. Door Balancing Ports—Fresh Air

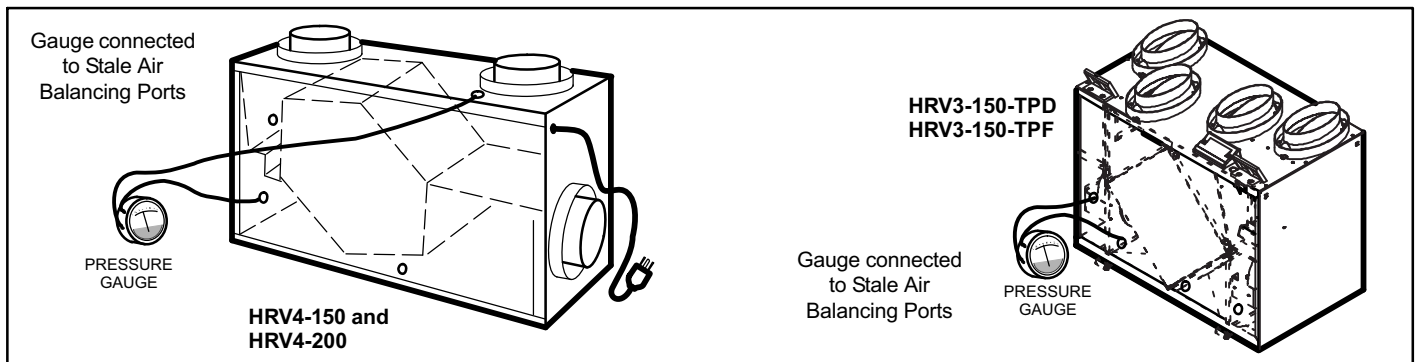


Figure 32. Door Balancing Ports—Stale Air

Table 1. Airflow Balancing Reference HRV3-150-TPD & HRV3-150-TPF

Speed 5 (factory setting)				Speed 4				Speed 3			
Pressure Drop		Fresh Air CFM	Stale Air CFM	Pressure Drop		Fresh Air CFM	Stale Air CFM	Pressure Drop		Fresh Air CFM	Stale Air CFM
"w.g.	Pa			"w.g.	Pa			"w.g.	Pa		
0.470	118		176	0.300	75		159	0.260	65		139
0.480	120		173	0.310	78		156	0.270	68		135
0.490	123		170	0.320	80		153	0.280	70		131
0.500	125		167	0.330	83		150	0.290	73		127
0.510	128		164	0.340	85		147	0.300	75		124
0.520	130		161	0.350	88		144	0.310	78		120
0.530	133		158	0.360	90		142	0.320	80		116
0.540	135		155	0.370	93		139	0.330	83		113
0.550	138		152	0.380	95		136	0.340	85		109
0.560	140		149	0.390	98		133	0.350	88	138	106
0.570	143		146	0.400	100		130	0.360	90	133	102
0.580	145		143	0.410	103		127	0.370	93	129	99
0.590	148		140	0.420	105		125	0.380	95	124	96
0.600	150		137	0.430	108		122	0.390	98	120	93
0.610	153		134	0.440	110		119	0.400	100	116	90
0.620	155		131	0.450	113		116	0.410	103	112	87
0.630	158		128	0.460	115		113	0.420	105	107	84
0.640	160		125	0.470	118		110	0.430	108	104	81
0.650	163		122	0.480	120		108	0.440	110	100	78
0.660	165		119	0.490	123		105	0.450	113	96	75
0.670	168		117	0.500	125		102	0.460	115	92	72
0.680	170		114	0.510	128	156	99	0.470	118	89	70
0.690	173		111	0.520	130	148	96	0.480	120	86	67
0.700	175		108	0.530	133	139	93	0.490	123	82	64
0.710	178		105	0.540	135	132	91	0.500	125	79	62
0.720	180	176	102	0.550	138	125	88	0.510	128	76	60
0.730	183	165	99	0.560	140	119	85	0.520	130	73	57
0.740	185	156	96	0.570	143	113	82	0.530	133	71	55
0.750	188	148	93	0.580	145	107	79	0.540	135	68	53
0.760	190	140	90	0.590	148	103	77	0.550	138	65	51
0.770	193	133	87	0.600	150	98	74	0.560	140	63	49
0.780	195	127	84	0.610	153	94	71	0.570	143	61	47
0.790	198	122	81	0.620	155	90	68	0.580	145	58	45
0.800	200	117	78	0.630	158	87	65	0.590	148	56	43
0.810	203	113	75	0.640	160	84	62	0.600	150	54	41
0.820	205	109	72	0.650	163	81	60	0.610	153	53	39
0.830	208	106	69	0.660	165	79	57	0.620	155	51	37
0.840	210	103	66	0.670	168	76	54	0.630	158	49	
0.850	213	100		0.680	170	74	51	0.640	160	48	
0.860	215	98		0.690	173	72	48	0.650	163	46	
0.870	218	96		0.700	175	71		0.660	165	45	
0.880	220	94		0.710	178	69		0.670	168	44	
0.890	223	93		0.720	180	67		0.680	170	43	
0.900	225	89		0.730	183	66		0.690	173	42	
0.910	228	87		0.740	185	64		0.700	175	41	
0.920	230	85		0.750	188	62		0.710	178	40	
0.930	233	83		0.760	190	61					
0.940	235	81		0.770	193	59					
0.950	238	79		0.780	195	57					
0.960	240	78		0.790	198	55					
0.970	243	76		0.800	200	53					
0.980	245	75		0.810	203	50					
0.990	248	74		0.820	205	48					
1.000	250	73									
<p>Refer to "Installer Selectable High Speed Settings" in this manual for more information. NOTE - Door port balancing on the HRV3-150-TPD and HRV3-150-TPF requires a Magnehelic Gauge with a scale of 0 to 1.00" w.c.</p>											

