

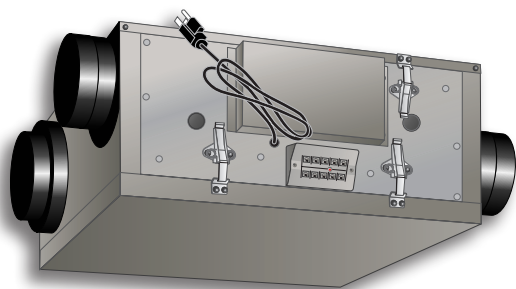


INDOOR AIR QUALITY KIT AND ACCESSORIES

507363-04
05/2024
Supersedes 01/2024

HEALTHY CLIMATE® ERV AND HRV VENTILATORS

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



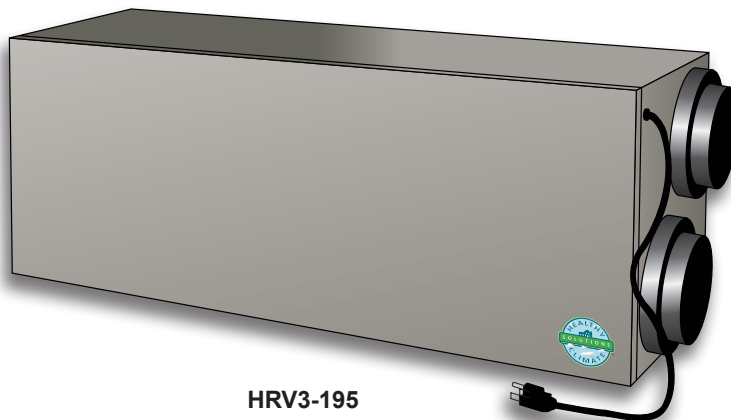
ERV5-130



HRV5-150-TPD, HRV5-200-TPD,
HRV7-HEX095-TPD, HRV5-270-TPD-ECM,
ERV5-150-TPD, ERV5-175-TPD



HRV6-150



HRV3-195

THIS MANUAL MUST BE LEFT WITH THE OWNER
FOR FUTURE REFERENCE

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⚠ 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.

⚠ IMPORTANT

The ERV/HRV may be used with an S30 and E30 control system. The Lennox S30 will require a smart hub 2.0 and the Lennox S40 will require a Equipment Interface Module (22X18).

Do not connect the S30 or E30 to the ERV/HRV before confirming the thermostats have 0.03.5.0XXX or higher software.

Shipping and Packing List

Package 1 of 1 contains:

1 - Assembled ventilator

1 - Bag assembly contains the following:

Table 1. Bag Assembly Contents

Quantity Included	Description
2	Drain spout assemblies with one drain tee (included with all models except ERV5-130)
2	Drain plugs (included only with ERV5-150-TPD and ERV5-175-TPD)
4	Mounting brackets (included only with ERV5-130)
4	Hanging straps (included with all models except ERV5-130)
1	Installation instruction and warranty
1	Terminal Block plug-in (included with ERV5-175-TPD, HRV5-200-TPD, HRV5-270-TPD-ECM, and HRV7-HEX095-TPD)

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.

⚠ IMPORTANT

All controls referenced in this instruction are field-provided. Lennox catalog numbers are provide for all reference controls.

Model and Catalog Numbers

Table 2. Model and Catalog Numbers

Model	Catalog #	Description
HRV5-150-TPD	27C78	Heat Recovery Ventilation
HRV3-195-TPD	Y2143	Heat Recovery Ventilation
HRV6-150	17Y58	Heat Recovery Ventilation
HRV5-200-TPD	17Y62	Heat Recovery Ventilation
HRV7-HEX095-TPD	27C79	Heat Recovery Ventilation
HRV5-270-TPD-ECM	17Y53	Heat Recovery Ventilation
ERV5-130	17Y54	Energy Recovery
ERV5-150-TPD	17Y55	Energy Recovery
ERV5-175-TPD	17Y57	Energy Recovery

NOTE:

If the unit is certified ENERGY STAR®, the following applies:

- This product earned the ENERGY STAR® by meeting strict energy efficiency guidelines set by Natural Resources Canada and the US EPA. This product meets ENERGY STAR® requirements only when used in Canada.
- To ensure quiet operation of the ENERGY STAR® certified H/ERV, each product model must be installed using sound attenuation techniques appropriate for the installation.
- The way your heat/energy-recovery ventilator is installed can make a significant difference to the electrical energy you use. To minimize the electricity use of the heat/energy-recovery ventilator, a stand-alone fully ducted installation is recommended. If you choose a simplified installation that operates your furnace air handler for room-to-room ventilation, an electrically efficient furnace that has an electronically commutated (EC) variable speed blower motor will minimize your electrical energy consumption and operating cost.
- Installation of a user-accessible control with your product model will improve comfort and may significantly reduce the product model's energy use.

Terms and Definitions

- **Defrost Mode (ERV/HRV)** - to ensure reliable operation during cold weather, the ERV/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 ERV/HRV is required, simply unplug the power cord for 30 seconds. The Self-Test will occur when the ERV/HRV is reconnected.
- **Self-Test** - each time the ERV/HRV is powered/energized, the self test function will automatically initiate. During the self-test, the ERV/HRV 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 ERV/HRV 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** - This is the temperature sensor for both ERV and HRV that measures electrical resistance in a known manner, as outdoor temperatures fluctuate.
- **HVI** - Home Ventilating Institute.
- **HRAI** - Heating Refrigeration Air Conditioning Institute.

Application

⚠ 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.

This equipment is designed to provide fresh air while exhausting an equal amount of stale air. Refer to "Application Map - ERV/HRV Ventilators" on page 60.

ENERGY RECOVERY VENTILATOR (ERV)

The ERV unit is equipped with an enthalpic core. 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.

HEAT RECOVERY VENTILATOR (HRV)

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.

Required Tools and Materials

Table 3. Field-Provided Materials

Low voltage control wire	Mastic tape
1/2" I.D. Drain hose	Caulking material
Aluminum foil duct tape	Zip ties (duct)
Fabric flexible or insulated rigid ducts – class II rated	Zip ties

Table 4. Balancing Tools

Product	Catalog #	Description
Balancing Tool	Y6484	Digital Manometer with a range of 0 - 4.000 inches w.c. (0 - 995 Pa)
H/C Door Port Balance Kit without Gage	Y2207	Can be used to balance the following models: HRV5-150-TPD, HRV5-200-TPD, HRV7-HEX095-TPD, HRV5-270-TPD-ECM, ERV5-150-TPD, and ERV5-175-TPD This kit includes: <ul style="list-style-type: none"> • Two connection hoses, • Two rubber fittings • Instructions Digital manometer. Will read 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.

⚠ CAUTION

Potential equipment malfunction or damage.

May require repairs and/or void warranty.

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

Specifications

Table 5. Specifications





Specifications	Single-Core HRV Units					Dual – Core HRV Unit	Single-Core ERV Units		
Model No.	HRV5-150-TPD (27C78)	HRV6-150 (17Y58)	HRV5-200-TPD (17Y62)	HRV7-HEX095-TPD (27C79)	HRV5-270-TPD-ECM (17Y53)	HRV3-195 (Y2143)	ERV5-130 (17Y54)	ERV5-150-TPD (17Y55)	ERV5-175-TPD (17Y57)
Energy Star® certified (Canada Only)			No		No	No	No	No	
	These products earned the ENERGY STAR® by meeting strict energy efficiency guidelines set by Natural Resources Canada and the US EPA. These products meets ENERGY STAR® requirements only when used in Canada.								
Unit Weight in pounds (kilograms)	45 (20)	62 (28)	58 (26)	59 (27)	59 (27)	82 (37)	41 (19)	42 (19)	54 (24)
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)	186 (88)	170 (80)	203 (96)	108 (51)	278 (131)	220 (104)	136 (64)	172 (81)	193 (91)
0.2 (50)	174 (82)	159 (75)	193 (91)	104 (49)	271 (128)	210 (99)	131 (62)	161 (76)	182 (86)
0.3 (75)	163 (77)	148 (70)	182 (86)	95 (45)	267 (126)	193 (91)	127 (60)	153 (72)	172 (81)
0.4 (100)	150 (71)	138 (65)	170 (80)	89 (42)	261 (123)	176 (83)	122 (58)	144 (68)	161 (76)
0.5 (125)	140 (66)	123 (58)	159 (75)	81 (38)	254 (120)	155 (73)	116 (55)	133 (63)	150 (71)
0.6 (150)	127 (60)	---	146 (69)	70 (33)	248 (117)	131 (62)	112 (53)	125 (59)	140 (66)
0.7 (175)	114 (54)	---	133 (63)	59 (28)	242 (114)	108 (51)	105 (50)	117 (55)	127 (60)
0.8 (200)	102 (48)	---	121 (57)	49 (23)	233 (110)	83 (39)	99 (47)	106 (50)	117 (55)
0.9 (225)	89 (42)	---	106 (50)	36 (17)	227 (107)	55 (26)	93 (44)	97 (46)	104 (49)
1.0 (250)	74 (35)	---	91 (43)	---	218 (103)	---	84 (40)	87 (41)	91 (43)
*Adjusted Sensible Recovery Efficiency @ 32 °F (0°C)	@ 64 CFM (30 L/s) 70%	@ 64 CFM (30 L/s) 82%	@ 64 CFM (30 L/s) 82%	@ 64 CFM (30 L/s) 79%	@ 64 CFM (30 L/s) 77%	@ 64 CFM (30 L/s) 87%	@ 64 CFM (30 L/s) 78%	@ 89 CFM (42 L/s) 81%	@ 66 CFM (31 L/s) 83%
*Sensible Recovery Efficiency @ 32 °F (0°C)	@ 64 CFM (30 L/s) 65%	@ 64 CFM (30 L/s) 75%	@ 64 CFM (30 L/s) 76%	@ 64 CFM (30 L/s) 75%	@ 64 CFM (30 L/s) 75%	@ 64 CFM (30 L/s) 80%	@ 64 CFM (30 L/s) 71%	@ 89 CFM (42 L/s) 75%	@ 66 CFM (31 L/s) 75%
*Adjusted Sensible Recovery Efficiency @ -13 °F (-25°C)	@ 70 CFM (33 L/s) 63%	@ 68 CFM (32 L/s) 73%	@ 102 CFM (48 L/s) 73%	@ 66 CFM (31 L/s) 68%	@ 72 CFM (34 L/s) 71%	@ 110 CFM (52 L/s) 70%	@ 64 CFM (30 L/s) 62%	@ 78 CFM (37 L/s) 68%	@ 68 CFM (32 L/s) 66%
*Sensible Recovery Efficiency @ -13 °F (-25°C)	@ 70 CFM (33 L/s) 60%	@ 68 CFM (32 L/s) 70%	@ 102 CFM (48 L/s) 70%	@ 66 CFM (31 L/s) 65%	@ 72 CFM (34 L/s) 70%	@ 110 CFM (52 L/s) 68%	@ 64 CFM (30 L/s) 57%	@ 78 CFM (37 L/s) 65%	@ 68 CFM (32 L/s) 62%
*Latent Efficiency 95°F (35°C)	N/A	N/A	N/A	N/A	N/A	N/A	@ 64 CFM (30 L/s) 35%	@ 83 CFM (39 L/s) 43%	@ 64 CFM (30 L/s) 49%
*Total Efficiency 95°F (35°C)	N/A	N/A	N/A	N/A	N/A	N/A	@ 64 CFM (30 L/s) 41%	@ 83 CFM (39 L/s) 49%	@ 64 CFM (30 L/s) 51%
* Certified by the Home Ventilating Institute (HVI) according to test procedures developed by HVI members and based on internationally recognized standards. For performance ratings at other conditions not shown, please visit the HVI website.									
Number of speeds available with S40/S30/E30 and basic wall control	2	2	2	2	2	2	2	2	2

Table 5. Specifications

Specifications	Single-Core HRV Units					Dual – Core HRV Unit	Single-Core ERV Units		
Model No.	HRV5-150-TPD (27C78)	HRV6-150 (17Y58)	HRV5-200-TPD (17Y62)	HRV7-HEX095-TPD (27C79)	HRV5-270-TPD-ECM (17Y53)	HRV3-195 (Y2143)	ERV5-130 (17Y54)	ERV5-150-TPD (17Y55)	ERV5-175-TPD (17Y57)
Number of speeds available with optional wall control	5	5	5	5	5	5	5	5	5
Ventilator Type	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Heat Recovery	Energy Recovery	Energy Recovery	Energy Recovery
Heat/Energy Recovery Core	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Enthalpic	Enthalpic	Enthalpic
Number of ERV/HRV Cores	1	1	1	1	1	2	1	1	1
Defrost Type	Recirculating	Recirculating	Recirculating	Recirculating	Recirculating	Damper	Recirculating	Recirculating	Recirculating
Door Port Balancing	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Balancing Damper in Supply & Exhaust Collar	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Number of Ports	4	4	4	4	4	5	4	4	4
Pre-Filters Supply & Exhaust	MERV6 or MERV13** ** To be ordered separately. Comes in a set of 4 and is installed in the Fresh Side only. When a MERV 13 filter is installed for the first time, airflow will need to be balanced (see "Airflow Balancing" on page 40 for further details).								
Wall Controller Included	No	No	No	No	No	No	No	No	No
Condensate Drain Connections: Spouts: qty. 2 (1/2" o.d.) Drain Tee: qty. 1 (1/2" o.d.)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Drain Plug Included	No	No	No	No	No	No	No	Yes	Yes
Hanging Strap kit Included	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Bracket Included	No	No	No	No	No	No	Yes	No	No
Terminal Block Connection Included	No	No	Yes	Yes	Yes	No	No	No	Yes
Electrical Characteristics: 120 Volts, 60 Hertz, 1 phase									
Fan HP	1/20	1/10	1/10	1/10	1/10	1/10	1/10	1/20	1/20
Motor Type	PSC	PSC	PSC	PSC	ECM	PSC	PSC	PSC	PSC
Fan Watts @HVI maximum rated CFM 32°F (0°C) Test*	47 (64 cfm)	72 (64 cfm)	61 (64 cfm)	65 (64 cfm)	22 (64 cfm)	67 (64 cfm)	101 (96 cfm)	99 (110 cfm)	110 (114 cfm)
Amp Rating	0.94	1.4	1.4	0.5	2.1	1.5	1.4	1.7	1.4

* Certified by the Home Ventilating Institute (HVI) according to test procedures developed by HVI members and based on internationally recognized standards. For performance ratings at other conditions not shown, please visit the HVI website.

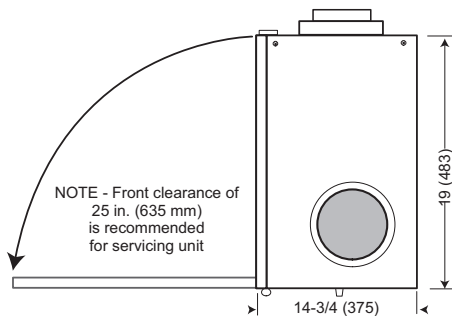
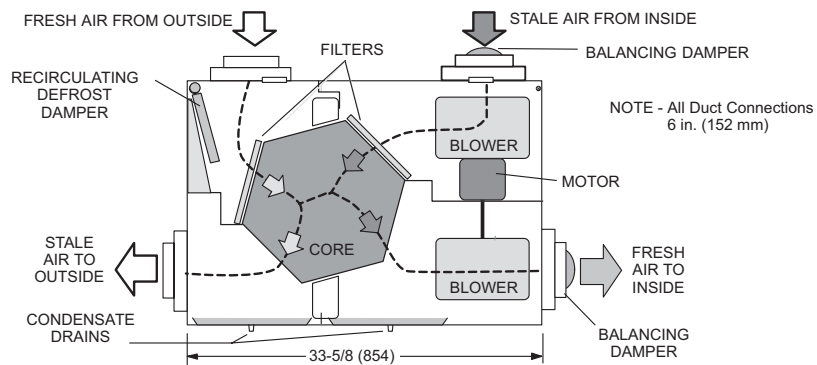
Optional Fan Curve Speeds

Table 6. Optional Fan Curves Speeds (Factory Tested)

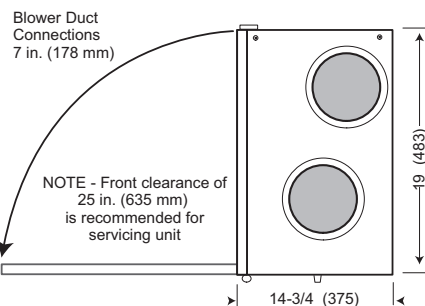
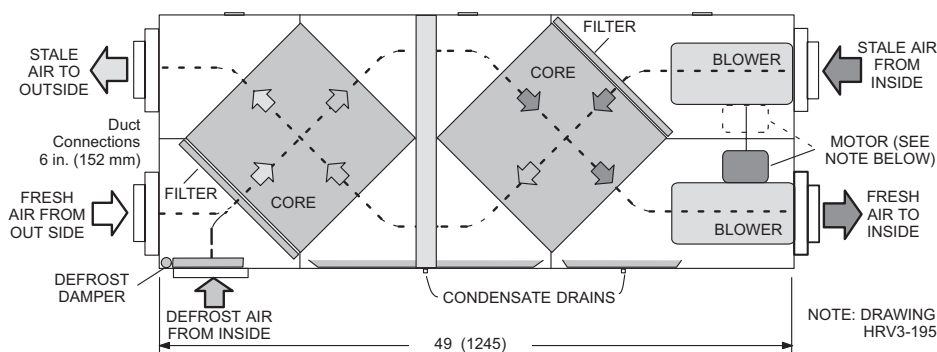
NOTE: All specifications are subject to change without notice.

	Single-Core HRV Units										Dual-Core HRV Units		Single-Core ERV Units						
Model No.	HRV5-150-TPD (27C78)		HRV6-150 (17Y58)		HRV5-200-TPD (17Y62)		HRV7-HEX095-TPD (27C79)		HRV5-270-TPD-ECM (17Y53)		HRV3-195 (17Y65)		ERV5-130 (17Y54)		ERV5-150-TPD (17Y55)		ERV5-175-TPD (17Y57)		
Speed 4 – Medium 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)	155	73	153	72	189	89	98	47	249	120	167	78	117	56	127	61	150	71	
0.2 (50)	148	70	141	67	170	80	95	46	239	115	159	75	112	54	119	57	138	66	
0.3 (75)	139	66	131	62	153	72	89	43	228	110	150	71	110	53	112	54	123	59	
0.4 (100)	129	61	117	55	136	64	80	38	217	104	140	66	105	50	105	50	112	54	
0.5 (125)	118	56	96	45	120	57	70	34	204	98	124	58	98	47	96	46	101	49	
0.6 (150)	105	50	80	38	106	50	60	29	190	91	110	52	95	46	89	43	88	42	
0.7 (175)	91	43	---	---	91	43	---	---	176	84	93	44	88	42	80	38	74	36	
0.8 (200)	76	36	---	---	78	37	---	---	160	77	---	---	80	38	---	---	62	30	
Speed 3 – Medium																			
0.1 (25)	139	66	144	68	161	76	95	46	209	100	142	67	100	48	100	48	128	60	
0.2 (50)	130	61	130	61	141	67	90	43	198	95	136	64	96	46	98	47	115	55	
0.3 (75)	120	57	120	57	123	58	80	38	185	89	127	60	92	44	90	43	101	49	
0.4 (100)	109	51	106	50	108	51	72	35	171	82	118	55	89	43	82	39	90	43	
0.5 (125)	96	45	88	42	92	43	60	29	155	74	103	48	84	40	75	36	75	36	
0.6 (150)	81	38	---	---	77	36	---	---	137	66	92	43	80	38	64	31	63	30	
0.7 (175)	65	31	---	---	64	30	---	---	118	57	72	34	75	36	---	---	50	24	
0.8 (200)	48	23	---	---	52	25	---	---	97	46	---	---	---	---	---	---	---	---	
Speed 2 – Medium Low																			
0.1 (25)	129	61	127	60	127	60	88	42	158	76	115	54	n/a	n/a	n/a	n/a	102	48	
0.2 (50)	112	53	116	55	108	51	80	38	142	68	107	50	n/a	n/a	n/a	n/a	89	42	
0.3 (75)	96	45	106	50	90	42	70	34	123	59	100	47	n/a	n/a	n/a	n/a	75	36	
0.4 (100)	82	39	97	46	73	34	18	29	101	48	90	42	n/a	n/a	n/a	n/a	60	29	
0.5 (125)	67	32	86	40	60	28	---	---	75	36	81	38	n/a	n/a	n/a	n/a	47	23	
0.6 (150)	53	25	---	---	48	23	---	---	45	22	66	31	n/a	n/a	n/a	n/a	---	---	
0.7 (175)	39	18	---	---	38	18	---	---	---	---	---	---	n/a	n/a	n/a	n/a	---	---	
0.8 (200)	---	---	---	---	---	---	---	---	---	---	---	---	n/a	n/a	n/a	n/a	---	---	
Speed 1 – Low																			
0.1 (25)	82	39	108	51	100	48	70	34	106	51	88	41	63	30	66	32	74	35	
0.2 (50)	69	33	100	47	78	37	58	28	79	38	80	38	60	29	60	29	61	29	
0.3 (75)	56	26	91	43	60	28	45	22	45	22	73	34	57	27	54	26	48	23	
0.4 (100)	44	21	78	37	46	22	36	17	---	---	63	30	53	25	45	22	35	17	
0.5 (125)	31	15	---	---	32	15	---	---	---	---	56	26	50	24	37	18	---	---	
0.6 (150)	---	---	---	---	---	---	---	---	---	---	43	20	44	21	---	---	---	---	
0.7 (175)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
0.8 (200)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

HRV6-150 HEAT RECOVERY VENTILATORS



HRV3-195 HEAT RECOVERY VENTILATORS



HRV5-150-TPD HEAT RECOVERY VENTILATORS

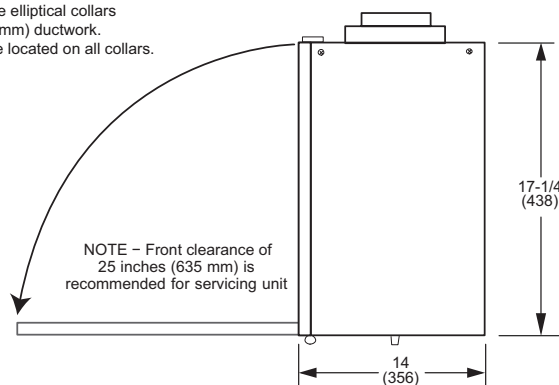
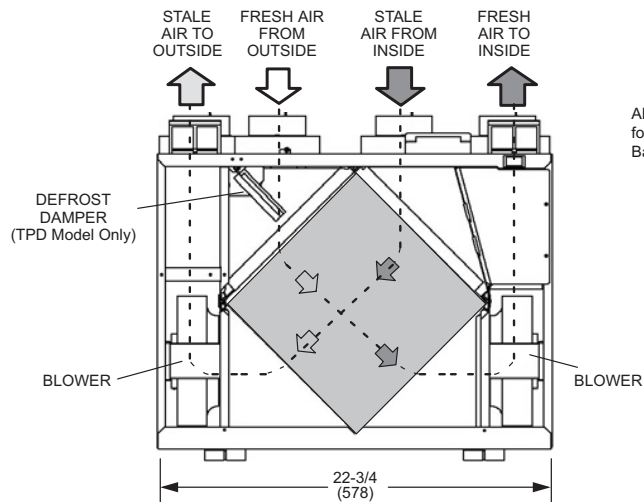


