

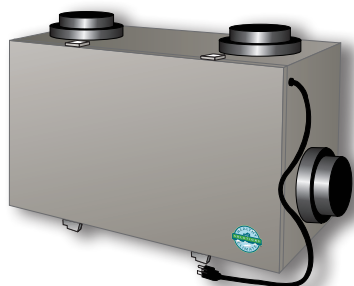


# INDOOR AIR QUALITY KIT AND ACCESSORIES

507363-02  
1/2017  
Supersedes 507363-01

## HEALTHY CLIMATE® HRV AND ERV VENTILATORS

### INSTALLATION INSTRUCTIONS AND HOMEOWNER GUIDE FOR HEALTHY CLIMATE® HEAT RECOVERY VENTILATOR (HRV) AND ENERGY RECOVERY VENTILATOR (ERV)



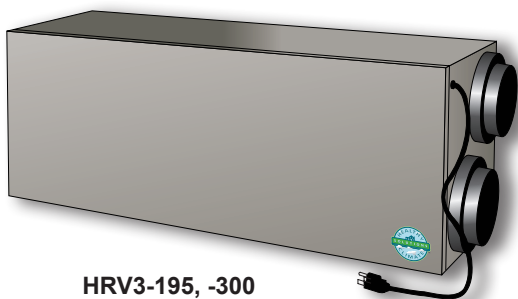
HRV5-150



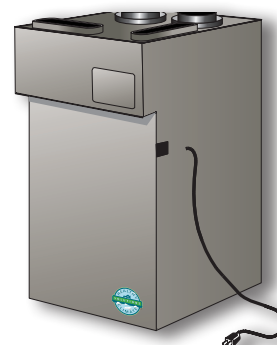
HRV3-150-TPD/TPF, HRV5-200-TPD



ERV3-150, -200



HRV3-195, -300



HRV3-095



Certain 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.

**THIS MANUAL MUST BE LEFT WITH THE OWNER  
FOR FUTURE REFERENCE**

### **! WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.

Installation and service must be performed by a licensed professional HVAC installer (or equivalent) or a service agency.

### **! CAUTION**

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

### 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 instruction
  - 1 - Warranty
  - 1 - Wall-mounted remote control

### General Information

This instruction is intended as a general guide and does not supersede local codes in any way. Consult authorities who have jurisdiction before installation.

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## Model and Catalog Number Cross-References

**Table 1. Models and Catalog Numbers**

Model	Catalog Number
ERV3-150	Y2138
ERV3-200	Y2139
HRV3-095*	Y2142
HRV3-150-TPD	Y5447
HRV3-150-TPD-GDX**	Y6423
HRV3-150-TPF	Y5448
HRV3-150-TPF-GDX**	Y6424
HRV3-095-GDX*/**	Y2967
HRV3-195*	Y2143
HRV3-300* (Dual-Core)	Y2144
HRV5-150*	Y6419
HRV5-150-GDX*/**	Y6420
HRV5-200-TPD	Y6421
HRV5-200-TPD-GDX*/**	Y6422

\*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.

\*\* Available in Canada only.

## Terms and 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 - HRV/ERV Ventilators” on page 44.

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 five days continuously.

## Required Tools and Materials

### Recommended Materials

**Table 2. 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

**Table 3. Balancing Tools**

Product	Catalog Number	Description
Balancing Tool	Y6484	Digital Manometer with range of 0 - 4.000 inches w.c. (0 - 995 kPa)
Door Port Gauge Tube Set	Y2207	Can be used to balance HRV3-150-TPD/TPF, HRV5-150/200 Models Only). Includes two connection hoses, two rubber fittings and instructions. Digital manometer. Rreading down to 0 with resolution of 0.001 inches w.c.(0.00024884 kPa) or Magnehelic gauge - scale of 0 to 1.0 inches w.c.(0 - to 0.24884 kPa) is not furnished and must be field-supplied.

## Optional Accessories

**Table 4. Optional Accessories**

Description	Catalog Number
Wired Timer	Y2169
Wireless 20/40/60 Minute Timer	Y8251
Wireless Timer Repeater	Y8252
Wall Mount Dehumidistat/Ventilation Control (furnished with all units except GDX)	Y8249
Digital 5 Speed / 5 Mode Control (furnished with all GDX units)	Y8250
Weatherhood Kit (includes two hoods, two screens, two 12 inch sleeves, two collars and supply/exhaust labels):	
5" (127 mm)	92E66
6" (152 mm)	95P07
7" (178 mm)	17N11

**Table 4. Optional Accessories**

Description	Catalog Number
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, labeled Supply/Exhaust. 6" (152 mm)	Y3813
Kitchen Grille, 6" x 10" (152 mm x 254 mm) (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

**Table 5. Specifications**

Specifications	Single-Core HRV Units					Dual-Core HRV Units		Single-Core ERV Units	
	HRV3 -150-TPD/- 150-TPD-GDX (Y5447/Y6423)	HRV3-150 -TPF/-150TPF- GDX (Y5448/Y6424)	HRV3 -095/-095- GDX (Y2142/ Y2967)	HRV5 -150/-150- GDX (Y6419/ Y6420)	HRV5 -200-TPD/- 200-TPD- GDX (Y6421/ Y6422)	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
Weight- pounds (kilograms)	51 (23)	51 (23)	52 (24)	71 (32)	57 (26)	106 (48)	106 (48)	68 (31)	68 (31)
Unit Dimensions	Refer to dimension drawings starting with "Figure 1. Dimensions and Airflows" on page 7.								
High Speed (HVI Certified)									
inches 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)	169 (74)	174 (82)	76 (36)	184 (87)	222 (105)	216 (101)	232 (110)	151 (71)	180 (85)
0.2 (50)	156 (69)	165 (77)	73 (34)	163 (77)	207 (98)	195 (92)	212 (100)	141 (67)	169 (79)
0.3 (75)	149 (63)	154 (73)	70 (33)	146 (69)	193 (91)	181 (85)	202 (95)	132 (62)	157 (74)
0.4 (100)	136 (59)	143 (67)	66 (31)	132 (62)	179 (84)	158 (74)	183 (86)	124 (59)	146 (69)
0.5 (125)	126 (54)	132 (62)	60 (28)	115 (54)	165 (78)	144 (68)	163 (77)	107 (50)	132 (62)
0.6 (150)	116 (49)	120 (56)		92 (43)	150 (71)	125 (59)	144 (68)	98 (46)	118 (55)
0.7 (175)	103 (45)	107 (52)		60 (28)	135 (63)	107 (50)	123 (58)	81 (38)	101 (47)
0.8 (200)	89 (40)	95 (45)			119 (56)	72 (34)	92 (43)	60 (28)	82 (39)
0.9 (225)	77 (33)	83 (39)			102 (49)				
1.0 (250)	58 (29)	71 (34)			84 (40)				
Sensible Effectiveness @ 32°F (0°C)	@ 66 CFM (31 L/s) 74%	@ 66 CFM (31 L/s) 75%	@ 60 CFM (28 L/s) 88%	@ 59 CFM (28 L/s) 84%	@ 100 CFM (47 L/s) 77%	@ 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%	@ 59 CFM (28 L/s) 75%	@ 100 CFM (47 L/s) 68%	@ 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) 63%	@ 76 CFM (30 L/s) 56%	@ 61 CFM (29 L/s) 68%	@ 64 CFM (30 L/s) 72%	@ 100 CFM (47 L/s) 68%	@ 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	2/5*	2/5*	2/5*	2/5*	2/5*	2	2	2	2
Number of speeds available with optional wall control (Control is furnished with all GDX models)	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

NOTE: All specifications are subject to change without notice.

\* For GDX models only

**Table 5. Specifications**

Specifications	Single-Core HRV Units					Dual-Core HRV Units		Single-Core ERV Units	
Model No.	HRV3 -150-TPD/- 150-TPD-GDX (Y5447/Y6423)	HRV3-150 -TPF/-150TPF- GDX (Y5448/Y6424)	HRV3 -095/-095- GDX (Y2142/ Y2967)	HRV5 -150/-150- GDX (Y6419/ Y6420)	HRV5 -200-TPD/- 200-TPD- GDX (Y6421/ Y6422)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
Pre-Filters (Foam) Supply & Exhaust	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wall Controller Included	Y8249/Y8250*	Y8249/Y8250*/	Y8249/ Y8250*	Y8249/Y8250*	Y8249/ Y8250*	Y8249	Y8249	Y8249	Y8249
Electrical Characteristics	120 Volts, 60 Hertz, 1 phase								
Fan HP	1/20	1/20	1/20	1/10	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 inches w.g.	110	118	150	118	96	173	333	173	182
Fan Watts – Low Speed @ 0.3 inches w.g.	57	66	60	66	64	100	150	63	70
Amp Rating	1.3	1.4	0.9	1.4	1.4	1.5	2.9	1.4	1.4
Condensate Drain Connections: Spouts: qty. 2 (1/2" o.d.) Drain Tee: qty. 1 (1/2" o.d.)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A
NOTE: All specifications are subject to change without notice. * For GDX models only									

**Table 6. Additional Specifications**

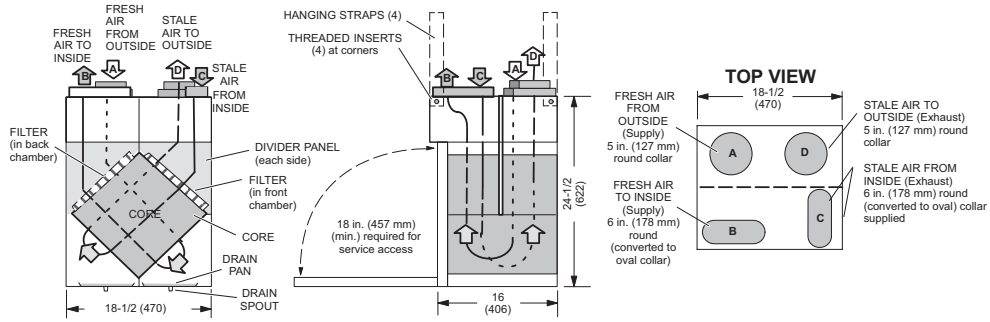
Specifications	Single-Core HRV Units					Dual-Core HRV Units		Single-Core ERV Units	
Model No.	HRV3 -150-TPD/- 150-TPD- GDX (Y5447/ Y6423)	HRV3-150 -TPF/-150- TPF-GDX (Y5448/ Y6424)	HRV3 -095/-095- GDX (Y2142/ Y2967)	HRV5 -150/-150- GDX (Y6419/ Y6420)	HRV5 -200-TPD/- 200-TPD- GDX (Y6421/ Y6422)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
OPTIONAL FAN CURVES SPEEDS (FACTORY TESTED)									
Speed 4-med high									
inches 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)	153 (72)	189 (89)	167 (78)	220 (103)	120 (56)	151 (71)
0.2 (50)			65 (31)	141 (67)	170 (80)	159 (75)	202 (94)	111 (52)	147 (69)
0.3 (75)			50 (24)	131 (62)	153 (72)	150 (71)	186 (87)	103 (48)	129 (61)
0.4 (100)	101 (48)	101 (48)	31 (15)	117 (55)	136 (64)	140 (66)	169 (79)	92 (43)	118 (55)
0.5 (125)	91 (43)	91 (43)		96 (45)	120 (57)	124 (58)	158 (74)	80 (38)	104 (49)
0.6 (150)	82 (39)	82 (39)		80 (38)	106 (50)	110 (52)	134 (62)	64 (30)	89 (42)
0.7 (175)	69 (33)	69 (33)			91 (43)	93 (44)	108 (50)	43 (20)	63 (30)
0.8 (200)	60 (28)	60 (28)			78 (37)		79 (37)		
Speed 3-med									
0.1 (25)			65 (31)	144 (68)	161 (76)	142 (67)	194 (91)	97 (46)	133 (63)
0.2 (50)			60 (28)	130 (61)	141 (67)	136 (64)	178 (83)	87 (41)	130 (61)
0.3 (75)	92 (43)	92 (43)	48 (23)	120 (57)	123 (58)	127 (60)	170 (79)	81 (38)	124 (58)
0.4 (100)	82 (39)	82 (39)	30 (14)	106 (50)	108 (51)	118 (55)	154 (72)	72 (34)	114 (54)
0.5 (125)	71 (34)	71 (34)		88 (42)	92 (43)	103 (48)	139 (65)	61 (29)	104 (49)
0.6 (150)	60 (28)	60 (28)			77 (36)	92 (43)	118 (55)	53 (25)	94 (44)
0.7 (175)					64 (30)	72 (34)	94 (44)		80 (38)
0.8 (200)					52 (25)				
Speed 2-med low									
NOTE: All specifications are subject to change without notice.									

**Table 6. Additional Specifications**

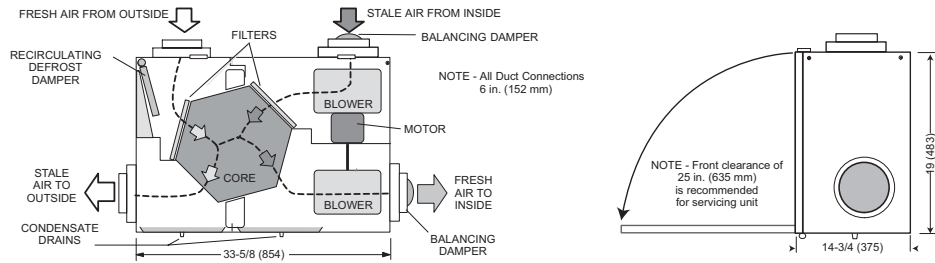
Specifications	Single-Core HRV Units					Dual-Core HRV Units		Single-Core ERV Units	
	HRV3 -150-TPD/- 150-TPD- GD X (Y5447/ Y6423)	HRV3-150 -TPF/-150- TPF-GDX (Y5448/ Y6424)	HRV3 -095/-095- GD X (Y2142/ Y2967)	HRV5 -150/-150- GD X (Y6419/ Y6420)	HRV5 -200-TPD/- 200-TPD- GD X (Y6421/ Y6422)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
0.1 (25)			62 (29)	127 (60)	127 (60)	115 (54)	170 (79)	73 (34)	112 (53)
0.2 (50)	81 (38)	81 (38)	54 (25)	116 (55)	108 (51)	107 (50)	163 (76)	67 (31)	107 (50)
0.3 (75)	70 (33)	70 (33)	42 (20)	106 (50)	90 (42)	100 (47)	151 (70)	59 (28)	101 (47)
0.4 (100)	60 (28)	60 (28)	26 (12)	97 (46)	73 (34)	90 (42)	136 (63)	51 (24)	96 (45)
0.5 (125)	46 (22)	46 (22)		86 (40)	60 (28)	81 (38)	129 (60)	45 (21)	88 (41)
0.6 (150)					48 (22)	66 (31)	107 (50)		77 (36)
0.7 (175)					38 (18)		88 (41)		60 (28)
0.8 (200)									
Speed 1-low									
0.1 (25)			51 (24)	108 (51)	100 (48)	88 (41)	144 (67)	53 (25)	88 (41)
0.2 (50)	61 (29)	61 (29)	45 (21)	100 (47)	78 (37)	80 (38)	137 (64)	44 (21)	85 (40)
0.3 (75)	49 (23)	49 (23)	33 (16)	91 (43)	60 (28)	73 (34)	134 (62)	38 (18)	80 (38)
0.4 (100)	35 (17)	35 (17)	18 (8)	78 (37)	46 (22)	63 (30)	121 (56)	32 (15)	77 (36)
0.5 (125)					32 (15)	56 (26)	110 (51)		67 (31)
0.6 (150)						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	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)						Y2207			
Digital Handheld Manometer						Y6484			
Magnehelic Gauge only (0-0.25")	N/A	N/A				79P83			
Pitot Tube Balancing Kit	N/A	N/A				56N82			
Pitot Tube only						72X52			
Repeater for Wireless Timers						Y8252			
NOTE: All specifications are subject to change without notice.									

# Dimensions - Unit - Inches (MM)

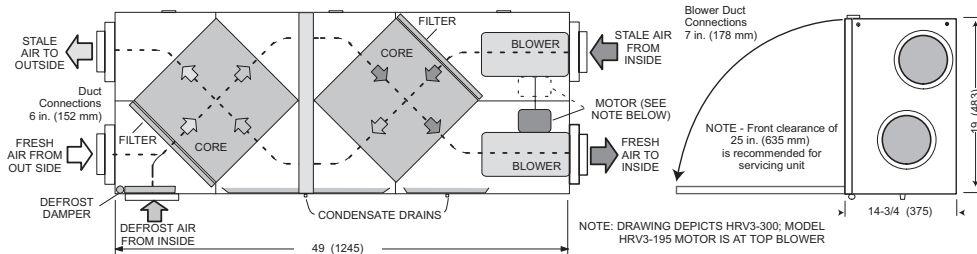
## HRV3-095 HEAT RECOVERY VENTILATOR



## HRV5-150 HEAT RECOVERY VENTILATORS



## HRV3-195, HRV3-300 HEAT RECOVERY VENTILATORS



## HRV3-150-TPD/TPF HEAT RECOVERY VENTILATORS

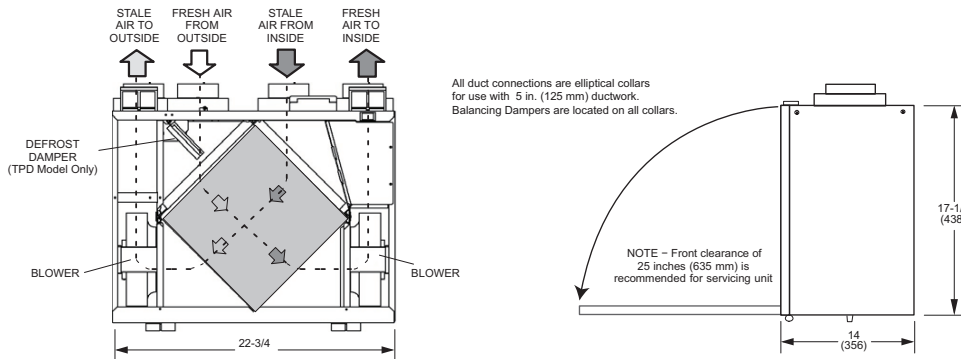


Figure 1. Dimensions and Airflows

### HRV5-200-TPD HEAT RECOVERY VENTILATORS

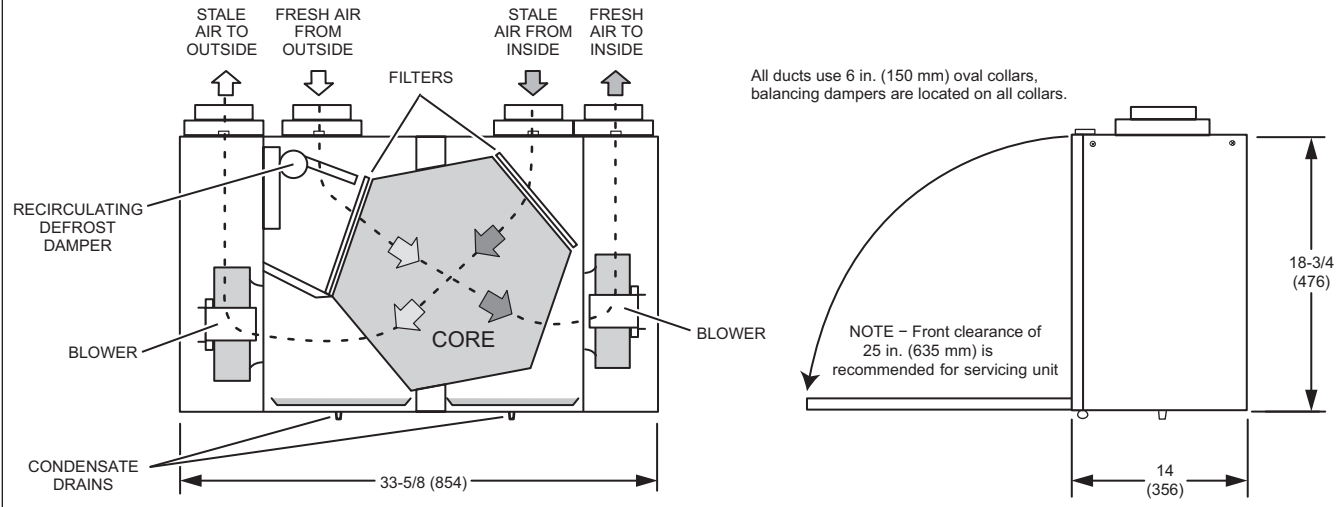


Figure 2. HRV5-200-TPD

### ERV3-150, ERV3-200 ENERGY RECOVERY VENTILATORS

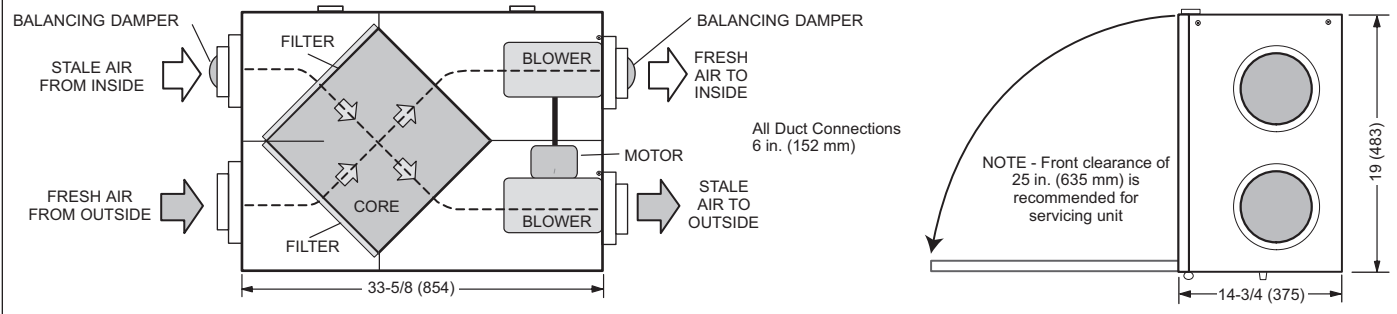


Figure 3. ERV-3-150 and ERV3-200

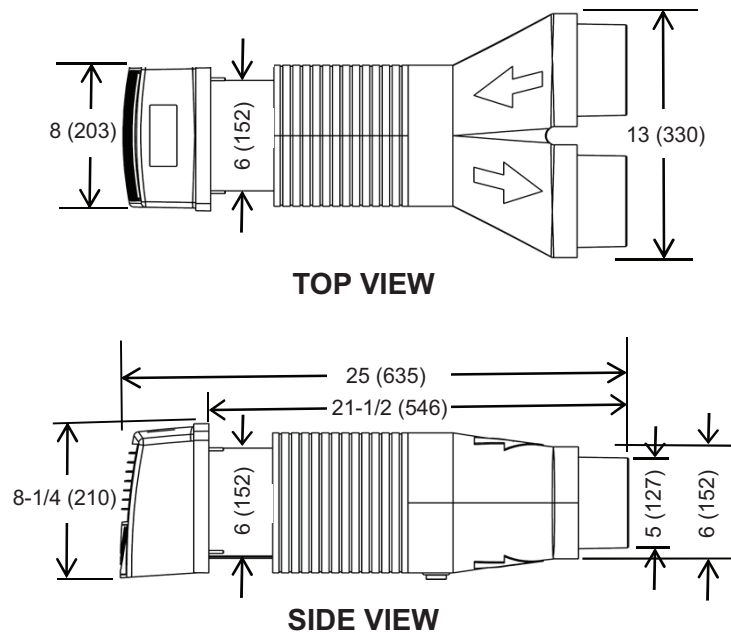


Figure 4. Dual Hoods



## Shaping Ducting to Fit Oval Ports

The HRV3-095, HRV3-150TPD, HRV3-150TPF and HRV5-200TPD units have oval supply and return ports. This enables these units to be as space efficient as possible. Circumference of the port remains the same as round ducting. Simply bend a standard duct fitting to the correct shape and attach to the oval port using the same method as for a round port.