Table 2. Airflow Balancing Reference HRV4-150

Speed 5 (factory setting)				Speed 4				Speed 3			
Pressure Drop		Fresh Air CFM	Stale Air CFM	Pressure Drop		Fresh Air CFM	Stale Air CFM	Pressure Drop		Fresh Air CFM	Stale Air CFM
"w.g.	Pa			"w.g.	Pa			"w.g.	Pa		
0.090	22	32	75	0.040	10	39	21	0.040	10	43	29
0.095	24	38	82	0.050	12	47	33	0.045	11	45	32
0.100	25	48	87	0.055	14	51	38	0.050	12	48	36
0.104	26	55	91	0.060	15	55	44	0.055	14	51	41
0.110	27	63	97	0.065	16	58	50	0.060	15	54	45
0.114	28	67	98	0.070	17	61	56	0.065	16	56	51
0.120	30	73	103	0.075	19	64	62	0.070	17	59	57
0.124	31	76	107	0.080	20	67	68	0.075	19	62	63
0.130	32	81	112	0.085	21	69	74	0.080	20	65	71
0.134	33	84	116	0.090	22	72	79	0.085	21	68	79
0.140	35	88	121	0.095	24	74	85	0.090	22	70	89
0.144	36	90	124	0.100	25	77	91	0.095	24	73	94
0.150	37	93	129	0.105	26	79	97	0.100	25	76	98
0.154	38	95	131	0.110	27	81	103	0.105	26	79	101
0.160	40	98	136	0.115	29	83	106	0.110	27	82	105
0.164	41	100	139	0.120	30	86	111	0.115	29	84	109
0.170	42	103	143	0.125	31	88	117	0.120	30	87	112
0.174	43	105	145	0.130	32	90	123	0.125	31	90	116
0.180	45	107	149	0.135	34	92	129	0.130	32	93	120
0.190	47	118	156	0.140	35	94	135	0.135	34	96	123
0.195	49	120	159	0.145	36	96	141	0.140	35	98	127
0.200	50	122	162	0.150	37	97	147	0.145	36	101	131
0.205	51	123	165	0.155	39	99	152	0.150	37	104	134
0.210	52	125	168	0.160	40	101	158	0.155	39	107	138
0.215	54	126	171	0.165	41	103	164	0.160	40	110	142
0.220	55	128	173	0.170	42	105	170	0.165	41	112	145
0.225	56	129	176	0.175	44	111	176	0.170	42	115	149
0.230	57	130	179	0.180	45	113	182	0.175	44	118	152
0.235	58	132	182	0.185	46	115	187	0.180	45	121	156
0.240	60	133	184	0.190	47	116	193	0.185	46	124	160
0.245	61	134	187	0.195	49	118	199	0.190	47	126	163
0.250	62	136	189	0.200	50	119	205	0.195	49	129	167
0.255	63	137	192	0.205	51	121	211	0.200	50	132	171
0.260	65	138	194	0.210	52	123	217	0.205	51	135	174
0.265	66	139	197	0.215	54	124	223	0.210	52	137	178
0.270	67	141	199	0.220	55	126	228	0.215	54	140	182
0.275	68	142	202	0.225	56	127	234	0.220	55	143	185
0.280	70	143	204	0.230	57	129	240	0.225	56	146	189
0.285	71	144	207	0.235	58	130	246	0.230	57	149	193
0.290	72	145	209	0.240	60	131	252	0.235	58	151	196
0.295	73	146	211	0.245	61	133	258	0.240	60	154	200
0.300	75	147	213	0.250	62	134	264	0.245	61	157	204
0.305	76	148	216	0.255	63	136	269	0.250	62	160	207
0.310	77	149	218	0.260	65	137	273	0.255	63	163	211
0.315	78	150	220					0.260	65	165	215
0.320	80	151	222					0.265	66	168	218
0.325	81	152	224					0.270	67	171	222
0.330	82	153	227					0.275	68	174	225
0.335	83	154	229					0.280	70	177	229
0.340	85	155	231					0.285	71	179	233
0.345	86	156	233					0.290	72	182	236
0.350	87	157	235					0.295	73	185	240
0.355	88	158	237					0.300	75	188	244
0.360	90	159	239					0.305	76	191	247
0.365	91	160	241					0.310	77	193	251
0.370	92	161	243					0.315	78	196	255
0.375	93	162	245								
0.380	95	163	247								

Refer to "Installer Selectable High Speed Settings" in this manual for more information.

NOTE - Door port balancing on the HRV4-150 requires a Magnehelic Gauge with a scale of 0 to 0.50" w.c.