Figure 1. HRV6-150, HRV3-195, and HRV5-150-TPD

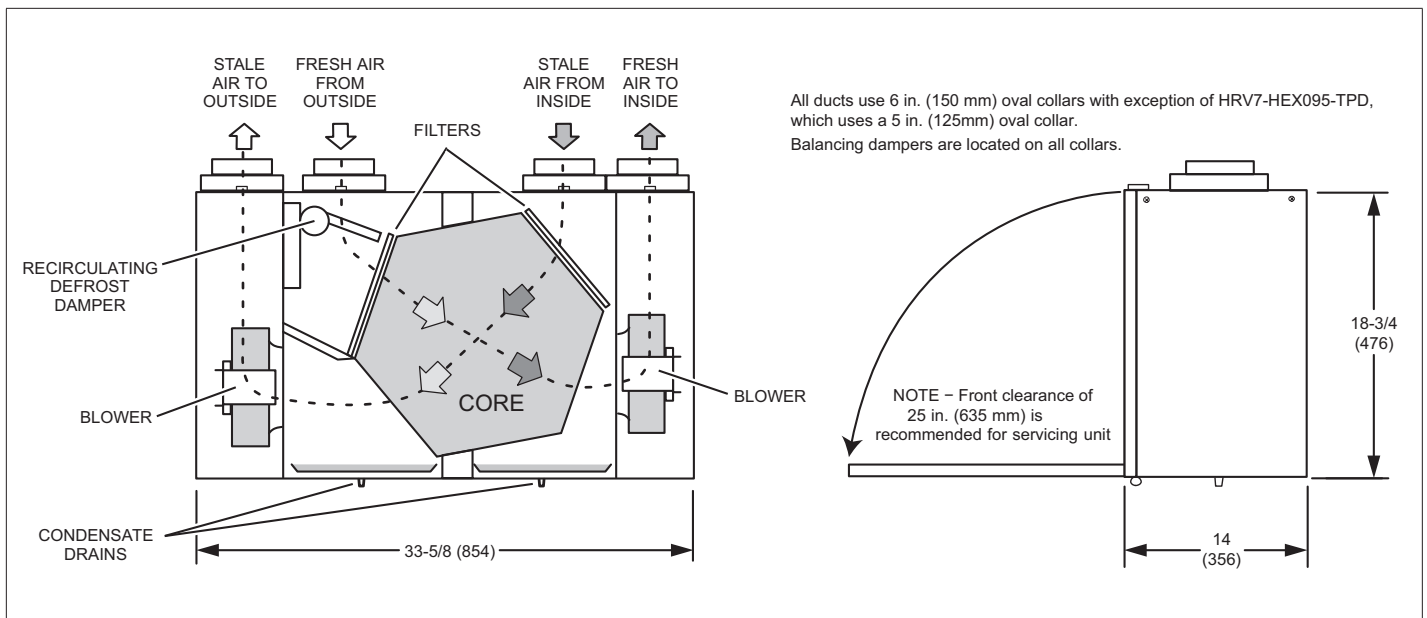


Figure 2. ERV5-175-TPD, HRV5-200-TPD, HRV5-270-TPD-ECM, and HRV7-HEX095-TPD

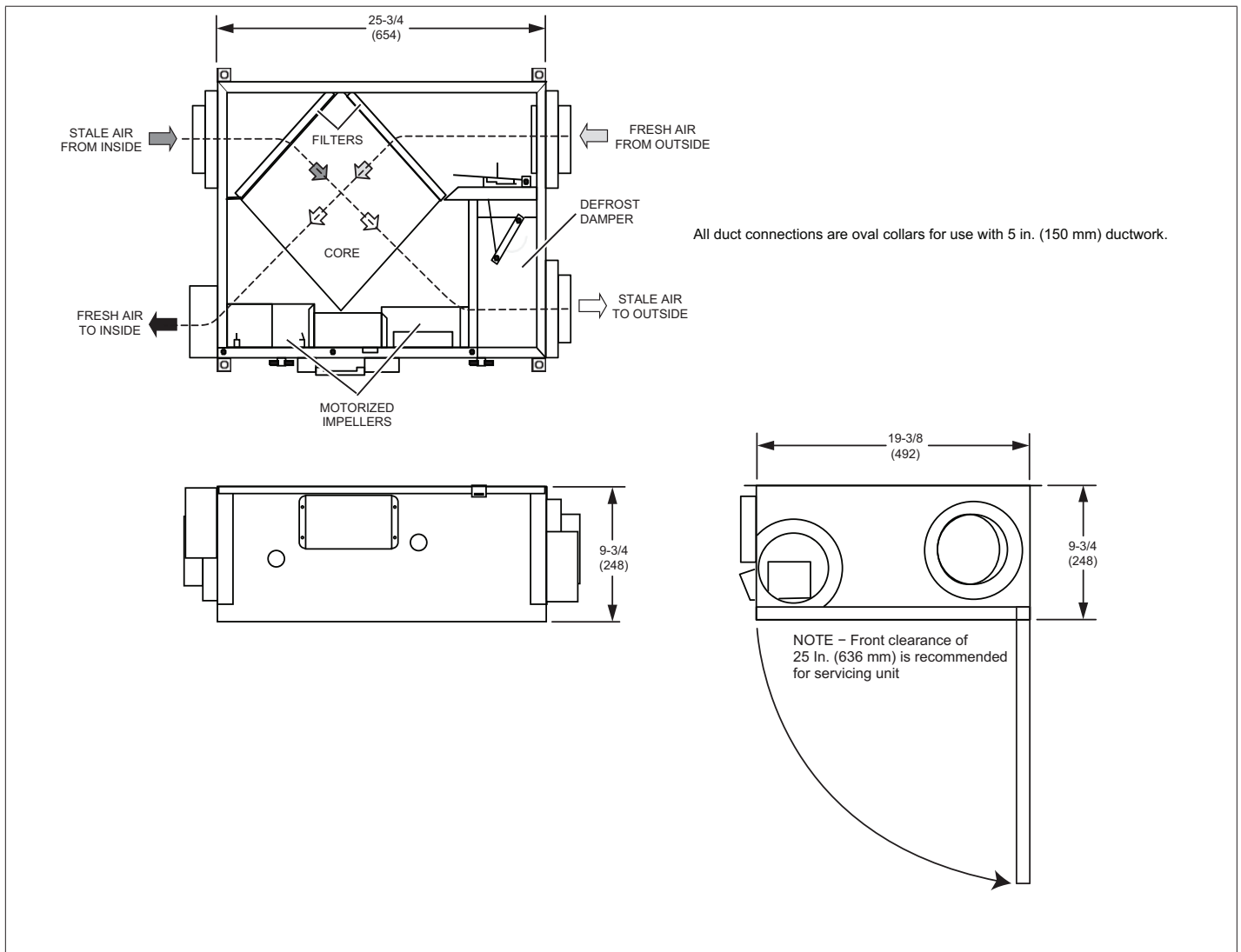


Figure 3. ERV5-130

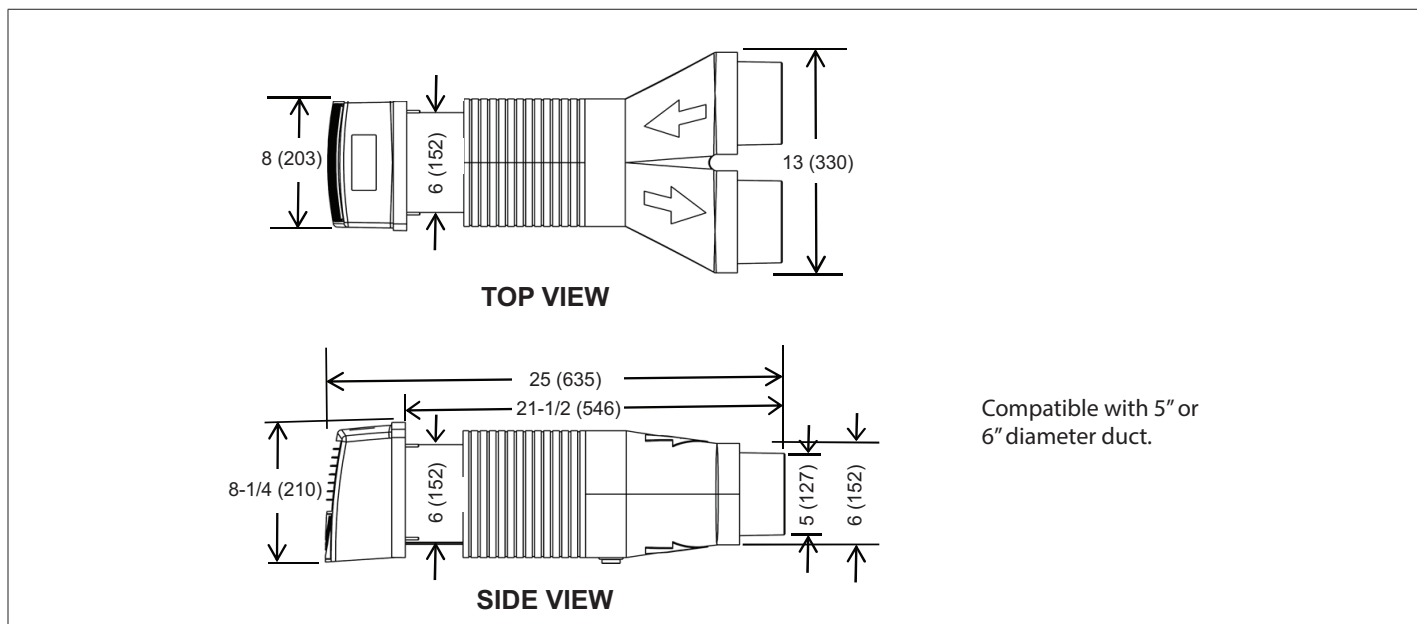


Figure 4. Dual Hoods

Shaping Ducting to Fit Oval Ports

Applicable Units:

HRV5-150-TPD, HRV5-200-TPD, HRV7-HEX095-TPD, HRV5-270-TPD-ECM, ERV5-150-TPD and ERV5-175-TPD

These 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.

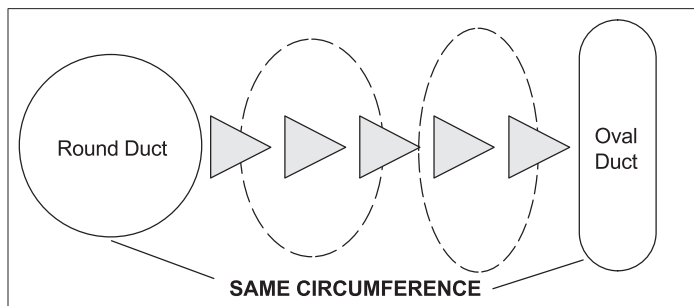


Figure 5. Shaping Ducting to Fit Oval Ports

Requirements

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

- Clothes dryer
- Range top
- Stove top fan
- Central vacuum system

NOTE: Failure to follow this instruction will void the ERV/HRV 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.

ERV/HRV 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.

Defrost Cycle (ERV/HRV)

The ERV/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) ERV/HRV runs in defrost for three minutes and runs in ventilation for 25 minutes
- At -4°F (-20°C) ERV/HRV runs in defrost for 4.5 minutes and runs in ventilation for 17 minutes
- At -31°F (-35°C) ERV/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 ERV/HRV defaults to previous settings. If the cycle is completed and the thermistor continues to measure defrost temperature the defrost cycle is repeated.

Recirculating Damper Defrost

Applicable Units:

HRV5-150-TPD, HRV6-150, HRV5-200-TPD, HRV7-HEX095-TPD, HRV5-270-TPD-ECM, ERV5-150-TPD, ERV5-175-TPD and ERV5-130)

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 Model (HRV3-195) - 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.)

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

- Exhaust stale and 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 ERV/HRV 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



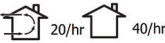
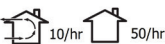




Mode	Icon	Description
Continuous Ventilation		This mode of operation provides continuous ventilation within the home. You may, for example, select Continuous Ventilation at low speed for normal operation and increase to high speed during increased activity levels, such as cooking and showering, etc.
20 Minutes On, 40 Minutes Recirculation*		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.
20 Minutes On, 40 Minutes Standby*		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.
10 Minutes On, 50 Minutes Standby*		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.
Continuous Recirculation*		This mode continuously recirculates your household air (no ventilation). This mode is not applicable if your HRV is connected to a forced air system.
Continuous Low Fan Speed		This mode will operate the fan in low speed continuously at the selected operating mode (Ventilation or Recirculation).
Continuous High Fan Speed		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.

Table 7. Operational Modes

Mode	Icon	Description
Recirculation		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.
* This mode of operation is only available on the Digital 5 Speed / 5 Mode Control (27C77).		

Lennox Smart Thermostat Ventilation Control Installation and Setup Guide



Figure 6. Lennox S30 with Smart Hub 2.0



Figure 7. Lennox E30



Figure 8. Lennox S40



Figure 9. Lennox M30

All of the models reference in “Table 2. Model and Catalog Numbers” on page 3 have direct compatible with Lennox E30, M30 and S30 Smart Thermostats.

The Lennox S40 Smart Thermostat requires the use of a Equipment Interface Module (EIM), catalog number 22X18) for ventilation support.

!IMPORTANT

The ERV/HRV may be used with an Lennox Smart Thermostat control system. The S30 will require a 2.0 smart hub.

Do not connect the S30 or E30 to the ERV/HRV before confirming the thermostats have 03.50.XXX or higher software.

FEATURES

The referenced Lennox Smart Thermostats can support Lennox ERV or HRV models in the following modes:

- ASHRAE 62.2 compliant mode.
- Non-ASHRAE compliant mode - Environmental overrides uses outdoor temperature and outdoor dew point within a set parameter range.
- Timed mode - Runs ventilation equipment for a timed amount per hour.
- User demanded ventilation.
- Provides ventilation for zoned and non-zoned applications.

INSTALLATION OVERVIEW

- Refer to “ERV and HRV Wiring Diagrams” on page 13 for wiring connections.
- For installer information concerning ventilation rates and ventilation rates, thermostat ventilation control parameters, see the following sections.
- For end user information go to “Lennox Smart Thermostat Ventilation Control User Guide” on page 20.
- Additional help and on-line tutorials are also available on the Lennox support page at:

<http://www.support.lennoxicomfort.com/help/index.html>

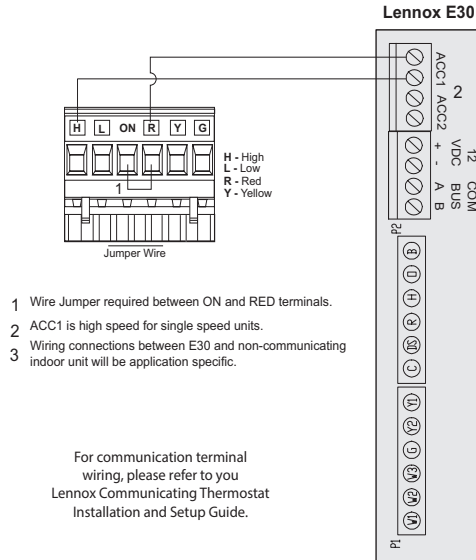
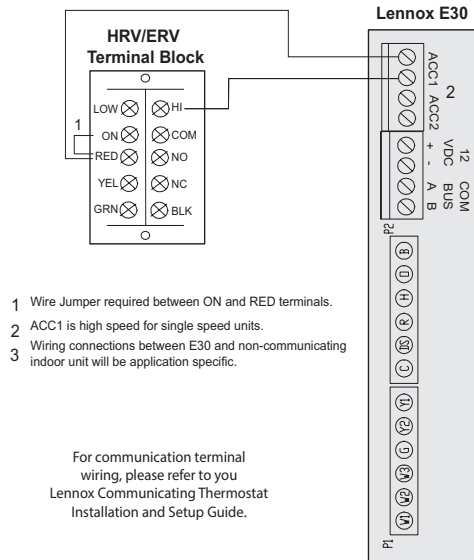
ERV and HRV Wiring Diagrams

Use the applicable wiring diagram to connect your ventilation equipment.

! IMPORTANT

Interlocking is NOT required on ventilation equipment when directly controlled by a Lennox Smart Thermostat.

Single Speed ERV / HRV Wiring High Speed



Two Speed ERV / HRV Wiring Low and High Speed

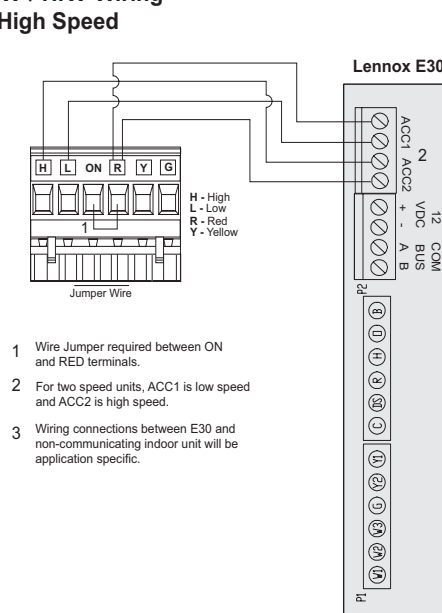
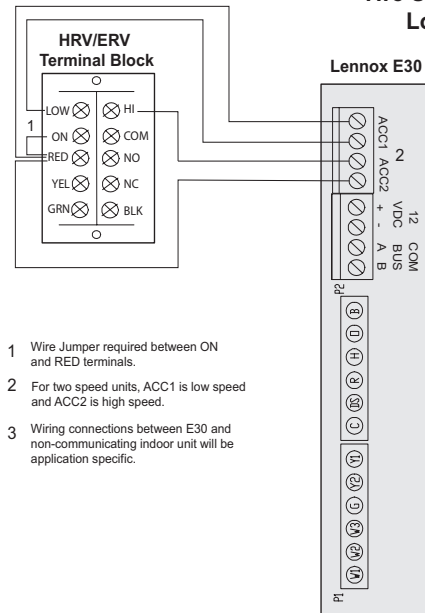
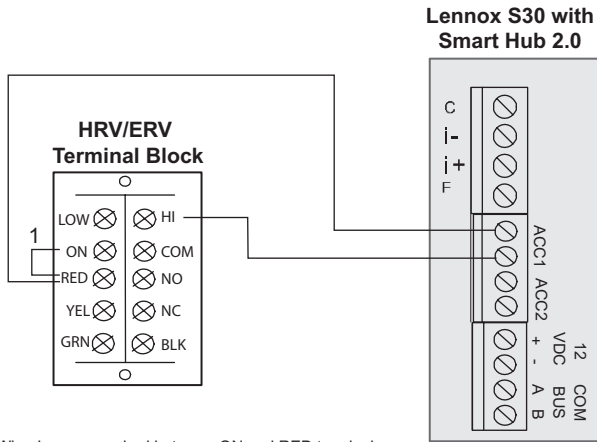


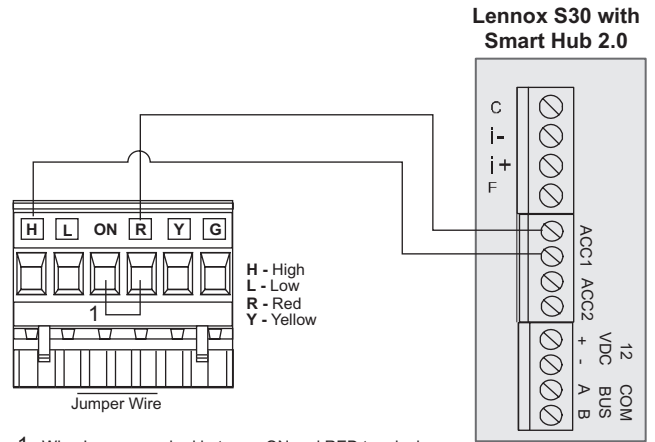
Figure 10. Lennox E30 to Ventilation Equipment Wiring Connections

Single Speed ERV / HRV Wiring High Speed



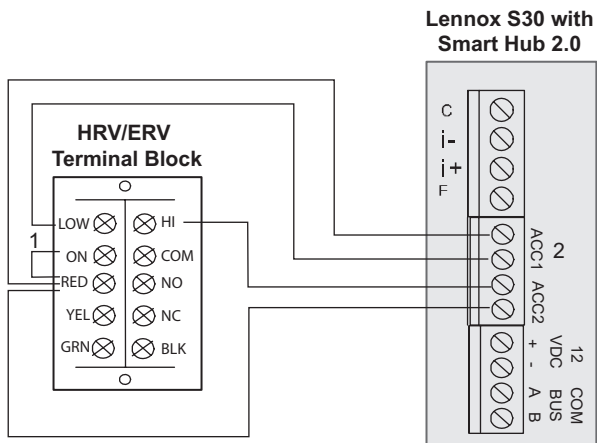
- 1 Wire Jumper required between ON and RED terminals.
- 2 ACC1 is high speed for single speed units.

Single Speed ERV / HRV Wiring High Speed



- 1 Wire Jumper required between ON and RED terminals.
- 2 ACC1 is high speed for single speed units.

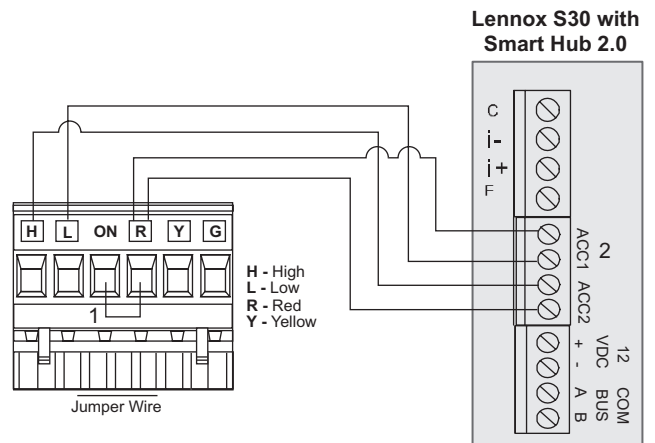
Two Speed ERV / HRV Wiring Low and High Speed



Use 18-2 for A B and
2-conductor shielded for i+ i-

- 1 Wire Jumper required between ON and RED terminals.
- 2 For two speed units, ACC1 is low speed and ACC2 is high speed.

Two Speed ERV / HRV Wiring Low and High Speed



Use 18-2 for A B and
2-conductor shielded for i+ i-

- 1 Wire Jumper required between ON and RED terminals.
- 2 For two speed units, ACC1 is low speed and ACC2 is high speed.