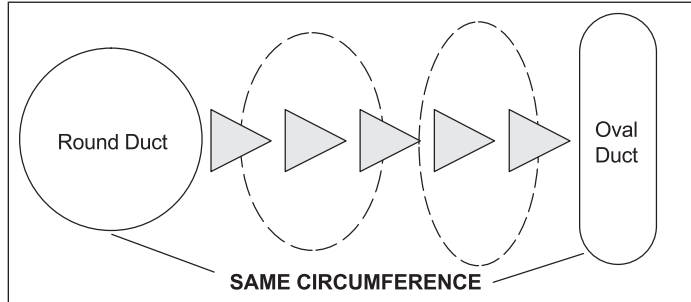


Figure 5. Shaping Ducting to Fit Oval Ports

## Requirements

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 30 or 32) 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.

## 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). 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 three 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. ERVs have no defrost cycle and are not recommended where outdoor temperatures fall below 25°F (-4°C) continuously for more than five days.

## Recirculating Damper Defrost (HRV3-095, HRV3-150-TPD, HRV5-150, HRV5-200-TPD)

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 - Five 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 re-peats 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).

## How the Dehumidistat Works

High indoor humidity levels, during the heating season, have become a problem in many well insulated, tight homes. Excessive condensation on the windows is a visual sign of high indoor humidity levels. High indoor humidity levels can result in mold, mildew and the eventual degradation of the building structure itself.

Your HRV reduces indoor humidity levels when the outdoor air is drier than the indoor air.

These conditions usually occur during the heating season when outdoor temperatures are less than 59°F (15°C) .

During the heating season, the operation of the HRV may reduce indoor humidity levels sufficiently to eliminate the need for further dehumidification. Use the adjustable Dehumidistat feature located on the main control if your home requires further dehumidification during the heating season. This feature aggressively addresses high indoor humidity levels by initiating high speed ventilation when the indoor humidity levels rise above the set point on the control. Once the humidity in the house is reduced, the HRV will revert back to its previous setting.

We suggest operating the HRV 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 percentage of RH (relative humidity) with 60 being high and 20 being low. If after a few days, further dehumidification is required (the house is still too humid), set the humidity level to a lower amount.

The average person is comfortable between 30% and 50% RH. The Dehumidistat should be set to **OFF** for all seasons except the heating season since a dehumidifying effect only occurs when the outdoor air is dryer than the indoor air.

### Dehumidistat Notes

**Dehumidistat Disable** automatically disables the dehumidistat function on the main control when outdoor temperatures exceed 59°F (15°C) for a full 24 hour period. All other HRV features and functions operate normally while the Dehumidistat Function is disabled.

**Dehumidistat Re-Enable** automatically re-enables the dehumidistat function when the outdoor temperature drops below 59°F (15°C) for a full 24 hour period or if the HRV is reset (unplugged for 30 seconds).

## Ventilation - ERV/HRV

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 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

- Introduce an equal amount of fresh outdoor air Recover the majority of the energy from the exhausted stale air
- Use the recovered energy to pre-heat or pre-cool 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.

### Selecting the Ventilation Rate That is Right for You.

The modes of operation and speeds are used to adjust your indoor ventilation rate. Experiment with the ventilation levels in your home to evaluate the ideal amount of ventilation to suit your home and personal preferences. Operational modes available to you will depend on the main control that is installed. Some features and modes may be unavailable to you.

**Table 7. Operational Modes**

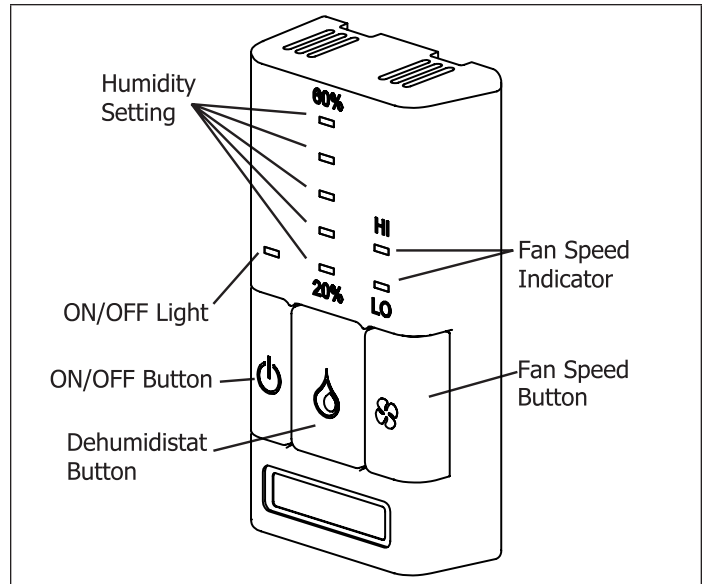
Mode	Description
 <b>Continuous Ventilation</b>	This mode of operation provides continuous ventilation within the home. You may, for example, select Continuous Ventilation at low speed for normal operation and increase to high speed during increased activity levels, such as cooking and showering, etc.
 <b>20 Minutes On, 40 Minutes Recirculation*</b>	This mode ventilates for 20 minutes and circulates the household air for 40 minutes each hour. This mode is not applicable if your HRV is connected to a forced air system. This mode is useful when "Continuous Ventilation" mode is providing too much ventilation.**
 <b>20 Minutes On, 40 Minutes Standby*</b>	This mode of operation provides 20 minutes of ventilation each hour. You can use this ventilation mode at low speed for low household activity levels or when the home is unoccupied. This mode is useful if "Continuous Ventilation" mode is providing too much ventilation.
 <b>10 Minutes On, 50 Minutes Standby*</b>	This mode of operation provides 10 minutes of ventilation each hour. You can use this ventilation mode at low speed for low household activity levels or when the home is unoccupied. This mode is useful if "20 Minutes On, 40 Minutes Standby" mode is providing too much ventilation.
 <b>Continuous Recirculation*</b>	This mode continuously recirculates your household air (no ventilation). This mode is not applicable if your HRV is connected to a forced air system.**
 <b>Continuous Low Fan Speed</b>	This mode will operate the fan in low speed continuously at the selected operating mode (Ventilation or Recirculation).
 <b>Continuous High Fan Speed</b>	This mode will operate the fan in high speed continuously at the selected operating mode (Ventilation or Recirculation). This mode is HI useful when occupancy or activity levels in the home is high for an extended period of time.
 <b>Recirculation</b>	Recirculates existing household air without introducing fresh air. Recirculation modes (II and V) are not applicable if your HRV is connected to a forced air system, since your forced air system already circulates the household air. Recirculation modes are unavailable on some models.
<p>* This mode of operation is only available on the Digital 5 Speed / 5 Mode Control (Y8250).                  ** Recirculation modes are unavailable on some models.</p>	

**Wall Mount 2-Speed Dehumidistat/Ventilation Control (Y8249)**

The Wall Mount Dehumidistat/Ventilation Control offers the following features to control your home's ventilation. Furnished with HRV/ERV units (non-GDX models only).




**NOTE:** All GDX models (Canada only) include the Digital 5-Speed / 4-Mode Control furnished as standard.

- Two speed fan setting (LOW / HIGH)
- Standby setting (fan OFF)
- Electronic dehumidistat
- Compatible with wireless timers
- Connect to 3-wire 20 gauge low voltage wire
- Designed to be mounted in a standard 2 x 4" (51 x 102 mm) electrical box or surface mounted to a wall



**Figure 6. Wall Mount Dehumidistat/Ventilation Control (Y8249)**

**Table 8. Operating Wall Mount Dehumidistat/Ventilation Control (Y8249)**

Mode	Description
<b>Turning on the Control</b> 	Press and release the ON/OFF button. The light above will illuminate.
<b>Setting the Ventilation Speed</b> 	Press and release the Fan button to select LOW or HIGH fan speed. The corresponding "Indicator Light" will illuminate. If both LO and HI indicator lights are off, the fan is OFF but will turn ON if required by the Dehumidistat or remote Timer (if installed).
<b>Humidity Control</b>	Your unit will reduce indoor humidity when outdoor humidity levels are lower than indoor humidity levels. This feature is only effective when the outdoor temperature is below 59° F (15° C).
<b>Setting the Dehumidistat</b> 	Press and release the Dehumidistat button until the Dehumidistat Light is at the desired setting. After a few seconds the Dehumidistat light will either flash or be on continuous. 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. The Dehumidistat will override the current speed setting to HIGH speed. The Dehumidistat function can be turned OFF by pressing the button until no Dehumidistat light is on. Refer to the "How the Dehumidistat Works" on page 10 section of this instruction for a detailed description of Dehumidistat functionality.

**! IMPORTANT**

Only one main control can be installed on the system. Timers will not function when mode of operation is set to "OFF", unless specifically installed for that function. See "Main Control Standby Setting" on page 24 in this instruction.

## Digital Five Speed / Five Mode Control (Y8250)

The Digital 5-Speed / 5-Mode Control offers the most advanced features to control your home's ventilation. Furnished as standard with all GDX (Canada only) models.

- Five speed fan setting
- Standby setting (fan speed 0)
- Electronic dehumidistat
- 20/40/60 HIGH speed override button
- Compatible with Wireless Timers (Y8251)
- Easy to read back-lit LCD screen
- Slim-line design
- Connect to 3-wire 20 gauge low voltage wire

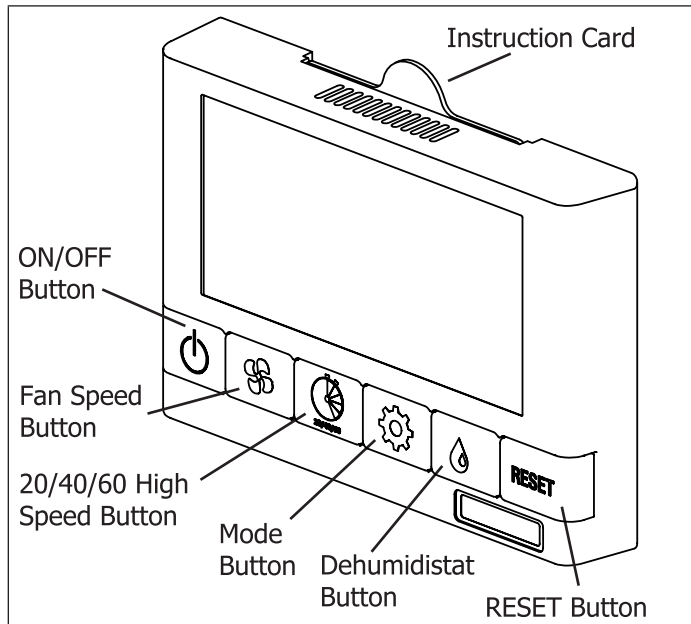


Figure 7. Digital 5-Speed / 5-Mode Control (Y8250)

Table 9. Operational Modes

Function	Icon
Continuous Ventilation	
20 Minutes On, 40 Minutes Recirculation	
20 Minutes On, 40 Minutes OFF	
10 Minutes On, 50 Minutes OFF	
Continuous Recirculation	

Table 10. Digital Control Operations

Mode	Description
<b>Turning on the Control</b>	Press and release the ON/OFF button. The light above will illuminate.
<b>Setting the Ventilation Speed</b>	Press and release the Fan button to select one of the five fan speeds. The fan speed will be displayed on the screen beside the Fan symbol. Standby mode (Fan OFF) is indicated as speed 0. The fan will turn ON if required by a remote Timer (if installed).
<b>20/40/60 High Speed Button</b>	Press and release the 20/40/60 High Speed button to temporarily initiate HIGH Fan speed for 20, 40 or 60 minutes. Press once for 20 minutes, twice for 40 minutes, three times for 60 minutes and four times to disable. The timer symbol will appear on the screen and the corresponding section of the clock will flash to indicate the time interval selected. When the timer runs out, the unit will return to its previous operating speed.
<b>Setting the Mode of Operation</b>	There are five modes of operation available with the Digital 5-Speed / 5-Mode Control. Pressing the Mode button will display the different modes of operation on the screen.
<b>Setting the Dehumidistat</b>	The Digital 5-Speed / 5-Mode Control displays the current indoor humidity in LARGE numbers and the Dehumidistat setting in SMALL numbers on the screen. If the indoor humidity is above the set point, the control will initiate HIGH Fan speed operation in Ventilation mode until the indoor humidity has been reduced below the set point. Press and release the Dehumidistat button to adjust the Dehumidistat setting. The Dehumidistat can be set between 25% RH and 60% RH. To disable the Dehumidistat function on the control, cycle through the setting until OFF is displayed. Refer to "How the Dehumidistat Works" on page 10 in this instruction for a detailed description of the Dehumidistat function.
<b>Reset Button RESET</b>	The <b>RESET</b> button will clear the current Fan, Timer, Mode and Dehumidistat settings and set the unit into LOW fan speed, Ventilation mode and a Dehumidistat setting of 40%.
<b>Service Indicator</b>	A service indicator appears when the unit requires routine maintenance. Refer to "Blower Assembly Service (Dealer Only)" on page 42" in this instruction. Press and hold the ON/OFF button for 5 seconds to reset the service indicator once maintenance has been performed.

## Optional Timers (Y2169 and Y8251)

Timers are available as wired or wireless. The Timer will override the operational mode of the main control (regardless of the setting) and initiate HIGH fan speed Ventilation for 20, 40 or 60 minutes. The HRV will return to your selected operational mode and fan speed setting upon completion of the timer cycle.

You may wish to have timers installed in the poorest air quality areas of you home (bathrooms, kitchen etc.).

### Using Timers

Press the select button to initiate high speed ventilation for 20, 40 or 60 minutes. The corresponding Status Light will illuminate to indicate either 20, 40 or 60 minutes of high speed fan operation. Press the Select Button until the Status Lights are no longer illuminated to cancel high speed timer operation.

### Wired Timer (Y2169)

The Wired Timer has a lockout mode feature that can be set to disable the Timer. Set lockout by holding the select button for five seconds. Unlock by holding for 5 seconds.

Connect to 3-wire, 20-gauge (min.) low-voltage wire and install in a standard 2 x 4" (51 x 102 mm) electrical box.

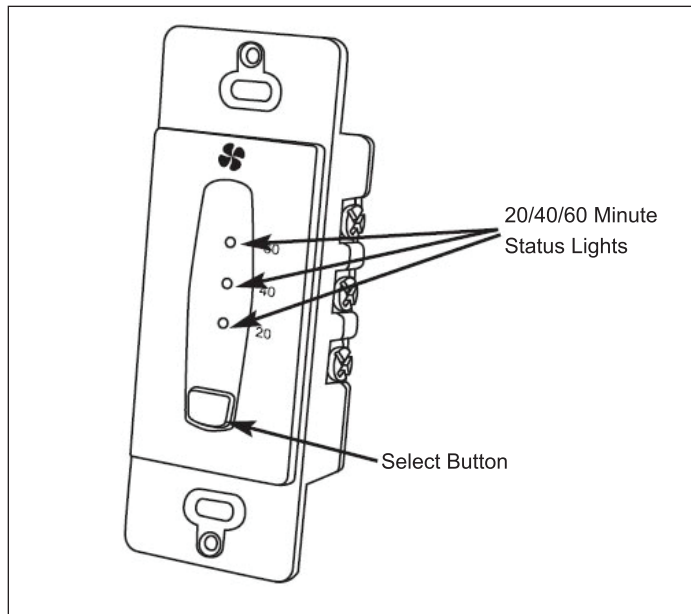


Figure 8. Wired Timer (Y2169)

### Wireless 20/40/60 Minute Timer (Y8251)

The Wireless 20/40/60 Minute Timer may be located in a remote location in the home (ex. Bathroom) when paired to the main wall control. Wireless Timers have an estimated range of 40 feet (12 meters) with no obstructions. To increase the range of a Wireless 20/40/60 Minute Timer, a Repeater (Y8252) may be used. Multiple timers can be paired to a single main control. Designed to be mounted in a standard 2 x 4" (51 x 102 mm) electrical box or surface mounted to a wall.

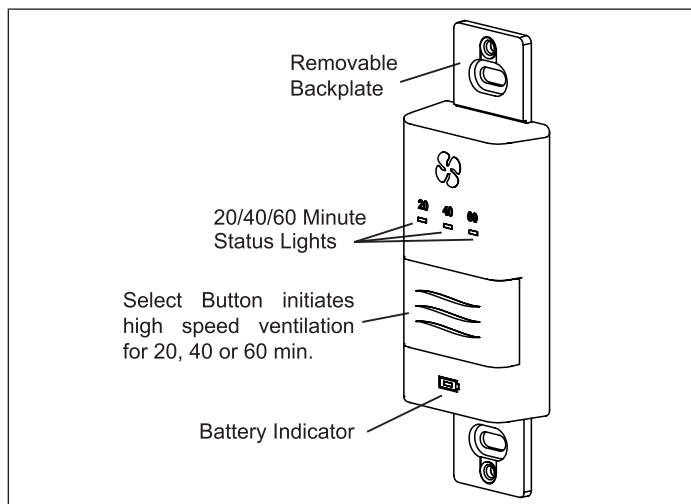


Figure 9. Wireless 20/40/60 Minute Timer (Y8251)

### Replacing the Battery

The red LED Battery indicator will illuminate when the battery on the timer needs to be replaced in the Wireless 20/40/60 Minute Timer. Replace the battery by:

- Pull the face plate off the wall.
- Replace the battery located on the back of the Timer Face Plate.
- Re-attach the face plate to the back plate. Be careful not to damage the tabs on the back plate when reattaching the face plate.

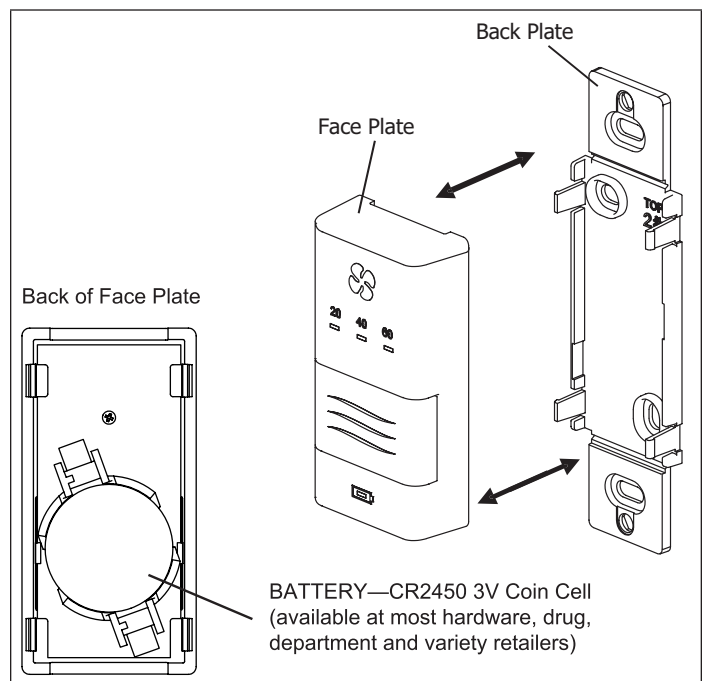


Figure 10. Replacing the Battery

### Wireless Repeater (Y8252)

The Wireless Repeater is used to extend range of the Wireless Timers (Y8251). The wireless repeater plugs directly into a 120V power outlet.

The Repeater should be installed at the halfway point between the Wireless 20/40/60 Minute Timer and the main wall control if the timer is out of range.

### Indicator LEDs

When the Repeater is positioned correctly, a solid green LED will illuminate indicating the Repeater has a strong connection to the main wall control and may be moved farther away if necessary.

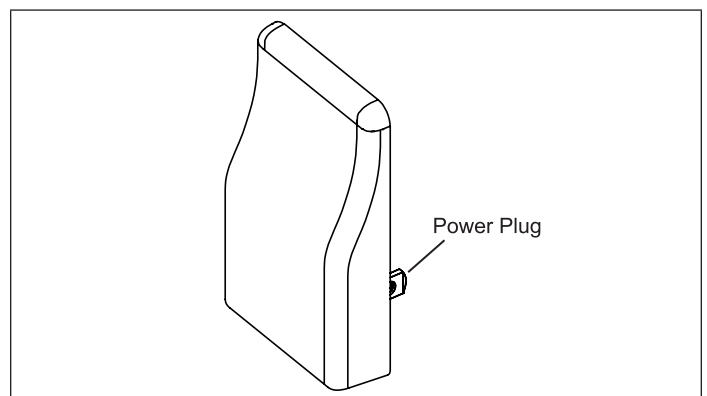


Figure 11. Wireless Repeater (Y8252)

## Overview of Installation Methods

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

- Simplified installation - See "Installation Methods - Simplified (Return/Return)" on page 14.
- Partially dedicated installation - See "Installation Methods - Partially Dedicated" on page 15.
- Fully dedicated installation - See "Installation Methods - Fully Dedicated" on 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 that the HRV/ERV unit must 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 inches [300 mm]) 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)

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 as illustrated in the following figures.