Table 3. Airflow Balancing Reference HRV4-200

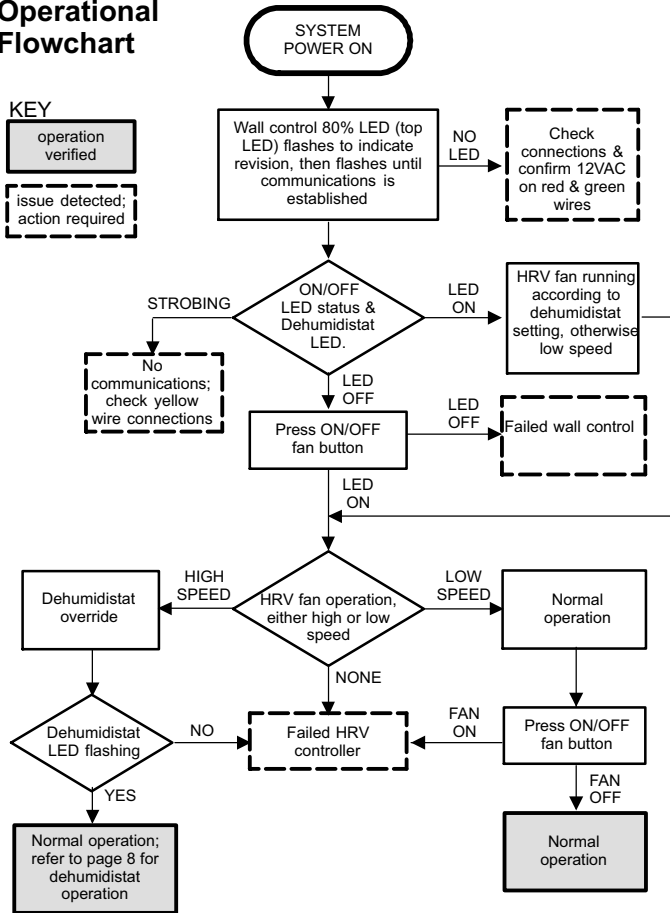
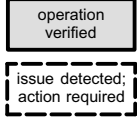
Speed 5 (factory setting)				Speed 4				Speed 3			
Pressure Drop		Fresh Air CFM	Stale Air CFM	Pressure Drop		Fresh Air CFM	Stale Air CFM	Pressure Drop		Fresh Air CFM	Stale Air CFM
"w.g.	Pa			"w.g.	Pa			"w.g.	Pa		
0.055	14	48	25	0.040	10	47	32	0.040	10	39	38
0.060	15	51	41	0.045	11	49	37	0.045	11	41	43
0.065	16	55	51	0.050	12	51	43	0.050	12	44	48
0.070	17	58	60	0.055	14	53	48	0.055	14	46	54
0.075	19	61	68	0.060	15	55	54	0.060	15	48	60
0.080	20	64	75	0.065	16	57	59	0.065	16	51	67
0.085	21	66	82	0.070	17	59	64	0.070	17	53	75
0.090	22	69	88	0.075	19	61	70	0.075	19	55	84
0.095	24	71	93	0.080	20	63	75	0.080	20	58	92
0.100	25	74	98	0.085	21	65	81	0.085	21	60	94
0.105	26	76	103	0.090	22	67	86	0.090	22	63	98
0.110	27	79	108	0.095	24	69	92	0.095	24	65	101
0.115	29	81	113	0.100	25	71	97	0.100	25	67	105
0.120	30	83	117	0.105	26	73	103	0.105	26	70	109
0.125	31	85	121	0.110	27	76	108	0.110	27	72	112
0.130	32	87	125	0.115	29	78	113	0.115	29	75	116
0.135	34	89	129	0.120	30	80	119	0.120	30	77	120
0.140	35	94	133	0.125	31	82	124	0.125	31	79	123
0.145	36	96	137	0.130	32	84	128	0.130	32	82	127
0.150	37	98	141	0.135	34	86	129	0.135	34	84	131
0.155	39	100	144	0.140	35	88	135	0.140	35	86	134
0.160	40	102	148	0.145	36	90	140	0.145	36	89	138
0.165	41	104	151	0.150	37	92	145	0.150	37	91	142
0.170	42	105	154	0.155	39	94	151	0.155	39	94	145
0.175	44	107	157	0.160	40	96	156	0.160	40	96	149
0.180	45	109	161	0.165	41	98	162	0.165	41	98	153
0.185	46	111	164	0.170	42	100	167	0.170	42	101	156
0.190	47	112	167	0.175	44	102	173	0.175	44	103	160
0.195	49	114	170	0.180	45	104	178	0.180	45	106	163
0.200	50	116	173	0.185	46	106	183	0.185	46	108	167
0.205	51	117	176	0.190	47	109	189	0.190	47	110	171
0.210	52	119	178	0.195	49	111	194	0.195	49	113	174
0.215	54	120	181	0.200	50	113	200	0.200	50	115	178
0.220	55	122	184	0.205	51	115	205	0.205	51	117	182
0.225	56	123	187	0.210	52	117	211	0.210	52	120	185
0.230	57	125	189	0.215	54	119	216	0.215	54	122	189
0.235	58	126	192	0.220	55	121	222	0.220	55	125	193
0.240	60	128	195	0.225	56	123	227	0.225	56	127	196
0.245	61	129	197	0.230	57	125	232	0.230	57	129	200
0.250	62	131	200	0.235	58	127	238	0.235	58	132	204
0.255	63	132	202	0.240	60	129	243	0.240	60	134	207
0.260	65	134	205	0.245	61	131	249	0.245	61	137	211
0.265	66	135	207	0.250	62	133	254	0.250	62	139	215
0.270	67	136	210	0.255	63	135	260	0.255	63	141	218
0.275	68	138	212	0.260	65	137	265	0.260	65	144	222
0.280	70	139	214	0.265	66	139	270	0.265	66	146	225
0.285	71	141	217	0.270	67	142	276	0.270	67	148	229
0.290	72	142	219	0.275	68	144	281	0.275	68	151	233
0.295	73	143	221	0.280	70	146	287	0.280	70	153	236
0.300	75	147	223	0.285	71	148	292	0.285	71	156	240
0.305	76	149	226	0.290	72	150	298	0.290	72	158	244
0.310	77	150	228	0.295	73	152	303	0.295	73	160	247
0.315	78	151	230	0.300	75	154	309	0.300	75	163	251
0.320	80	153	232	0.305	76	156	314	0.305	76	165	255
0.325	81	154	234	0.310	77	158	319	0.310	77	167	258
0.330	82	155	237					0.315	78	170	262
0.335	83	156	239								
0.340	85	158	241								
0.345	86	159	243								
0.350	87	160	245								
0.355	88	161	247								
0.360	90	162	249								
0.365	91	164	251								
0.370	92	165	253								
0.375	93	166	255								
0.380	95	167	257								