Figure 11. Lennox S30 to Ventilation Equipment Wiring Connections

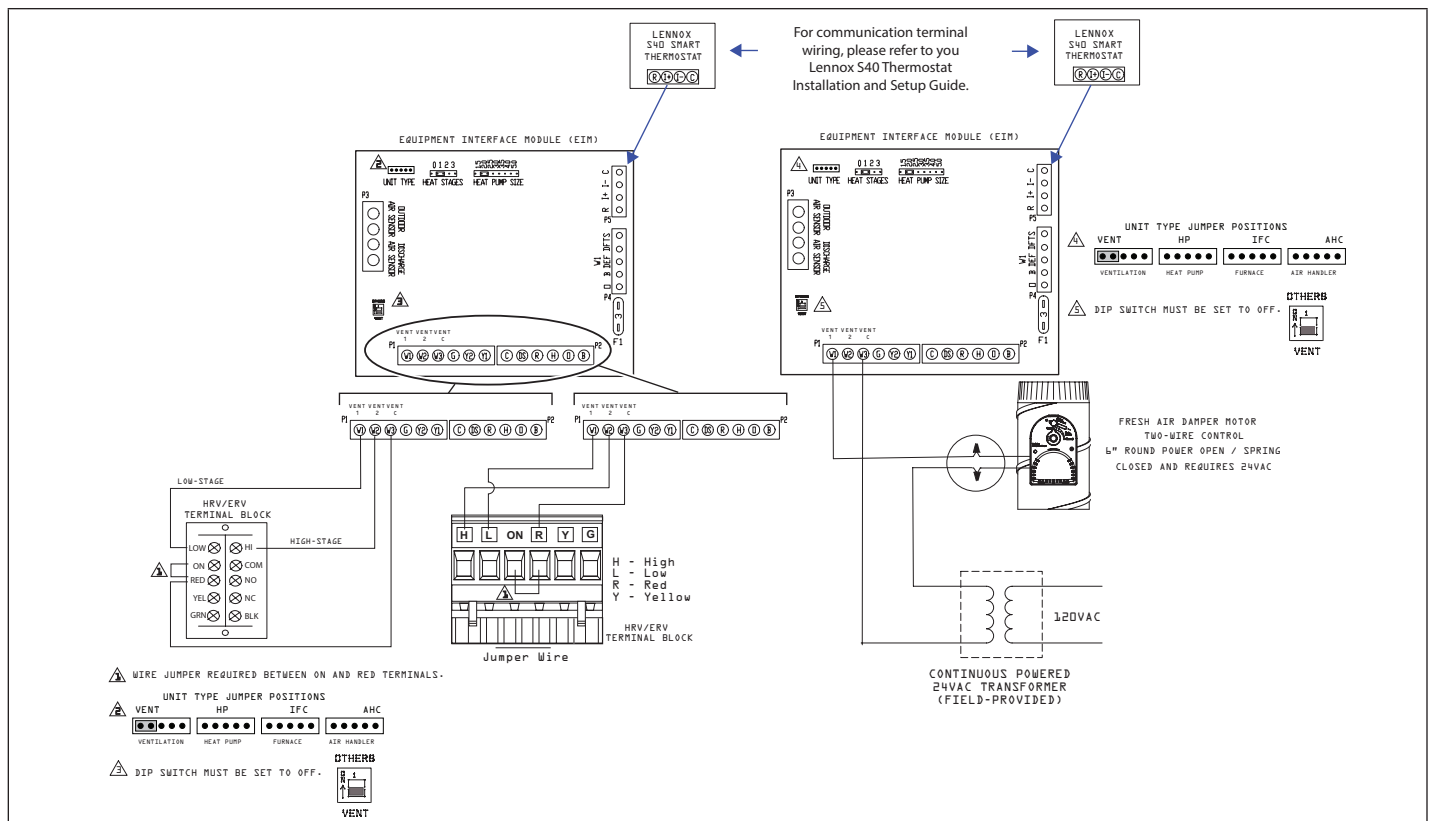


Figure 12. Lennox S40 Smart Thermostat, EIM and Ventilation (ERV/HRV or Fresh Air Damper)

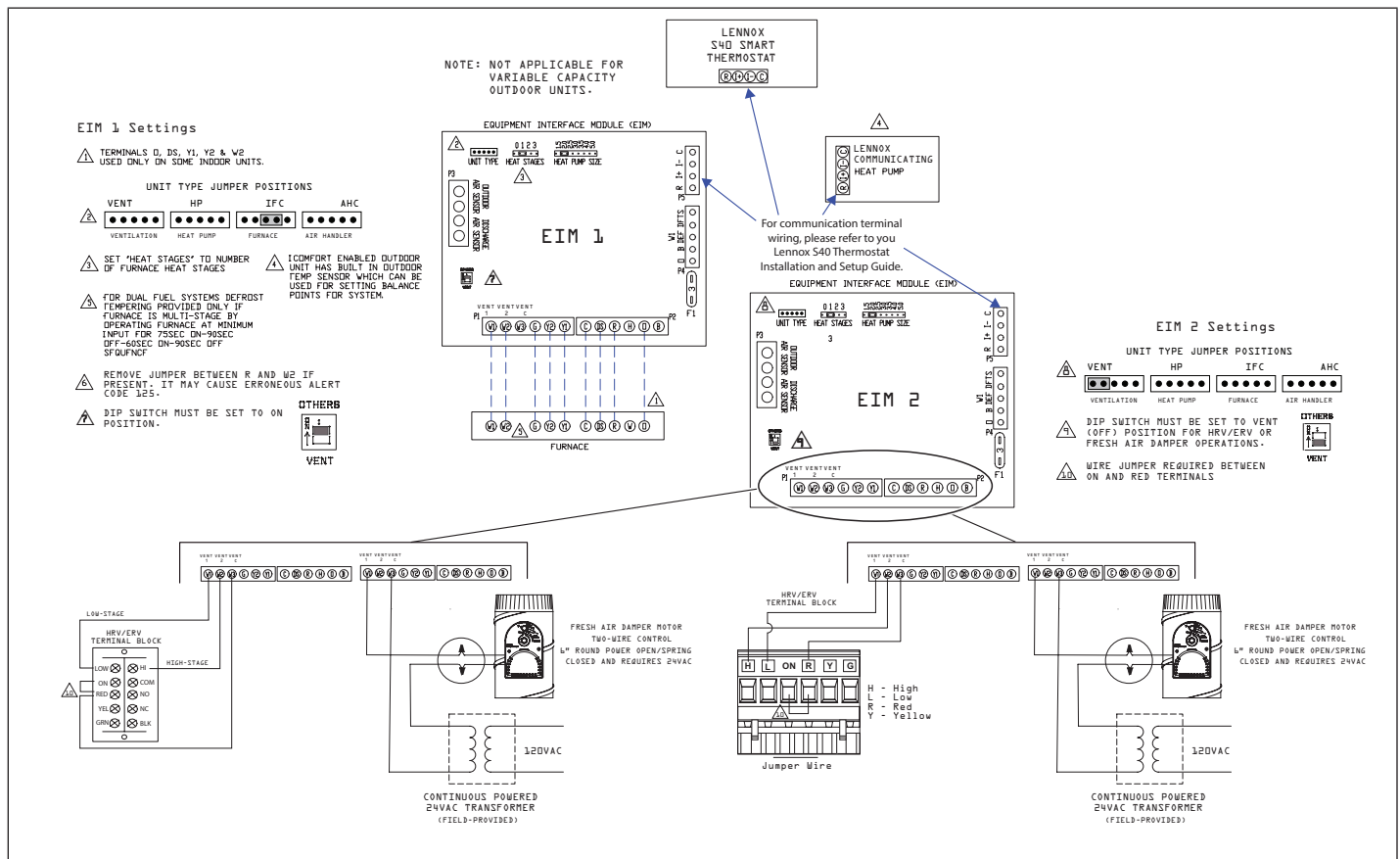
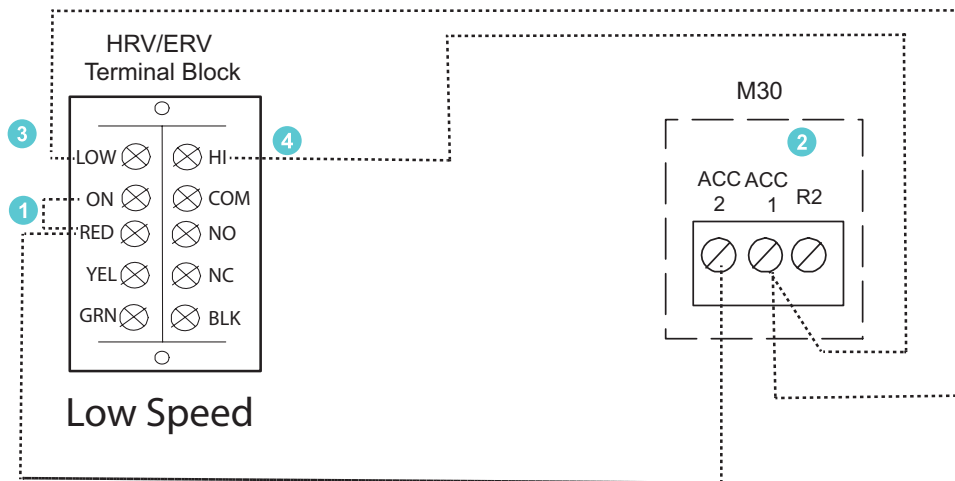
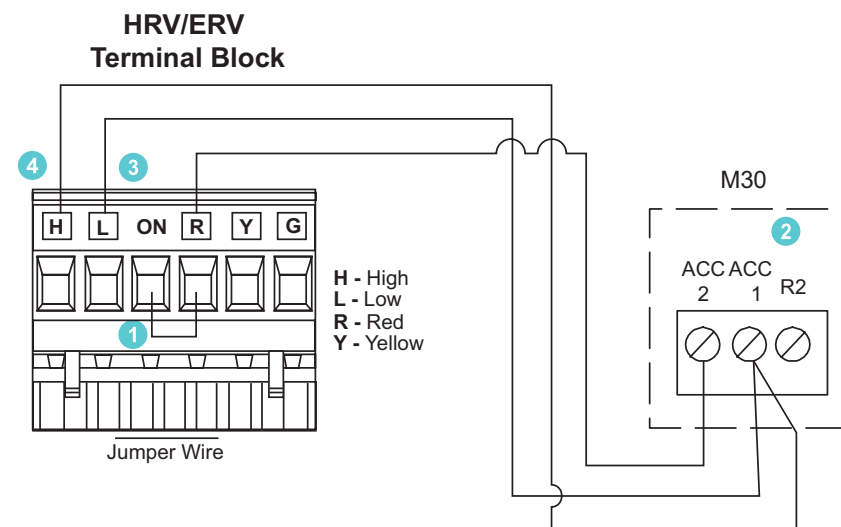


Figure 13. Lennox S40 Smart Thermostat, EIM, Non-communicating Furnace, Communicating Heat Pump and Ventilation (ERV/HRV or Fresh Air Damper)



- 1 Wire Jumper required between ON and RED terminals.
- 2 Remove the factory installed jumper between ACC1 and R2 terminals (The on-board 24VAC power source cannot be used.).
- 3 For low speed operation only.
- 4 On 2-Stage systems requiring high speed operation, move wire from the terminal block LOW terminal to HI terminal.



- 1 Wire Jumper required between ON and RED terminals.
- 2 Remove the factory installed jumper between ACC1 and R2 terminals (The on-board 24VAC power source cannot be used.).
- 3 For low speed operation only.
- 4 On 2-Stage systems requiring high speed operation, move wire from the terminal block LOW terminal to HI terminal.

Figure 14. Lennox M30 Smart Thermostat and Ventilation (ERV/HRV or Fresh Air Damper)

Ventilation Control Modes

DETERMINING VENTILATION RATE

The following information is used to set both the timed or ASHRAE compliant high and low speed ventilation rate for ERV or HRV single and two-speed units when using any Lennox Smart Thermostat.

Thermostat ventilation CFM parameters are to be adjusted only after the HRV/ERV set up is completed and the CFMs are known. Once the thermostat's CFMs are adjusted they are used with the thermostat's timer algorithm to determine how long to run the HRV/ERV and to change from low to high speed if a 2-stage HRV/ERVs.

See "Installer Selectable High Speed Settings" on page 39 for configuring CFM on the ERV / HRV equipment.

Ventilation Rate for High Speed

When using ERV/HRV as a single or two speed units you must set the blower to the highest speed to balance airflow to be ASHRAE 62.2 compliant.

- Use the door port balancing chart (see "Airflow Balancing Charts" on page 42) or pitot tube to determine the ventilation rate.
- Use the calculated CFM rate in the Lennox Smart Thermostat configuration set up for both timed and ASHRAE Compliant CFM rate at high speed.

Ventilation Rate for Low Speed

Use the following procedure to set the system blower to low speed on two-speed units.

- When a Pitot tube is not available use the 0.1" w.g static value CFM for speed 1 - low from "Table 6. Optional Fan Curves Speeds (Factory Tested)" on page 7 as default.
- Use the calculated CFM rate in the Lennox Smart Thermostat configuration set up for a ASHRAE Compliant CFM rate at low speed.

VENTILATION CONTROL MODES

The following tables provides a quick reference to which parameters are applicable to specific equipment.

Table 8. Ventilation Control Modes

Ventilation Control Mode	Fresh Air Damper	1 Speed HRV	2 Speed HRV	1 Speed ERV	2 Speed ERV
Timed					
Ventilation Minutes Per Hour (0 to 60 min., default is 20 min.)	√	√	√	√	√
Ventilation Rate (20 to 500 cfm, default is 130 cfm)	---	√	---	√	---
Ventilation Rate for Low Speed (10 to 200 cfm, default is 50 cfm)	---	---	√	---	√
Ventilation Rate for High Speed (20 to 500 cfm, default is 130 cfm)	---	---	√	---	√
Ventilation High Outdoor Temperature Limit (60 to 115°F, default is 100°F)	√	√	√	√	√
Ventilation Low Outdoor Temperature Limit (-20 to 55°F, default is 0°F)	√	√	√	√	√
Ventilation High Outdoor Dew Point Limit (45 to 80°F, default is 55°F)	√	√	√	√	√
ASHRAE (62.2)					
In this mode the thermostat can assist the installer by validating the ventilation CFMs are capable of meeting the ASHRAE required ventilation volumes, but the thermostat has no ability to control CFM from the HRV/ERV.					
Ventilation Rate (20 to 500 cfm, default is 130 cfm)	---	√	---	√	---
Ventilation Rate for Low Speed (10 to 200 cfm, default is 50 cfm)	---	---	√	---	√
Ventilation Rate for High Speed (20 to 500 cfm, default is 130 cfm)	---	---	√	---	√
ASHRAE Compliance Check	NO	YES	YES	YES	YES
ASHRAE Infiltration Credit (0 to 200 cfm, default is 0 cfm)	√	√	√	√	√
ASHRAE House Floor Area Serviced by this Ventilator	√	√	√	√	√
ASHRA Number of Bedrooms	√	√	√	√	√

Table 8. Ventilation Control Modes

Ventilation Control Mode	Fresh Air Damper	1 Speed HRV	2 Speed HRV	1 Speed ERV	2 Speed ERV
Ventilation Outdoor Condition Override - Enabled					
Ventilation High Outdoor Temperature Limit (60 to 115°F, default is 100°F)	√	√	√	√	√
Ventilation Low Outdoor Temperature Limit (-20 to 55°F, default is 0°F)	√	√	√	√	√
Ventilation High Outdoor Dew Point Limit (45 to 80°F, default is 55°F)	√	√	√	√	√

Timed

- When timed mode is selected, the system assures that low speed ventilation has run for at least the selected time per hour.
- The system first tries to satisfy the required ventilation run time by only ventilating while conditioning is occurring.
- The time remaining in the hour time block is compared to the required ventilation run-time remaining and if the time remaining in the hour is equal to or less than the remaining ventilation run time required, then low speed ventilation is started and stops when the hour time block is over or the required timed ventilation duration is satisfied.
- If ventilation now is selected by homeowner the unit will change from low speed operation to high speed.
- If the time is greater than the ventilation run-time the unit will switch to high speed until the run-time ventilation rate is satisfied.

ASHRAE

- ASHRAE 62.2 is a national standard that provides methods for achieving acceptable indoor air quality in typical residences. It was developed and is maintained by the American Society of Heating and Air-Conditioning Engineers (ASHRAE).
- One of the standard three main components is Whole House Ventilation which is exhausting stale indoor air and replacing it with fresh outdoor air.
- The exhaust fan dilutes the air in the main living spaces with outside air to remove unavoidable contaminants from people, pets, cleaning, off gassing, etc.
- The whole house fan flow rate is determined based on the floor space and the number of bedrooms. The whole house fan provides multiple air exchanges within the home each day. The operation can be continuous or intermittent (much higher airflow cycled by a timer) if 1 zone or less.

Formula Method

Example a 2000 square foot home with 4 bedrooms from ASHRAE 4.1 a quick reference chart predicts 98 cfm.

Formula:

$$(\text{Square feet} \times 0.03) + (\text{bedrooms} + 1 \times 7.5) = 97.5$$

$$(2000 \times 0.03) + (4+1) \times 7.5 = 97.5$$

Table Method

The following table complies with ASHRAE Standard 62.2, Table 4.1a, Continuous Whole-Building Ventilation rate in cfm.

Table 9. Whole Building Ventilation Air Requirements

Floor Area (Square Feet)	Number of Bedrooms				
	1	2	3	4	5
	cfm	cfm	cfm	cfm	cfm
<500	30	38	45	53	60
501 - 1000	45	53	60	68	75
1001 - 1500	60	68	75	83	90
1501 - 2000	75	83	90	98	105
2001- 2500	90	98	105	113	120
2501 - 3000	105	113	120	128	135
3001 - 3500	120	128	135	143	150
3501 - 4000	135	143	150	158	165
4001 - 4500	150	158	165	173	180
4501 - 5000	165	173	180	188	195

For more information about ASHRAE, go to:

<https://www.ashrae.org>.

THERMOSTAT VENTILATION PARAMETERS

Thermostat ventilation CFM parameters are to be adjusted only after the HRV/ERV set up is completed and the CFMs are known. Once the thermostat's CFMs are adjusted they are used with the thermostat's timer algorithm to determine how long to run the HRV/ERV and to change from low to high speed if a 2-stage HRV/ERVs.

- For **E30** and **S30**, go to **menu > settings > advanced settings > view dealer control center > equipment > smart hub**.
- For **M30**, go to **menu > settings > advanced settings > ventilation**
- For **S40**, go to **Menu > Settings > Advanced Settings > View Support Service Control Center > Equipment Settings > Thermostat**.

The following parameter will be application specific and are only listed where applicable to the type of equipment and control mode being used, for example, types of equipment would be ERV or HRV and control mode would be either Timed or ASHRAE.

Table 10. Smart Hub Parameters (Ventilation)

Parameter	Description
Ventilation Control Mode - timed (default)	
Ventilation Minutes Per Hour	<p>Parameter range is 0.0 - 60.0 minutes. Default is 20.0 minutes. Can be adjusted in increments of 1.0 minutes.</p> <ul style="list-style-type: none"> The system first tries to satisfy the ventilation time by only ventilating while conditioning is occurring. NOTE: Continuous fan is NOT considered conditioning. When the required time remaining to ventilate for the hour does not equal the amount of time remaining in that hour, the system begins ventilation and does not stop until the ventilation time requirement is satisfied. When ventilating without a conditioning demand, the ventilation output is active as well as a continuous indoor fan demand. When ventilating with a conditioning demand, the ventilation output is active with the conditioning demand outputs.
<p>Ventilation Rates</p> <p>Thermostat ventilation CFM parameters are to be adjusted only after the HRV/ERV set up is completed and the CFMs are known. Once the thermostat's CFMs are adjusted they are used with the thermostat's timer algorithm to determine how long to run the HRV/ERV and to change from low to high speed if a 2-stage HRV/ERVs.</p>	
Ventilation Rate	Parameter range is 20 - 200 CFM. Default is 130 CFM. Can be adjusted in increments of 1.0 CFM.
Ventilation Rate for Low Speed	Parameter range is 10 - 200 CFM. Default is 50 CFM. Can be adjusted in increments of 1.0 CFM.
Ventilation Rate for High Speed	Parameter range is 20 - 500 CFM. Default is 130 CFM. Can be adjusted in increments of 1.0 CFM.
Ventilation High Outdoor Temperature Limit	<p>Parameter range is 60 to 115°F. Default is 100°F. Can be adjusted in increments of 5°F.</p> <p>While the outdoor temperature is equal to or higher than the setting for Ventilation High Outdoor Temperature Limit, ventilation does not run. When locked out due to high outdoor temperature, it will become unlocked when either the outdoor temperature is missing, or when the temperature reported is 1°F less than the Ventilation High Outdoor Temperature Limit setting when display units are in Fahrenheit, or is reported as 0.5°C less than lock out setting when the display units are Celsius.</p>
Ventilation Low Outdoor Temperature Limit	<p>Parameter range is -20 to 55°F. Default is 0°F. Can be adjusted in increments of 5°F.</p> <p>While the outdoor temperature is lower than the setting for the Ventilation Low Outdoor Temperature Limit, ventilation does not run.</p> <p>When locked out due to low outdoor temperature, it will become unlocked when the outdoor temperature is missing, or when the temperature reported is 1°F higher than the Ventilation Low Outdoor Temperature Limit setting when display units are Fahrenheit, or is reported as 0.5°C higher than lock out setting when the display units are Celsius.</p>

Table 10. Smart Hub Parameters (Ventilation)

Parameter	Description
Ventilation High Outdoor Dew Point Limit	<p>Parameter range is 45 to 80°F. Default is 55°F. Can be adjusted in increments of 5°F.</p> <p>While the outdoor dew point is higher than the setting for the high outdoor dew point limit, ventilation does not run.</p> <p>When locked out due to high outdoor dew point limit, it will become unlocked when the outdoor dew point is missing, or when the dew point temperature reported is 1°F less than the lock-out setting when display units are Fahrenheit, or is reported as 0.5°C less than lock-out setting when the display units are Celsius.</p>
Ventilation Control Mode - ASHRAE	
<ul style="list-style-type: none"> In this mode the thermostat can assist the installer by validating the ventilation CFMs are capable of meeting the ASHRAE required ventilation volumes, but the thermostat has no ability to control CFM from the HRV/ERV. The system first tries to satisfy the ventilation volume by only ventilating while conditioning is occurring. Continuous fan is not considered conditioning. The total volume of ventilation air is accumulated and stored to compare against the target hourly ventilation volume (Vhr). The accumulated value resets each hour. When the remaining required volume of ventilation air for the hour divided by the fan only ventilation rate is equal to or greater than the time remaining to ventilate for the hour and no conditioning is occurring, the system begins ventilation using continuous fan and does not stop until the target hourly ventilation volume requirement is satisfied. When ventilating without a conditioning demand, the ventilation output is active as well as a continuous indoor fan demand. When ventilating with a conditioning demand, the ventilation output is active with the conditioning demand outputs. When the system is ventilating, the user interface can indicate as such by showing "ventilating" to the user on the home screen. 	
<p>Ventilation Rates</p> <p>Thermostat ventilation CFM parameters are to be adjusted only after the HRV/ERV set up is completed and the CFMs are known. Once the thermostat's CFMs are adjusted they are used with the thermostat's timer algorithm to determine how long to run the HRV/ERV and to change from low to high speed if a 2-stage HRV/ERVs.</p>	
Ventilation Rate	Parameter range is 20 - 500 CFM. Default is 130 CFM. Can be adjusted in increments of 1.0 CFM.
Ventilation Rate for Low Speed	Parameter range is 10 - 200 CFM. Default is 50 CFM. Can be adjusted in increments of 1.0 CFM.
Ventilation Rate for High Speed	Parameter range is 20 - 500 CFM. Default is 130 CFM. Can be adjusted in increments of 1.0 CFM.
Ventilation Outdoor Condition Override	Options are Disabled (default) or Enabled.
ASHRAE Compliance Check	= NO (Ventilation CFM too low to comply with ASHRAE 62.2) or YES (Current settings comply with ASHRAE 62.2)
ASHRAE Infiltration Credit	Parameter range is 0.0 - 200.0 CFM. Default is 2500 square feet. Can be adjusted in increments of 1.0 CFM.