### 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.

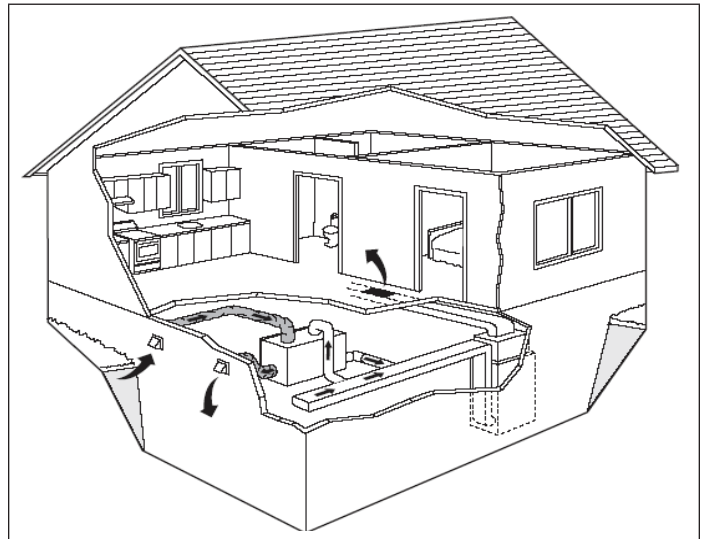
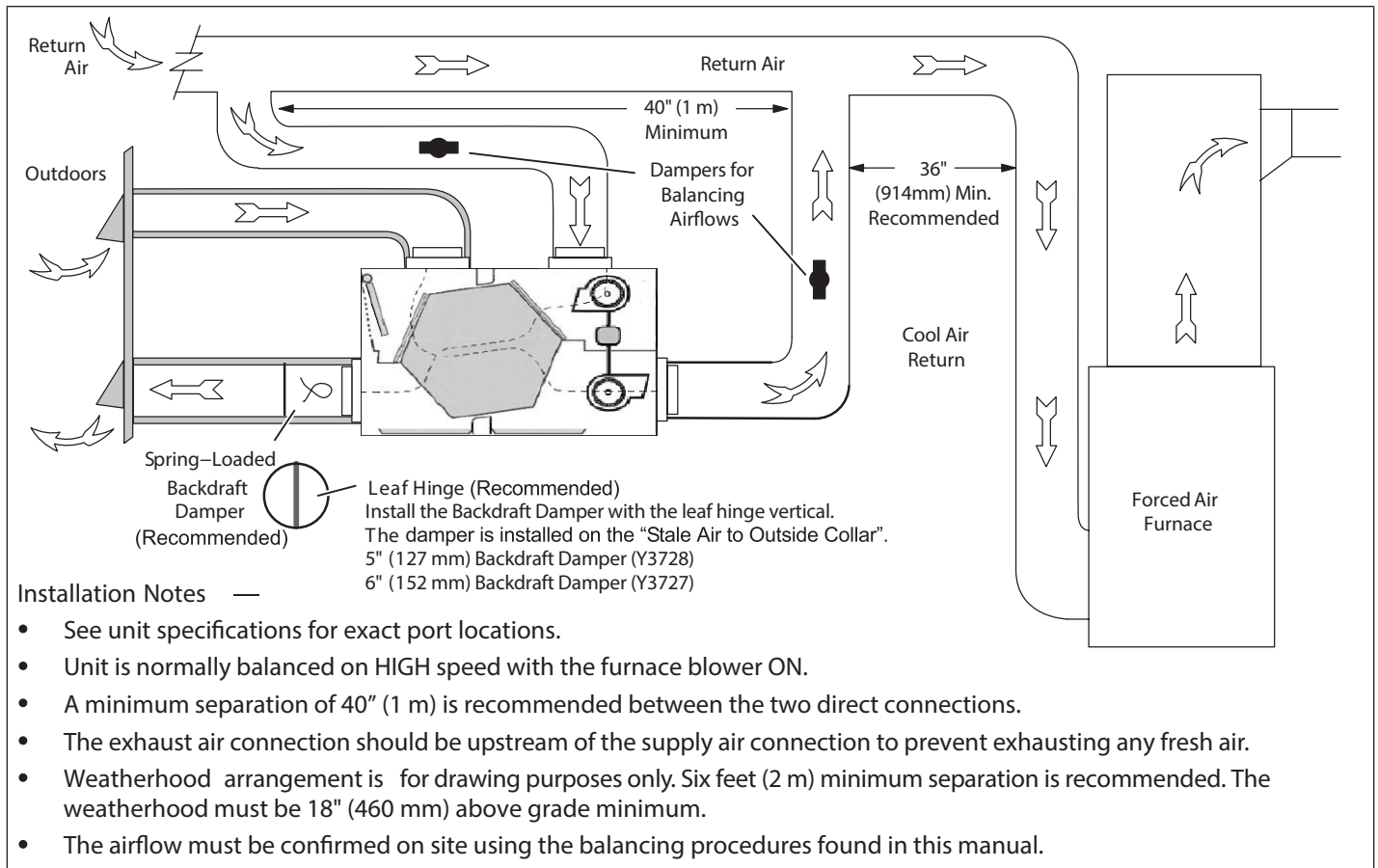


Figure 12. Simplified Installation (Return/Return)

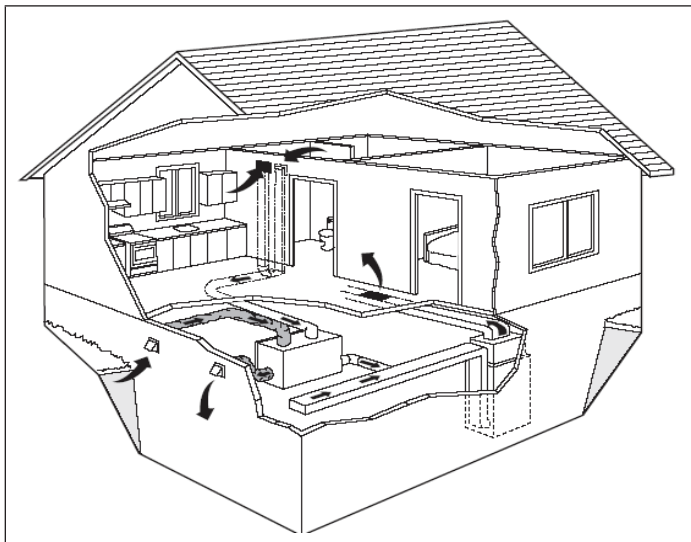


**Figure 13. Simplified Installation (Return/Return)**

## 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 as illustrated in the following figures.



**Figure 14. Partially Dedicated System**

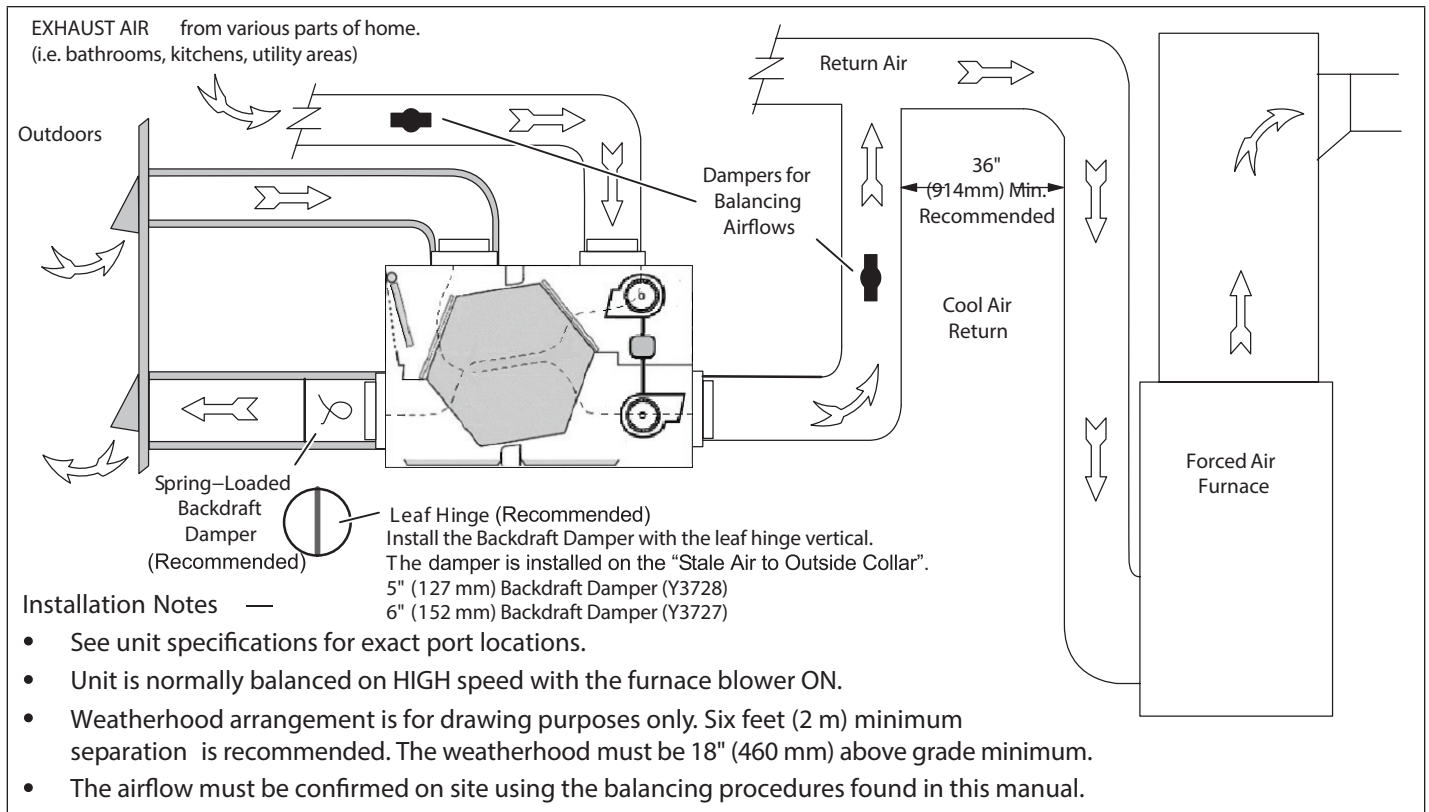
Stale air ducts should be installed in areas of the home where the poorest indoor air quality exists (bathrooms and kitchen). Each location with a stale air duct should have a timer to initiate high-speed ventilation. Refer to "Optional Timers (Y2169 and Y8251)" on page 12.

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 HRV/ERV Blower to Air Handler/Furnace Blower" on page 24.

### Key points

The HRV/ERV must be balanced.

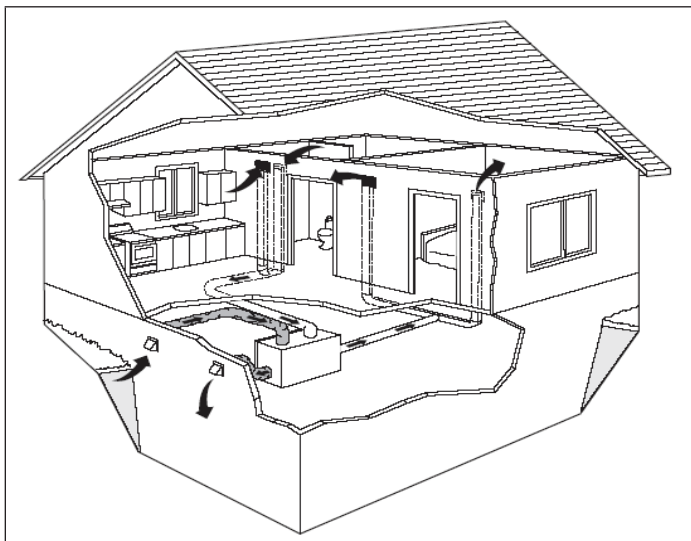
- It is recommended that the furnace blower run continuously or HRV/ERV operation be interlocked with the furnace blower to evenly distribute the fresh air throughout the house. Refer to building code.
- The duct configuration may change depending on the HRV/ERV model. See specifications for your unit.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



**Figure 15. Direct Connection of Supply Air Stream to the Furnace Cold Air Return (Stale air drawn from key areas of home)**

### Installation Methods - Fully Dedicated

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 the following figures).



**Figure 16. 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 (Y2169 and Y8251)" on page 12.

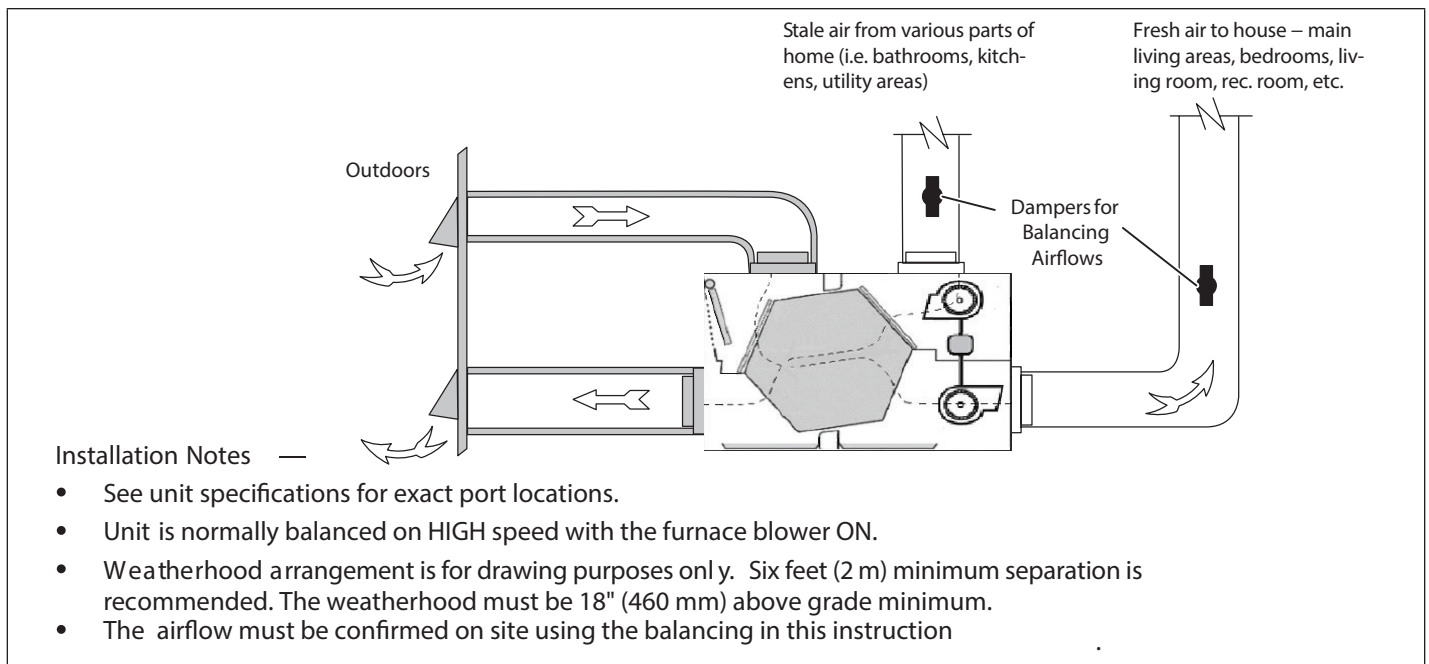
Fresh air ducts should be installed to all bedrooms and living areas, excluding bathrooms, kitchen, and utility areas. Grilles should be located high on a wall or in ceiling locations. Grilles that diffuse the air comfortably are recommended. Refer to "Installing Grilles and Diffusers" on page 19. Special 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 in-line 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.





**Figure 17. Fully Dedicated System (Not connected to forced air system)**

### Installation of the 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. A utility or laundry room may be used if a basement area is not present. 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 inches (635 mm) clearance is recommended so the door can be opened. Four adjustable 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.

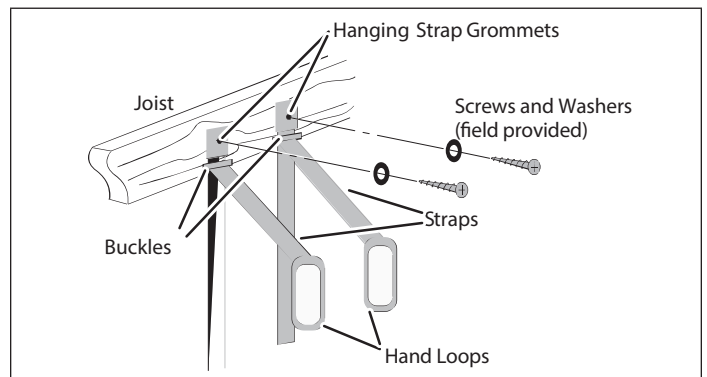
**CAUTION**

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.

### Suspending the Unit

This is a procedure for suspending the unit using adjustable hanging straps. Use four screws and 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.

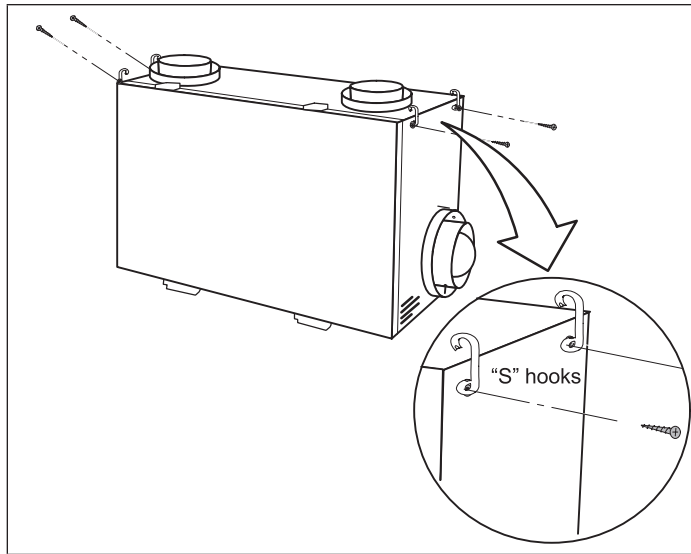
1. Insert the screws and washers (field provided) through the hanging strap grommets and fasten to the joists.



**Figure 18. Insert Screws and Washers**

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

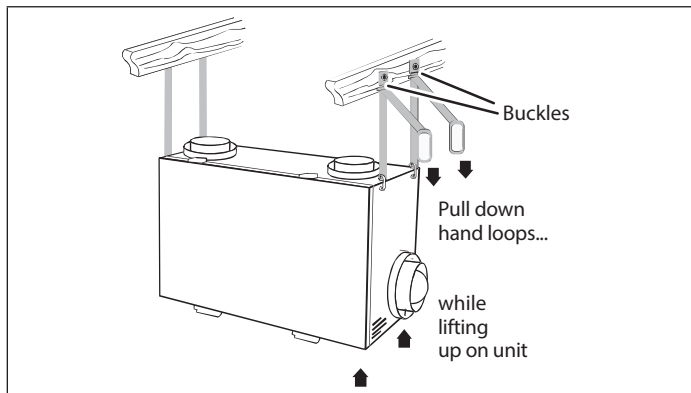
**NOTE:** The following illustration of the unit may vary from the unit you are installing.



**Figure 19. Unscrew**

- 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.

**NOTE:** Do not pull the hand loops in a horizontal direction (laterally with the unit) during installation or during adjustment of the straps.



**Figure 20. Hook the Grommets**

- 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.
- Fold the hand loops and excess strap and secure with a nylon tie (field provided).

### Installing the 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

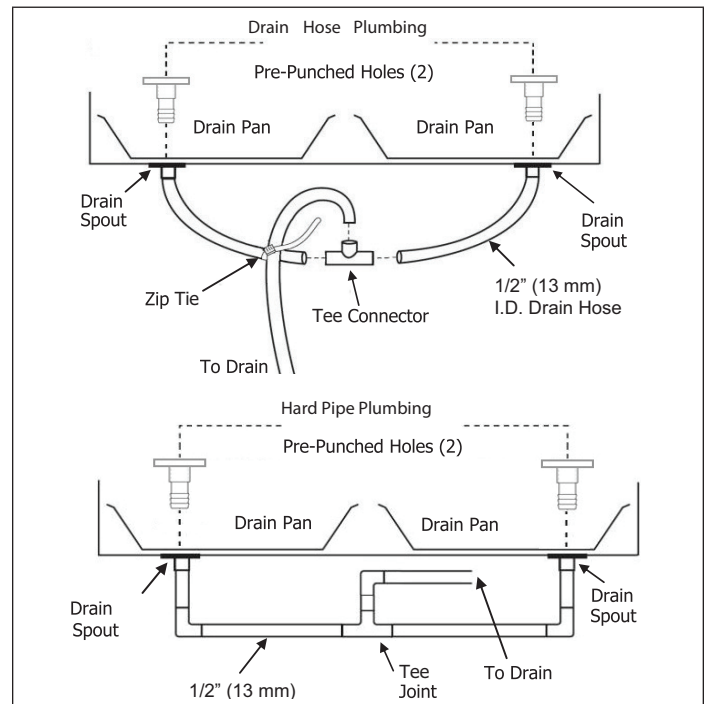
Potential Freeze Conditions leading to Water Damage. Condensation can accumulate and cause water damage to equipment, finished surfaces and structures.

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  $\frac{1}{4}$ " per foot downward slope away from unit.

The HRV cabinet has pre-punched holes for the drain as illustrated in the following figure. Insert the drain spout through the hole in the drain pan. Be sure to install the **O-ring** (if supplied) which seals each spout to the pan. Tighten the nut which holds the drain spout in place.



**Figure 21. P-Trap (HRV Unit Only)**

## ! CAUTION

Do not use sealant when installing the drain spout.

Construct a P-Trap using the plastic tee connector (see "Figure 21. P-Trap (HRV Unit Only)").

- 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, creating a "trap."
- Pour a cup of water into the drain pan of the HRV after the drain connection is complete.

This creates a water seal which will prevent odors from being drawn up the hose and into the fresh air supply of the HRV.

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

### Installing Grilles and Diffusers

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 four 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 "Airflow Balancing" on page 28.

## CAUTION

Potential equipment malfunction or damage.

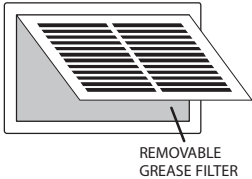
May require repairs and/or void warranty.

Do not install intake grille within four 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.

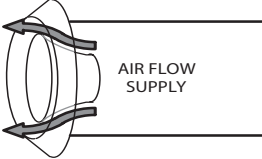
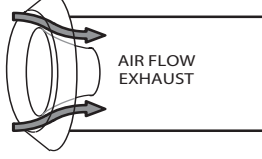
Table 11. Kitchen Grille

Size	Catalog Number	
6 x 10" (152 x 254 mm)	18N48	

### Round Diffuser

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

Table 12. Round Diffusers

Size	Catalog Number	
4" (102 mm)	92E54	
5" (127 mm)	92E55	
6" (152 mm)	92E56	
7" (203 mm)	56N81	

## 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 feet (3.3 meters). Refer to local building codes.

### Intake Weatherhood Requirements

Observe the following when installing the intake weatherhood:

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

### Exhaust Weatherhood Requirements

Observe the following when installing the exhaust weatherhood:

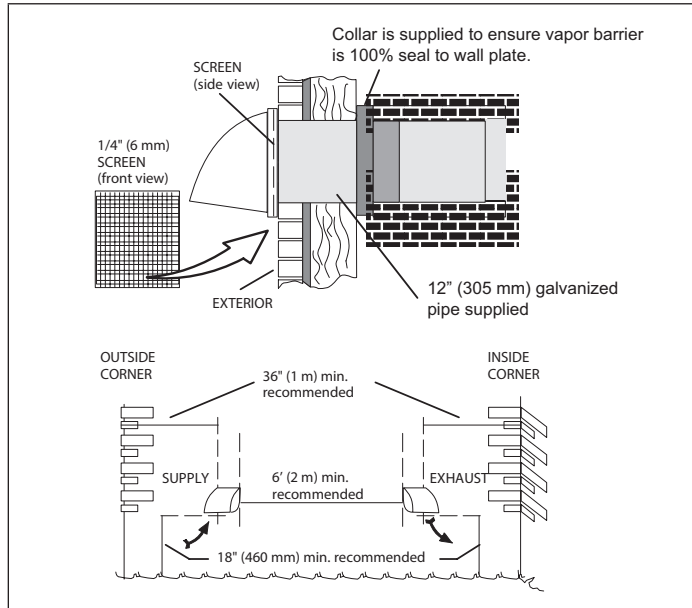
- At least six feet (two meters) from the ventilation air intake
- At least 18" (457 mm) above ground or above the depth of expected snow accumulation
- At least three feet (one meters) away from the corner of the building
- Not near a gas meter, electric meter, or a walkway where fog or ice could create a hazard.
- Not into a garage, workshop, or other unheated space
- 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" (6 mm) mesh to prevent foreign objects from entering the 12" (305 mm) insulated ducting labeled SUPPLY and EXHAUST.