**Refer to "Installer Selectable High Speed Settings" in this manual for more information.
NOTE - Door port balancing on the HRV4-200 requires a Magnehelic Gauge with a scale of 0 to 0.50" w.c.**

Sequence of Operation

HRV Operational Flowchart

KEY

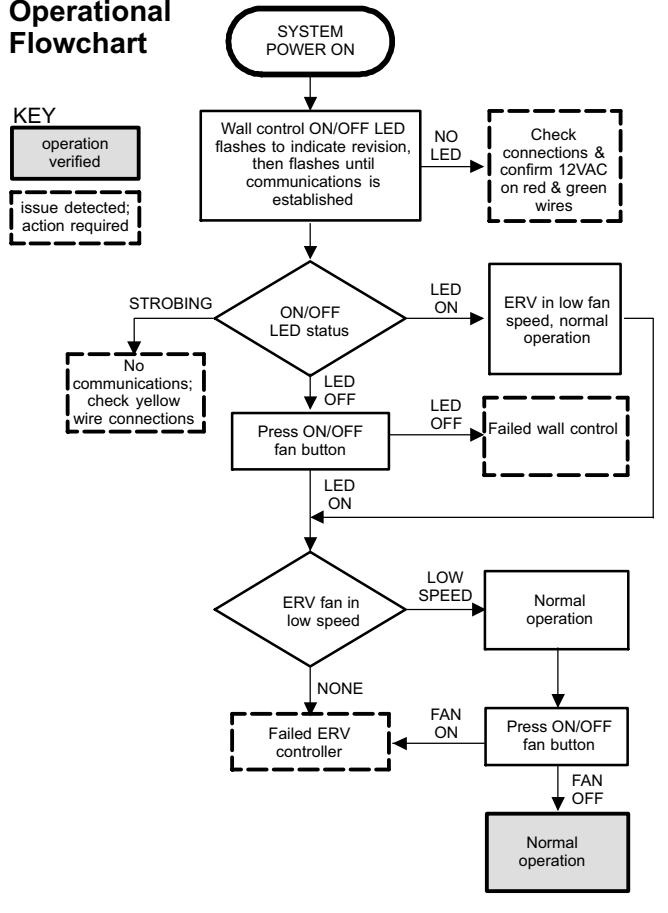
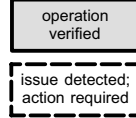


NOTES:

- 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.

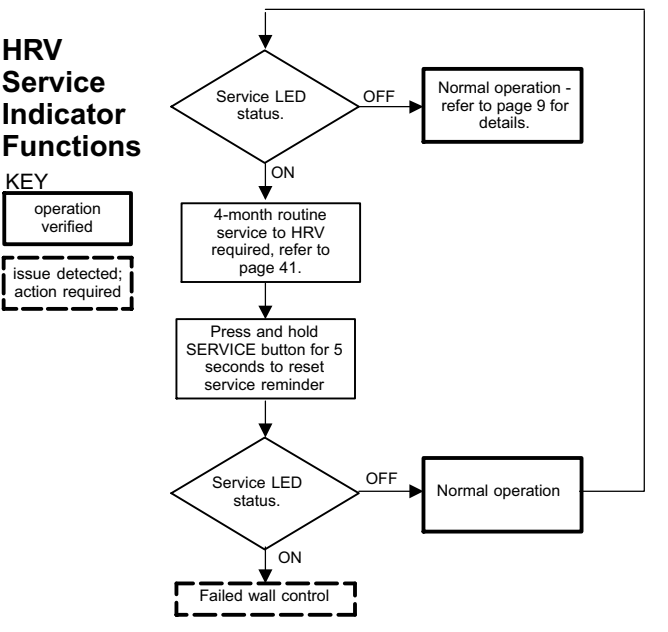
ERV Operational Flowchart

KEY



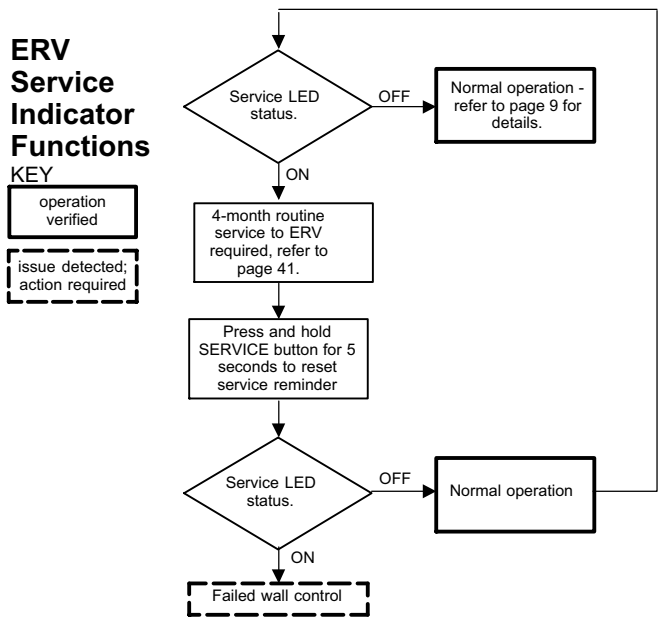
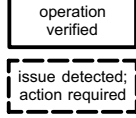
HRV Service Indicator Functions