Table 10. Smart Hub Parameters (Ventilation)

Parameter	Description
ASHRAE House Floor Area Served by This Ventilator	Parameter range is 500.0 - 5000.0 square feet. Default is 2500.0 CFM. Can be adjusted in increments of 100.0 square feet. The formula for calculating how much ventilation is required is: (total square footage of the home/100) + (number of bedrooms+1) x 7.5 cfm)
ASHRAE Number of Bedrooms	Parameter range is 1.0 - 10.0. Default is 3.0. Can be adjusted in increments of 1.0.
Ventilation Outdoor Condition Override - Enabled	
Ventilation High Outdoor Temperature Limit	Parameter range is 60 to 115°F. Default is 100°F. Can be adjusted in increments of 5°F. While the outdoor temperature is equal to or higher than the setting for Ventilation High Outdoor Temperature Limit , ventilation does not run. When locked out due to high outdoor temperature, it will become unlocked when either the outdoor temperature is missing, or when the temperature reported is 1°F less than the Ventilation High Outdoor Temperature Limit setting when display units are in Fahrenheit, or is reported as 0.5°C less than lock out setting when the display units are Celsius.
Ventilation Low Outdoor Temperature Limit	Parameter range is -20 to 55°F. Default is 0°F. Can be adjusted in increments of 5°F. While the outdoor temperature is lower than the setting for the Ventilation Low Outdoor Temperature Limit , ventilation does not run. When locked out due to low outdoor temperature, it will be unlocked when the outdoor temperature is missing, or when the temperature reported is 1°F higher than the Ventilation Low Outdoor Temperature Limit setting when display units are Fahrenheit, or is reported as 0.5°C higher than lock out setting when the display units are Celsius.
Ventilation High Outdoor Dew Point Limit	Parameter range is 45 to 80°F. Default is 55°F. Can be adjusted in increments of 5°F. While the outdoor dew point is higher than the setting for the high outdoor dew point limit, ventilation does not run. When locked out due to high outdoor dew point limit, it will become unlocked when the outdoor dew point is missing, or when the dew point temperature reported is 1°F less than the lock out setting when display units are Fahrenheit, or is reported as 0.5°C less than lock out setting when the display units are Celsius.

Lennox Smart Thermostat Ventilation Control User Guide

VENTILATION HOME SCREEN ICONS

The ventilation icon that appears along the left side of the home screen will appear when a pre-defined system level routine for ventilation is running. The system level routine was defined by your installer using the thermostats' available parameter settings.

VENTILATION SETTINGS

Menu Selection

From the E30, M30 or S30 thermostat's home screen, go to **menu > settings > ventilation**.

From the S40 thermostat's home screen, go to **Menu > Settings >** and under **Equipment** select **Ventilation**.

The ventilation menu option will only appear if a ERV or HRV is installed and configured by your installer. Any Lennox ERV or HRV reference in this instruction can be configured as either a single or two-speed unit.

When selecting this menu option, selections will be either:

- Timed or ASHRAE (either Timed or ASHRAE is set by your installer during setup of your thermostat).
- On (always).
- Off (always).

Factory default is ASHRAE. Your installer will need to change it to Timed if that mode is desired.

User Demand Ventilation

You can also select "ventilate now" to start a ventilation function immediately. Those menu options are 10, 20, 30, 40 and 50 minutes, 1 hour, 1-1/2 hours, 2 hours, 2-1/2 hours, 3 hours, 3-1/2 hours and 4 hours and custom. Custom will allow a specific time to be set.

NOTE: Once ventilation is started, a notification appears on the right-side of the home screen indicating a time when that specific cycle will end and the option to cancel the demand. Fan is running icon may also appear on the left-side of the home screen when ventilation is running and there is no cooling or heating demand active.

REMINDERS

From the thermostat home page, go to **menu > settings > reminders**.

This screen allows you to set reminders as either disabled or 3, 6, 12 or 24 months and also custom by specific date. The other options on this screen is to trigger the reminder event either by calendar or actual system run-time.

Reminders may be set for ventilation maintenance and ventilation filter. Once a reminder is set for a specific item, touch done to return to the previous screen. An "expires on date" will appear next to the item just set.

How the Dehumidistat Works

When using either an H/C ERV/HRV Ventilation Push Button Control (Y8249) or H/C ERV/HRV Deluxe Ventilation Control (27C77) a built-in dehumidistat is present. The following information is provided on how it 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).

H/C ERV/HRV Ventilation Push Button Control (Y8249)

The control offers the following features to control your home's ventilation.

- 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.

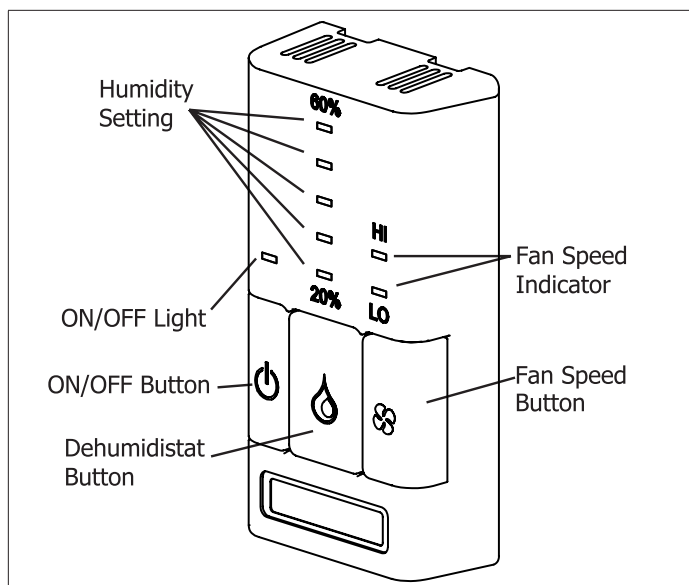


Figure 15. H/C ERV/HRV Ventilation Push Button Control (Y8249)

Table 11. H/C ERV/HRV Ventilation Push Button Control (Y8249) Settings

Settings	Icon	Description
Turning on the Control		Press and release the ON/OFF button. The light above will illuminate.
Setting the Ventilation Speed		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).
Humidity Control		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).
Setting the Dehumidistat		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 20 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 35 in this instruction.

H/C ERV/HRV Deluxe Ventilation Control (27C77)

The control offers the most advanced features to control your home's ventilation.

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

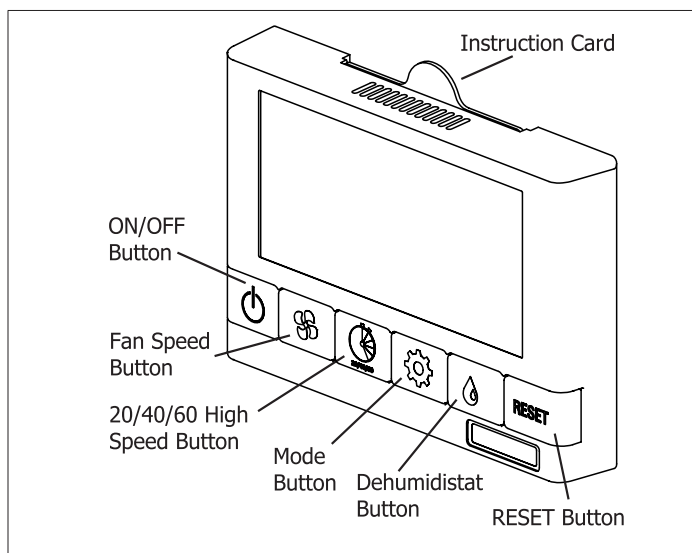


Figure 16. H/C ERV/HRV Deluxe Ventilation Control (27C77)

Table 12. Operational Modes

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

Table 12. Operational Modes

Function	Icon
Continuous Recirculation	

Table 13. Digital Control Operations

Mode	Icon	Description
Turning on the Control		Press and release the ON/OFF button. The light above will illuminate.
Setting the Ventilation Speed		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).
20/40/60 High Speed Button		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.
Setting the Mode of Operation		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.
Setting the Dehumidistat		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 20 in this instruction for a detailed description of the Dehumidistat function.
Reset Button RESET		The RESET 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%.
Service Indicator		A service indicator appears when the unit requires routine maintenance. Refer to "Blower Assembly Service (Dealer Only)" on page 60" in this instruction. Press and hold the ON/OFF button for 5 seconds to reset the service indicator once maintenance has been performed.

H/C 20/40/60 Minute Timer (Y2169) (Optional) and H/C Ventilation Wireless Timer (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 ERV/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 your 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.

H/C 20/40/60 MINUTE TIMER (Y2169) (OPTIONAL)

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 17. H/C 20/40/60 Minute Timer (Y2169) (Optional)

H/C VENTILATION WIRELESS TIMER (Y8251)

NOTE: Can only be used with basic control Y8249 or digital control 27C77.

The Ventilation Wireless 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.

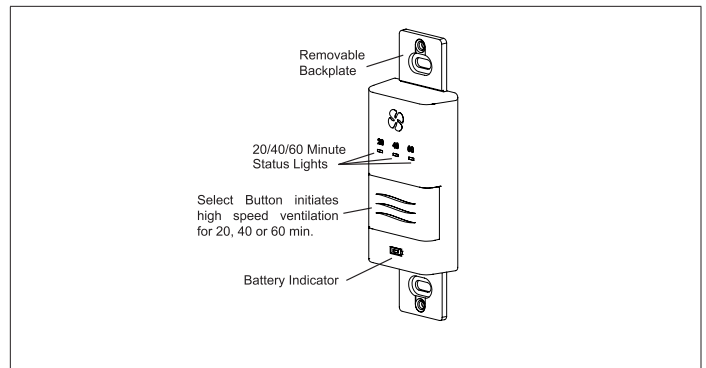


Figure 18. H/C Wireless 20/40/60 Minute Timer (Y8251)

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:

- Pulling the face plate off the wall.
- Replacing the battery located on the back of the Timer Face Plate.
- Re-attaching the face plate to the back plate. Be careful not to damage the tabs on the back plate when re-attaching the face plate.

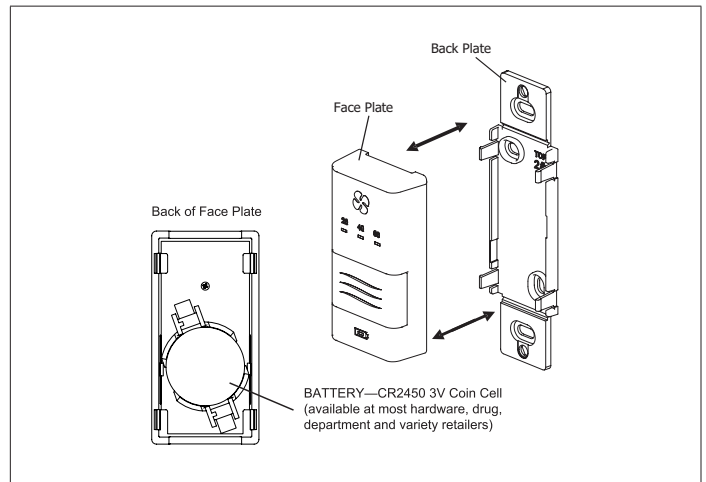


Figure 19. Replacing the Battery

H/C Ventilation Wireless Repeater (Y8252)

This device 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.

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.

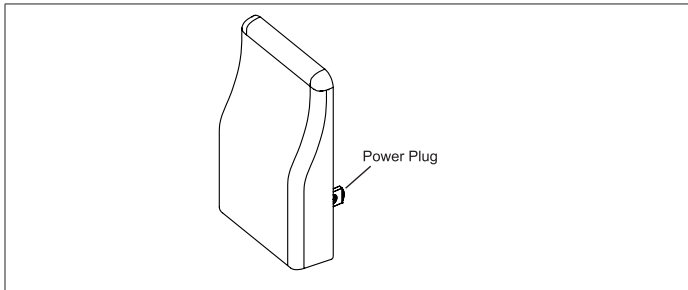


Figure 20. H/C Ventilation Wireless Repeater (Y8252)

Overview of Installation Methods

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

- Simplified installation - See "Installation Methods - Simplified (Return/Return)" on page 24.
- Partially dedicated installation - See "Installation Methods - Partially Dedicated" on page 25.
- Fully dedicated installation - See "Installation Methods - Fully Dedicated" on page 26.

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 ERV/HRV unit will deliver is directly related to the total external static pressure 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 ERV/HRV UNIT AND LIVING AREAS IN THE HOUSE

A well designed and installed ducting system will allow the ERV/HRV 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 ERV/HRV 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 ERV/HRV 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, atrium, 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 ERV/HRV unit must be balanced.

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

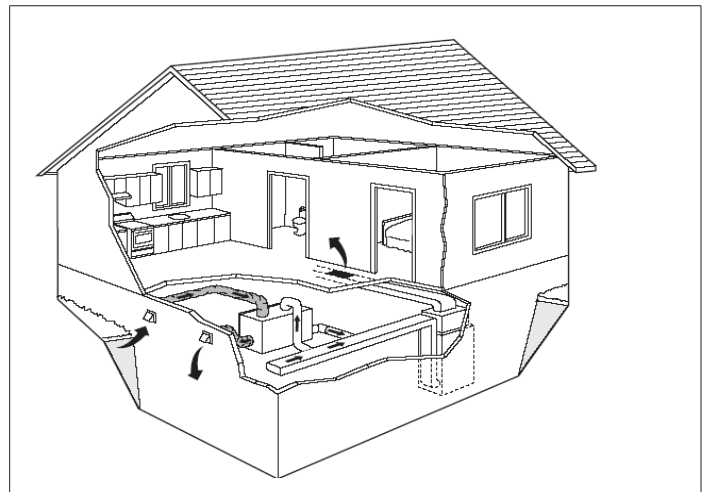


Figure 21. Simplified Installation (Return/Return)

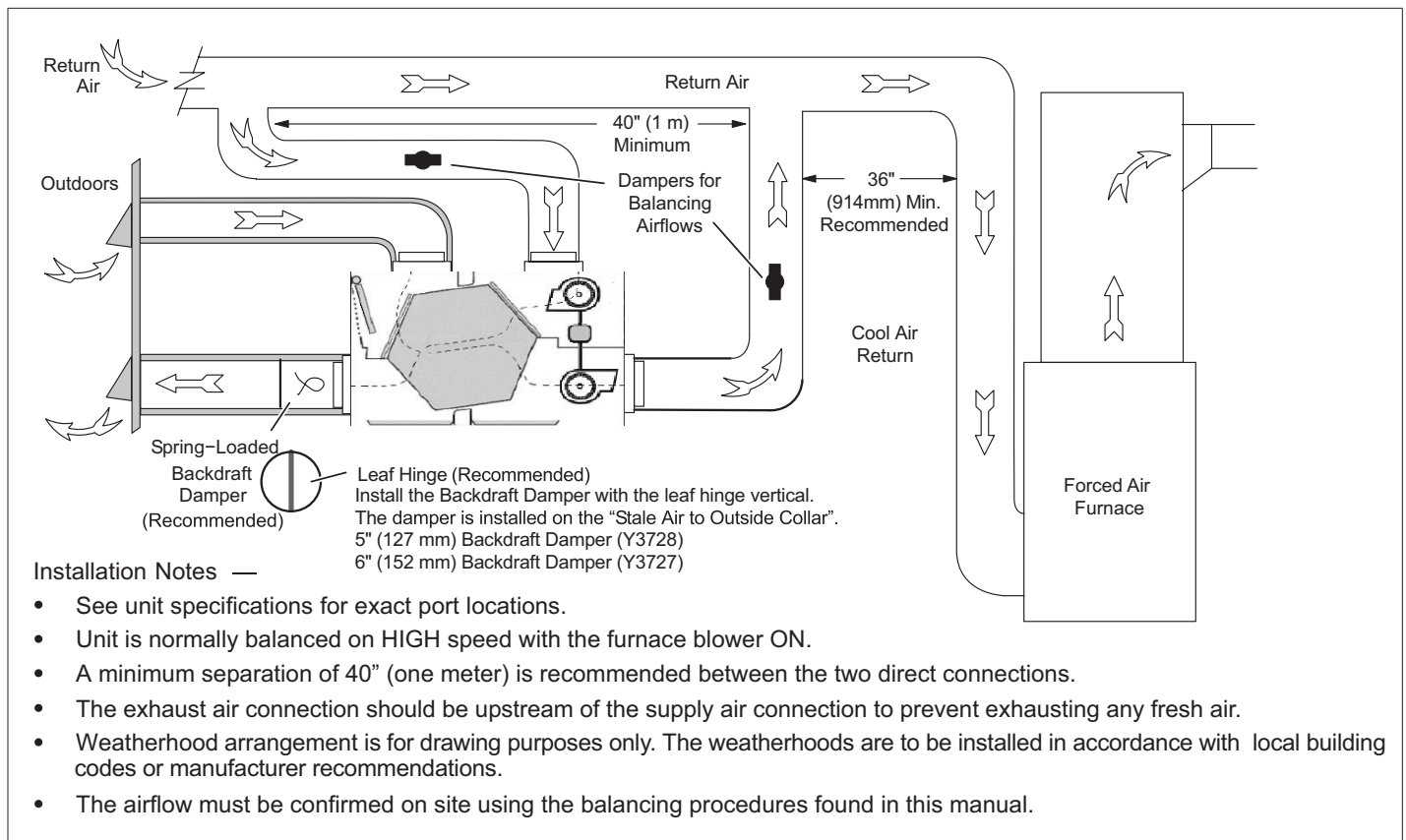


Figure 22. Simplified Installation (Return/Return)

Installation Methods - Partially Dedicated

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.

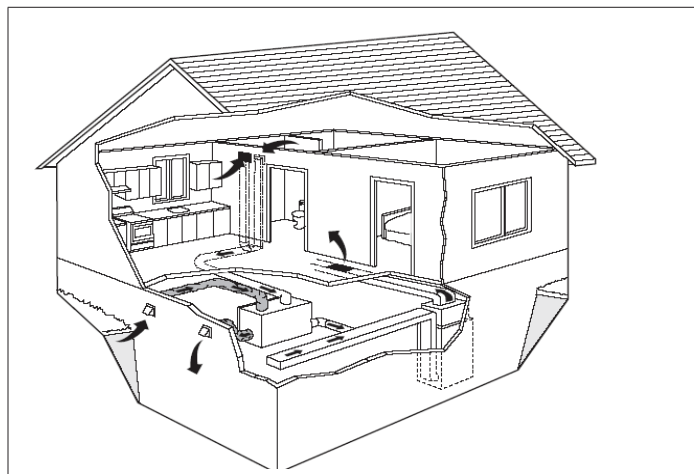


Figure 23. Partially Dedicated System

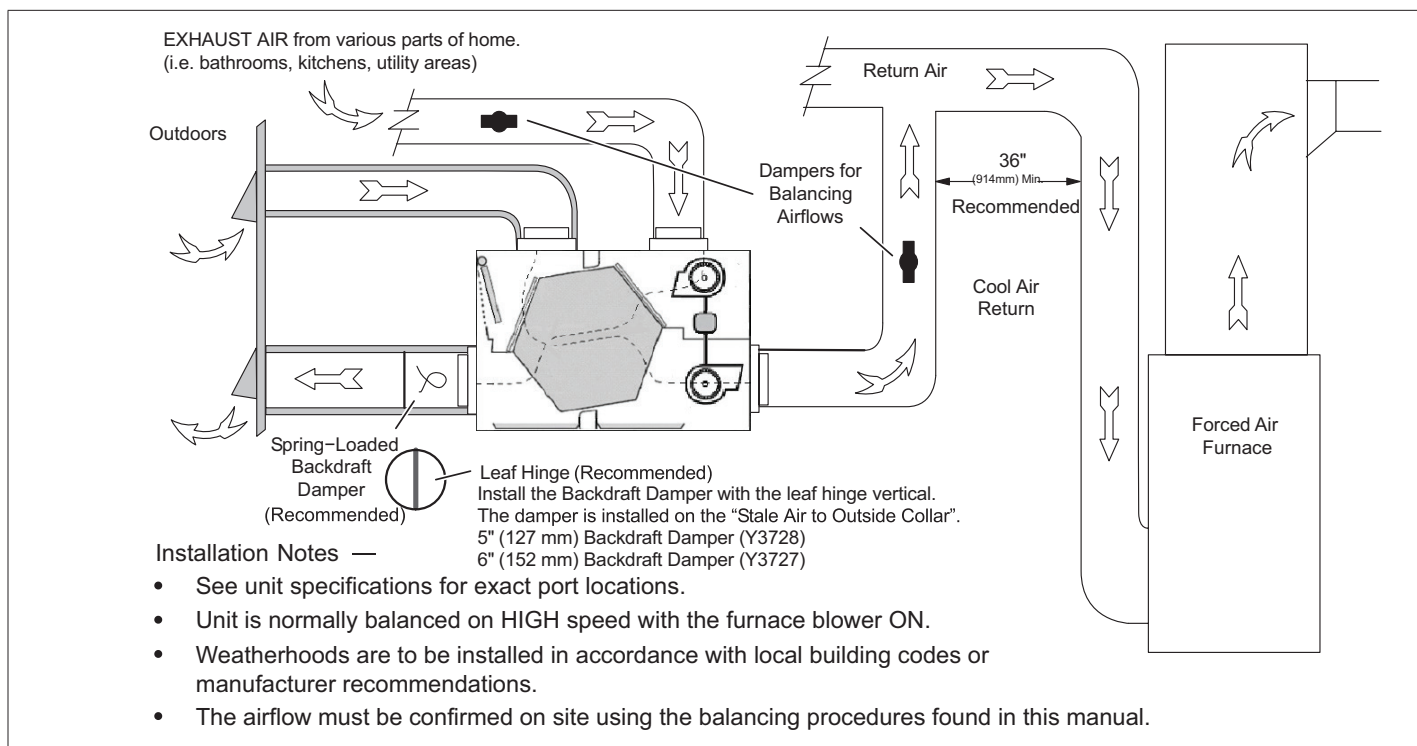
Stale air ducts should be installed in areas of the home where the poorest indoor air quality exists (bathrooms and kitchen). Each location with a stale air duct should have a timer to initiate high-speed ventilation. Refer to "H/C 20/40/60 Minute Timer (Y2169) (Optional) and H/C Ventilation Wireless Timer (Y8251)" on page 23.

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 ERV/HRV Blower to Air Handler/Furnace Blower" on page 35.

Key Points

The ERV/HRV must be balanced.