**Table 13. Fixed Covered Weatherhoods**

Size	Catalog Number
5" (127 mm)	92E66
6" (152 mm)	95P07
7" (203 mm)	17N11



**Figure 22. 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 (1.8 m) distance between openings to prevent short circuit air routes. Local codes may require a greater distance between openings.

1. Thermal collar slides over galvanized sleeve of weatherhood.
2. Fasten thermal collar to belt.
3. Slide insulated flexible ducting over the weatherhood's galvanized sleeve and fasten to the thermal collar.
4. Hood is hinged to allow for easy access for cleaning screen.

## Dual Hood Kit (Y3813)

The Dual Hood Kit (Y3813) offers the benefit of requiring only one 6" (152 mm) 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

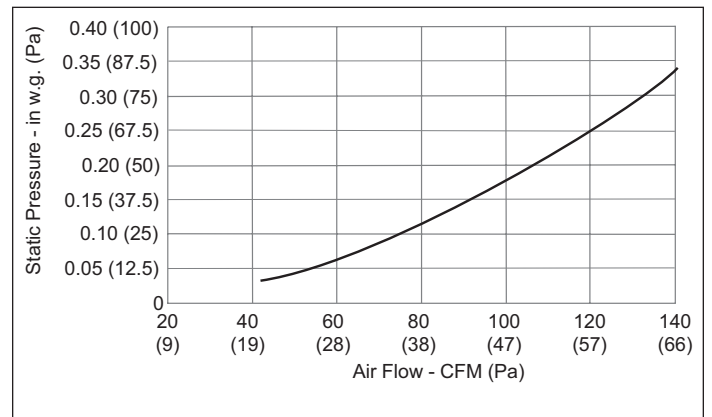
These charts and table illustrate the External Static Pressure (ESP) and the corresponding airflows of Lennox HRVs and ERVs, when using the Dual Hood in the system. Perform all calculations for duct sizing in the usual manner (taking into account measured and equivalent lengths).

**Table 14. Blower Data with Optional Dual Hood**

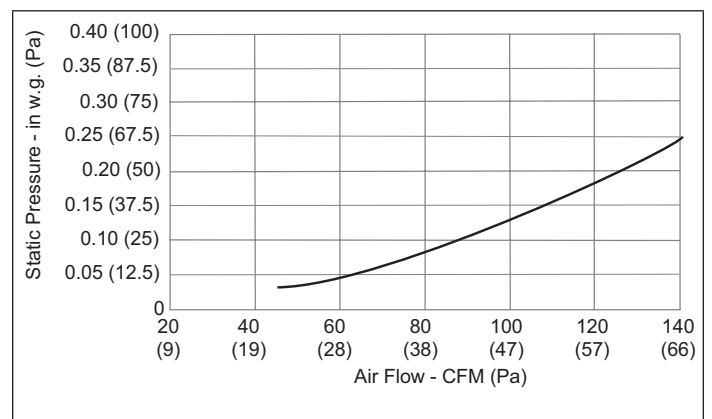
*NOTE: Perform all calculations for duct sizing in the usual manner (taking into account measured and equivalent lengths).*

Model No.	Airflow in CFM (L/s) at Nominal External Static Pressure - in. w.g. (Pa)			Compatible with Dual Hood
	0.3 (75)	0.4 (100)	0.5 (125)	
HRV3-095	66 (31)	60 (28)	N/A	Yes
HRV3-150-TPD	115 (54)	104 (49)	95 (45)	Yes
HRV3-150-TPF	120 (57)	107 (50)	100 (47)	Yes
HRV5-150	115 (54)	103 (49)	87 (41)	Yes
HRV5-200-TPD	128 (60)	120 (57)	110 (52)	Yes
HRV3-195	125 (59)	114 (54)	107 (50)	Yes
HRV3-300	N/A	N/A	N/A	No
ERV3-150	107 (50)	98 (46)	81 (38)	Yes
ERV3-200	125 (59)	118 (56)	101 (48)	Yes

*NOTE: Normal system design ESP is 0.3 to 0.5" w.g. (75-125 Pa)*



**Figure 23. Intake Airflow Chart**



**Figure 24. Exhaust Airflow Chart**

## ⚠ CAUTION

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

### Installing Main Control

The Wall Mount Dehumidistat/Ventilation Control (Y8249) may either be installed onto a flush mounted electrical switch box or surface mounted onto the wall. The optional Five Speed Mode Control (Y8250) is to be surface mounted onto a wall. Only one master control should be installed to a ventilation system.

## ⚠ IMPORTANT

Pay special attention not to damage the contact pins when removing and detaching the face plate.

1. For the Digital 5-Speed / 5-Mode Control, remove the operating instructions card from the top of the control (Box A).
  2. Separate the face plate from the back plate by firmly pulling apart (Boxes B or C). Be careful not to damage face plate contact pins.
  3. For the Digital 5-Speed / 5-Mode Control, place the back plate of the control in the desired location on the wall and pencil mark the wall with the right and left screw holes (Box D).
  4. For the Wall Mount Dehumidistat/ Ventilation Control, place the back plate of the control in the desired location on the wall and pencil mark the top and bottom screw holes (Boxes E or F). For mounting the control without a decorative plate, break off top and bottom tabs and refer to Box F for mounting.
  5. Remove the back plate from the wall and mark the center hole for the wires in the middle of the screw holes. Refer to Boxes D, E or F for dimensions.
  6. Drill (two) 1/8" (3 mm) holes for the screws and wall anchors (Boxes D, E or F). For the Digital 5-Speed / 5-Mode Control, drill a one inch hole in the center (Box D). For the Wall Mount Dehumidistat/Ventilation Control, cut in a 3/4" (19 mm) by 1-inch (25 mm) oval hole in the wall (Boxes E or F).
  7. Pull 3-wire 20 gauge (minimum) 100 feet (30-1/2 meters) length (maximum), through the opening in the wall.
  8. Connect red, green, and yellow to the wiring terminals located on the back plate (Boxes D, E or F).
  9. Attach the back plate to the wall using two supplied screws and anchors.
  10. Attach the face plate to the back plate (Boxes B or C).
- NOTE:** Be careful to correctly align the face plate to avoid damaging the face plate contact pins.
11. For the Digital 5-Speed / 5-Mode Control, insert the instructions card into the control (Box A).

12. Connect the 3-wire 20 gauge (minimum) 100 feet (30-1/2 meters) length (maximum to the terminal block located on ventilator (Red #3, Yellow #4 and Green #5).

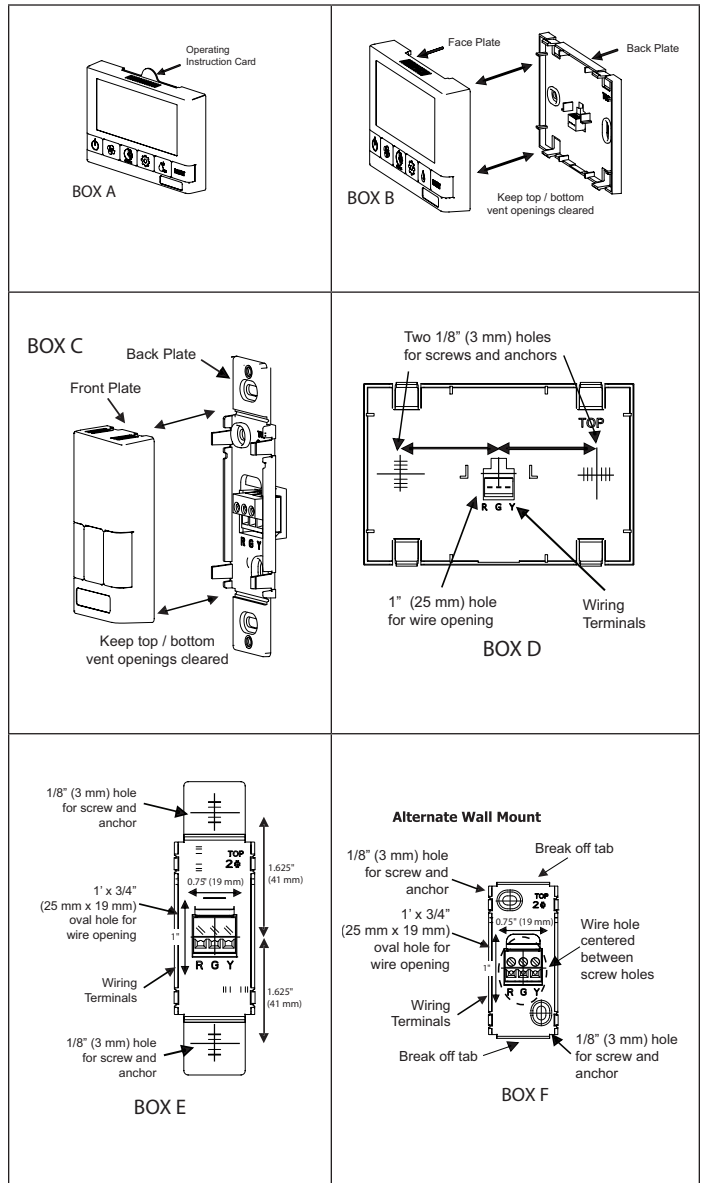





Figure 25. Digital Control Installation

### Installation and Operation of Wireless Timers

The Timers may be installed onto a flush mounted electrical switch box or it may be surface mounted onto a wall. Multiple Timers may be installed in a ventilation system. To increase the range of a wireless Timer, a Repeater (Y8252) should be used.

#### Pairing

1. Turn on the main wall control by pressing the ON/OFF button  and remove the battery from Timer.
2. Pairing **Wireless 20/40/60 Minute Timer with Digital 5-Speed / 5-Mode Control:** Press the left and right buttons simultaneously on the main wall control  and RESET buttons). The screen will go blank and the wireless symbol  appear flashing on the bottom right

of the display. This indicates that the main control is now in pairing mode (Box D).

3. Pairing **Wireless 20/40/60 Minute Timer with Wall Mount Dehumidistat/Ventilation Control**: Press the left and right buttons simultaneously on the main wall control (⏻) and either ⚙️ or 🌀 buttons, depending on the main control). The bottom row of three LEDs will begin flashing. This indicates that the main control is now in pairing mode (Box E).
4. Keep the timer within 16 inches (406 mm) of the main wall control when pairing.
5. Install the battery in the Wireless Timer. All four lights on the Timer will immediately flash five times, then only the red battery light will remain on for approximately 12 seconds after which the **40** light flashes the rev code. 20, 40, 60 lights will flash until paired or will stop if not paired within 12 seconds. If pairing was not successful you now must return to step 1 to restart the pairing process.
6. Press the button on the main wall control to exit pairing mode when Timers have been successfully paired.

To pair additional Wireless Timers with the same wall control, or if pairing was not successful, repeat steps 1-6.

When paired, the Wireless Timers can be moved and installed elsewhere. Estimated range of the Timer is 40' with no obstructions. A Repeater may be installed to increase the range of the Timers.

Test if pairing was successful by pressing the Select Button and listen for the HRV / ERV to initiate HIGH fan speed Ventilation.

### Un-Pairing

1. Remove the battery from the back of the Wireless Timer
2. Press and hold the Select Button on the front of the Timer
3. While holding the Select Button, reinsert the battery in the Timer. Continue holding the select button until the LED under **40** begins flashing. The Wireless Timer will now be unpaired with the main wall control.

### Installation

1. Separate the face plate from the back plate by firmly pulling apart (Box A).
2. For mounting the control without a decorative plate, break off top and bottom tabs and refer to Box C for mounting.
3. Place the back plate of the control in the desired location on the wall and pencil mark the top and bottom screw holes (Boxes B or C). Drill two 1/8" (3 mm) holes.
4. Attach the back plate to the wall using the two supplied screws and anchors. 5. Attach the face plate to the back plate (Box A).

## ! IMPORTANT

The wireless Timers and Repeaters must be matched to the main wall control of the HRV / ERV. This process is called "Pairing". Multiple Timers and Repeaters can be paired to a single wall control.

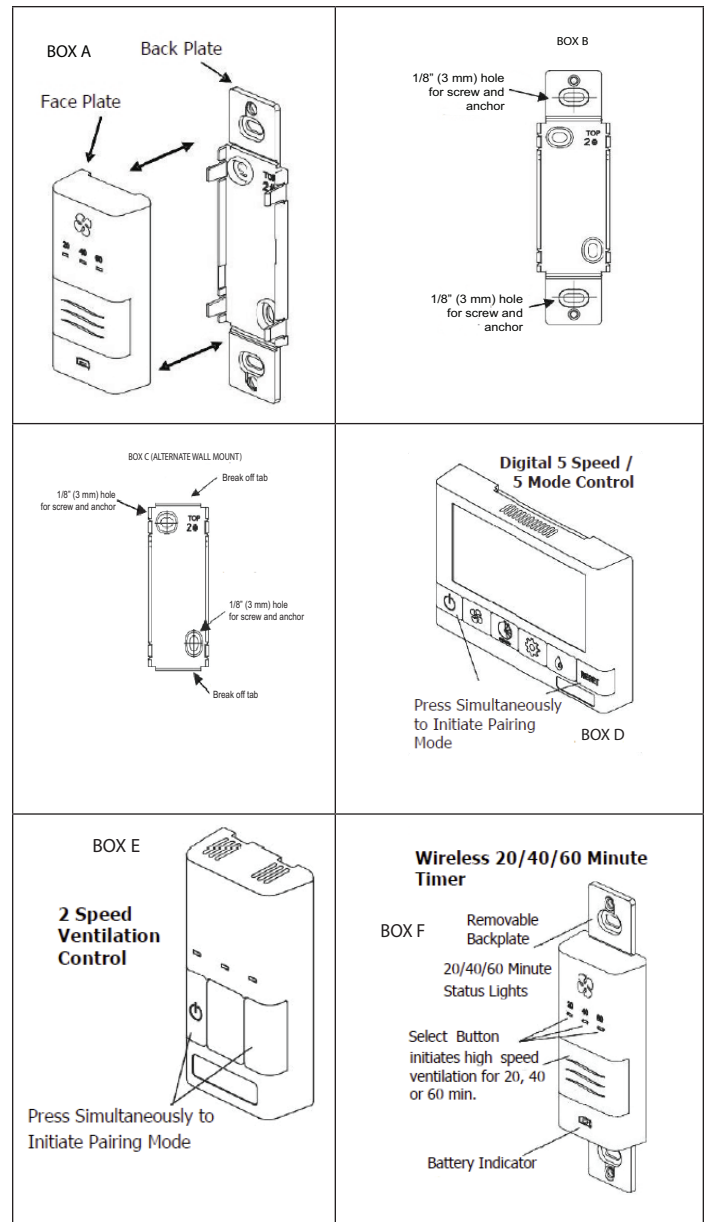


Figure 26. Wireless Timer Installation

## Installation and Pairing of Wireless Repeaters (Y8252)

A Repeater may be necessary to install if the distance of the Wireless 20/40/60 Minute Timer is too great to communicate directly with the main ventilation control. The Repeater is plugged directly into a 120V power outlet.

1. Turn on the main wall control by pressing the ON/OFF button (⏻).
2. **Repeater (Y2852) with Digital 5-Speed / 5-Mode Control:** Press the left and right buttons simultaneously on the main wall control (⏻ and RESET buttons). The screen will go blank and the wireless symbol (📶) will appear flashing on the bottom right of the display. This indicates that the main control is now in pairing mode. Repeater (Y2852) with Wall Mount Dehumidistat/Ventilation Control: Press the left and right buttons simultaneously on the main wall control (⏻ and 🌀 either or ⚙️ buttons, depending on the main control).

The bottom row of three LED's will begin flashing. This indicates that the main control is now in pairing mode.

3. The repeater must be powered within 16 inches (406 mm) of the main wall control for pairing. If an outlet is not available an extension cord should be used to power the repeater initially for pairing.
4. Plug the repeater into the power outlet. The green light will flash after approximately 12 seconds indicating that the repeater is paired with the main wall control.
5. Press the ON/OFF button on the main wall control to exit pairing mode and the repeater may now be unplugged and moved to its permanent location.

To pair additional repeaters with the same wall control, repeat steps 1-5 until all repeaters have been paired.

When installed in its permanent location, the green LED will remain solid to indicate the best location and the Repeater can be moved farther if required. The green LED will flash to indicate it is in a good location. A red light indicates the Repeater is out of range and needs to be moved closer to the main wall control.

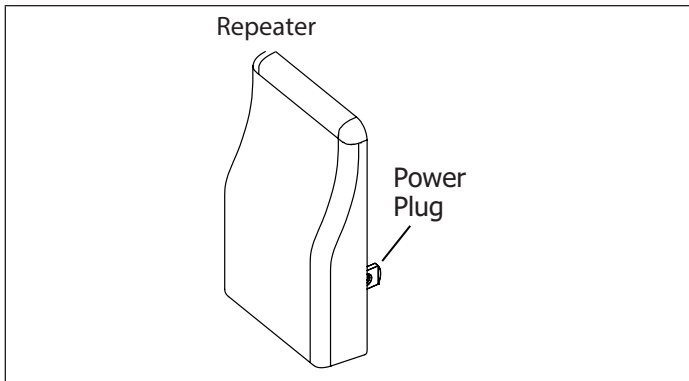


Figure 27. Wireless Repeater (Y8252)

### Installation of Wired Fan Timers

#### Installation Requirements

The following installation requirements must be followed:

- Timers mount in standard 2 x 4" (51 x 102 mm) electrical boxes.
- Wire multiple timers individually back to the unit.
- Use 3-wire 20-gauge (min.) low-voltage wire.

#### Operating 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 five minutes of the cycle.

#### Lockout Mode

The timer can be set to lockout mode (timers disabled) as follows: press and hold **SELECT** for five seconds; then the high-speed status light will flash; then release the button. The timer is now in lockout mode. If **SELECT** is pressed

during lockout mode, the high-speed status light will momentarily illuminate but no override will be initiated.

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

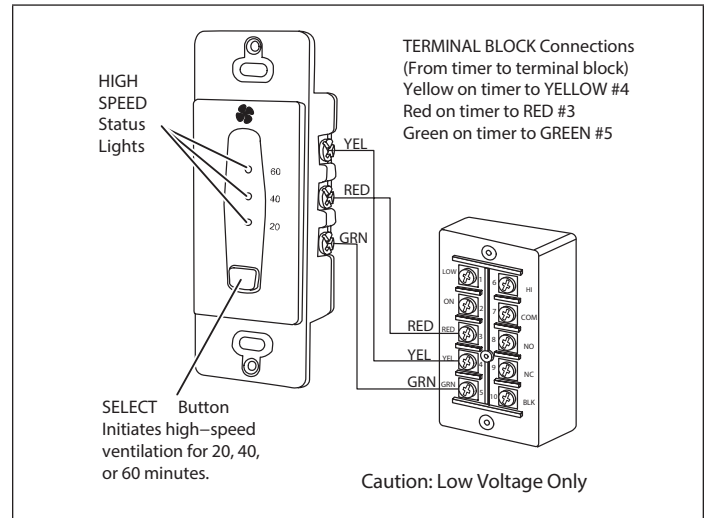


Figure 28. Wired Timer Installation

### Installation of Mechanical Timers

The Healthy Climate HRV/ERV is compatible with two wire, "dry contact" mechanical timers. This may be useful for retrofit situations where only two wires are available for the timer.

Install the two wire timer by connection a jumper wire between ON and RED. Connect the two timer wires to ON and HI.

**NOTE:** An alternative to using the 2-wire timers is to install the system with wireless timers.

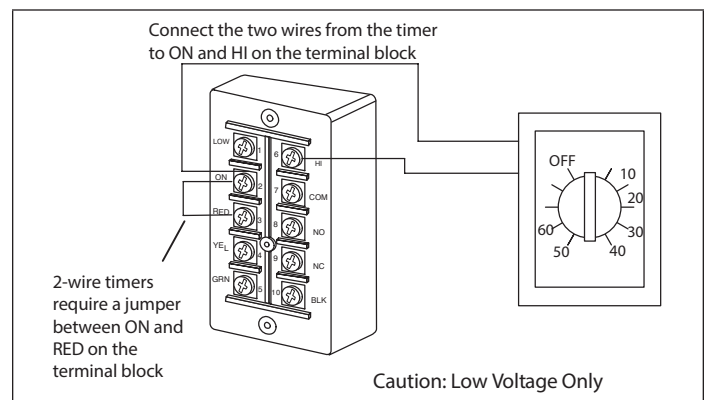


Figure 29. Mechanical Timer Installation

## Interlocking 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.

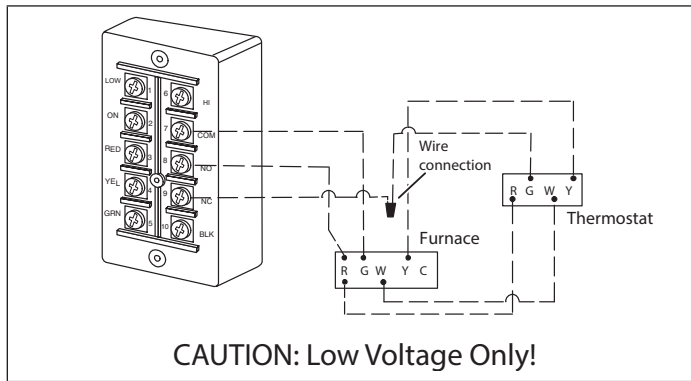
The HRV/ERV unit must be interlocked to the furnace/air handler with a simplified (return/return) installation and should be interlocked with a partially dedicated installation as illustrated in the following figure.

### ! 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.



CAUTION: Low Voltage Only!

Figure 30. Interlocking

## 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. Wiring diagrams for the units described in this instruction start with Figure 33 on page 25.

### ! 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.

## Main Control Standby Setting

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) as illustrated in the following figure.

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.