KEY

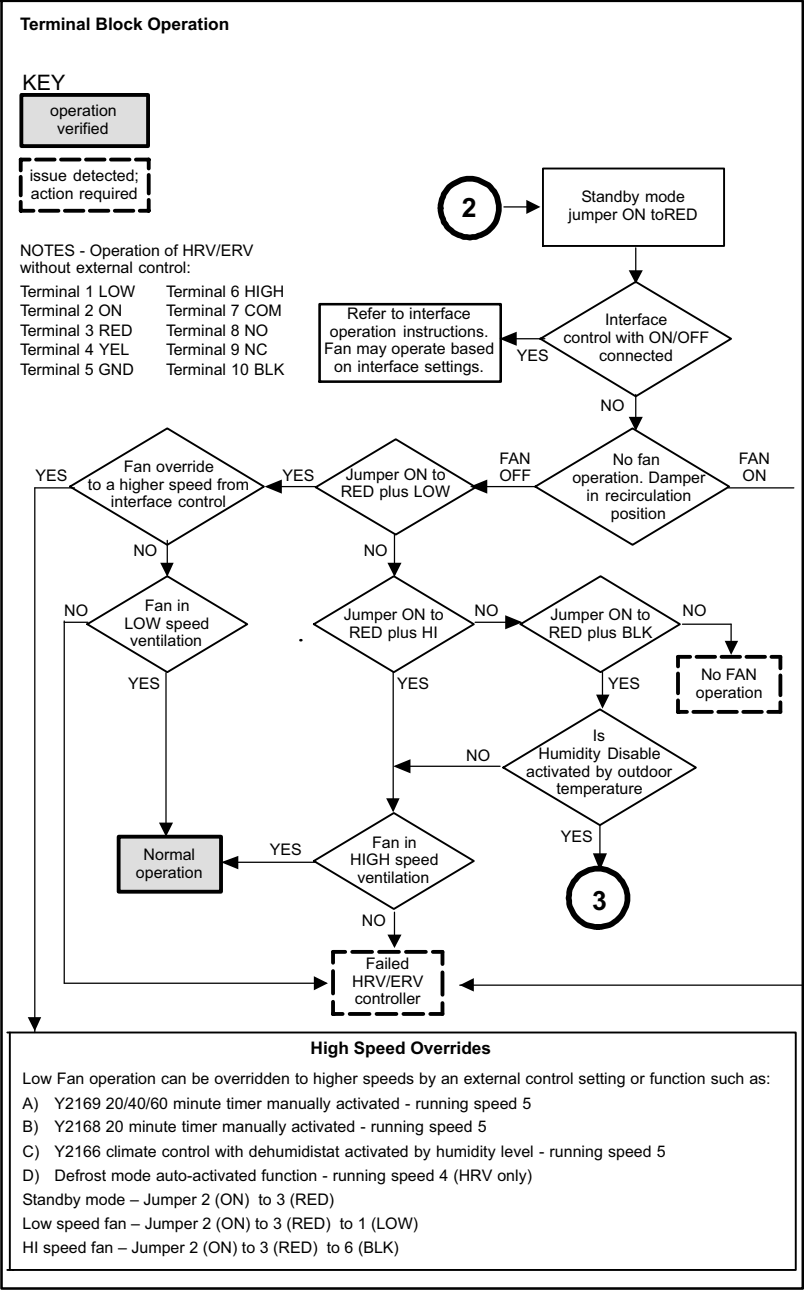
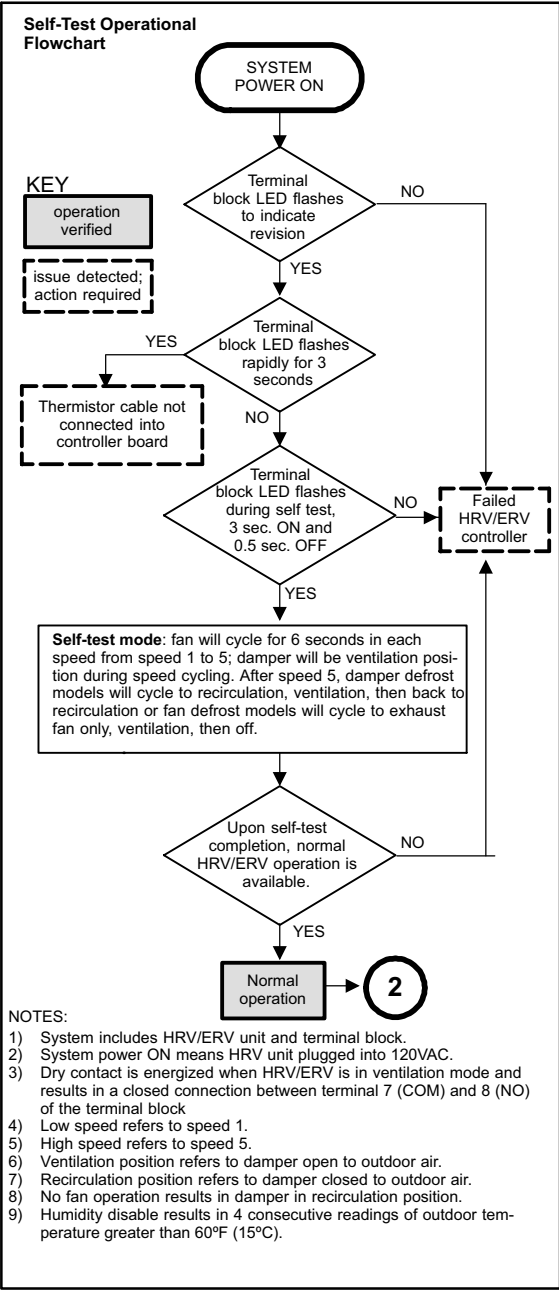


ERV Service Indicator Functions

KEY



Sequence of Operation (continued)



Sequence of Operation (continued)