- It is recommended that the furnace blower run continuously or ERV/HRV 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 ERV/HRV model. See specifications for your unit.
- Check local codes and authority having jurisdiction for acceptance.



**Figure 24. 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).

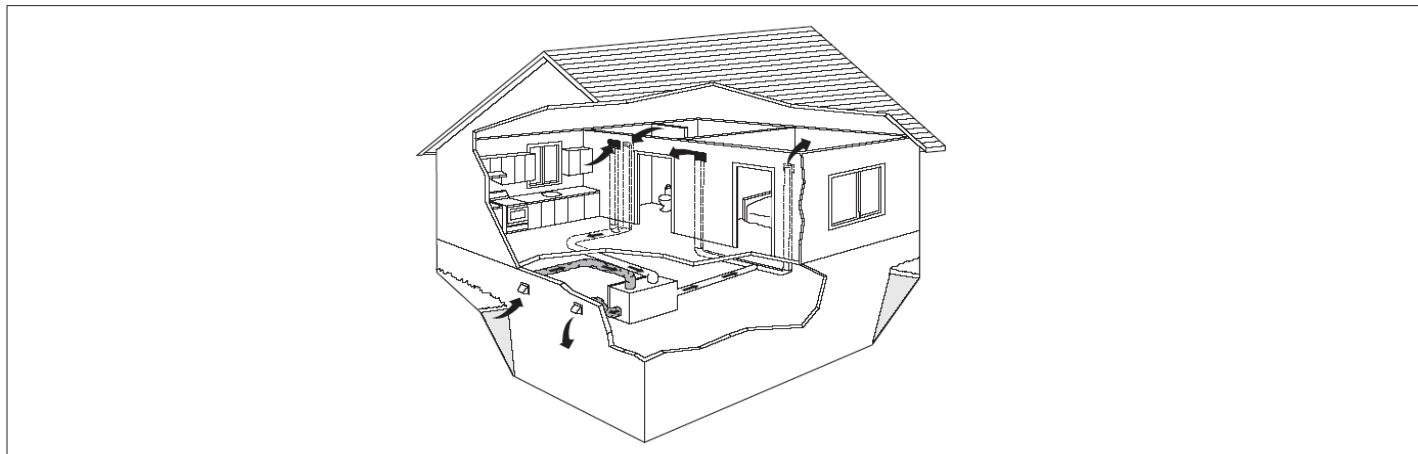


Figure 25. Fully Dedicated System

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 "H/C 20/40/60 Minute Timer (Y2169) (Optional) and H/C Ventilation Wireless Timer (Y8251)" on page 23.

The air handler/furnace blower should be running when the ERV/HRV is operating to evenly distribute the fresh air throughout the house. Refer to "Interlocking ERV/HRV Blower to Air Handler/Furnace Blower" on page 35.

Key Points

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

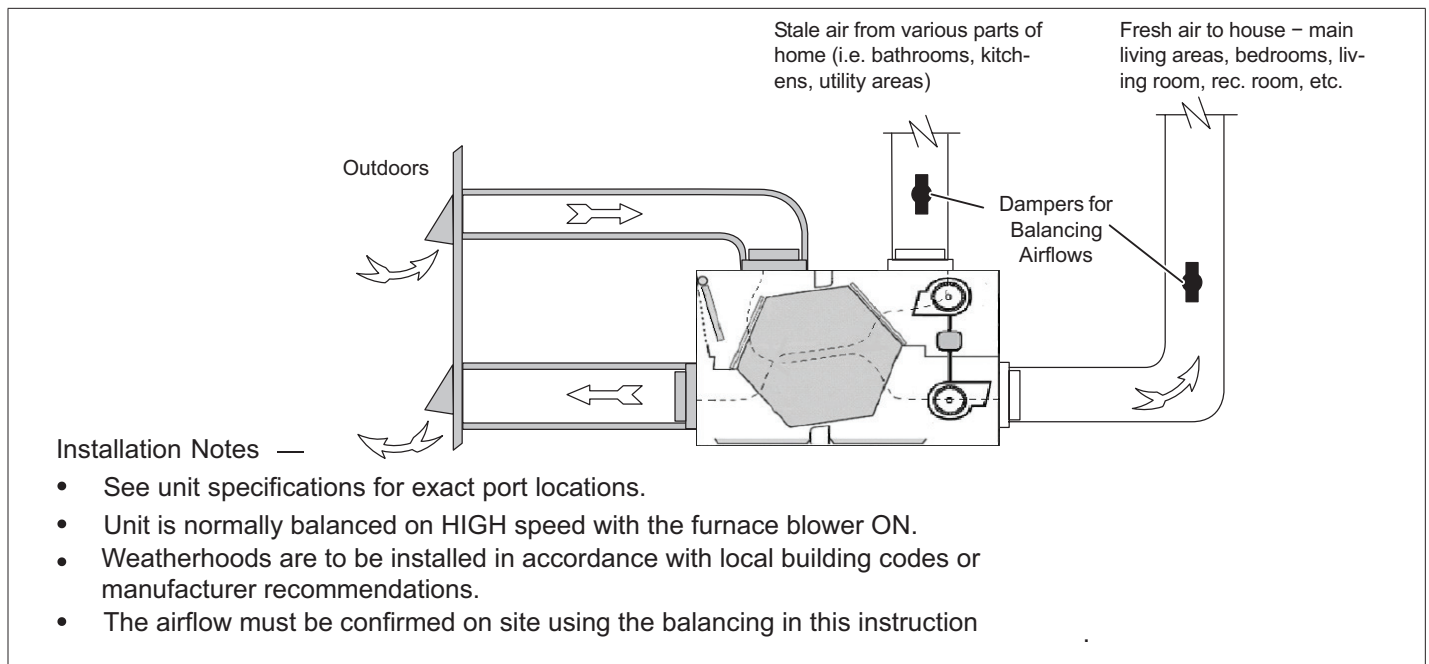


Figure 26. Fully Dedicated System (Not connected to forced air system)

Unit Installation Location

It is recommended that the ERV/HRV unit be located in a conditioned space where it will be possible to conveniently service the unit. Typically the ERV/HRV 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 ERV/HRV units due to:

- 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" (635 mm) clearance is recommended so the door can be opened. Four adjustable hanging straps are provided for hanging the ERV/HRV except for the ERV5-130 which comes with four mounting brackets.

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 ERV/HRV. 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. 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.

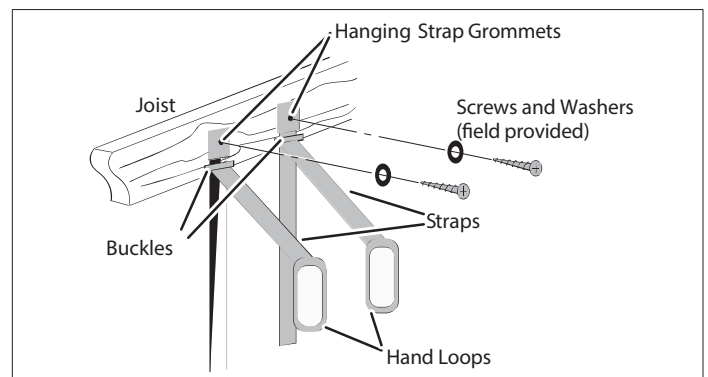


Figure 27. Insert Screws and Washers

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.

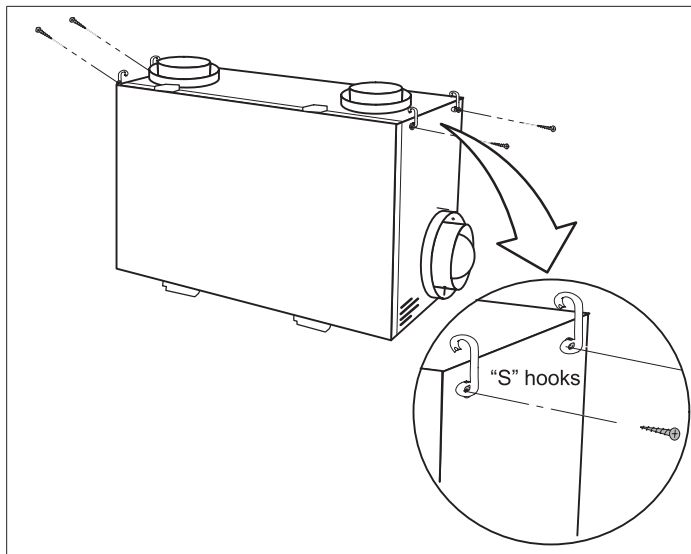


Figure 28. Unscrew

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

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

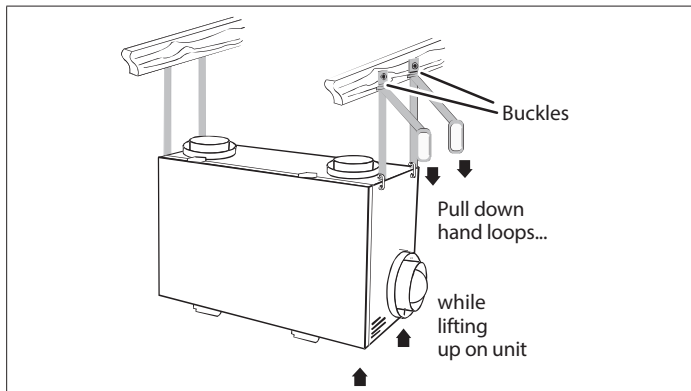


Figure 29. Hook the Grommets

4. Level the unit from left to right and front to back.
 - Adjust the unit down by lifting up on the buckles.
 - Adjust the unit up by pulling down vertically on the hand loops while lifting up the bottom of the cabinet.
5. Fold the hand loops and excess strap and secure with a nylon tie (field provided).

Installing the ERV5-130

It is important to isolate the mounting bracket from the attached surface to minimize vibration. Use the hardware provided (see "Table 1. Bag Assembly Contents" on page 3) to attach the mounting brackets to the unit.

! IMPORTANT

Do not drill additional holes in the ERV.

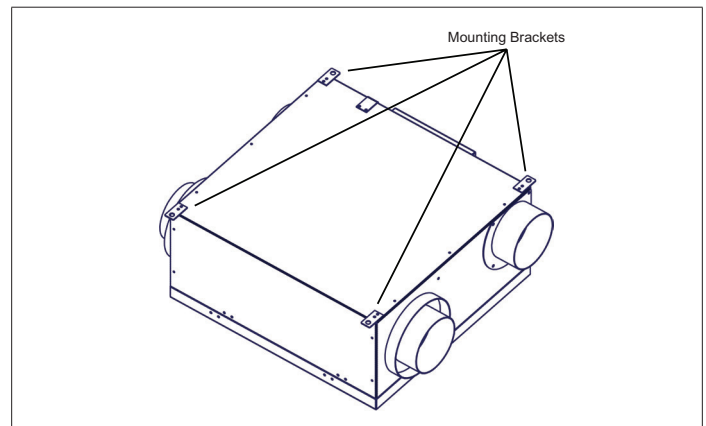


Figure 30. ERV5-130

Installing the Drain Connection

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.

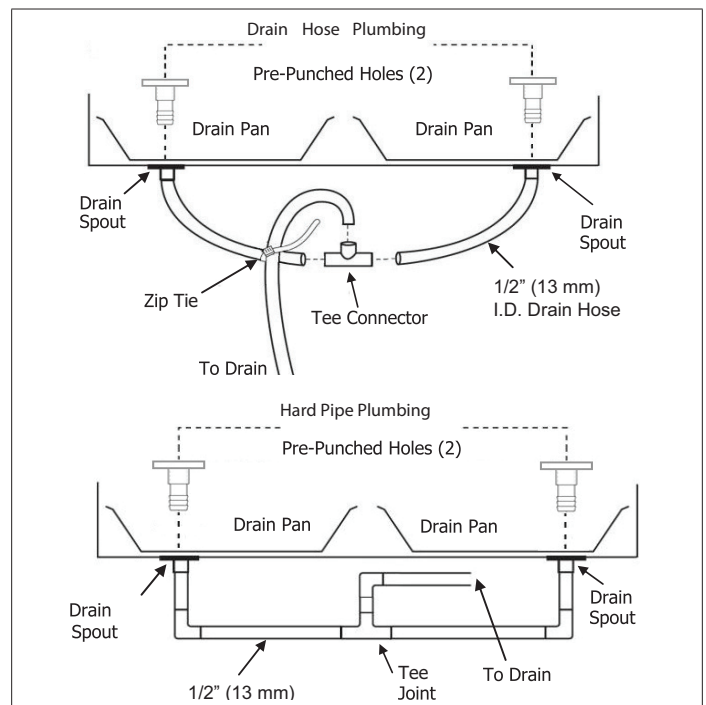


Figure 31. Drain Holes and P-Trap (ERV/HRV)

! CAUTION

Do not use sealant when installing the drain spout.

!CAUTION

Potential Freeze Conditions leading to Water Damage. Condensation can accumulate and cause water damage to equipment, finished surfaces and structures. Do not install ERV/HRV or route condensate drain lines in areas that can be subjected to freezing.

Potential Water Damage.

Unit must be installed level to ensure proper condensation drainage. Avoid installing units above areas or equipment that are sensitive to water damage. Connect condensate drains in accordance with national and local codes. P-Trap and tubing must be located below the HRV door with a minimum of 1/4" per foot downward slope away from unit.

All ERV/HRV cabinets (except ERV5-130) have pre-punched holes for the drain as illustrated in "Figure 31. Drain Holes and P-Trap (ERV/HRV)".

1. Insert the drain spout through the hole in the drain pan.
2. Be sure to install the **O-ring** (if supplied) which seals each spout to the pan.
3. Tighten the nut which holds the drain spout in place.

Construct a P-Trap using the plastic tee connector as illustrated in "Figure 31. Drain Holes and P-Trap (ERV/HRV)".

1. 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.
2. Position the T fitting to point upward, and connect the drain line. Tape or fasten base to avoid any kinks, creating a "trap."
3. 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 Optional Plug (ERV5-150-TPD and ERV5-175-TPD Unit Only)

The plugs are located in the ERV manual bag. The plugs will be installed into the two holes located in the bottom tray of the ERV. They must be inserted from the inside of the unit to ensure the holes are fully sealed, see detail below.

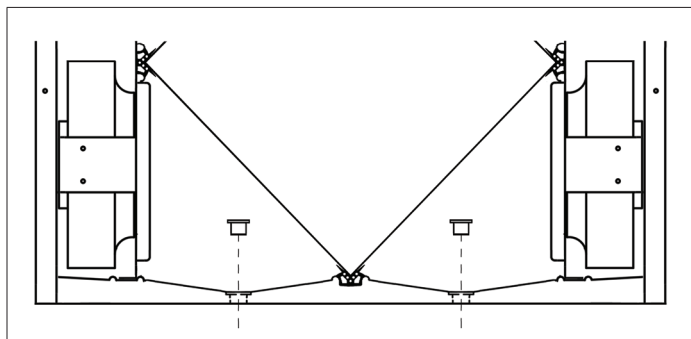


Figure 32. Plug Installation

!CAUTION

A drain is required. However in climates where the outdoor temperature remains above 13°F (25°C) combined with an indoor humidity less than 30%, the use of a drain is optional.

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 meters) 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 40.

!CAUTION

Potential equipment malfunction or damage.

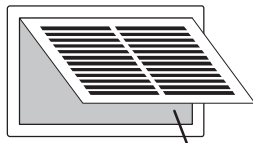
May require repairs and/or void warranty.

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 14. Kitchen Grille

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

ROUND DIFFUSER

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

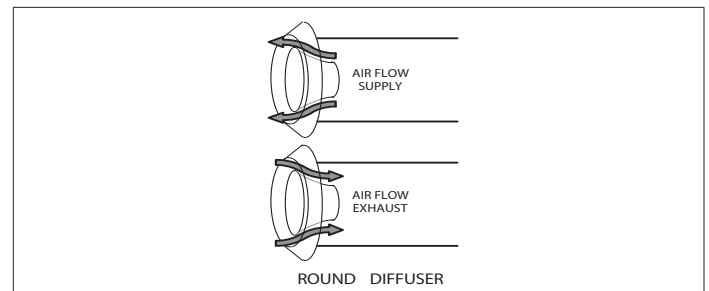


Figure 33. Round Diffusers

Table 15. Round Diffusers Sizes

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 (ERV/HRV) UNIT

The inner and outer liners of the flexible or rigid insulated duct must be clamped to the sleeve of the weatherhoods (as close to the outside as possible) and the appropriate port on the ERV/HRV. 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 ERV/HRV port and the weatherhood prior to clamping.

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

Twisting or folding the duct will severely restrict airflow. Refer to local building codes for complete local installation requirements.

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) 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 (one meter) 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
- To be installed in accordance with local building codes or manufacturer recommendations.

EXHAUST WEATHERHOOD REQUIREMENTS

Observe the following when installing the exhaust weatherhood:

- 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.

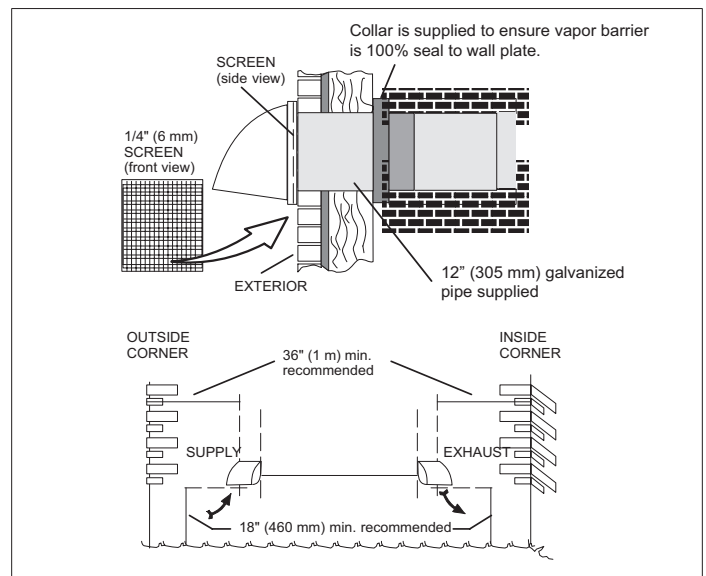
- Not into a garage, workshop, or other unheated space
- AFTER installing the weatherhood, its outside perimeter must be sealed with exterior caulking
- To be installed in accordance with local building codes or manufacturer recommendations.

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 16. Fixed Covered Weatherhoods

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

**Figure 34. Typical 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.

Local codes may require a minimum distance between openings.

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

H/C ERV/HRV Dual Hood Kit (Y3813)

The H/C ERV/HRV 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 ERV and HRV models, 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 17. Blower Data with Optional Dual Hood

Model No.	Airflow in CFM & L/S at Nominal External Static Pressure						Compatible with dual hood
	0.3	75	0.4	100	0.5	125	
	(in. w.g.)	(Pa)	(in. w.g.)	(Pa)	(in. w.g.)	(Pa)	
HRV5-150-TPD	124	58	116	54	107	50	YES
HRV3-195	135	63	123	58	108	51	YES
HRV6-150	116	54	102	48	87	41	YES
HRV5-200-TPD	N/A	N/A	138	65	129	61	NO @ 0.3 in. w.g.
HRV7-HEX095-TPD	87	41	80	38	72	34	YES
HRV5-270-TPD-ECM	N/A	N/A	N/A	N/A	N/A	N/A	NO
ERV5-130	118	55	113	53	109	51	YES
ERV5-150-TPD	124	58	116	54	108	51	YES
ERV5-175-TPD	N/A	N/A	133	62	125	59	NO @ 0.3 in. w.g.

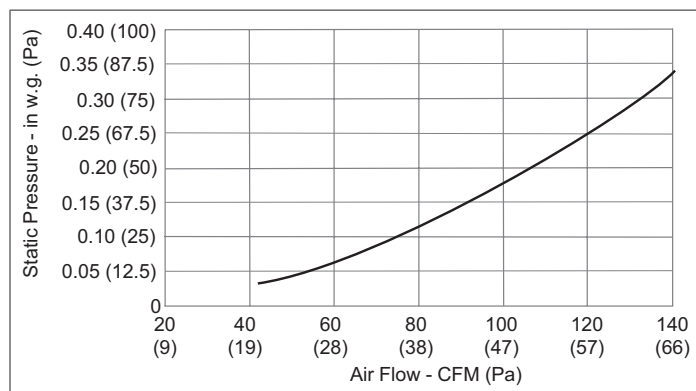


Figure 35. Intake Airflow Chart

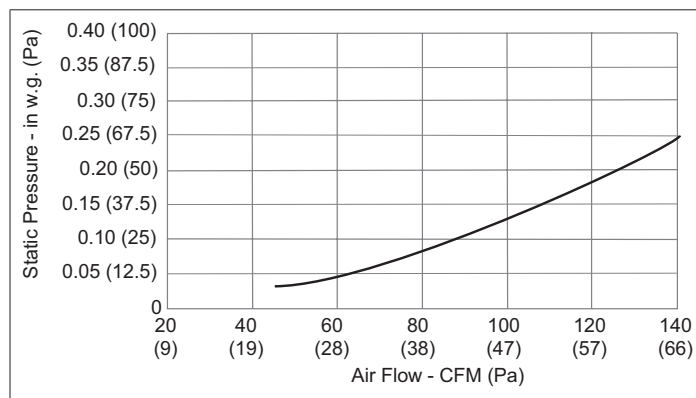


Figure 36. Exhaust Airflow Chart

! CAUTION

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

Installing H/C ERV/HRV Ventilation Push Button Control (Y8249)

This control may either be installed onto a flush mounted electrical switch box or surface mounted onto the wall. The optional ERV/HRV Deluxe Ventilation Control (27C77) 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 (Figure 37, Box A).
2. Separate the face plate from the back plate by firmly pulling apart (Figure 37, 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 (Figure 37, 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 (Figure 37, Boxes E or F). For mounting the control without a decorative plate, break off top and bottom tabs and refer to Figure 37, 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 Figure 37, Boxes D, E or F for dimensions.
6. Drill (two) 1/8" (3 mm) holes for the screws and wall anchors (Figure 37, Boxes D, E or F). For the Digital 5-Speed / 5-Mode Control , drill a one inch hole in the center (Figure 37, Box D). For the Wall Mount Dehumidistat/Ventilation Control, cut in a 3/4" (19 mm) by 1" (25 mm) oval hole in the wall (Figure 37, 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 (Figure 37, Boxes D, E or F).