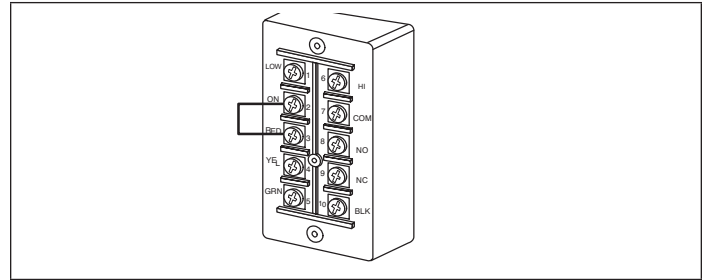


Figure 31. HRV/ERV Terminal Block

### ! CAUTION

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

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

## Activating 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.

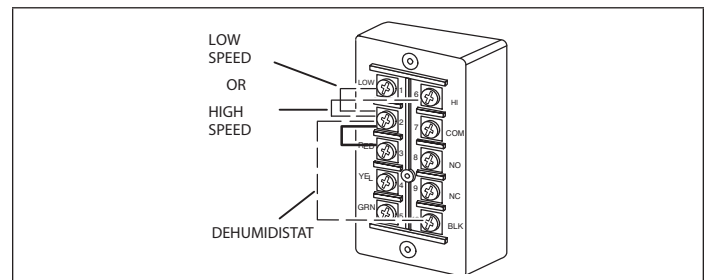


Figure 32. Adding Dry Contact Controls

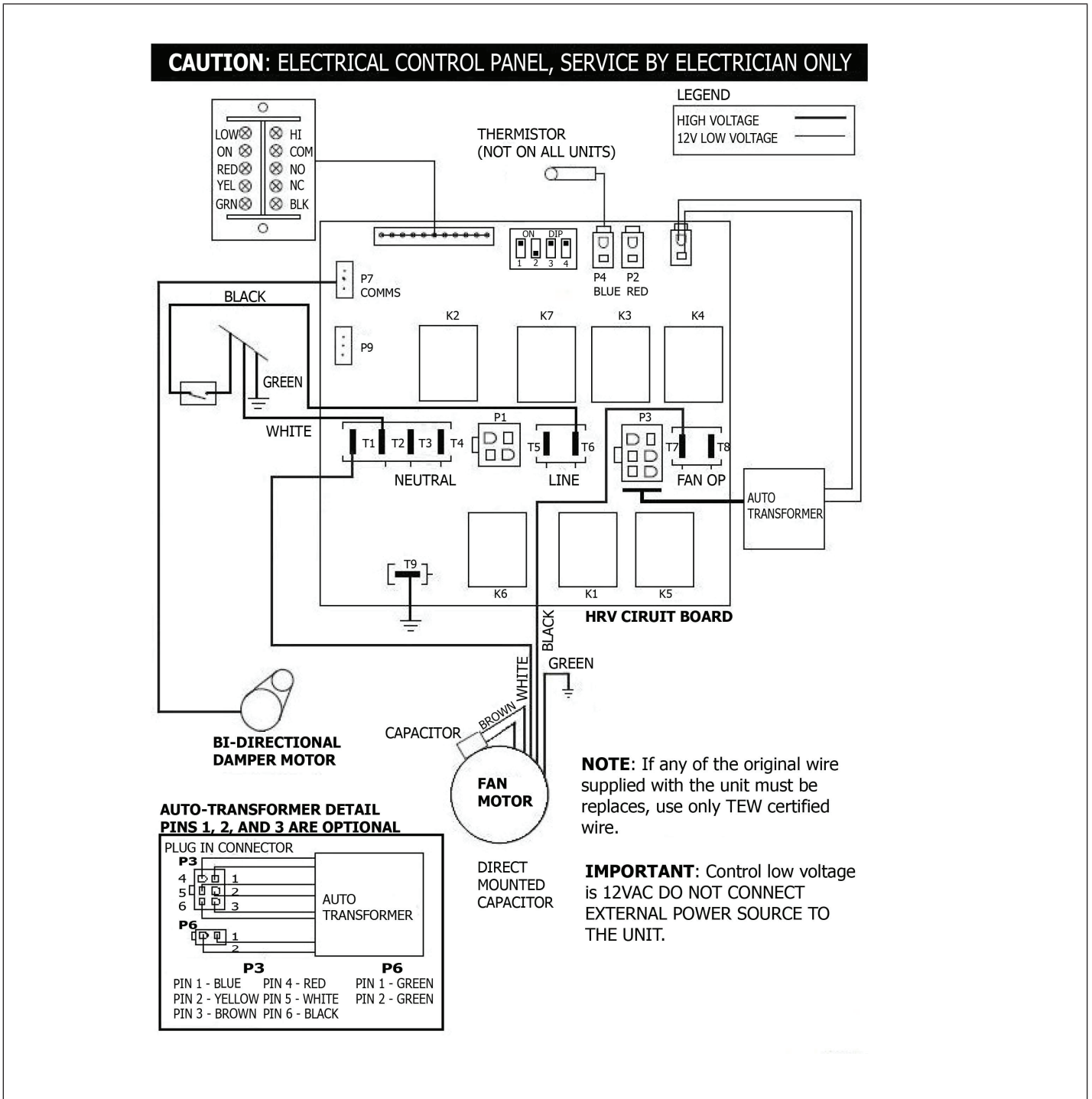
### ! IMPORTANT

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



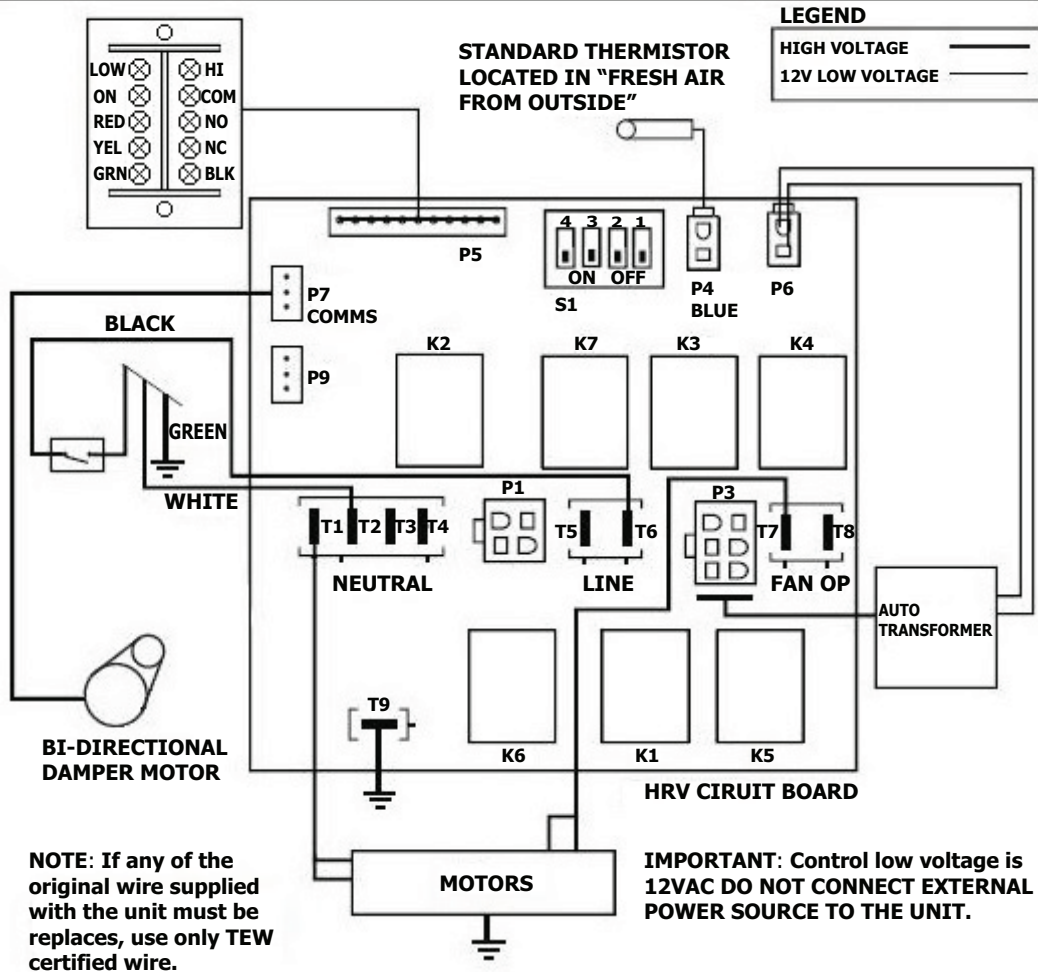
**Table 15. Adding Dry Contact Controls**

Speed	Description
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).

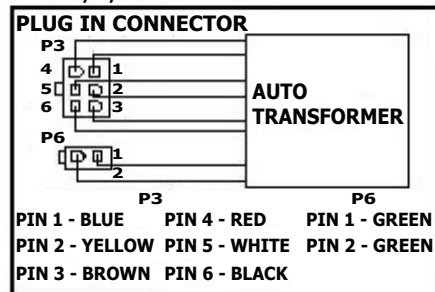


**Figure 33. Wiring Diagram (HRV3-095, HRV5-150, HRV3-195, HRV3-300, ERV3-150, ERV3-200)**

**CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY**



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



**FAN MOTOR DETAILS**

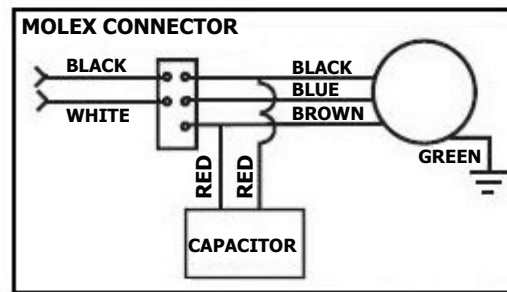
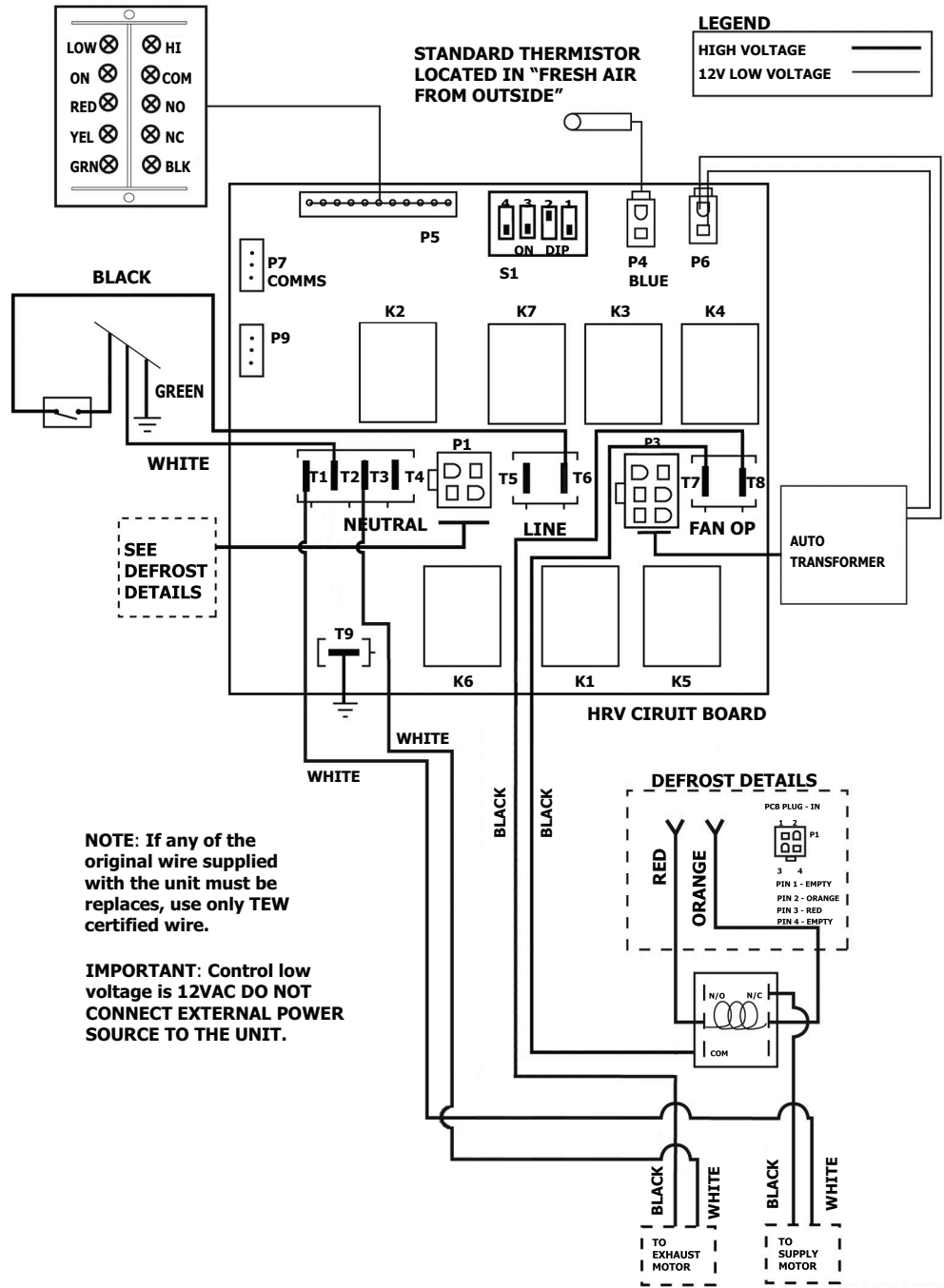


Figure 34. Wiring Diagram (HRV3-150-TPD and HRV5-200-TPD)

**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 SOURCE TO THE UNIT.

Figure 35. Wiring Diagram (HRV3-150-TPF)

## Installer Selectable High Speed Settings

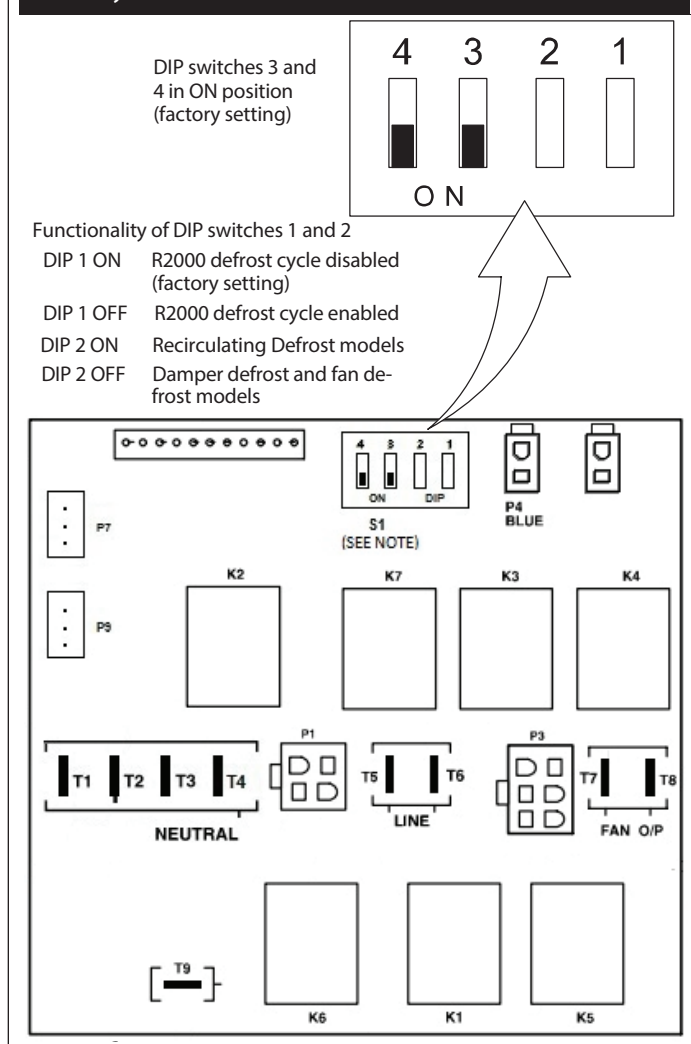
The circuit board on this unit has adjustable DIP switches to select the maximum air flow at high speed. Adjusting high speed can be useful to accurately satisfy the calculated ventilation rate. The chart below indicates how to adjust high speed to High Speed 4 and High Speed 3. Refer to the specification 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.

**Table 16. High Speed Settings**

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

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



## CAUTION

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 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.

## Airflow Balancing

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.

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:

- The unit may not operate at its maximum efficiency.
- A negative or positive air pressure may occur in the house.
- The (HRV) unit may not defrost properly.
- Failure to balance the unit properly may void warranty.

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 the “Requirements” on page 9 of this manual.

### Balancing Preparation

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. Operate air handling unit to fan speed for normal operation.
7. A field-supplied balancing damper for the stale air side is required for system balancing.

### Balancing the Unit

Balance the unit by measuring the unit’s incoming fresh and exhausting stale airflows and dampering down the higher airflow to match the lower airflow.

### Airflow Measuring Gauges

Airflow measurement is achieved by using a gauge with an airflow measuring attachment connected to the high pressure and the low-pressure side of the gauge. Use a Digital Manometer (reading down to 0 with resolution of 0.001” w.g. (0.02 Pa) or a magnehelic gauge for airflow measurement.

**NOTE:** A Magnehelic Gauge with a scale of 0 to 0.25” w.g. (0 to 62 Pa) is necessary for using with a Pitot Tube and Magnehelic Gauge with a scale of 0 to 1.00” w.g. (0 to 249 Pa) is necessary for using on Door Port Balancing).

### Gauge Attachments

Common gauge attachments for measuring HRV/ERV airflows are:

- The pitot Tube - This will measure the airflow in the ductwork for any HRV/ERV.
- Door Port Gauge Tube Set - This will measure the airflow using the door ports for models HRV3-150-TPD/TPF, HRV5-150-200.
- Flow Stations - These are installed into the duct work.

### Pitot Tube Balancing Procedure

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. Refer to next page for illustrations of Airflow Balancing Using the Pitot Tube.

### Determining the Actual Airflow

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 liters 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 six inch (152 mm) duct with a Pitot tube reading of 0.025” w.g. (6.2 Pa) water.

From the chart, this equates to 640 feet (16 meters) per minute. The 6 inch (152 mm) duct cross-sectional area is 0.2 sq. ft. (0.019 m<sup>2</sup>) The airflow is 640 cfm x 0.2 sq. ft. = 128 cfm (302 L/s x 0.019 m<sup>2</sup> = 60 L/s)

The cross sectional area of some common round duct is:

- 5” (127 mm) diameter duct has 0.14 sq. ft. (0.013 m<sup>2</sup>) cross-section area
- 6” (152 mm) diameter duct has 0.20 sq. ft. (0.019 m<sup>2</sup>) cross-section area
- 7” (178 mm) diameter duct has 0.27 sq. ft. (0.025 m<sup>2</sup>) 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.

### Airflow Balancing Using the Pitot Tube (All Models)

1. Drill a 3/16” (5 mm) in hole in the duct, ideally three feet (914 mm) downstream and 12” (305 mm) upstream of any elbows or bends in the fresh air and stale air streams.

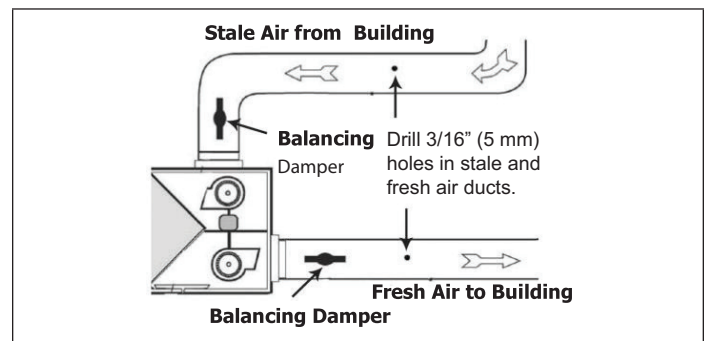


Figure 37. Drill

2. Insert the pitot tube with the tip facing towards the air stream in the stale air from Building air stream. Move the pitot tube around in the duct (facing toward the airflow) and take an average reading. Record the reading.

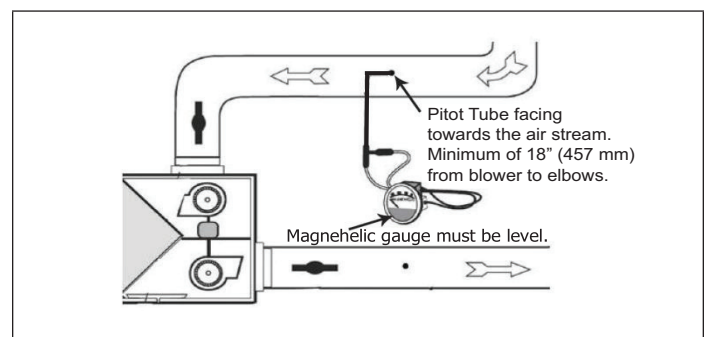
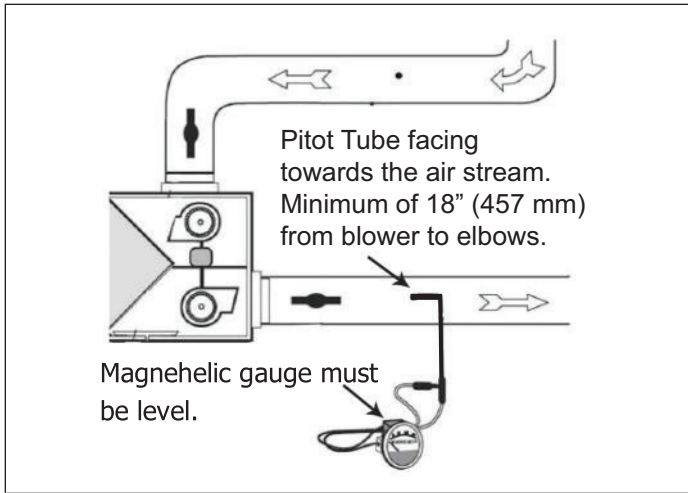


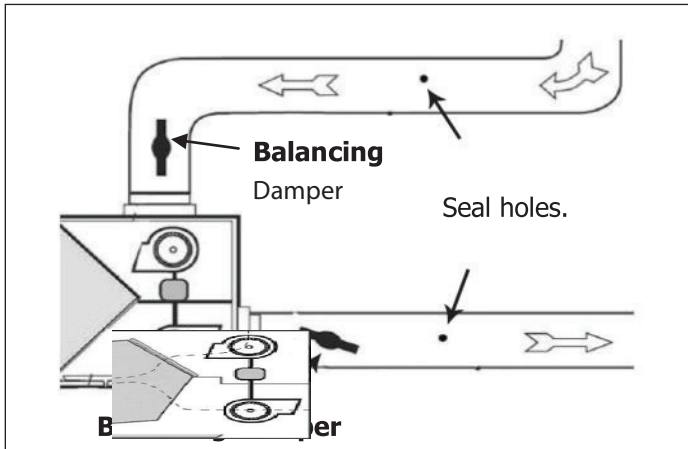
Figure 38. Insert Pitot Tube

3. Repeat step 2 to measure the fresh air to building duct.



**Figure 39. Repeat Step**

4. Review the readings and damper down the duct with the highest duct velocity pressure. Repeat step 2 and step 3 until both ducts show identical readings.
5. Upon completion of balancing, seal the holes (foil tape recommended).