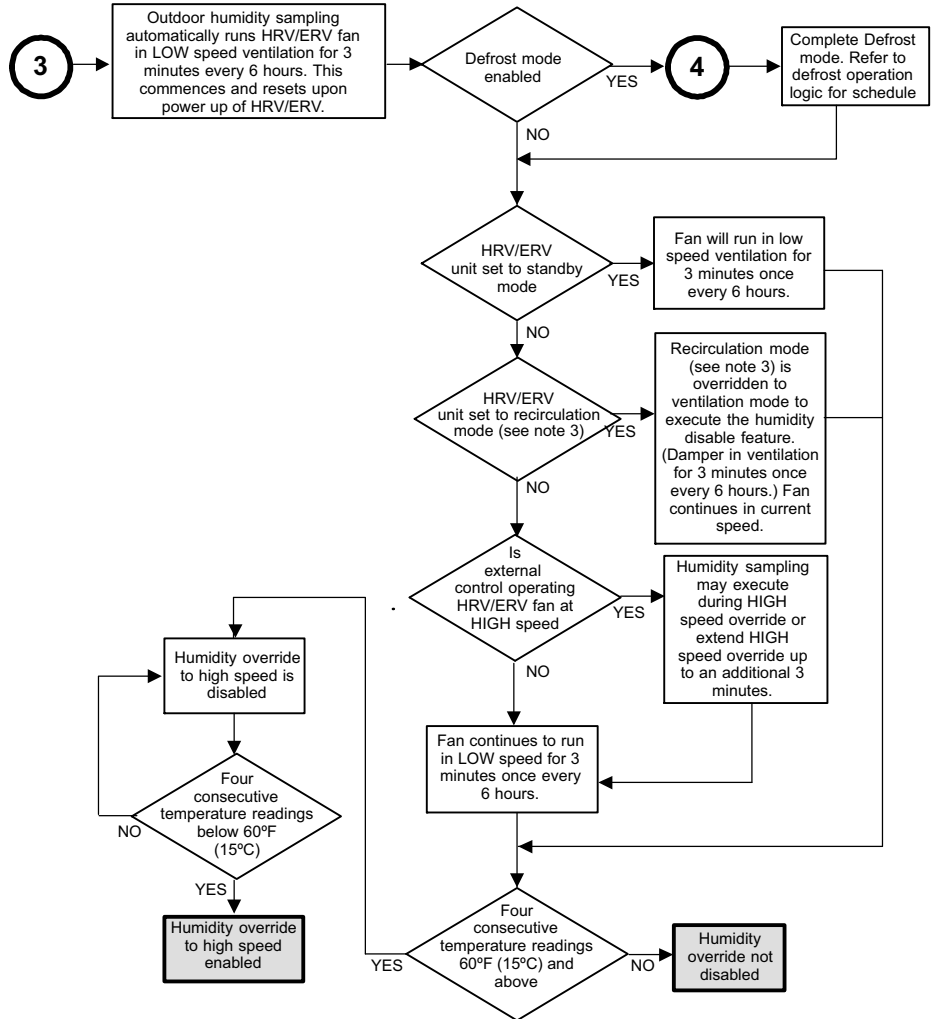
Dehumidistat Disable

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).
- 3) Recirculation mode is only available on recirculating defrost models (HRV3-095, HRV3-150-TPD, HRV4-150, HRV4-200).

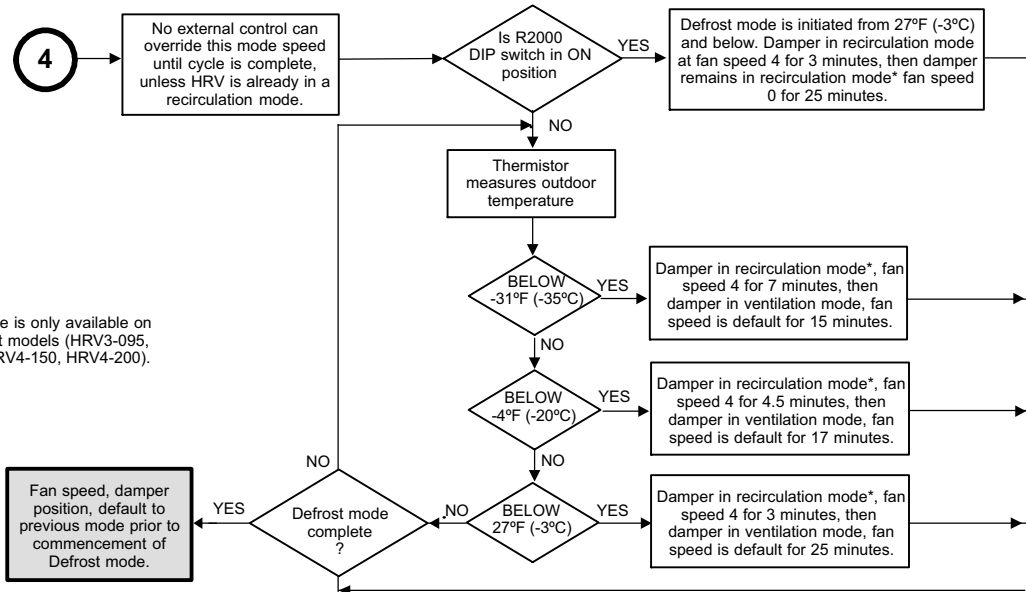


Defrost Mode (HRV)