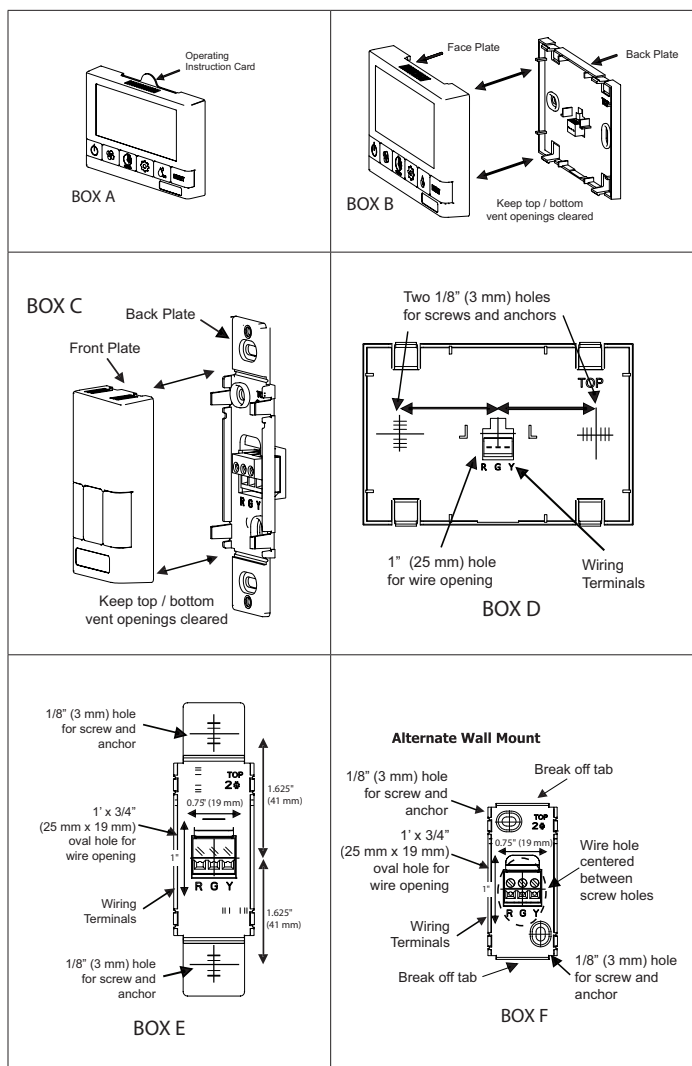


Figure 37. Digital Control Installation

9. Attach the back plate to the wall using two supplied screws and anchors.
10. Attach the face plate to the back plate (Figure 37, 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 (Figure 37, 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).

Installation and Operation of H/C Ventilation Wireless Timers (Y8251)

NOTE: Wireless timers can only be used with wall mounted H/C ERV/HRV Ventilation Push Button Control (Y8249) or H/C ERV/HRV Deluxe Ventilation Control (27C77).

The wireless timers may be installed onto a flush mounted electrical switch box or it may be surface mounted onto a wall. Multiple wireless timers (maximum six timers) may be installed in a ventilation system.

To increase the range of a wireless timer, a H/C Ventilation Wireless 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 (Figure 38, 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 (Figure 38, Box E).
4. Keep the timer within 16" (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 wireless 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 wireless timer is 40' with no obstructions. A ventilation wireless repeater may be installed to increase the range of the wireless timers.

Test if pairing was successful by pressing the Select button and listen for the ERV/HRV 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 (Figure 38, Box A).
2. For mounting the control without a decorative plate, break off top and bottom tabs and refer to Figure 38, Box C for mounting.

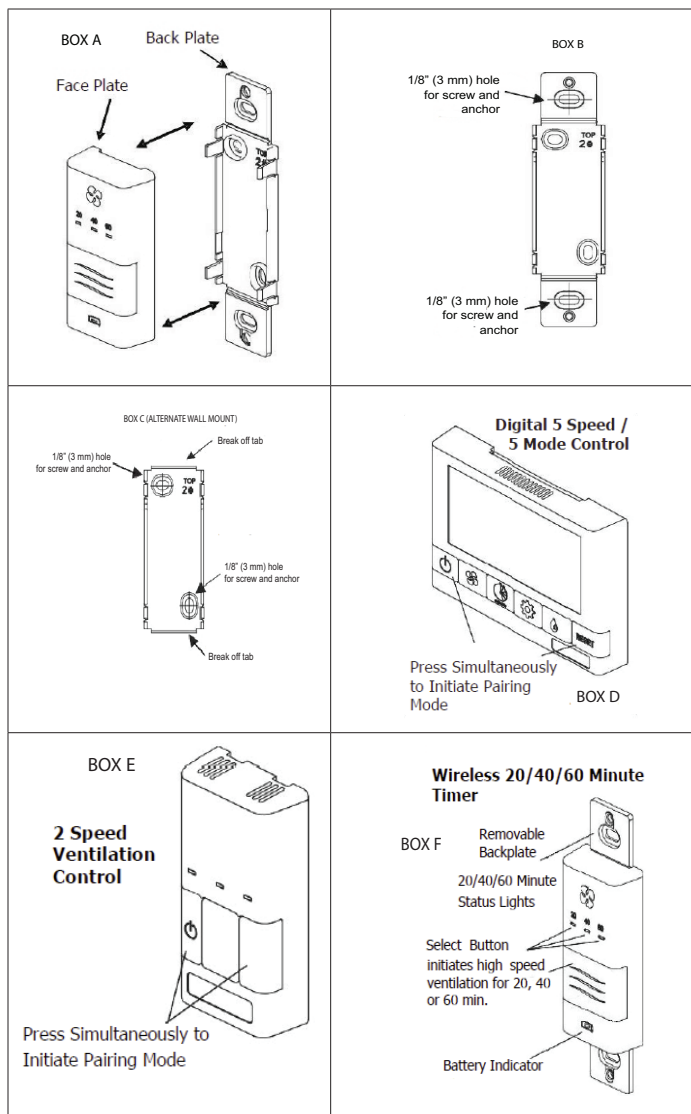


Figure 38. Wireless Timer Installation

3. Place the back plate of the control in the desired location on the wall and pencil mark the top and bottom screw holes (Figure 38, 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 (Figure 38, 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.

Installation and Pairing of H/C Ventilation 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.

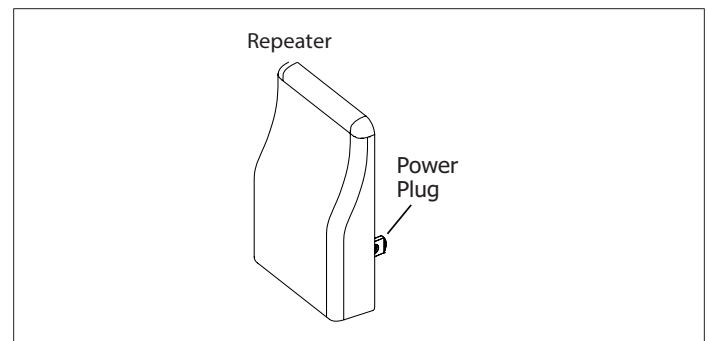







Figure 39. Wireless Repeater (Y8252)

1. Turn on the main wall control by pressing the ON/OFF button .
2. **Repeater (Y8252) 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 (Y8252) with Wall Mount Dehumidistat/ Ventilation Control: Press the left and right buttons simultaneously on the main wall control ( and  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" (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.

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

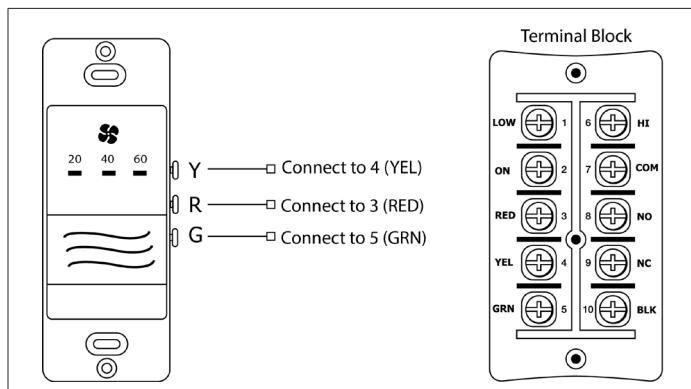


Figure 40. Wired Timer Installation (Configuration A)

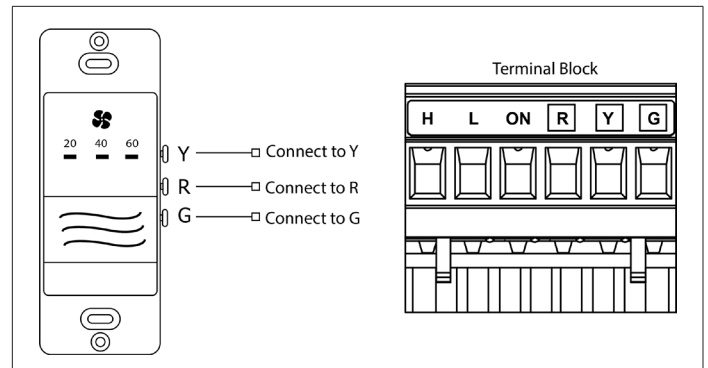


Figure 41. Wired Timer Installation (Configuration B)

Installation of Mechanical Timers

The Healthy Climate ERV/HRV 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.

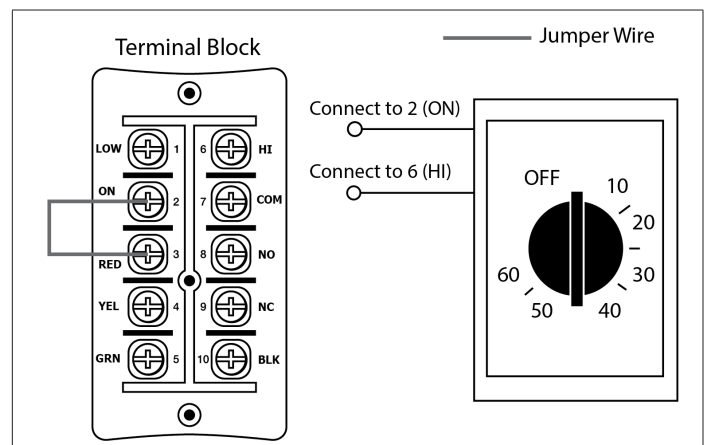


Figure 42. Mechanical Timer Installation Configuration A

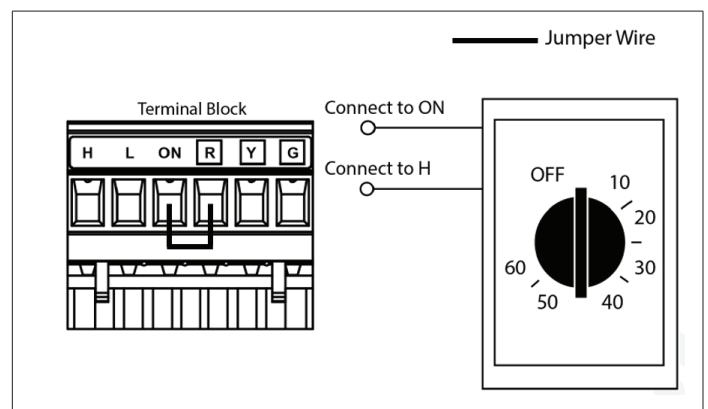


Figure 43. Mechanical Timer Installation Configuration B

Interlocking ERV/HRV Blower to Air Handler/Furnace Blower

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

The ERV/HRV unit must be interlocked to the furnace/air handler or Lennox E30 with a simplified (return/return) installation and should be interlocked with a partially dedicated installation as illustrated in the following figure.

NOTE: Interlock is only required with Lennox Smart Thermostats if another control can activate ventilation, such as a wall switch, etc.

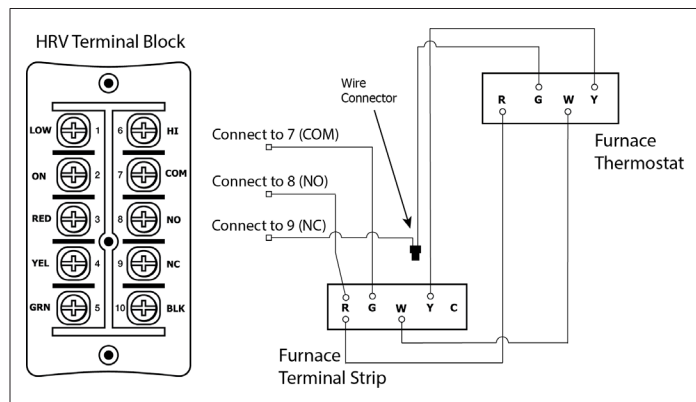


Figure 44. Interlocking Configuration A

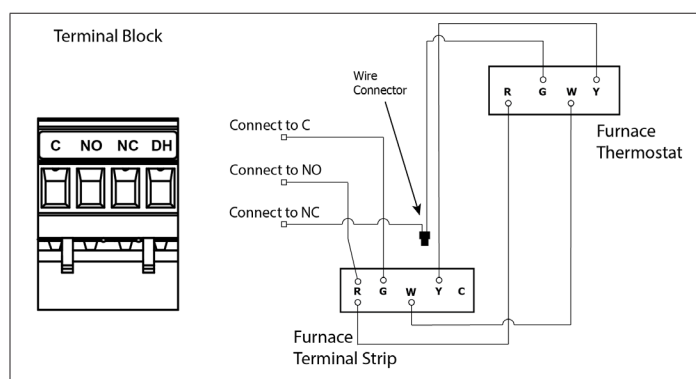


Figure 45. Interlocking Configuration B

Electrical Connections

Plug the ERV/HRV 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. See wiring diagrams for the units described in section titled "Unit Wiring Diagrams" on page 37.

! WARNING

Electric Shock Hazard

Can cause injury or death.

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

MAIN CONTROL STANDBY SETTING

The ERV/HRV 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 ERV/HRV 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.

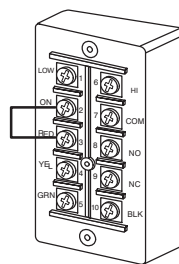


Figure 46. ERV/HRV Terminal Block

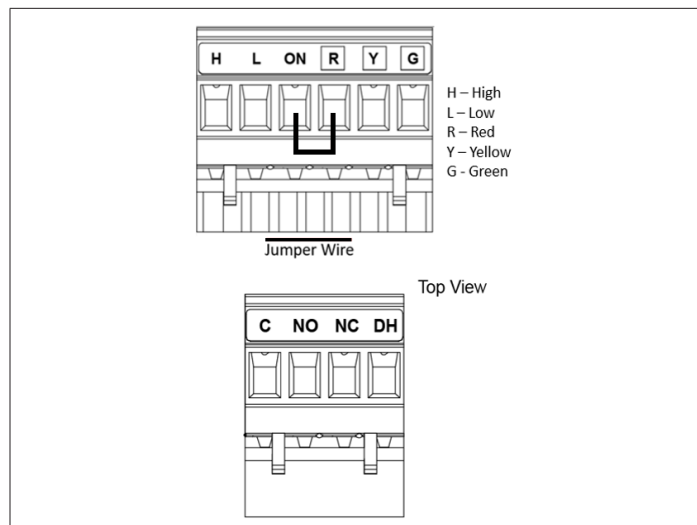


Figure 47. ERV/HRV Terminal Block

! IMPORTANT

The ERV/HRV 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 18. 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).

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

ACTIVATING DRY CONTACT CONTROLS

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

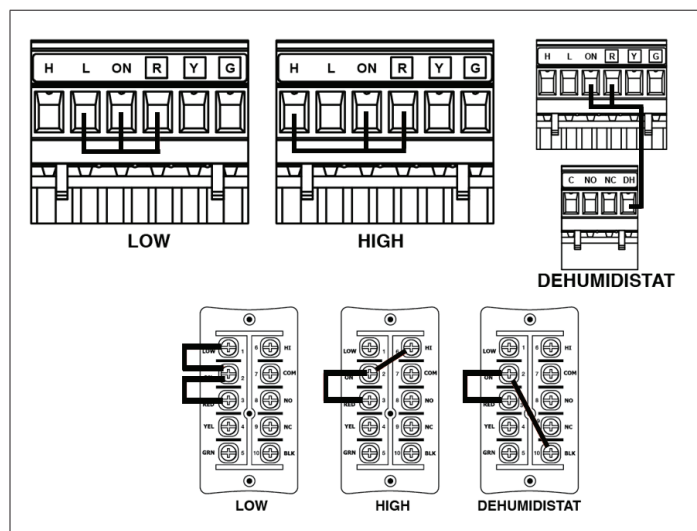
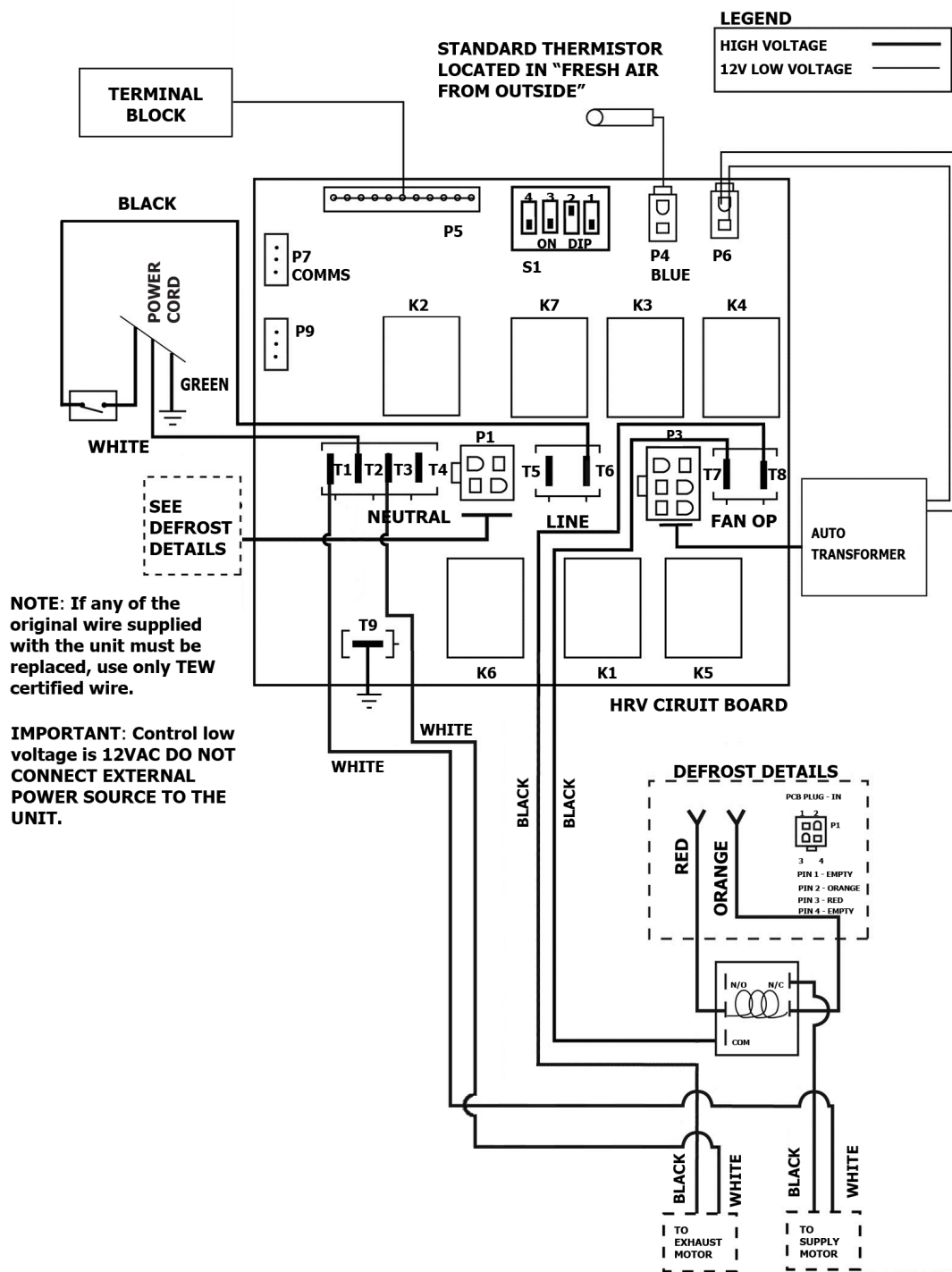


Figure 48. Adding Dry Contact Controls

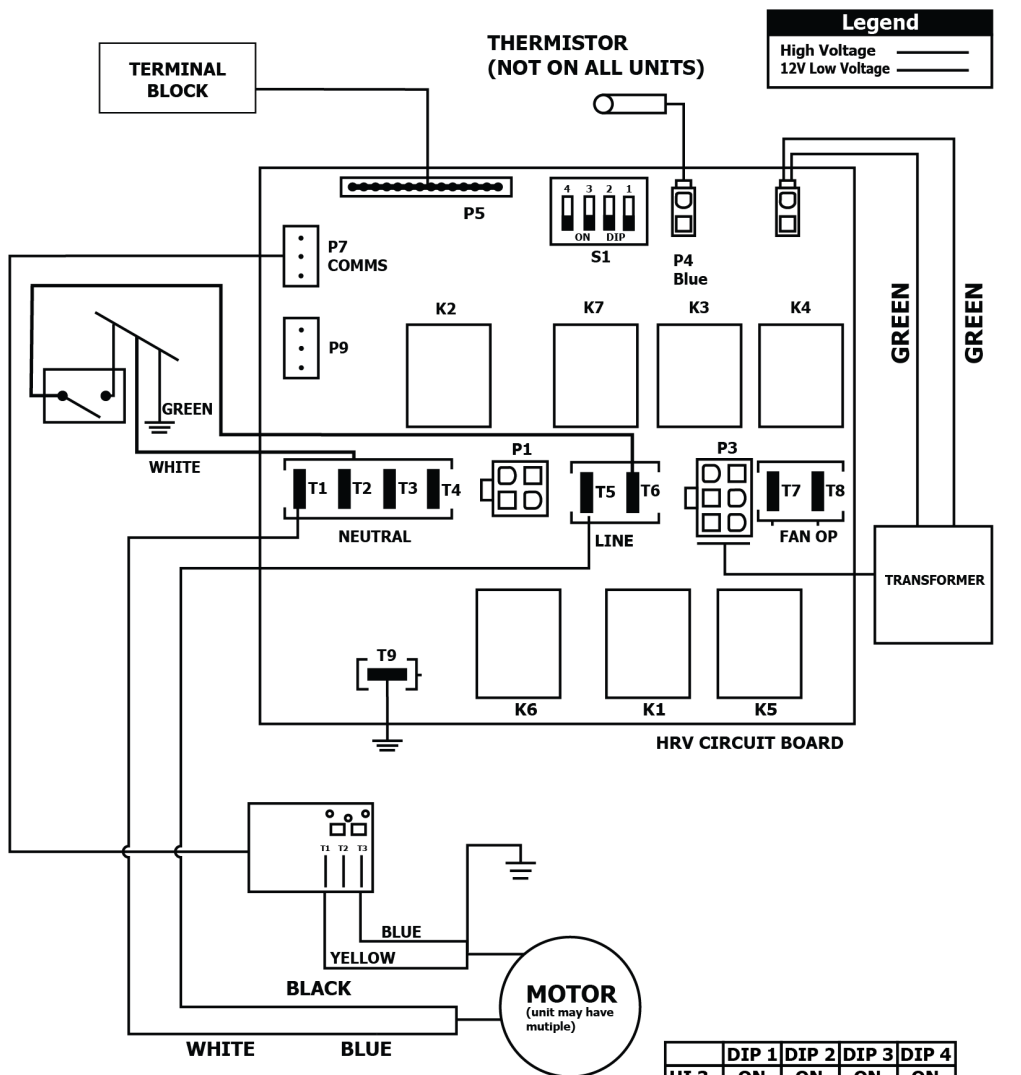
CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY



NOTE: The wiring diagram is applicable to both variants of terminal blocks.