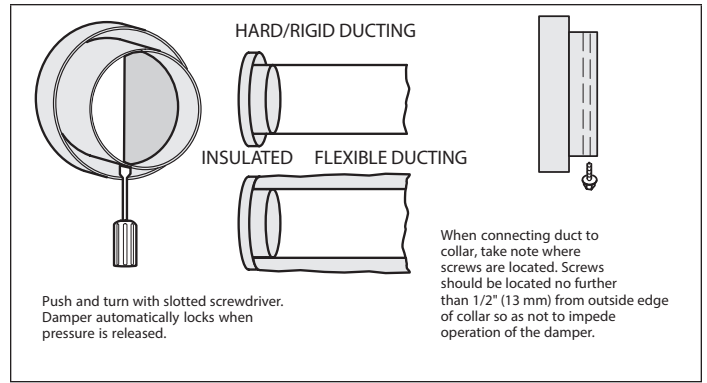


**Figure 40. Balancing Damper**

### Balancing Dampers

Balancing Dampers are located in the round collars of the HRV5-150, ERV3-150, ERV3-200 and the oval collars of the HRV3-150TPD/TPF, HRV5-200TPD. Installations where the HRV is ducted directly to the return of a furnace or air handler may require additional dampering on the fresh air to building duct. This is due to the high return static pressures found in some forced air installations.

Balancing dampers are necessary to be installed in the fresh air and stale air ducting when installing HRV3-95, HRV3-195, and HRV3-300. Refer to ducting illustrations located in the "Overview of Installation Methods" on page 14.



**Figure 41. Balancing Collars**

### Airflow Balancing Using the Door Ports (Available on Selected Models)

Door balancing ports (available only for HRV5-150, HRV5-200-TPD, 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. (0-249 Pa). HRV5-150 and HRV5-200 require a Magnehelic Gauge with a scale of 0 to 0.50" w.c. (0 - 125 Pa)

### 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 Gauge Tube Set (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 four 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 two rubber fittings from the gauge to the STALE AIR Balancing Ports (see Figure 43 on page 31). Seal the FRESH AIR Balancing Ports (upper left and lower right) with tape. Record your reading.
6. Measure Fresh air insert the two rubber fittings from the gauge to the FRESH AIR Balancing Ports (see Figure 42 on page 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 four Door Port Covers.

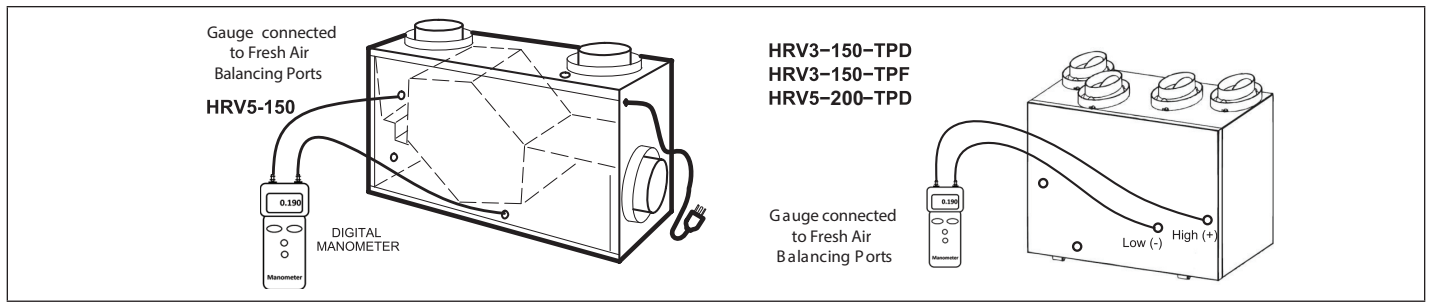


Figure 42. Door Balancing Ports - Fresh Air

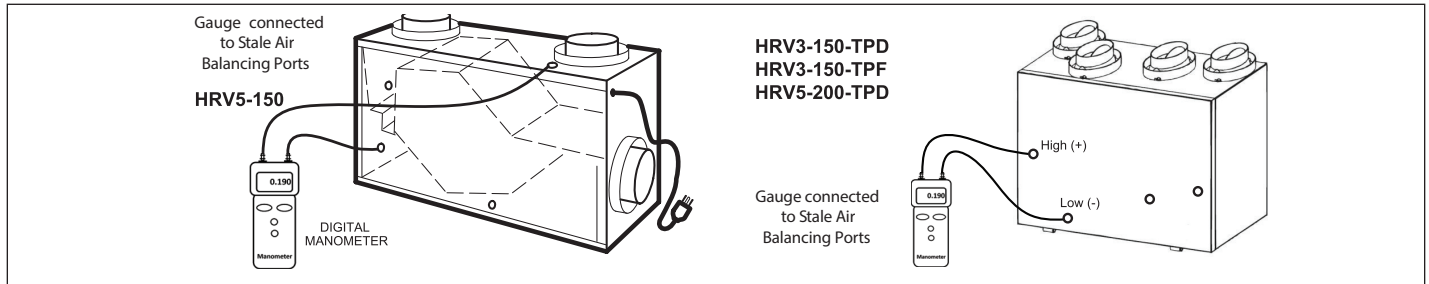


Figure 43. Door Balancing Ports - Stale Air

Table 17. Airflow Balancing Reference HRV3-150-TPD & HRV3-150-TPF

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air	
in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s
0.58	145	---	---	177	84	0.36	90	---	---	160	76	0.28	70	---	---	140	66
0.59	148	---	---	174	82	0.37	93	---	---	158	75	0.29	73	---	---	138	65
0.60	150	---	---	171	81	0.38	95	---	---	156	74	0.3	75	---	---	135	64
0.61	153	---	---	169	80	0.39	98	---	---	154	73	0.31	78	---	---	133	63
0.62	155	---	---	167	79	0.40	100	---	---	151	71	0.32	80	---	---	131	62
0.63	158	---	---	164	77	0.41	103	---	---	149	70	0.33	83	---	---	129	61
0.64	160	---	---	162	76	0.42	105	---	---	147	69	0.34	85	---	---	126	59
0.65	163	---	---	159	75	0.43	108	---	---	144	68	0.35	88	---	---	124	59
0.66	165	---	---	157	74	0.44	110	155	73	142	67	0.36	90	---	---	122	58
0.67	168	---	---	154	73	0.45	113	153	72	140	66	0.37	93	139	66	120	57
0.68	170	---	---	152	72	0.46	115	151	71	138	65	0.38	95	137	65	117	55
0.69	173	---	---	149	70	0.47	118	149	70	135	64	0.39	98	135	64	115	54
0.70	175	---	---	147	69	0.48	120	147	69	133	63	0.40	100	133	63	113	53
0.71	178	---	---	144	68	0.49	123	145	68	131	62	0.41	103	131	62	111	52
0.72	180	---	---	142	67	0.50	125	144	68	129	61	0.42	105	129	61	108	51
0.73	183	---	---	139	66	0.51	128	142	67	126	59	0.43	108	127	60	106	50
0.74	185	---	---	137	65	0.52	130	140	66	124	59	0.44	110	125	59	104	49
0.75	188	175	83	134	63	0.53	133	138	65	122	58	0.45	113	123	58	102	48
0.76	190	172	81	132	62	0.54	135	136	64	119	56	0.46	115	121	57	99	47
0.77	193	169	80	129	61	0.55	138	134	63	117	55	0.47	118	119	56	97	46
0.78	195	167	79	127	60	0.56	140	132	62	115	54	0.48	120	117	55	95	45
0.79	198	164	77	124	59	0.57	143	130	61	113	53	0.49	123	115	54	93	44
0.80	200	161	76	121	57	0.58	145	129	61	110	52	0.50	125	113	53	90	42
0.81	203	158	75	119	56	0.59	148	127	60	108	51	0.51	128	111	52	88	42
0.82	205	155	73	116	55	0.60	150	125	59	106	50	0.52	130	109	51	86	41
0.83	208	153	72	114	54	0.61	153	123	58	104	49	0.53	133	107	50	84	40
0.84	210	150	71	111	52	0.62	155	121	57	101	48	0.54	135	105	50	81	38
0.85	213	147	69	109	51	0.63	158	119	56	99	47	0.55	138	102	48	79	37

Refer to "Installer Selectable High Speed Settings" on page 28 in this manual for more information.

**Table 17. Airflow Balancing Reference HRV3-150-TPD & HRV3-150-TPF**

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air	
in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s
0.86	215	144	68	106	50	0.64	160	117	55	97	46	0.56	140	100	47	71	34
0.87	218	141	67	104	49	0.65	163	115	54	94	44	0.57	143	98	46	75	35
0.88	220	139	66	101	48	0.66	165	114	54	92	43	0.58	145	96	45	72	34
0.89	223	136	64	99	47	0.67	168	112	53	90	42	0.59	148	94	44	70	33
0.9	225	133	63	96	45	0.68	170	110	52	88	42	0.6	150	92	43	68	32
0.91	228	130	61	94	44	0.69	173	108	51	85	40	0.61	153	90	42	66	31
0.92	230	127	60	91	43	0.7	175	106	50	83	39	0.62	155	88	42	63	30
0.93	233	125	59	89	42	0.71	178	104	49	81	38	0.63	158	86	41	61	29
0.94	235	122	58	86	41	0.72	180	102	48	79	37	0.64	160	84	40	59	28
0.95	238	119	56	84	40	0.73	183	100	47	76	36	0.65	163	82	39	57	27
0.96	240	116	55	81	38	0.74	185	99	47	74	35	0.66	165	80	38	54	25
0.97	243	113	53	79	37	0.75	188	97	46	72	34	0.67	168	78	37	52	25
0.98	245	111	52	76	36	0.76	190	95	45	69	33	0.68	170	76	36	50	24
0.99	248	108	51	74	35	0.77	193	93	44	67	32	0.69	173	74	35	48	23
1.00	250	105	50	71	34	0.78	195	91	43	65	31	0.7	175	72	34	45	21
1.01	253	102	48	69	33	0.79	198	89	42	63	30	0.71	178	70	33	43	20
1.02	255	100	47	66	31	0.8	200	87	41	60	28	0.72	180	68	32	41	19
1.03	258	97	46	---	---	0.81	203	85	40	58	27	0.73	183	66	31	39	18
1.04	260	94	44	---	---	0.82	205	84	40	56	26	0.74	185	64	30	---	---
1.05	263	91	43	---	---	0.83	208	82	39	54	25	0.75	188	62	29	---	---
1.06	265	88	42	---	---	0.84	210	80	38	51	24	0.76	190	60	28	---	---
1.07	268	86	41	---	---	0.85	213	78	37	---	---	0.77	193	58	27	---	---
1.08	270	83	39	---	---	0.86	215	76	36	---	---	0.78	195	56	26	---	---
1.09	273	80	38	---	---	0.87	218	74	35	---	---	0.79	198	54	25	---	---
1.1	275	71	34	---	---	0.88	220	72	34	---	---	0.8	200	52	25	---	---
1.11	278	74	35	---	---	0.89	223	70	33	---	---	0.81	203	50	24	---	---
---	---	---	---	---	---	0.9	225	89	42	---	---	0.82	205	48	23	---	---
---	---	---	---	---	---	0.91	228	67	32	---	---	0.83	208	45	21	---	---
---	---	---	---	---	---	0.92	230	65	31	---	---	0.84	210	43	20	---	---
---	---	---	---	---	---	0.93	233	63	30	---	---	0.65	213	41	19	---	---
---	---	---	---	---	---	0.94	235	81	38	---	---	---	---	---	---	---	---
---	---	---	---	---	---	0.95	238	59	28	---	---	---	---	---	---	---	---
---	---	---	---	---	---	0.96	240	57	27	---	---	---	---	---	---	---	---
---	---	---	---	---	---	0.97	242	55	26	---	---	---	---	---	---	---	---
---	---	---	---	---	---	0.98	245	54	25	---	---	---	---	---	---	---	---
---	---	---	---	---	---	0.99	247	52	25	---	---	---	---	---	---	---	---
---	---	---	---	---	---	1	250	50	24	---	---	---	---	---	---	---	---

Refer to "Installer Selectable High Speed Settings" on page 28 in this manual for more information.



**Table 18. Airflow Balancing Reference HRV5-150**

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air	
in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s
0	0	---	---	40	19	0	0	---	---	35	17	0	0	---	---	39	18
0.005	1	---	---	45	21	0.005	1	---	---	40	19	0.005	1	---	---	44	21
0.010	3	---	---	50	24	0.010	3	---	---	44	21	0.010	3	---	---	48	23
0.015	4	---	---	54	25	0.015	4	---	---	49	23	0.015	4	---	---	53	25
0.020	5	---	---	59	28	0.020	5	---	---	54	25	0.020	5	---	---	58	27
0.025	6	---	---	63	30	0.025	6	---	---	59	28	0.025	6	---	---	62	29
0.030	8	---	---	68	32	0.030	8	35	17	63	30	0.030	8	---	---	67	32
0.035	9	---	---	72	34	0.035	9	38	18	68	32	0.035	9	---	---	71	34
0.040	10	---	---	76	36	0.040	10	41	19	72	34	0.040	10	---	---	76	36
0.045	11	---	---	81	38	0.045	11	43	20	77	36	0.045	11	38	18	81	38
0.050	13	39	18	85	40	0.050	13	46	22	81	38	0.050	13	42	20	85	40
0.055	14	43	20	89	42	0.055	14	49	23	85	40	0.055	14	45	21	90	42
0.060	15	46	22	93	44	0.060	15	52	25	90	42	0.060	15	49	23	94	44
0.065	16	49	23	97	46	0.065	16	54	25	94	44	0.065	16	52	25	99	47
0.070	18	53	25	101	48	0.070	18	57	27	98	46	0.070	18	55	26	104	49
0.075	19	56	26	105	50	0.075	19	60	28	102	48	0.075	19	58	27	108	51
0.080	20	59	28	109	51	0.080	20	62	29	106	50	0.080	20	61	29	113	53
0.085	21	62	29	113	53	0.085	21	65	31	110	52	0.085	21	64	30	117	55
0.090	23	65	31	117	55	0.090	23	67	32	114	54	0.090	23	67	32	122	58
0.095	24	68	32	120	57	0.095	24	70	33	118	56	0.095	24	70	33	127	60
0.100	25	71	34	124	59	0.100	25	73	34	122	58	0.100	25	73	34	131	62
0.105	26	74	35	128	60	0.105	26	75	35	126	59	0.105	26	76	36	136	64
0.110	28	76	36	131	62	0.110	28	78	37	129	61	0.110	28	79	37	140	66
0.115	29	79	37	135	64	0.115	29	80	38	133	63	0.115	29	82	39	145	68
0.120	30	81	38	138	65	0.120	30	83	39	137	65	0.120	30	84	40	149	70
0.125	31	84	40	141	67	0.125	31	85	40	140	66	0.125	31	87	41	154	73
0.130	33	86	41	145	68	0.130	33	88	42	144	68	0.130	33	89	42	158	75
0.135	34	89	42	148	70	0.135	34	90	42	147	69	0.135	34	92	43	163	77
0.140	35	91	43	151	71	0.140	35	93	44	150	71	0.140	35	94	44	167	79
0.145	36	93	44	154	73	0.145	36	95	45	154	73	0.145	36	97	46	172	81
0.150	38	96	45	157	74	0.150	38	97	46	157	74	0.150	38	99	47	176	83
0.155	39	98	46	160	76	0.155	39	100	47	160	76	0.155	39	102	48	181	85
0.160	40	100	47	163	77	0.160	40	102	48	163	77	0.160	40	104	49	---	---
0.165	41	102	48	166	78	0.165	41	104	49	166	78	0.165	41	107	50	---	---
0.170	43	104	49	169	80	0.170	43	107	50	169	80	0.170	43	109	51	---	---
0.175	44	106	50	172	81	0.175	44	109	51	172	81	0.175	44	111	52	---	---
0.180	45	108	51	174	82	0.180	45	111	52	175	83	0.180	45	113	53	---	---
0.185	46	110	52	177	84	0.185	46	113	53	178	84	0.185	46	116	55	---	---
0.190	48	112	53	180	85	0.190	48	116	55	181	85	0.190	48	118	56	---	---
0.195	49	114	54	182	86	0.195	49	118	56	184	87	0.195	49	120	57	---	---
0.200	50	116	55	185	87	0.200	50	120	57	186	88	0.200	50	123	58	---	---
0.205	51	118	56	187	88	0.205	51	122	58	189	89	0.205	51	125	59	---	---
0.210	53	120	57	189	89	0.210	53	124	59	192	91	0.210	53	127	60	---	---
0.215	54	122	58	192	91	0.215	54	127	60	---	---	0.215	54	129	61	---	---
0.220	55	123	58	194	92	0.220	55	129	61	---	---	0.220	55	132	62	---	---
0.225	56	125	59	196	92	0.225	56	131	62	---	---	0.225	56	134	63	---	---
0.230	58	127	60	198	93	0.230	58	133	63	---	---	0.230	58	136	64	---	---
0.235	59	129	61	200	94	0.235	59	135	64	---	---	0.235	59	138	65	---	---

Refer to "Installer Selectable High Speed Settings" on page 28 in this manual for more information.

**Table 18. Airflow Balancing Reference HRV5-150**

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air	
in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s
0.240	60	131	62	202	95	0.240	60	137	65	---	---	0.240	60	141	67	---	---
0.245	61	132	62	---	---	0.245	61	139	66	---	---	0.245	61	143	67	---	---
0.250	63	134	63	---	---	0.250	63	141	67	---	---	0.250	63	145	68	---	---
0.255	64	136	64	---	---	0.255	64	143	67	---	---	0.255	64	148	70	---	---
0.260	65	138	65	---	---	0.260	65	145	68	---	---	0.260	65	150	71	---	---
0.265	66	139	66	---	---	0.265	66	147	69	---	---	0.265	66	152	72	---	---
0.270	68	141	67	---	---	0.270	68	149	70	---	---	0.270	68	155	73	---	---
0.275	69	143	67	---	---	0.275	69	151	71	---	---	0.275	69	157	74	---	---
0.280	70	145	68	---	---	0.280	70	153	72	---	---	0.280	70	160	76	---	---
0.285	71	146	69	---	---	0.285	71	154	73	---	---	0.285	71	162	76	---	---
0.290	73	148	70	---	---	0.290	73	156	74	---	---	0.290	73	165	78	---	---
0.295	74	150	71	---	---	0.295	74	158	75	---	---	0.295	74	167	79	---	---
0.300	75	152	72	---	---	0.300	75	160	76	---	---	0.300	75	170	80	---	---
0.305	76	154	73	---	---	0.305	76	162	76	---	---	0.305	76	173	82	---	---
0.310	78	156	74	---	---	0.310	78	163	77	---	---	0.310	78	176	83	---	---
0.315	79	158	75	---	---	0.315	79	165	78	---	---	0.315	79	178	84	---	---
0.320	80	159	75	---	---	0.320	80	167	79	---	---	0.320	80	181	85	---	---
0.325	81	161	76	---	---	0.325	81	169	80	---	---	---	---	---	---	---	---
0.330	83	163	77	---	---	0.330	83	170	80	---	---	---	---	---	---	---	---
0.335	84	165	78	---	---	0.335	84	172	81	---	---	---	---	---	---	---	---
0.340	85	167	79	---	---	0.340	85	174	82	---	---	---	---	---	---	---	---
0.345	86	170	80	---	---	0.345	86	175	83	---	---	---	---	---	---	---	---
0.350	88	172	81	---	---	0.350	88	177	84	---	---	---	---	---	---	---	---
0.355	89	174	82	---	---	0.355	89	179	84	---	---	---	---	---	---	---	---
0.360	90	176	83	---	---	0.360	90	180	85	---	---	---	---	---	---	---	---
0.365	91	178	84	---	---	0.365	91	182	86	---	---	---	---	---	---	---	---
0.370	93	181	85	---	---	0.370	93	183	86	---	---	---	---	---	---	---	---
0.375	94	183	86	---	---	0.375	94	185	87	---	---	---	---	---	---	---	---
0.380	95	185	87	---	---	0.380	95	186	88	---	---	---	---	---	---	---	---
0.385	96	188	89	---	---	0.385	96	188	89	---	---	---	---	---	---	---	---
0.39	98	190	90	---	---	0.390	98	189	89	---	---	---	---	---	---	---	---
0.395	99	193	91	---	---	0.395	99	191	90	---	---	---	---	---	---	---	---
0.400	100	196	92	---	---	0.400	100	192	91	---	---	---	---	---	---	---	---
0.405	101	198	93	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0.410	103	201	95	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Refer to "Installer Selectable High Speed Settings" on page 28 in this manual for more information.