KEY

- operation verified
- issue detected; action required

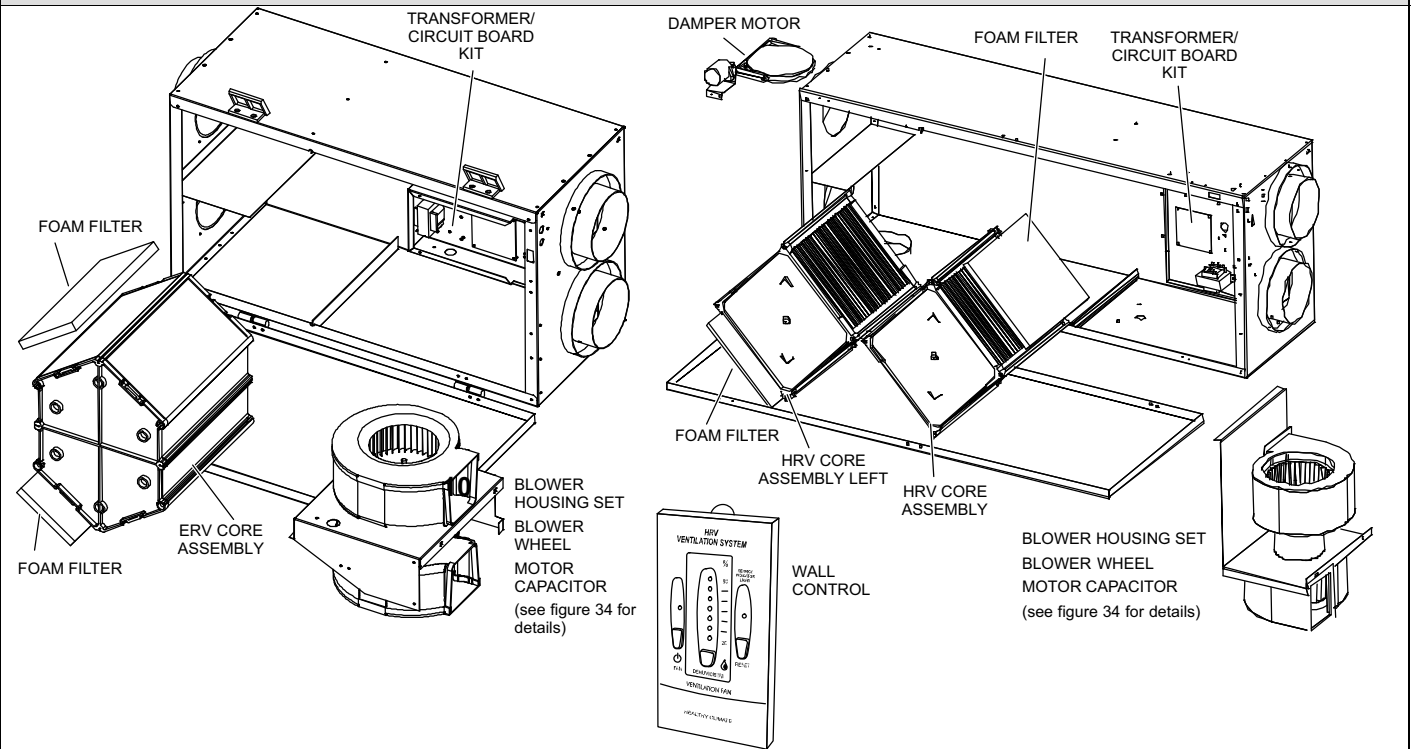
* Recirculation mode is only available on recirculating defrost models (HRV3-095, HRV3-150-TPD, HRV4-150, HRV4-200).



Troubleshooting

Symptom	Cause	Solution
Poor airflow(s)	<ul style="list-style-type: none"> Mesh on outside hoods plugged Filters plugged Core obstructed House grilles closed or blocked Dampers closed (if installed) Poor power supply at site Ductwork is restricting HRV/ERV Improper speed control setting HRV/ERV airflow improperly balanced 	<ul style="list-style-type: none"> Clean exterior hoods or vents Remove and clean filter Remove and clean core Check and open grilles Open and adjust dampers Have electrician check supply voltage at house Check duct installation Increase the speed of the HRV/ERV Have contractor balance the HRV/ERV
Supply air feels cold	<ul style="list-style-type: none"> Poor location of supply grilles; airflow may irritate occupants Outdoor temperature extremely cold 	<ul style="list-style-type: none"> 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). Turn down the HRV/ERV supply speed. A small duct heater (1kw) could be used to temper the supply air. Placement of furniture or closed doors restricting movement of air in home; consider rearranging. If supply air is ducted into furnace return, the furnace fan may need to run continuously to distribute ventilation air comfortably.
Dehumidistat is not operating	<ul style="list-style-type: none"> Outdoor temperature is above 59°F (15°C) Improper low-voltage connection External low voltage is shorted out by a staple or nail Check dehumidistat setting; it may be OFF 	<ul style="list-style-type: none"> Dehumidistat is functioning normally (see Auto Dehumidistat Disable in this manual). Check that the correct terminals have been used, Check external wiring for a short. Set the dehumidistat at the desired level.
Humidity levels are too high; condensation is appearing on windows	<ul style="list-style-type: none"> Dehumidistat set too high HRV/ERV unit is undersized to handle a hot tub, indoor pool, etc. (occupant lifestyle) Moisture coming into the home from an unvented or unheated crawl space Moisture remaining in washroom and/or kitchen areas Condensation seems to form in the spring and fall seasons HRV/ERV is set at too low a speed 	<ul style="list-style-type: none"> Set dehumidistat at lower level. Cover pool, hot tub, when not in use. Avoid hanging clothes to dry indoors, storing wood indoors, and venting dryer inside. Vent crawl space and place a vapor barrier on the floor of the crawl space. 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. On humid days, as seasons change, some condensation may appear but the home's air quality will remain high with some HRV/ERV use. Increase speed of HRV/ERV.
Humidity levels are too low	<ul style="list-style-type: none"> Dehumidistat control set too low Blower speed of HRV/ERV is too high Occupant lifestyle issue HRV/ERV airflows may be improperly balanced 	<ul style="list-style-type: none"> Set dehumidistat at higher level. Decrease HRV/ERV blower speed. Humidity may have to be added through use of humidifiers. Have a contractor balance HRV/ERV airflows.
HRV units and/or ducts frosting up	<ul style="list-style-type: none"> HRV air flows are improperly balanced Malfunction of the HRV defrost system 	<ul style="list-style-type: none"> Note – minimal frost build-up is expected on cores before unit initiates defrost cycle functions. Have HVAC contractor balance the HRV airflows. Ensure damper defrost is operating during self-test.
Condensation or ice build-up in insulated duct to the outside	<ul style="list-style-type: none"> Incomplete vapor barrier around insulated duct Hole or tear in outer duct covering 	<ul style="list-style-type: none"> Tape and seal all joints. Tape any holes or tears made in the outer duct covering. Ensure that the vapor barrier is complete sealed.
Water in the bottom of the HRV/ERV unit	<ul style="list-style-type: none"> Drain pans plugged Improper connection of HRV/ERV drain lines HRV/ERV is not level Drain lines obstructed HRV/ERV heat exchange core is not properly installed 	<ul style="list-style-type: none"> Ensure o-ring on drain nozzle sits properly. Look for kinks in the drain line. Check water drain connections. Make sure water drains properly from pan(s).