Figure 49. Wiring Diagram
(HRV5-150-TPD, HRV5-200-TPD, ERV5-130, ERV5-150-TPD, and ERV5-175-TPD)

CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY



Note: If any of the othe 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.

*DIP 1 ON - R2000 defrost disabled
DIP 1 OFF - R2000 defrost enabled
**DIP 2 ON - Recirculation enabled
DIP 2 ON - Recirculation disabled

NOTE: Recirculation is not available on all units.

59-267
1223

Figure 50. Wiring Diagram HRV5-270-TPD-ECM

Installer Selectable High Speed Settings

!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.

ERV/HRV 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.

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 19. High Speed Settings

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

ERV/HRV Connected with an Basic and Deluxe Control

Balance the HRV or ERV at High speed using door port balancing chart or pitot tube to required CFM making sure the system blower is on at high speed.

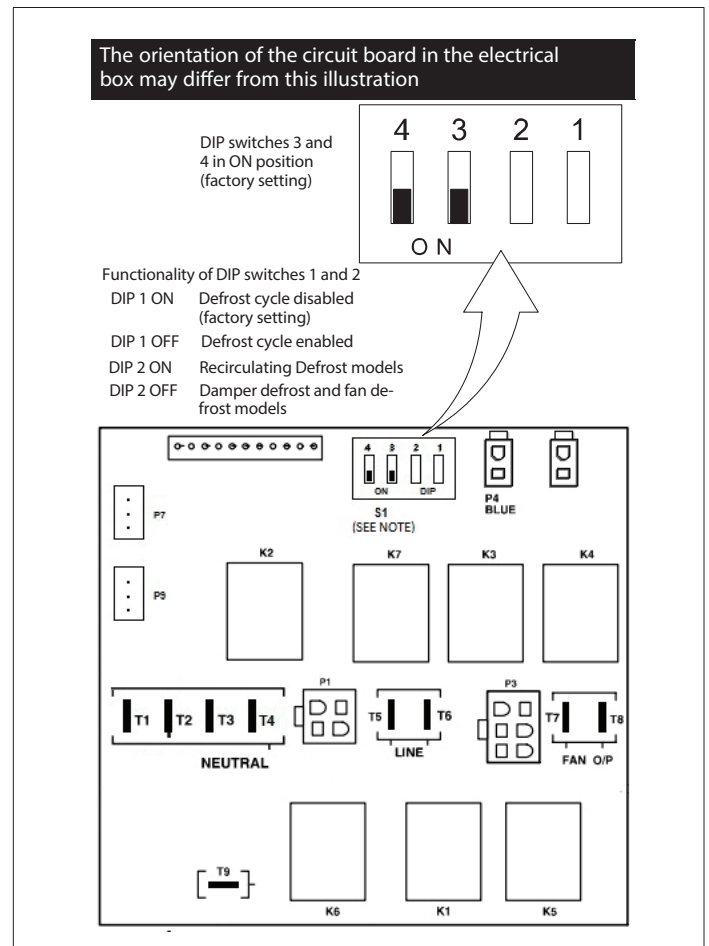


Figure 51. Speed Settings

!CAUTION

Potential Condensation Damage. Condensation can cause damage to building structures.

Ensure proper ERV/HRV 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 ERV/HRV 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 ERV/HRV unit may not operate at its maximum efficiency.
2. A negative or positive air pressure may occur in the house.
3. The ERV/HRV unit may not defrost properly.
4. Failure to balance ERV/HRV units 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 10 of this instruction.

BALANCING PREPARATION

1. All sealing of the duct system has been completed.
2. All of the ERV/HRV 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.

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 Gauge

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 ERV/HRV airflows are:

- The **Pitot Tube** - This will measure the airflow in the ductwork for any ERV/HRV.
- **Door Port Gauge Tube Set** - This will measure the airflow using the door ports for models HRV5-150-TPD, HRV6-150, HRV5-200-TPD, HRV5-270-TPD-ECM, ERV5-150-TPD, and ERV5-175-TPD.
- Flow Stations - These are installed into the duct work.

Pitot Tube Recommendation

Use a field-provided pitot tube comparable to the Dwyer® Series 160 Stainless Steel Pitot Tubes.

Pitot Tube Balancing Procedure

1. Operate all mechanical systems that have influence on the ventilation system at high speed. These systems include the ERV/HRV 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 m²) The airflow is 640 cfm x 0.2 sq. ft. = 128 cfm (302 L/s x 0.019 m² = 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 m²) cross-section area
- 6" (152 mm) diameter duct has 0.20 sq. ft. (0.019 m²) cross-section area
- 7" (178 mm) diameter duct has 0.27 sq. ft. (0.025 m²) 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)

NOTE: Required method for HRV3-195 and ERV5-130

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.

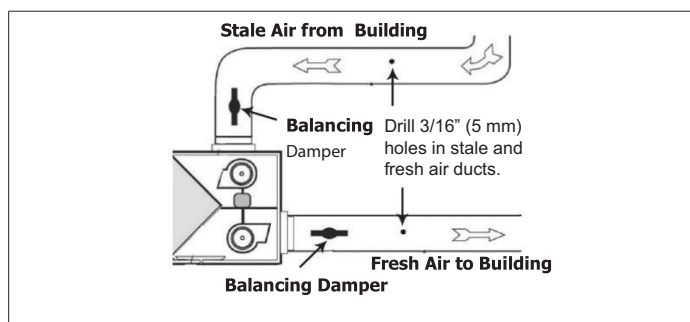


Figure 52. Drill

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.

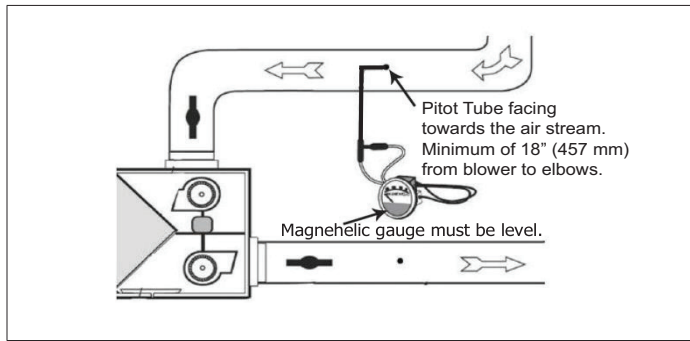


Figure 53. Insert Pitot Tube

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

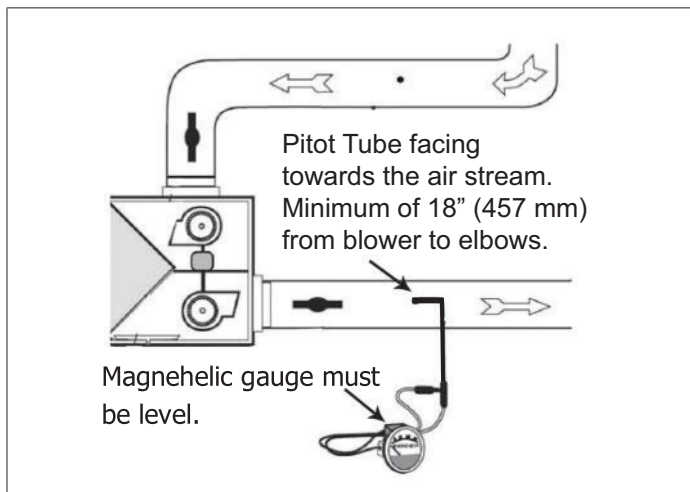


Figure 54. Repeat Step

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).

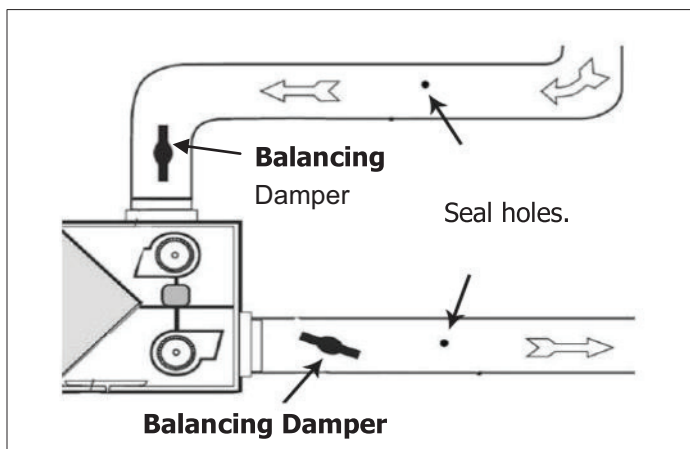


Figure 55. Balancing Damper

BALANCING DAMPERS

Balancing Dampers are located in the round collars of the HRV6-150, and the oval collars of the HRV5-150-TPD, HRV5-200-TPD, HRV7-HEX095-TPD, HRV5-270-TPD-ECM, ERV5-150-TPD and ERV5-175-TPD.

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 required to be installed in the fresh air and stale air ducting for HRV3-195, and ERV5-130. Refer to ducting illustrations located in the "Overview of Installation Methods" on page 24.

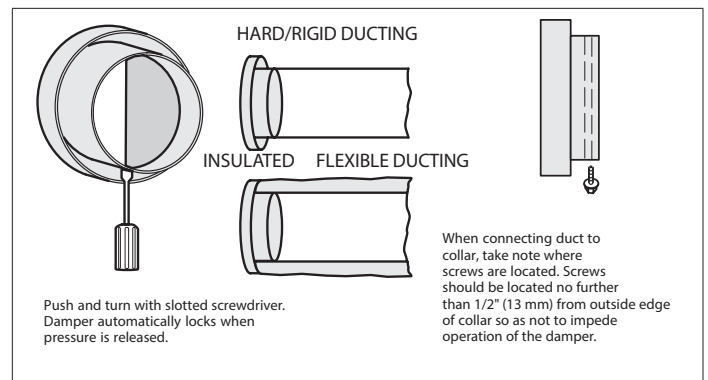


Figure 56. Balancing Collars

AIRFLOW BALANCING USING THE DOOR PORTS (AVAILABLE ON SELECTED MODELS)

Applicable Units:

HRV6-150, HRV5-200-TPD, HRV5-150-TPD, HRV7-HEX095-TPD, HRV5-270-TPD-ECM, ERV5-150-TPD and ERV5-175-TPD)

Door balancing ports for the above reference models are designed to be used in conjunction with a Magnehelic Gauge or Digital Manometer to measure the stale and fresh air-flows for balancing.

NOTE: Door port balancing requires the Magnehelic gauge or Digital Manometer pressure measurement scale to match the pressure range in the airflow balancing chart for the model of ERV or HRV being balance. Refer to "Airflow Balancing Charts" on page 42.

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. 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. Seal the STALE AIR Balancing Ports (upper right and lower left) with tape. Record your reading.
7. Refer to the “Airflow Balancing Charts” on page 42 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.

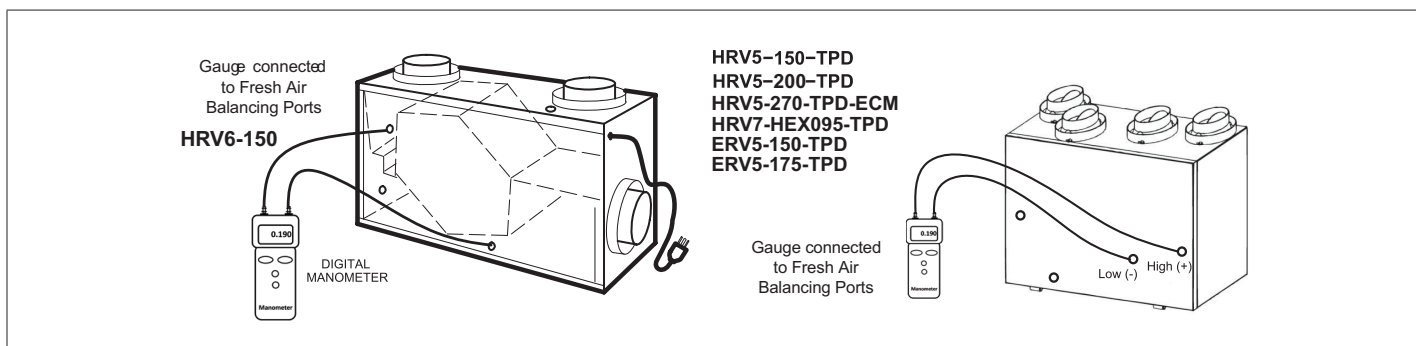


Figure 57. Door Balancing Ports - Fresh Air

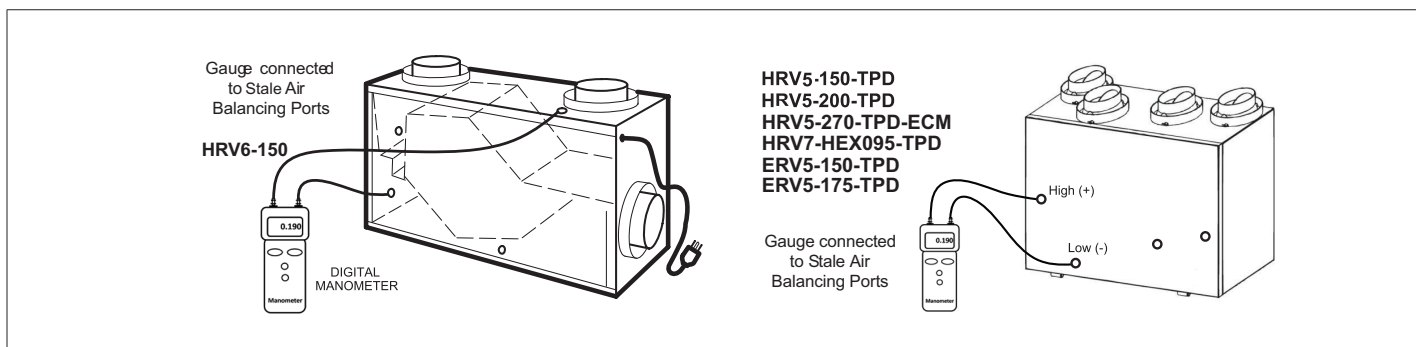


Figure 58. Door Balancing Ports - Stale Air

Airflow Balancing Charts

The RNC6-ES units have three airflow charts for their installer adjustable high speed settings. Refer to Installer Selectable High Speed Settings in this manual for instructions on how to adjust the circuit board DIP switches.

Table 20. Airflow Balancing - Reference HRV5-150-TPD

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Supply Air		Exhaust Air		Pressure Drop		Supply Air		Exhaust Air		Pressure Drop		Supply Air		Exhaust 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
0.70	174	---	---	158	75	0.57	142	---	---	140	66	0.50	125	---	---	124	59
0.71	177	---	---	155	73	0.58	145	---	---	137	65	0.51	127	---	---	120	57
0.72	179	---	---	152	72	0.59	147	---	---	134	63	0.52	130	---	---	117	55
0.73	182	---	---	149	70	0.60	150	---	---	131	62	0.53	132	---	---	114	54
0.74	184	---	---	146	69	0.61	152	---	---	127	60	0.54	135	---	---	110	52
0.75	187	---	---	143	67	0.62	154	---	---	124	59	0.55	137	---	---	107	50
0.76	189	---	---	140	66	0.63	157	---	---	121	57	0.56	140	---	---	104	49
0.77	192	---	---	137	65	0.64	159	---	---	118	56	0.57	142	---	---	101	48
0.78	194	---	---	134	63	0.65	162	---	---	115	54	0.58	145	---	---	98	46
0.79	197	---	---	131	62	0.66	164	---	---	112	53	0.59	147	---	---	94	44

Table 20. Airflow Balancing - Reference HRV5-150-TPD

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Supply Air		Exhaust Air		Pressure Drop		Supply Air		Exhaust Air		Pressure Drop		Supply Air		Exhaust 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
0.80	199	---	---	128	60	0.67	167	---	---	109	51	0.60	150	126	59	91	43
0.81	202	---	---	125	59	0.68	169	---	---	106	50	0.61	152	121	57	88	42
0.82	204	---	---	122	58	0.69	172	---	---	103	49	0.62	154	116	55	85	40
0.83	207	---	---	119	56	0.70	174	141	67	100	47	0.63	157	111	52	83	39
0.84	209	---	---	116	55	0.71	177	136	64	97	46	0.64	159	107	50	80	38
0.85	212	---	---	113	53	0.72	179	131	62	94	44	0.65	162	102	48	77	36
0.86	214	---	---	110	52	0.73	182	126	59	92	43	0.66	164	98	46	74	35
0.87	217	155	73	107	50	0.74	184	121	57	89	42	0.67	167	93	44	71	34
0.88	219	149	70	104	49	0.75	187	116	55	86	41	0.68	169	89	42	69	33
0.89	222	144	68	101	48	0.76	189	111	52	83	39	0.69	172	85	40	66	31
0.90	224	139	66	98	46	0.77	192	107	50	80	38	0.70	174	81	38	63	30
0.91	227	134	63	95	45	0.78	194	103	49	77	36	0.71	177	78	37	61	29
0.92	229	129	61	92	43	0.79	197	98	46	75	35	0.72	179	74	35	58	27
0.93	232	125	59	89	42	0.80	199	94	44	72	34	0.73	182	70	33	56	26
0.94	234	120	57	87	41	0.81	202	90	42	69	33	0.74	184	67	32	53	25
0.95	237	115	54	84	40	0.82	204	86	41	66	31	0.75	187	64	30	51	24
0.96	239	111	52	81	38	0.83	207	83	39	64	30	0.76	189	61	29	48	23
0.97	242	106	50	78	37	0.84	209	79	37	61	29	0.77	192	58	27	46	22
0.98	244	102	48	75	35	0.85	212	75	35	58	27	0.78	194	55	26	44	21
0.99	247	98	46	72	34	0.86	214	72	34	56	26	0.79	197	52	25	42	20
1.00	249	94	44	69	33	0.87	217	68	32	53	25	0.80	199	50	24	---	---
1.01	252	90	42	66	31	0.88	219	65	31	51	24	0.81	202	47	22	---	---
1.02	254	86	41	63	30	0.89	222	62	29	48	23	0.82	204	45	21	---	---
1.03	257	82	39	60	28	0.90	224	59	28	45	21	0.83	207	43	20	---	---
1.04	259	78	37	57	27	0.91	227	56	26	43	20	0.84	209	41	19	---	---
1.05	262	75	35	54	25	0.92	229	53	25	40	19	---	---	---	---	---	---
1.06	264	71	34	51	24	0.93	232	51	24	---	---	---	---	---	---	---	---
1.07	267	68	32	48	23	0.94	234	48	23	---	---	---	---	---	---	---	---
1.08	269	64	30	45	21	0.95	237	46	22	---	---	---	---	---	---	---	---
1.09	272	61	29	42	20	0.96	239	43	20	---	---	---	---	---	---	---	---
1.10	274	58	27	---	---	0.97	242	41	19	---	---	---	---	---	---	---	---
1.11	277	55	26	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.12	279	52	25	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.13	282	49	23	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.14	284	46	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.15	287	44	21	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.16	289	41	19	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.17	292	39	18	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 21. Airflow Balancing - Reference HRV6-150

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

Refer to “Installer Selectable High Speed Settings” on page 39 in this manual for more information.

Table 21. Airflow Balancing - Reference HRV6-150

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
0.035	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	---	---
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	---	---

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 21. Airflow Balancing - Reference HRV6-150

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
0.270	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 39 in this manual for more information.

Table 22. 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

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 22. 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
0.610	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
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

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 22. 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
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 39 in this manual for more information.

Table 23. Airflow Balancing - Reference HRV5-270-TPD-ECM

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
1.10	274	---	---	325	153	0.860	214	---	---	250	118	0.650	162	---	---	222	105
1.120	279	---	---	324	153	0.870	217	---	---	249	118	0.660	164	221	104	225	106
1.140	284	---	---	322	152	0.880	219	---	---	248	117	0.670	167	219	103	222	105
1.160	289	---	---	320	151	0.890	222	---	---	247	117	0.680	169	216	102	220	104
1.180	294	---	---	319	151	0.90	224	---	---	245	116	0.690	172	214	101	217	102
1.200	299	---	---	317	150	0.910	227	---	---	244	115	0.700	174	211	100	214	101
1.220	304	---	---	315	149	0.920	229	---	---	242	114	0.710	177	209	99	212	100
1.240	309	---	---	313	148	0.930	232	---	---	241	114	0.720	179	207	98	209	99
1.260	314	---	---	311	147	0.940	234	---	---	240	113	0.730	182	204	96	206	97
1.280	319	---	---	309	146	0.950	237	---	---	238	112	0.740	184	202	95	203	96
1.300	324	---	---	307	145	0.960	239	250	118	236	111	0.750	187	199	94	201	95
1.320	329	---	---	305	144	0.970	242	248	117	235	111	0.760	189	197	93	198	93
1.340	334	323	152	303	143	0.980	244	246	116	233	110	0.770	192	194	92	195	92
1.360	339	320	151	300	142	0.990	247	243	115	232	109	0.780	194	192	91	192	91
1.380	344	317	150	298	141	1.000	249	241	114	230	109	0.790	197	190	90	190	90

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 23. Airflow Balancing - Reference HRV5-270-TPD-ECM