**Table 19. Airflow Balancing Reference HRV5-200-TPD**

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air	
in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s
0.500	125	220	104	233	110	0.400	100	174	82	188	89	0.300	75	167	79	175	83
0.510	128	217	102	230	109	0.410	103	171	81	185	87	0.310	78	163	77	172	81
0.520	130	214	101	227	107	0.420	105	168	79	182	86	0.320	80	160	76	169	80
0.530	133	210	99	224	106	0.430	108	164	77	179	84	0.330	83	156	74	165	78
0.540	135	207	98	221	104	0.440	110	161	76	176	83	0.340	85	153	72	162	76
0.550	138	204	96	218	103	0.450	113	158	75	173	82	0.350	88	149	70	159	75
0.560	140	201	95	215	101	0.460	115	155	73	171	81	0.360	90	146	69	156	74
0.570	143	197	93	213	101	0.470	118	152	72	168	79	0.370	93	143	67	153	72
0.580	145	194	92	210	99	0.480	120	149	70	165	78	0.380	95	140	66	151	71
0.590	148	191	90	207	98	0.490	123	146	69	162	76	0.390	98	136	64	148	70
0.600	150	188	89	204	96	0.500	125	143	67	160	76	0.400	100	133	63	145	68
0.610	153	185	87	201	95	0.510	128	140	66	157	74	0.410	103	130	61	142	67
0.620	155	182	86	198	93	0.520	130	137	65	154	73	0.420	105	127	60	139	66
0.630	158	179	84	195	92	0.530	133	134	63	152	72	0.430	108	124	59	136	64
0.640	160	176	83	192	91	0.540	135	131	62	149	70	0.440	110	121	57	134	63
0.650	163	173	82	190	90	0.550	138	128	60	146	69	0.450	113	118	56	131	62
0.660	165	170	80	187	88	0.560	140	125	59	144	68	0.460	115	115	54	128	60
0.670	168	167	79	184	87	0.570	143	122	58	141	67	0.470	118	112	53	125	59
0.680	170	164	77	181	85	0.580	145	120	57	139	66	0.480	120	109	51	123	58
0.690	173	161	76	179	84	0.590	148	117	55	136	64	0.490	123	107	50	120	57
0.700	175	158	75	176	83	0.600	150	114	54	134	63	0.500	125	104	49	118	56
0.710	178	155	73	173	82	0.610	153	112	53	131	62	0.510	128	101	48	115	54
0.720	180	152	72	171	81	0.620	155	109	51	129	61	0.520	130	99	47	113	53
0.730	183	149	70	168	79	0.630	158	106	50	126	59	0.530	133	96	45	110	52
0.740	185	146	69	165	78	0.640	160	104	49	124	59	0.540	135	93	44	108	51
0.750	188	144	68	163	77	0.650	163	101	48	121	57	0.550	138	91	43	105	50
0.760	190	141	67	160	76	0.660	165	99	47	119	56	0.560	140	88	42	103	49
0.770	193	138	65	158	75	0.670	168	96	45	117	55	0.570	143	86	41	100	47
0.780	195	135	64	155	73	0.680	170	94	44	114	54	0.580	145	84	40	98	46
0.790	198	133	63	152	72	0.690	173	91	43	112	53	0.590	148	81	38	96	45
0.800	200	130	61	150	71	0.700	175	89	42	110	52	0.600	150	79	37	93	44
0.810	203	127	60	147	69	0.710	178	87	41	107	50	0.610	153	77	36	91	43
0.820	205	125	59	145	68	0.720	180	84	40	105	50	0.620	155	74	35	89	42
0.830	208	122	58	142	67	0.730	183	82	39	103	49	0.630	158	72	34	87	41
0.840	210	119	56	140	66	0.740	185	80	38	101	48	0.640	160	70	33	85	40
0.850	213	117	55	138	65	0.750	188	78	37	99	47	0.650	163	68	32	82	39
0.860	215	114	54	135	64	0.760	190	76	36	96	45	0.660	165	66	31	80	38
0.870	218	112	53	133	63	0.770	193	73	34	94	44	0.670	168	64	30	78	37
0.880	220	109	51	130	61	0.780	195	71	34	92	43	0.680	170	62	29	76	36
0.890	223	107	50	128	60	0.790	198	69	33	90	42	0.690	173	60	28	74	35
0.900	225	104	49	126	59	0.800	200	67	32	88	42	0.700	175	58	27	72	34
0.910	228	102	48	123	58	0.810	203	65	31	86	41	0.710	178	56	26	70	33
0.920	230	99	47	121	57	0.820	205	63	30	84	40	0.720	180	55	26	68	32
0.930	233	97	46	119	56	0.830	208	61	29	82	39	0.730	183	53	25	66	31
0.940	235	95	45	116	55	0.840	210	59	28	80	38	0.740	185	51	24	65	31
0.950	238	92	43	114	54	0.850	213	57	27	78	37	0.750	188	49	23	63	30
0.960	240	90	42	112	53	0.860	215	56	26	76	36	0.760	190	48	23	61	29
0.970	243	88	42	110	52	0.870	218	54	25	74	35	0.770	193	46	22	59	28

Refer to "Installer Selectable High Speed Settings" on page 28 in this manual for more information.

**Table 19. Airflow Balancing Reference HRV5-200-TPD**

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air		Pressure Drop		Fresh Air		Stale Air	
in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s	in. w.g.	Pa	cfm	L/s	cfm	L/s
0.980	245	85	40	107	50	0.880	220	52	25	72	34	0.780	195	45	21	57	27
0.990	2 48	83	39	105	50	0.890	2 23	50	24	70	33	0.790	1 98	43	20	56	26
1.000	2 50	81	38	103	49	0.900	2 25	48	23	68	32	0.800	2 00	42	20	54	25
1.010	2 53	79	37	101	48	0.910	2 28	47	22	66	31	0.810	2 03	40	19	52	25
1.020	2 55	77	36	99	47	0.920	2 30	45	21	65	31	0.820	2 05	39	18	51	24
1.030	2 58	74	35	97	46	0.930	2 33	43	20	63	30	0.830	2 08	37	17	49	23
1.040	2 60	72	34	95	45	0.940	2 35	42	20	61	29	0.840	2 10	36	17	47	22
1.050	2 63	70	33	92	43	0.950	2 38	40	19	59	28	0.850	2 13	35	17	46	22
1.060	2 65	68	32	90	42	0.960	2 40	39	18	57	27	0.860	2 15	34	16	44	21
1.070	2 68	66	31	88	42	0.970	2 43	37	17	56	26	0.870	2 18	32	15	43	20
1.080	2 70	64	30	86	41	0.980	2 45	36	17	54	25	0.880	2 20	31	15	42	20
1.090	2 73	62	29	84	40	0.990	2 48	34	16	52	25	0.890	2 23	30	14	40	19
1.100	2 75	60	28	82	39	1.000	2 50	33	16	51	24	0.900	2 25	29	14	39	18
1.110	2 78	58	27	80	38	1.010	2 53	32	15	49	23	0.910	2 28	28	13	37	17
1.120	2 80	56	26	78	37	1.020	2 55	30	14	47	22	0.920	2 30	27	13	36	17
1.130	2 83	54	25	76	36	1.030	2 58	29	14	46	22	0.930	2 33	26	12	35	17
1.140	2 85	52	25	74	35	1.040	2 60	28	13	44	21	0.940	2 35	25	12	33	16
1.150	2 88	50	24	73	34	1.050	2 63	26	12	43	20	0.950	2 38	25	12		0
1.160	2 90	48	23	71	34	1.060	2 65	25	12	41	19	---	---	---	---	---	---
1.170	2 93	47	22	69	33	1.070	2 68	24	11	40	19	---	---	---	---	---	---
1.180	2 95	45	21	67	32	1.080	2 70	23	11	38	18	---	---	---	---	---	---
1.190	2 98	43	20	65	31	1.090	2 73	22	10	37	17	---	---	---	---	---	---
1.200	3 00	41	19	63	30	---	---	---	---	---	---	---	---	---	---	---	---
1.210	3 03	39	18	61	29	---	---	---	---	---	---	---	---	---	---	---	---
1.220	3 05	38	18	60	28	---	---	---	---	---	---	---	---	---	---	---	---
1.230	3 08	36	17	58	27	---	---	---	---	---	---	---	---	---	---	---	---
1.240	3 10	34	16	56	26	---	---	---	---	---	---	---	---	---	---	---	---
1.250	3 13	33	16	54	25	---	---	---	---	---	---	---	---	---	---	---	---
1.260	3 15	31	15	53	25	---	---	---	---	---	---	---	---	---	---	---	---
1.270	3 18	29	14	51	24	---	---	---	---	---	---	---	---	---	---	---	---
1.280	3 20	28	13	49	23	---	---	---	---	---	---	---	---	---	---	---	---
1.290	3 23	26	12	48	23	---	---	---	---	---	---	---	---	---	---	---	---
1.300	3 25	25	12	46	22	---	---	---	---	---	---	---	---	---	---	---	---
1.310	3 28	23	11	44	21	---	---	---	---	---	---	---	---	---	---	---	---
1.320	3 30	22	10	43	20	---	---	---	---	---	---	---	---	---	---	---	---

Refer to "Installer Selectable High Speed Settings" on page 28 in this manual for more information.

## Sequence of Operations

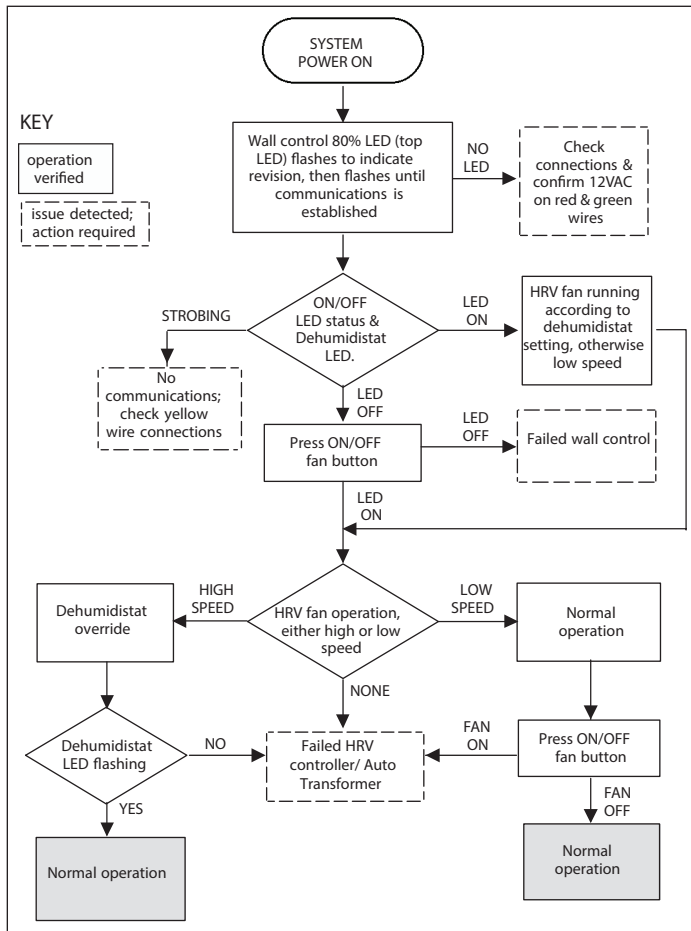


Figure 44. HRV Operational Flowchart

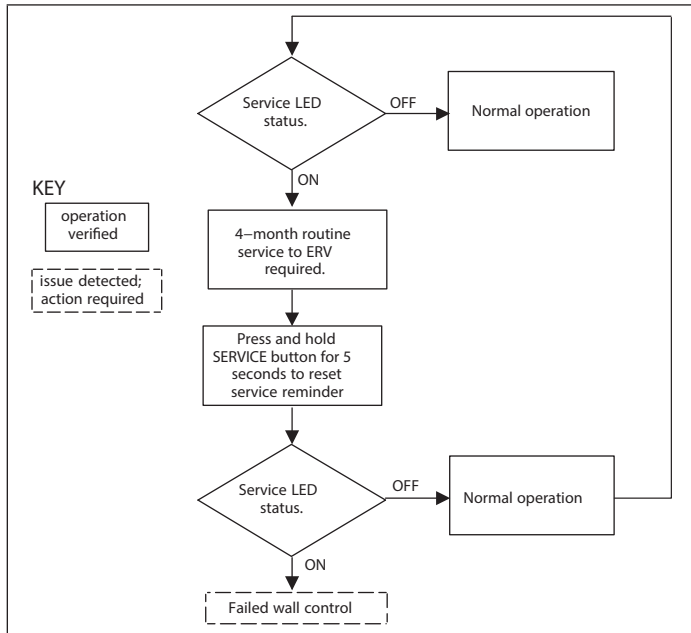


Figure 45. HRV Service Indicator Functions

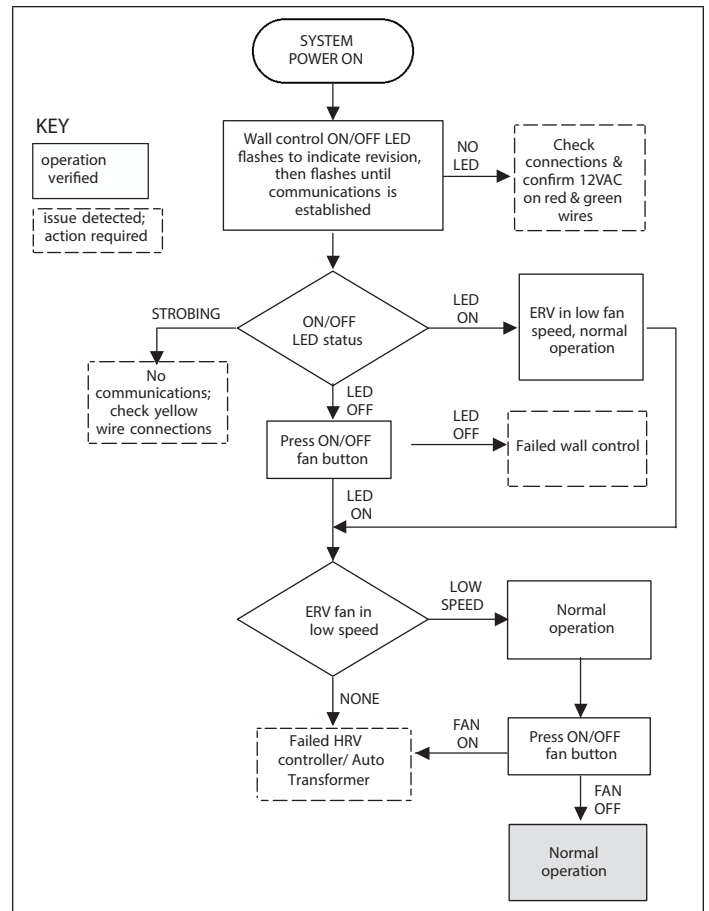


Figure 46. ERV Operational Flowchart

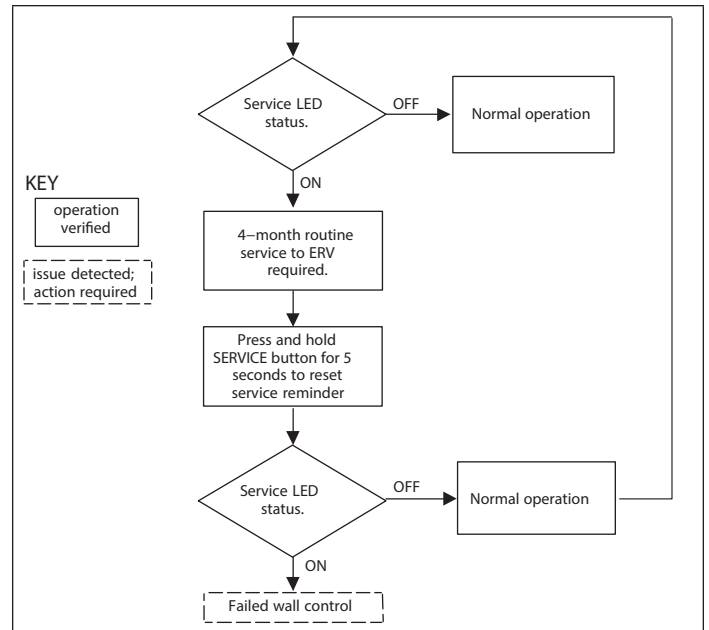
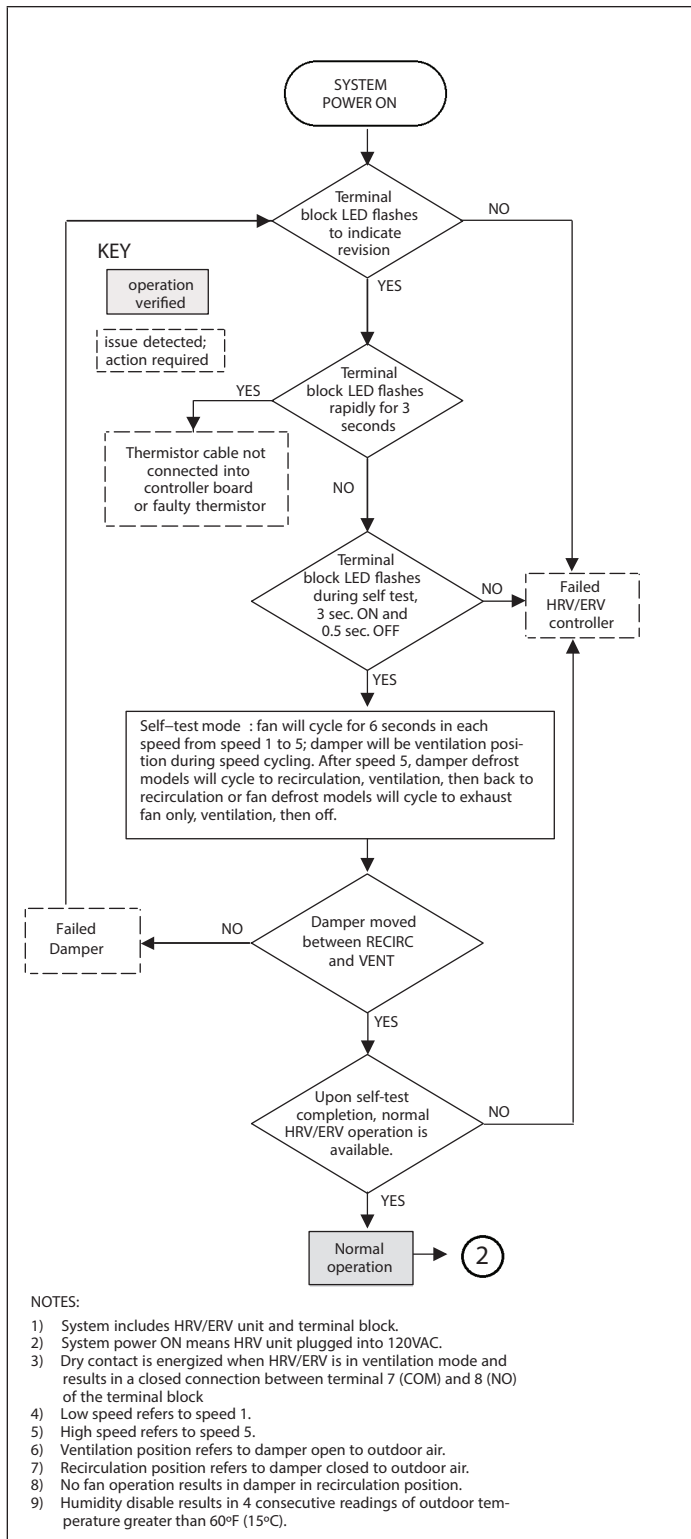
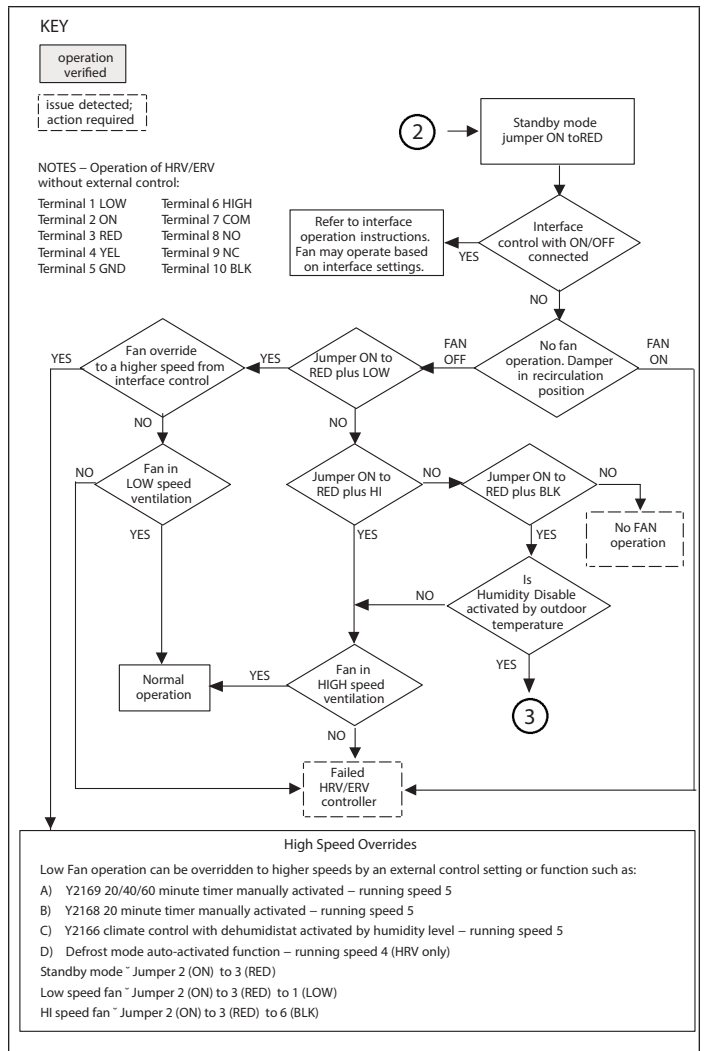