Replacement Parts Summary



Replacement Parts	HRV3 -150-TPD (Y5447)	HRV3 -150-TPF (Y5448)	HRV3 -095/-095-GDX (Y2142/ Y2967)	HRV4 -150/-150-GDX (Y5443/ Y5445)	HRV4 -200/-200-GDX (Y5444/ Y5446)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
Motor / Capacitor	Y5438	Y5438	Y2146	Y5436	Y5437	Y2145	Y2147	Y2145	Y2145
Blower Housing Set	N/A	N/A	Y2149	Y5439	Y5439	Y2150	Y2150	Y2148	Y2148
Blower Wheel CW red dot	N/A	N/A	Y2153	Y2151	Y2152	Y2152	Y2152	Y2151	Y2152
Blower Wheel CCW	N/A	N/A	Y2156	Y2154	Y2154	Y2155	Y2155	Y2154	Y2155
Core Assembly	Y5441	Y5441	Y2159	Y5440	Y5440	Y2159	Y2159	Y2157	Y2157
Core Assembly Left	-	-	-	-	-	Y2160	Y2160	-	-
Foam Filter Set (2)	Y2162	Y2162	Y2163	Y5442	Y5442	Y2162	Y2162	Y2161	Y2161
Transformer / Circuit board kit	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164
Damper Motor	74N94	N/A	74N94	74N94	74N94	74N94	74N94	-	-
Wall Control with the Unit	Y2166	Y2166	Y2166/Y2171	Y2166/Y2171	Y2166/Y2171	Y2166	Y2166	Y2165	Y2165
Fan Relay	N/A	Y5473	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Blower Assembly Service (Dealer Only)

To Remove Blower Assembly (figure 33)

⚠ 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 34)

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.

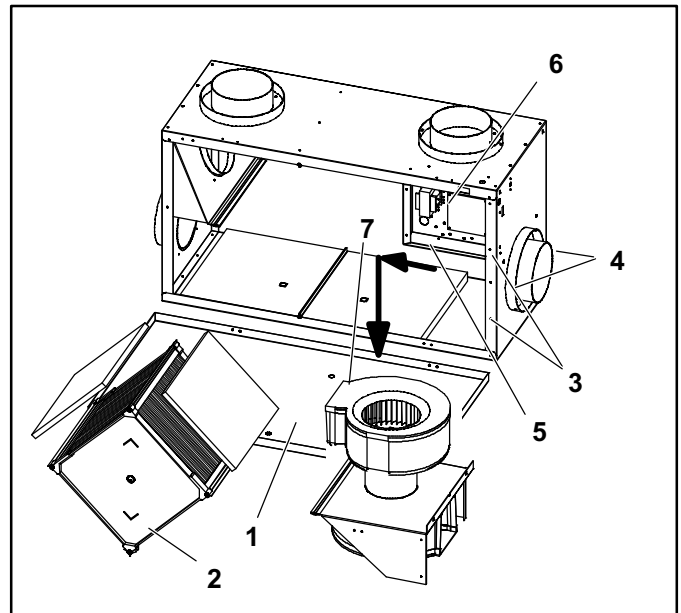


Figure 33. Removing Blower Assembly

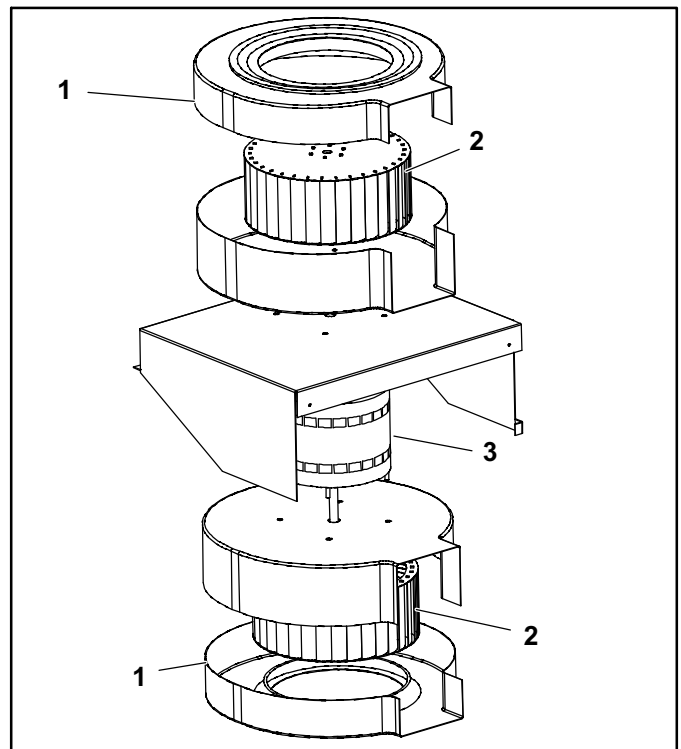


Figure 34. Replacing Motor

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