Figure 47. ERV Service Indicator Functions



**Figure 48. Self-Test Operational Flowchart**



**Figure 49. Terminal Block Operation**

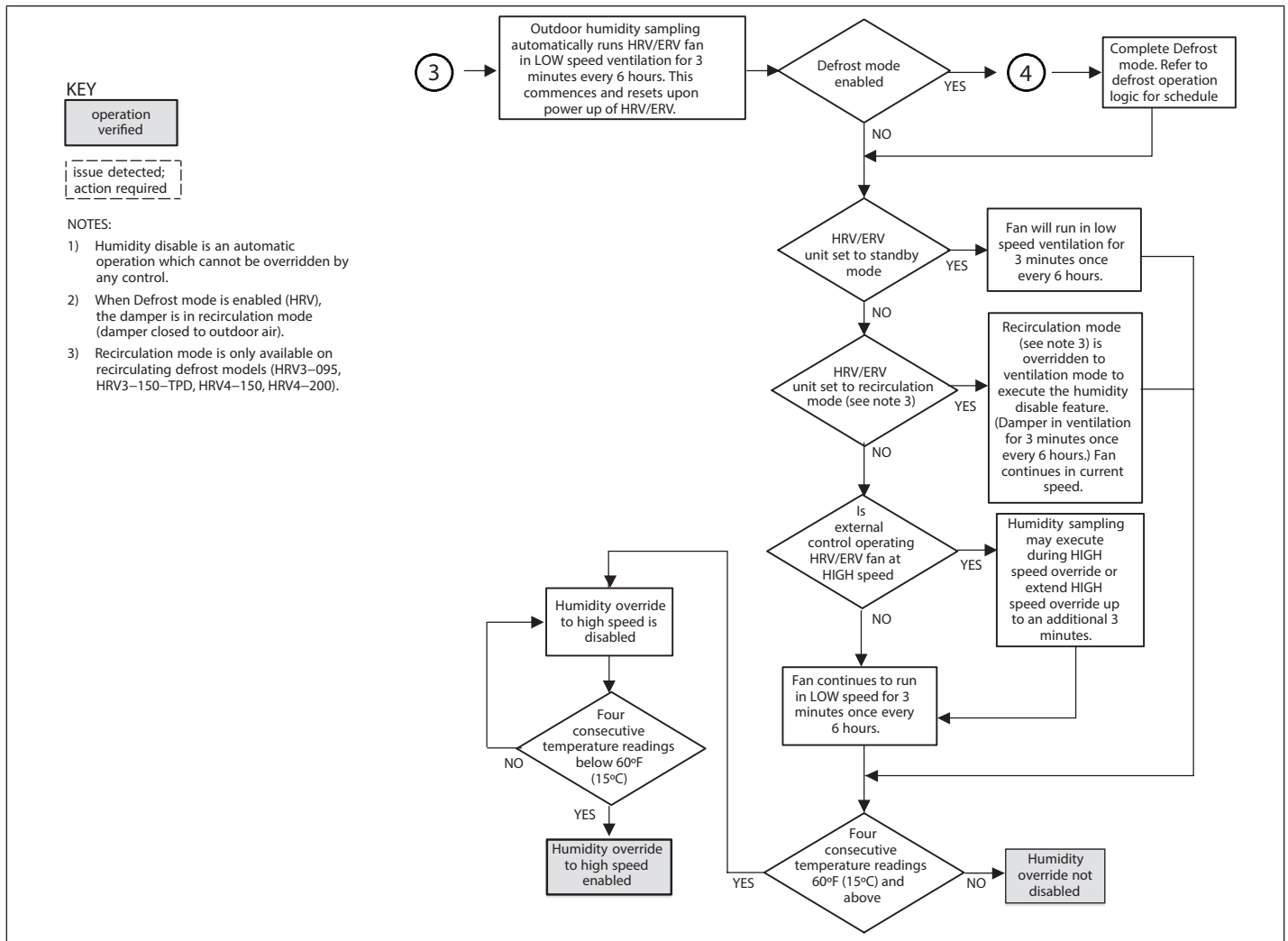


Figure 50. Dehumidistat Disable

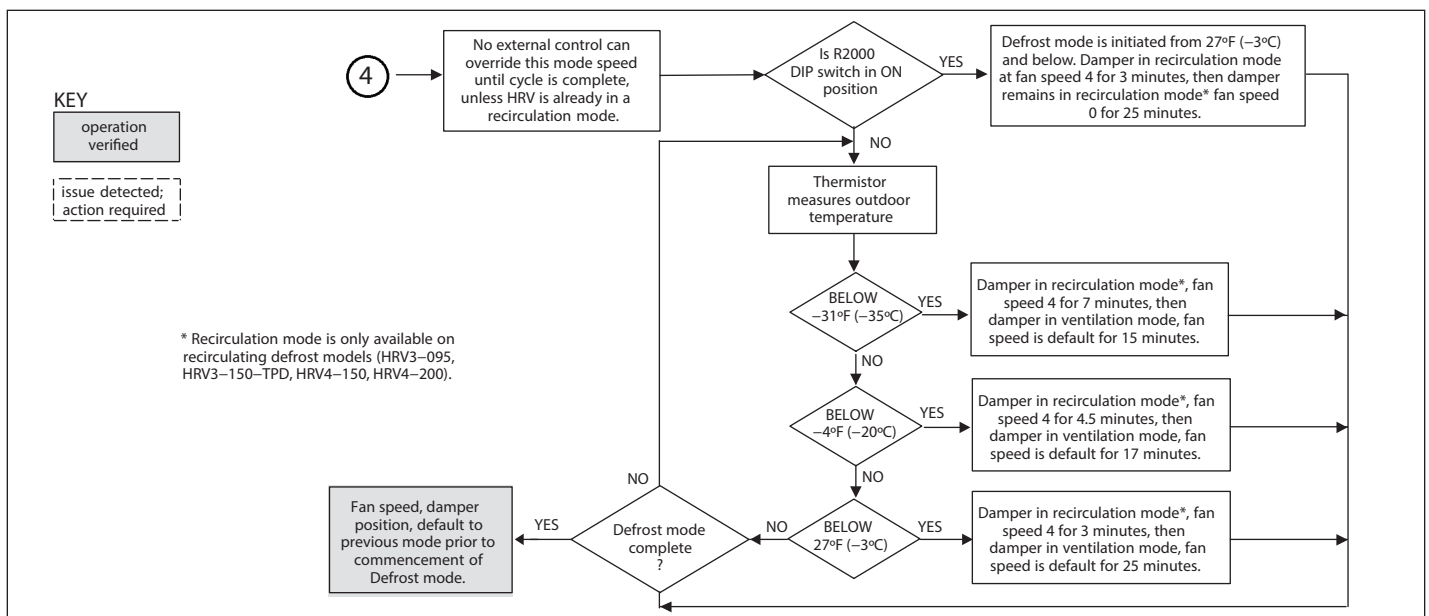


Figure 51. HRV Defrost Mode

## Troubleshooting

Prior to proceeding with troubleshoot, make certain the unit passes the self-test. Refer to “Figure 48. Self-Test Operational Flowchart” on page 38”. Follow these steps to initiate self-test:

1. Open the Access Door. (This will release the door switch).
2. Depress the door switch located on the cabinet to energize the unit.
3. Observe the sequence of operation to verify the unit is operating correctly.

**Table 20. Troubleshooting**

Symptom	Cause	Solution
Poor airflow(s)	<ul style="list-style-type: none"> <li>• Mesh on outside hoods plugged</li> <li>• Filters plugged</li> <li>• Core obstructed</li> <li>• House grilles closed or blocked</li> <li>• Dampers closed (if installed)</li> <li>• Poor power supply at site</li> <li>• Ductwork is restricting HRV/ERV</li> <li>• Improper speed control setting</li> <li>• HRV/ERV airflow improperly balanced</li> </ul>	<ul style="list-style-type: none"> <li>• Clean exterior hoods or vents</li> <li>• Remove and clean filter</li> <li>• Remove and clean core</li> <li>• Check and open grilles</li> <li>• Open and adjust dampers</li> <li>• Have electrician check supply voltage at house</li> <li>• Check duct installation</li> <li>• Increase the speed of the HRV/ERV Have contractor balance the HRV/ERV.</li> </ul>
Supply air feels cold	<ul style="list-style-type: none"> <li>• Poor location of supply grilles</li> <li>• Airflow may irritate occupants</li> <li>• Outdoor temperature extremely cold</li> </ul>	<ul style="list-style-type: none"> <li>• Locate the grilles high on the walls or under the baseboards</li> <li>• Install ceiling mounted diffuser or grilles so as not to direct airflow onto occupants (e.g. over a sofa).</li> <li>• Turn down the HRV/ERV supply speed.</li> <li>• A small duct heater (1kw) could be used to temper the supply air.</li> <li>• Placement of furniture or closed doors restricting movement of air in home; consider rearranging.</li> <li>• If supply air is ducted into furnace return, the furnace fan may need to run continuously to distribute ventilation air comfortably.</li> </ul>
Dehumidistat is not operating	<ul style="list-style-type: none"> <li>• Outdoor temperature is above 59°F (15°C)</li> <li>• Improper low-voltage connection</li> <li>• External low voltage is shorted out by a staple or nail</li> <li>• Check dehumidistat setting; it may be OFF</li> </ul>	<ul style="list-style-type: none"> <li>• Dehumidistat is functioning normally (see “Figure 50. Dehumidistat Disable” on page 39).</li> <li>• Check that the correct terminals have been used, Check external wiring for a short.</li> <li>• Set the dehumidistat at the desired level.</li> </ul>
Humidity levels are too high; condensation is appearing on windows	<ul style="list-style-type: none"> <li>• Dehumidistat set too high</li> <li>• HRV/ERV unit is undersized to handle a hot tub, indoor pool, etc. (occupant lifestyle)</li> <li>• Moisture coming into the home from an un-vented or un-heated crawl space</li> <li>• Moisture remaining in washroom and/or kitchen areas</li> <li>• Condensation seems to form in the spring and fall seasons</li> <li>• HRV/ERV is set at too low a speed</li> </ul>	<ul style="list-style-type: none"> <li>• Set dehumidistat at lower level.</li> <li>• Cover pool, hot tub, when not in use.</li> <li>• Avoid hanging clothes to dry indoors, storing wood indoors, and venting dryer inside.</li> <li>• Vent crawl space and place a vapor barrier on the floor of the crawl space.</li> <li>• 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.</li> <li>• 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.</li> </ul>
Humidity levels are too low	<ul style="list-style-type: none"> <li>• Dehumidistat control set too low</li> <li>• Blower speed of HRV/ERV is too high</li> <li>• Occupant lifestyle issue</li> <li>• HRV/ERV airflows may be improperly balanced</li> </ul>	<ul style="list-style-type: none"> <li>• Set dehumidistat at higher level. Decrease HRV/ERV blower speed.</li> <li>• Humidity may have to be added through use of humidifiers.</li> <li>• Have a contractor balance HRV/ERV airflows.</li> </ul>
HRV units and/or ducts frosting up	<ul style="list-style-type: none"> <li>• HRV air flows are improperly balanced</li> <li>• Malfunction of the HRV defrost system</li> </ul>	<p><b>NOTE:</b> <i>Minimal frost build-up is expected on cores before unit initiates defrost cycle functions.</i></p> <p>Have HVAC contractor balance the HRV airflows. Ensure damper defrost is operating during self-test.</p>
Condensation or ice build-up in insulated duct to the outside	<ul style="list-style-type: none"> <li>• Incomplete vapor barrier around insulated duct</li> <li>• Hole or tear in outer duct covering</li> </ul>	<ul style="list-style-type: none"> <li>• Tape and seal all joints.</li> <li>• Tape any holes or tears made in the outer duct covering. Ensure that the vapor barrier is complete sealed.</li> </ul>
Water in the bottom of the HRV/ERV unit	<ul style="list-style-type: none"> <li>• Drain pans plugged</li> <li>• Improper connection of HRV/ERV drain lines</li> <li>• HRV/ERV is not level</li> <li>• Drain lines obstructed</li> <li>• HRV/ERV heat exchange core is not properly installed</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure o-ring on drain nozzle sits properly.</li> <li>• Look for kinks in the drain line.</li> <li>• Check water drain connections.</li> <li>• Make sure water drains properly from pan(s).</li> </ul>



## Replacement Parts Summary

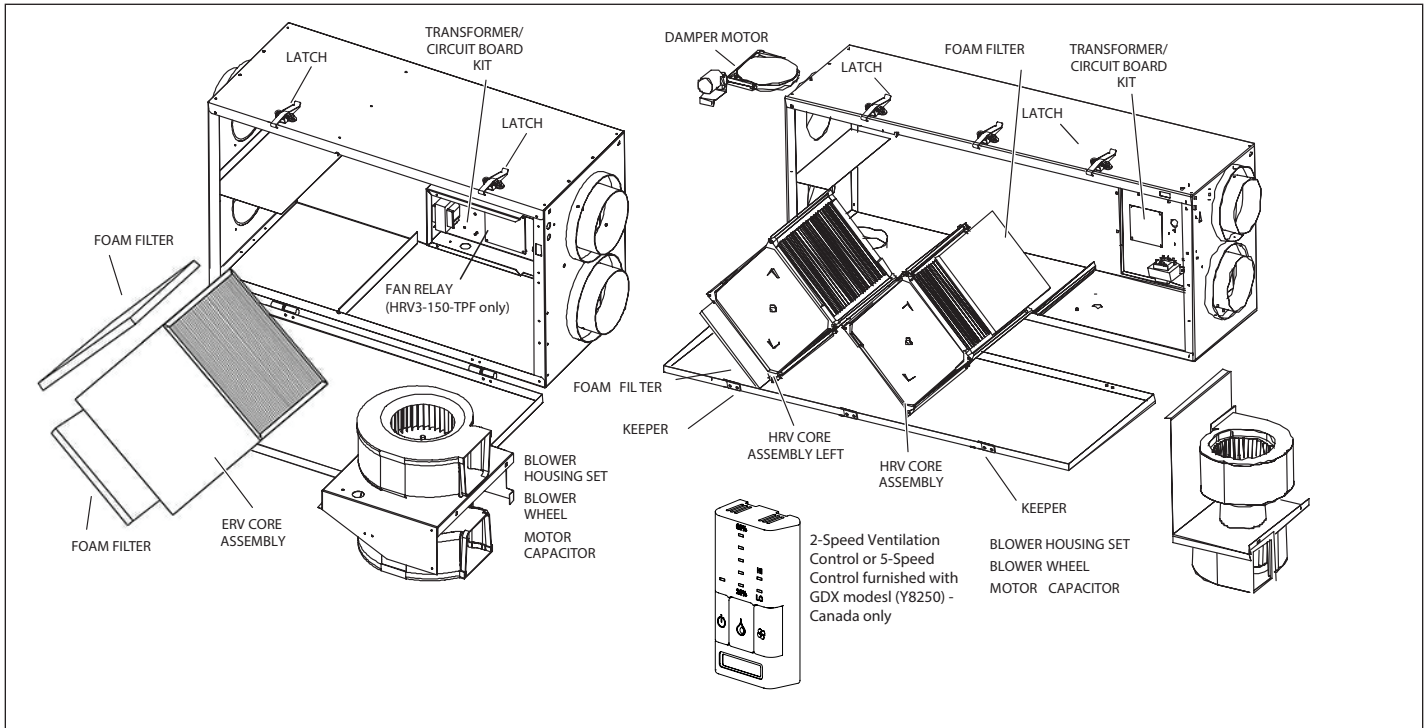


Figure 52. Parts Locations

Table 21. Replacement Parts Summary

Replacement Parts	HRV3-150-TPD/ -150-TPD-GDX (Y5447/Y6423)	HRV3-150-TPF/ -150-TPF-GDX (Y5448/Y6424)	HRV3 -095/-095-GDX (Y2142/ Y2967)	HRV5 -150/-150-GDX (Y6419/ Y6420)	HRV5 -200-TPD/-200-TPD-GDX (Y6421/ Y6422)	HRV3-195 (Y2143)	HRV3-300 (Y2144)	ERV3-150 (Y2138)	ERV3-200 (Y2139)
Motor / Capacitor	N/A	N/A	Y2146	Y5437	N/A	Y2145	Y2147	Y2145	Y2145
Motor Replacement Kit (Top Port Models)	Y5438	Y5438	N/A	N/A	Y6450	N/A	N/A	N/A	N/A
Blower Housing Set	N/A	N/A	Y2149	Y5439	N/A	Y2150	Y2150	Y2148	Y2148
Blower Wheel CW Red Dot	N/A	N/A	Y2153	Y2152	N/A	Y2152	Y2152	Y2151	Y2152
Blower Wheel CCW	N/A	N/A	Y2156	Y2154	N/A	Y2155	Y2155	Y2154	Y2155
Core Assembly	Y5441	Y5441	Y2159	Y5440	Y5440	Y2159	Y2159	10F87	10F87
Core Assembly Left	-	-	-	-	-	Y2160	Y2160	-	-
Foam Filter Set (2)	Y2162	Y2162	Y2163	Y5442	Y5442	Y2162	Y2162	Y2162	Y2162
Transformer / Circuit Board Kit	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164	Y2164
Damper Motor	Y6447	N/A	Y6447	Y6448	Y6448	Y6448	Y6448	-	-
Wall Control with the Unit	Y8249/Y8250*	Y8249/Y8250*	Y8249/Y8250*	Y8249/Y8250*	Y8249/Y8250*	Y8249	Y8249	Y8249	Y8249
Fan Relay	N/A	Y5473	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Latches/Keeper	11U82	11U82	11U82	11U82	11U82	11U82	11U82	11U82	11U82

DAMPER MOTOR ROTATION: Y6447 -- CW rotation; Y6448 -- CCW rotation / \* indicates GDX models have the 5-speed control furnished (Y8250) - Canada only

## Blower Assembly Service (Dealer Only)

### To Remove Blower Assembly

#### ⚠ 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 (6 mm) sheet metal screws on front lip of cabinet.
4. Remove two Phillips head screws on right side panel.
5. Remove ¼ inch (6 mm) 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.

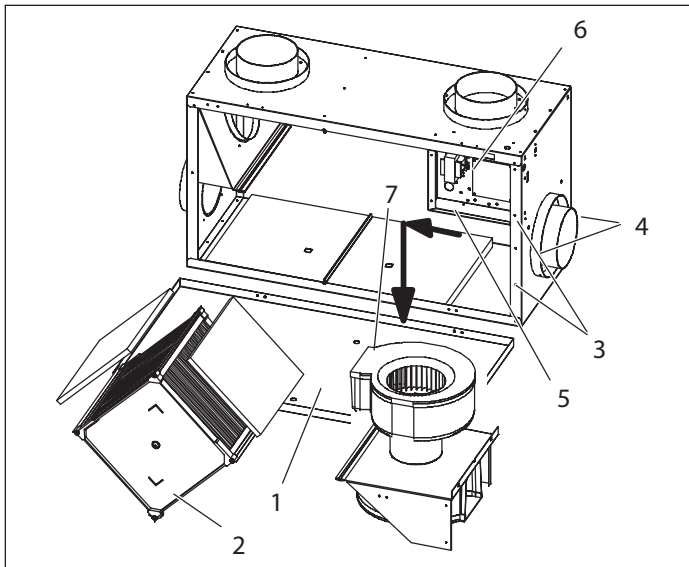


Figure 53. Removing Blower Assembly

### 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

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.

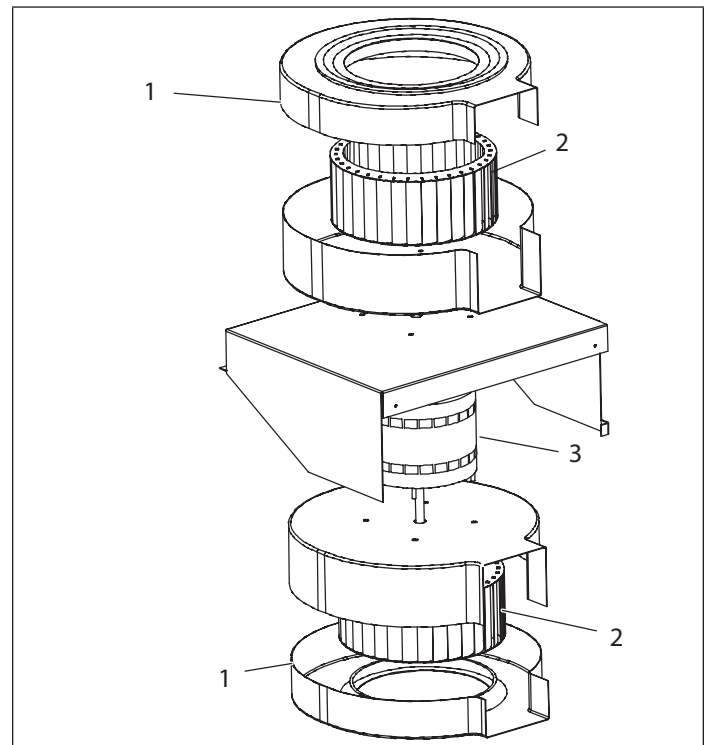


Figure 54. Replacing Motor

### To Assemble Motor

Follow the above steps in reverse order.

## Homeowner Maintenance Information

### **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 and 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 **ONLY** to clean 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).

- f. **ERV Core** - vacuum **ONLY** to clean core, do not get wet.
  - g. Install clean filters.
  - h. 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. A Install the bottom flange of the core guide into the bottom **H** channel approximately 1/4" (6 mm).
    - b. Install the left or right side flange of the core guide approximately 1/4" (6 mm) followed by the other side flange.
    - c. Install the top flange of the core guide into the top **H** channel approximately 1/4" (6 mm).
    - 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.

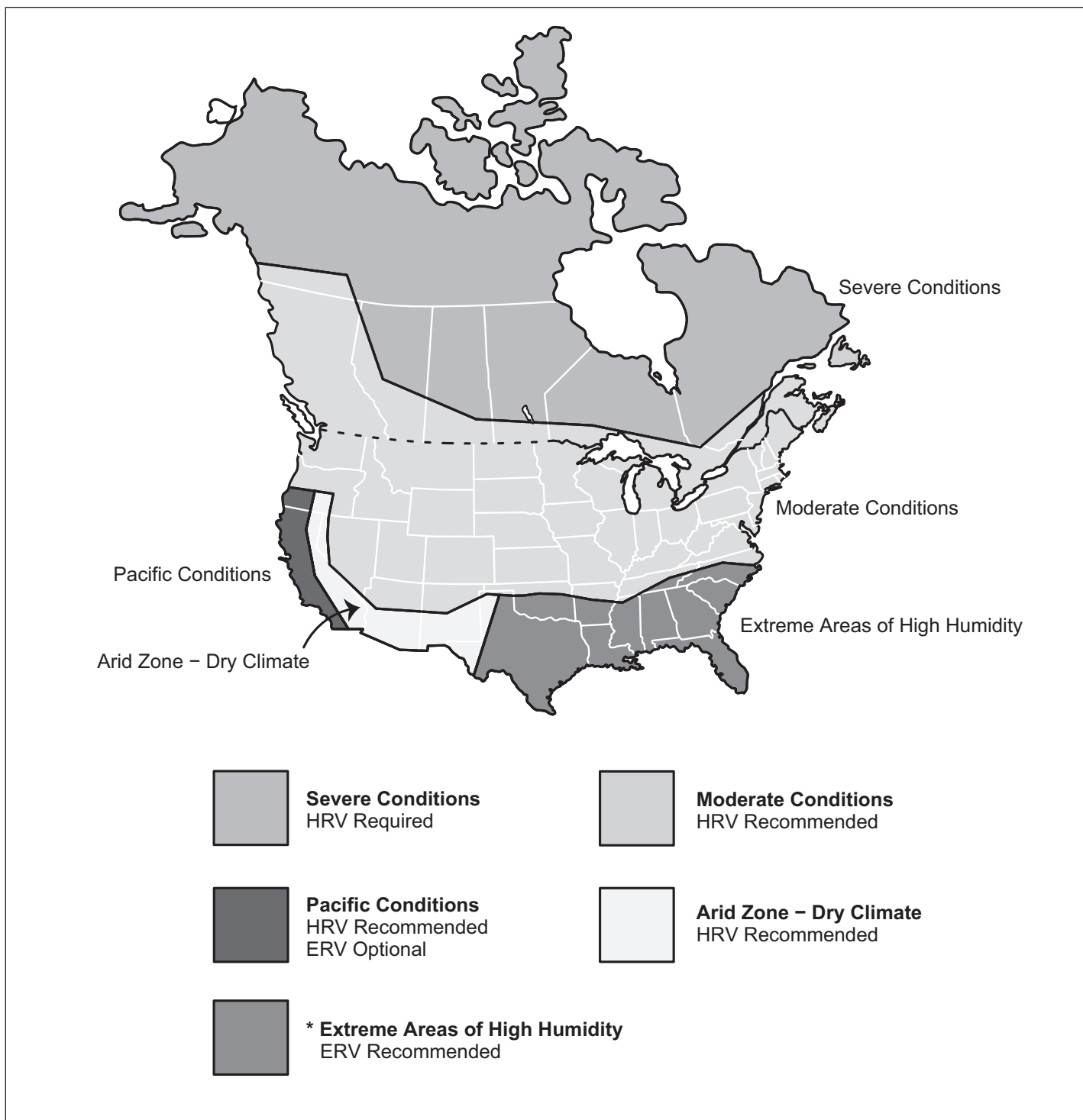
**NOTE:** Core will appear to stick out from cabinet approximately 1/8" (3 mm). This is designed this way so that the access door will fit tight against the core.

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 in-line 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**



**Figure 55. Application Map - HRV/ERV Ventilators**



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