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
1.400	349	313	148	296	140	1.010	252	239	113	228	108	0.800	199	187	88	187	88
1.420	354	310	146	293	138	1.020	254	237	112	227	107	0.810	202	185	87	184	87
1.440	359	307	145	291	137	1.030	257	235	111	225	106	0.820	204	182	86	181	85
1.460	364	304	143	288	136	1.040	259	233	110	223	105	0.830	207	180	85	179	84
1.480	369	300	142	286	135	1.050	262	230	109	221	104	0.840	209	177	84	176	83
1.500	374	297	140	283	134	1.060	264	228	108	219	103	0.850	212	175	83	173	82
1.520	379	293	138	280	132	1.070	267	226	107	217	102	0.860	214	172	81	170	80
1.540	384	290	137	277	131	1.080	269	223	105	215	101	0.870	217	170	80	168	79
1.560	389	287	135	275	130	1.090	272	221	104	214	101	0.880	219	168	79	165	78
1.580	394	283	134	272	128	1.100	274	219	103	212	100	0.890	222	165	78	162	76
1.600	399	279	132	269	127	1.110	277	216	102	210	99	0.90	224	163	77	160	76
1.620	404	276	130	266	126	1.120	279	214	101	207	98	0.910	227	160	76	157	74
1.640	409	272	128	263	124	1.130	282	211	100	205	97	0.920	229	158	75	154	73
1.660	414	268	126	259	122	1.140	284	209	99	203	96	0.930	232	155	73	151	71
1.680	419	265	125	256	121	1.150	287	207	98	201	95	0.940	234	153	72	149	70
1.700	424	261	123	253	119	1.160	289	204	96	199	94	0.950	237	150	71	146	69
1.720	429	257	121	250	118	1.170	292	201	95	197	93	0.960	239	148	70	143	67
1.740	434	253	119	246	116	1.180	294	199	94	195	92	0.970	242	146	69	140	66
1.760	439	249	118	243	115	1.190	297	196	92	192	91	0.980	244	143	67	138	65
1.780	444	245	116	239	113	1.200	299	194	92	190	90	0.990	247	141	67	135	64
1.800	449	241	114	236	111	1.210	302	191	90	188	89	1.000	249	138	65	132	62
1.820	453	237	112	232	109	1.220	304	189	89	185	87	1.010	252	136	64	129	61
1.840	458	233	110	229	108	1.230	306	186	88	183	86	1.020	254	133	63	127	60
1.860	463	229	108	225	106	1.240	309	183	86	180	85	1.030	257	131	62	124	59
1.880	468	225	106	221	104	1.250	311	181	85	178	84	1.040	259	129	61	121	57
1.900	473	220	104	217	102	1.260	314	178	84	175	83	1.050	262	126	59	119	56
1.920	478	216	102	213	101	1.270	316	175	83	173	82	1.060	264	124	59	116	55
1.940	483	212	100	209	99	1.280	319	172	81	170	80	1.070	267	121	57	113	53
1.960	488	207	98	205	97	1.290	321	169	80	168	79	1.080	269	119	56	110	52
1.980	493	203	96	201	95	1.300	324	167	79	165	78	1.090	272	116	55	108	51
2.000	498	199	94	197	93	1.310	326	164	77	162	76	1.100	274	114	54	105	49
2.020	503	194	92	193	91	1.320	329	161	76	160	76	1.110	277	111	53	102	48
2.040	508	190	90	189	89	1.330	331	158	75	157	74	1.120	279	109	51	99	47
2.060	513	185	87	184	87	1.340	334	155	73	154	73	1.130	282	107	50	97	46
2.080	518	180	85	180	85	1.350	336	152	72	151	71	1.140	284	104	49	94	44
2.100	523	176	83	176	83	1.360	339	149	70	149	70	1.150	287	102	48	91	43
2.120	528	171	81	171	81	1.370	341	146	69	146	69	1.160	289	99	47	88	42
2.140	533	166	78	167	79	1.380	344	143	67	143	67	1.170	292	97	46	86	40
2.160	538	162	76	162	76	1.390	346	140	66	140	66	1.180	294	94	45	83	39
2.180	543	157	74	157	74	1.400	349	137	65	137	65	1.190	297	92	43	80	38
2.200	548	152	72	153	72	1.410	351	134	63	134	63	1.200	299	90	42	77	37
2.220	553	147	69	148	70	1.420	354	131	62	131	62	---	---	---	---	---	---
2.240	558	142	67	143	67	1.430	356	128	60	128	60	---	---	---	---	---	---
2.260	563	137	65	138	65	1.440	359	125	59	125	59	---	---	---	---	---	---
2.280	568	132	62	133	63	1.450	361	122	58	122	58	---	---	---	---	---	---
2.300	573	127	60	128	60	1.460	364	119	56	119	56	---	---	---	---	---	---

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 23. Airflow Balancing - Reference HRV5-270-TPD-ECM

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
2.320	578	122	58	123	58	1.470	366	115	54	116	55	---	---	---	---	---	---
2.340	583	117	55	118	56	1.480	369	112	53	112	53	---	---	---	---	---	---
2.360	588	112	53	113	53	1.490	371	109	51	109	51	---	---	---	---	---	---
2.380	593	106	50	107	50	1.500	374	106	50	106	50	---	---	---	---	---	---
2.400	598	101	48	102	48	1.510	376	102	48	103	49	---	---	---	---	---	---

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 24. Airflow Balancing - Reference HRV7-HEX095-TPD

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Supply Airflow		Exhaust Airflow		Pressure Drop		Supply Airflow		Exhaust Airflow		Pressure Drop		Supply Airflow		Exhaust Airflow	
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
0.200	50	125	59	135	64	0.200	50	115	54	128	60	0.200	50	104	49	120	57
0.210	52	124	59	135	64	0.210	52	114	54	127	60	0.210	52	103	49	118	56
0.220	55	123	58	134	63	0.220	55	113	53	126	59	0.220	55	102	48	117	55
0.230	57	122	58	133	63	0.230	57	111	52	125	59	0.230	57	101	48	115	54
0.240	60	121	57	133	63	0.240	60	110	52	124	59	0.240	60	99	47	114	54
0.250	62	120	57	132	62	0.250	62	109	51	123	58	0.250	62	98	46	112	53
0.260	65	119	56	131	62	0.260	65	108	51	121	57	0.260	65	97	46	110	52
0.270	67	118	56	131	62	0.270	67	106	50	120	57	0.270	67	95	45	109	51
0.280	70	117	55	130	61	0.280	70	105	50	119	56	0.280	70	94	44	107	50
0.290	72	116	55	129	61	0.290	72	104	49	118	56	0.290	72	93	44	106	50
0.300	75	115	54	128	60	0.300	75	102	48	116	55	0.300	75	92	43	104	49
0.310	77	114	54	127	60	0.310	77	101	48	115	54	0.310	77	90	42	102	48
0.320	80	113	53	126	59	0.320	80	100	47	113	53	0.320	80	89	42	101	48
0.330	82	112	53	125	59	0.330	82	98	46	112	53	0.330	82	87	41	99	47
0.340	85	111	52	124	59	0.340	85	97	46	110	52	0.340	85	86	41	97	46
0.350	87	109	51	123	58	0.350	87	96	45	109	51	0.350	87	85	40	96	45
0.360	90	108	51	122	58	0.360	90	94	44	107	50	0.360	90	83	39	94	44
0.370	92	107	50	121	57	0.370	92	93	44	106	50	0.370	92	82	39	92	43
0.380	95	106	50	119	56	0.380	95	92	43	104	49	0.380	95	80	38	90	42
0.390	97	105	50	118	56	0.390	97	90	42	103	49	0.390	97	79	37	89	42
0.400	100	103	49	117	55	0.400	100	89	42	101	48	0.400	100	78	37	87	41
0.410	102	102	48	115	54	0.410	102	87	41	99	47	0.410	102	76	36	85	40
0.420	105	101	48	114	54	0.420	105	86	41	98	46	0.420	105	75	35	83	39
0.430	107	99	47	112	53	0.430	107	85	40	96	45	0.430	107	73	34	81	38
0.440	110	98	46	111	52	0.440	110	83	39	94	44	0.440	110	72	34	79	37
0.450	112	97	46	109	51	0.450	112	82	39	92	43	0.450	112	70	33	78	37
0.460	115	95	45	108	51	0.460	115	80	38	90	42	0.460	115	69	33	76	36
0.470	117	94	44	106	50	0.470	117	79	37	88	42	0.470	117	67	32	74	35
0.480	120	92	43	104	49	0.480	120	77	36	87	41	0.480	120	65	31	72	34
0.490	122	91	43	103	49	0.490	122	76	36	85	40	0.490	122	64	30	70	33
0.500	125	90	42	101	48	0.500	125	74	35	83	39	0.500	125	62	29	68	32
0.510	127	88	42	99	47	0.510	127	73	34	81	38	0.510	127	61	29	66	31
0.520	130	87	41	97	46	0.520	130	71	34	79	37	0.520	130	59	28	64	30
0.530	132	85	40	95	45	0.530	132	70	33	76	36	0.530	132	57	27	62	29

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 24. Airflow Balancing - Reference HRV7-HEX095-TPD

Speed 5 (factory setting)						Speed 4						Speed 3					
Pressure Drop		Supply Airflow		Exhaust Airflow		Pressure Drop		Supply Airflow		Exhaust Airflow		Pressure Drop		Supply Airflow		Exhaust Airflow	
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
0.540	135	84	40	93	44	0.540	135	68	32	74	35	0.540	135	56	26	60	28
0.550	137	82	39	91	43	0.550	137	66	31	72	34	0.550	137	54	25	58	27
0.560	139	80	38	89	42	0.560	139	65	31	70	33	0.560	139	52	25	56	26
0.570	142	79	37	87	41	0.570	142	63	30	68	32	0.570	142	51	24	54	25
0.580	144	77	36	85	40	0.580	144	62	29	66	31	0.580	144	49	23	52	25
0.590	147	76	36	83	39	0.590	147	60	28	63	30	0.590	147	47	22	50	24
0.600	149	74	35	81	38	0.600	149	58	27	61	29	0.600	149	46	22	47	22
0.610	152	72	34	78	37	0.610	152	57	27	59	28	0.610	152	44	21	45	21
0.620	154	71	34	76	36	0.620	154	55	26	56	26	0.620	154	42	20	43	20
0.630	157	69	33	74	35	0.630	157	54	25	54	25	0.630	157	40	19	41	19
0.640	159	67	32	71	34	0.640	159	52	25	51	24	0.640	159	39	18	39	18
0.650	162	65	31	69	33	0.650	162	50	24	49	23	0.650	162	37	17	37	17
0.660	164	64	30	66	31	0.660	164	49	23	47	22	0.660	164	35	17	34	16
0.670	167	62	29	64	30	0.670	167	47	22	44	21	0.670	167	33	16	32	15
0.680	169	60	28	61	29	0.680	169	45	21	41	19	0.680	169	31	15	30	14
0.690	172	58	27	59	28	0.690	172	43	20	39	18	0.690	172	30	14	---	---
0.700	174	56	26	56	26	0.700	174	42	20	36	17	0.700	174	---	---	---	---
0.710	177	55	26	53	25	0.710	177	40	19	34	16	0.710	177	---	---	---	---
0.720	179	53	25	50	24	0.720	179	38	18	31	15	0.720	179	---	---	---	---
0.730	182	51	24	48	23	0.730	182	37	17	---	---	0.730	182	---	---	---	---
0.740	184	49	23	45	21	0.740	184	35	17	---	---	0.740	184	---	---	---	---
0.750	187	47	22	42	20	0.750	187	33	16	---	---	0.750	187	---	---	---	---
0.760	189	45	21	39	18	0.760	189	31	15	---	---	0.760	189	---	---	---	---
0.770	192	43	20	36	17	0.770	192	---	---	---	---	0.770	192	---	---	---	---
0.780	194	41	19	33	16	0.780	194	---	---	---	---	0.780	194	---	---	---	---
0.790	197	39	18	30	14	0.790	197	---	---	---	---	0.790	197	---	---	---	---
0.800	199	37	17	---	---	0.800	199	---	---	---	---	0.800	199	---	---	---	---
0.810	202	35	17	---	---	0.810	202	---	---	---	---	0.810	202	---	---	---	---
0.820	204	33	16	---	---	0.820	204	---	---	---	---	0.820	204	---	---	---	---

Refer to "Installer Selectable High Speed Settings" on page 39 in this manual for more information.

Table 25. Airflow Balancing - Reference ERV5-150-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
0.750	70	---	---	157	74	0.530	70	---	---	127	---	0.500	70	---	---	100	47
0.760	189	---	---	155	73	0.540	135	---	---	125	---	0.510	127	---	---	98	46
0.770	192	---	---	152	72	0.550	137	---	---	123	---	0.520	130	---	---	96	45
0.780	194	---	---	150	71	0.560	140	---	---	122	---	0.530	132	---	---	94	44
0.790	197	---	---	148	70	0.570	142	---	---	120	---	0.540	135	---	---	92	43
0.80	199	---	---	146	69	0.580	145	---	---	118	---	0.550	137	---	---	90	42
0.810	202	---	---	144	68	0.590	147	---	---	116	---	0.560	140	---	---	88	42
0.820	204	---	---	142	67	0.600	150	---	---	114	---	0.570	142	---	---	86	41
0.830	207	---	---	139	66	0.610	152	---	---	112	---	0.580	145	---	---	84	40
0.840	209	---	---	137	65	0.620	154	---	---	111	---	0.590	147	---	---	83	39

Table 25. Airflow Balancing - Reference ERV5-150-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
0.850	212	---	---	135	64	0.630	157	---	---	109	---	0.600	150	---	---	81	38
0.860	214	---	---	133	63	0.640	159	---	---	107	---	0.610	152	---	---	79	37
0.870	217	---	---	131	62	0.650	162	---	---	105	---	0.620	154	---	---	77	36
0.880	219	---	---	129	61	0.660	164	---	---	103	---	0.630	157	103	49	75	35
0.890	222	---	---	126	59	0.670	167	---	---	102	---	0.640	159	100	47	73	34
0.900	224	---	---	124	59	0.680	169	---	---	100	---	0.650	162	97	46	71	34
0.910	227	---	---	122	58	0.690	172	---	---	98	---	0.660	164	93	44	69	33
0.920	229	---	---	120	57	0.700	174	---	---	96	---	0.670	167	90	42	67	32
0.930	232	---	---	118	56	0.710	177	---	---	94	---	0.680	169	88	42	65	31
0.940	234	---	---	115	54	0.720	179	---	---	93	---	0.690	172	85	40	64	30
0.950	237	---	---	113	53	0.730	182	127	60	91	---	0.700	174	82	39	62	29
0.960	239	162	76	111	52	0.740	184	124	59	89	---	0.710	177	79	37	60	28
0.970	242	158	75	109	51	0.750	187	121	57	87	---	0.720	179	77	36	58	27
0.980	244	154	73	107	50	0.760	189	118	56	85	---	0.730	182	74	35	56	26
0.990	247	150	71	105	50	0.770	192	115	54	84	---	0.740	184	72	34	54	25
1.000	249	146	69	102	48	0.780	194	112	53	82	---	0.750	187	69	33	52	25
1.010	252	142	67	100	47	0.790	197	109	51	80	---	0.760	189	67	32	51	24
1.020	254	138	65	98	46	0.80	199	106	50	78	---	0.770	192	65	31	49	23
1.030	257	134	63	96	45	0.810	202	103	49	76	---	0.780	194	62	29	47	22
1.040	259	130	61	94	44	0.820	204	100	47	75	---	0.790	197	60	28	45	21
1.050	262	126	59	92	43	0.830	207	98	46	73	---	0.800	199	58	27	43	20
1.060	264	122	58	89	42	0.840	209	95	45	71	---	0.810	202	56	26	42	20
1.070	267	119	56	87	41	0.850	212	92	43	69	---	0.820	204	54	25	40	19
1.080	269	115	54	85	40	0.860	214	90	42	67	---	0.830	207	52	25	---	---
1.090	272	112	53	83	39	0.870	217	87	41	66	---	0.840	209	51	24	---	---
1.100	274	108	51	81	38	0.880	219	85	40	64	---	0.850	212	49	23	---	---
1.110	277	105	50	79	37	0.890	222	82	39	62	---	0.860	214	47	22	---	---
1.120	279	102	48	76	36	0.900	224	80	38	60	---	0.870	217	46	22	---	---
1.130	282	99	47	74	35	0.910	227	77	36	58	---	0.880	219	44	21	---	---
1.140	284	95	45	72	34	0.920	229	75	35	57	---	0.890	222	43	20	---	---
1.150	287	92	43	70	33	0.930	232	73	34	55	---	0.900	224	42	20	---	---
1.160	289	89	42	68	32	0.940	234	71	34	53	---	0.910	227	40	19	---	---
1.170	292	87	41	66	31	0.950	237	69	33	51	---	---	---	---	---	---	---
1.180	294	84	40	63	30	0.960	239	66	31	49	---	---	---	---	---	---	---
1.190	297	81	38	61	29	0.970	242	64	30	48	---	---	---	---	---	---	---
1.200	299	78	37	59	28	0.980	244	62	29	46	---	---	---	---	---	---	---
1.210	302	76	36	57	27	0.990	247	60	28	44	---	---	---	---	---	---	---
1.220	304	73	34	55	26	1.000	249	59	28	42	---	---	---	---	---	---	---
1.230	306	70	33	53	25	1.010	252	57	27	40	---	---	---	---	---	---	---
1.240	309	68	32	50	24	1.020	254	55	26	39	---	---	---	---	---	---	---

Table 25. Airflow Balancing - Reference ERV5-150-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
1.250	311	66	31	48	23	1.030	257	53	25	---	---	---	---	---	---	---	---
1.260	314	63	30	46	22	1.040	259	51	24	---	---	---	---	---	---	---	---
1.270	316	61	29	44	21	1.050	262	50	24	---	---	---	---	---	---	---	---
1.280	319	59	28	42	20	1.060	264	48	23	---	---	---	---	---	---	---	---
1.290	321	57	27	39	18	1.070	267	47	22	---	---	---	---	---	---	---	---
1.300	324	55	26	---	---	1.080	269	45	21	---	---	---	---	---	---	---	---
1.310	326	53	25	---	---	1.090	272	44	21	---	---	---	---	---	---	---	---
1.320	329	51	24	---	---	1.100	274	42	20	---	---	---	---	---	---	---	---
1.330	331	49	23	---	---	1.110	277	41	19	---	---	---	---	---	---	---	---
1.340	334	48	23	---	---	1.120	279	40	19	---	---	---	---	---	---	---	---
1.350	336	46	22	---	---	1.130	282	38	18	---	---	---	---	---	---	---	---
1.360	339	44	21	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.370	341	43	20	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.380	344	41	19	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.390	346	40	19	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.400	349	39	18	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 26. Airflow Balancing - Reference ERV5-175-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	
"w.g.	Pa	CFM	L/s	CFM	L/s	"w.g.	Pa	CFM	L/s	CFM	L/s	"w.g.	Pa	CFM	L/s	CFM	L/s
0.750	187	199	94	201	95	0.640	159	---	---	152	72	0.470	117	138	65	---	---
0.760	189	197	93	198	93	0.650	162	151	71	149	70	0.480	120	135	64	139	66
0.770	192	194	92	195	92	0.660	164	148	70	146	69	0.490	122	132	62	135	64
0.780	194	192	91	192	91	0.670	167	145	68	143	67	0.500	125	129	61	132	62
0.790	197	190	90	190	90	0.680	169	143	67	140	66	0.510	127	126	59	129	61
0.800	199	187	88	187	88	0.690	172	140	66	137	65	0.520	130	124	59	125	59
0.810	202	185	87	184	87	0.700	174	137	65	134	63	0.530	132	121	57	122	58
0.820	204	182	86	181	85	0.710	177	134	63	132	62	0.540	135	118	56	119	56
0.830	207	180	85	179	84	0.720	179	132	62	129	61	0.550	137	115	54	116	55
0.840	209	177	84	176	83	0.730	182	129	61	126	59	0.560	140	112	53	113	53
0.850	212	175	83	173	82	0.740	184	126	59	123	58	0.570	142	110	52	110	52
0.860	214	172	81	170	80	0.750	187	124	59	120	57	0.580	145	107	50	107	50
0.870	217	170	80	168	79	0.760	189	121	57	117	55	0.590	147	104	49	104	49
0.880	219	168	79	165	78	0.770	192	119	56	115	54	0.600	150	102	48	101	48
0.890	222	165	78	162	76	0.780	194	116	55	112	53	0.610	152	99	47	98	46
0.900	224	163	77	160	76	0.790	197	114	54	109	51	0.620	154	97	46	95	45
0.910	227	160	76	157	74	0.800	199	111	52	106	50	0.630	157	94	44	92	43
0.920	229	158	75	154	73	0.810	202	109	51	104	49	0.640	159	92	43	89	42
0.930	232	155	73	151	71	0.820	204	106	50	101	48	0.650	162	89	42	86	41
0.940	234	153	72	149	70	0.830	207	104	49	98	46	0.660	164	87	41	84	40
0.950	237	150	71	146	69	0.840	209	101	48	96	45	0.670	167	85	40	81	38
0.960	239	148	70	143	67	0.850	212	99	47	93	44	0.680	169	82	39	78	37
0.970	242	146	69	140	66	0.860	214	96	45	91	43	0.690	172	80	38	76	36

Table 26. Airflow Balancing - Reference ERV5-175-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	
0.980	244	143	67	138	65	0.870	217	94	44	88	42	0.700	174	78	37	73	34
0.990	247	141	67	135	64	0.880	219	92	43	86	41	0.710	177	75	35	71	34
1.000	249	138	65	132	62	0.890	222	89	42	83	39	0.720	179	73	34	68	32
1.010	252	136	64	129	61	0.900	224	87	41	80	38	0.730	182	71	34	66	31
1.020	254	133	63	127	60	0.910	227	85	40	78	37	0.740	184	69	33	63	30
1.030	257	131	62	124	59	0.920	229	83	39	76	36	0.750	187	67	32	61	29
1.040	259	129	61	121	57	0.930	232	80	38	73	34	0.760	189	65	31	59	28
1.050	262	126	59	119	56	0.940	234	78	37	71	34	0.770	192	63	30	56	26
1.060	264	124	59	116	55	0.950	237	76	36	68	32	0.780	194	61	29	54	25
1.070	267	121	57	113	53	0.960	239	74	35	66	31	0.790	197	59	28	52	25
1.080	269	119	56	110	52	0.970	242	71	34	63	30	0.800	199	57	27	50	24
1.090	272	116	55	108	51	0.980	244	69	33	61	29	0.810	202	55	26	48	23
1.100	274	114	54	105	50	0.990	247	67	32	59	28	0.820	204	53	25	46	22
1.110	277	111	52	102	48	1.000	249	65	31	56	26	0.830	207	51	24	44	21
1.120	279	109	51	99	47	1.010	252	63	30	54	25	0.840	209	49	23	42	20
1.130	282	107	50	97	46	1.020	254	61	29	52	25	0.850	212	48	23	40	19
1.140	284	104	49	94	44	1.030	257	59	28	50	24	0.860	214	46	22	---	---
1.150	287	102	48	91	43	1.040	259	57	27	47	22	0.870	217	44	21	---	---
1.160	289	99	47	88	42	1.050	262	55	26	45	21	0.880	219	42	20	---	---
1.170	292	97	46	86	41	1.060	264	53	25	43	20	0.890	222	41	19	---	---
1.180	294	94	44	83	39	1.070	267	51	24	41	---	---	---	---	---	---	---
1.190	297	92	43	80	38	1.080	269	49	23	---	---	---	---	---	---	---	---
1.200	299	90	42	77	36	1.090	272	47	22	---	---	---	---	---	---	---	---
1.210	302	87	41	75	35	1.100	274	45	21	---	---	---	---	---	---	---	---
1.220	304	85	40	72	34	1.110	277	43	20	---	---	---	---	---	---	---	---
1.230	306	82	39	69	33	1.120	279	42	20	---	---	---	---	---	---	---	---
1.240	309	80	38	67	32	1.130	282	40	19	---	---	---	---	---	---	---	---
1.250	311	77	36	64	30	---	---	---	---	---	---	---	---	---	---	---	---
1.260	314	75	35	61	29	---	---	---	---	---	---	---	---	---	---	---	---
1.270	316	72	34	58	27	---	---	---	---	---	---	---	---	---	---	---	---
1.280	319	70	33	56	26	---	---	---	---	---	---	---	---	---	---	---	---
1.290	321	68	32	53	25	---	---	---	---	---	---	---	---	---	---	---	---
1.300	324	65	31	50	24	---	---	---	---	---	---	---	---	---	---	---	---
1.310	326	63	30	47	22	---	---	---	---	---	---	---	---	---	---	---	---
1.320	329	60	28	45	21	---	---	---	---	---	---	---	---	---	---	---	---
1.330	331	58	27	42	20	---	---	---	---	---	---	---	---	---	---	---	---
1.340	334	55	26	39	18	---	---	---	---	---	---	---	---	---	---	---	---
1.350	336	53	25	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.360	339	51	24	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.370	341	48	23	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.380	344	46	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.390	346	43	20	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1.400	349	41	19	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sequence of Operations

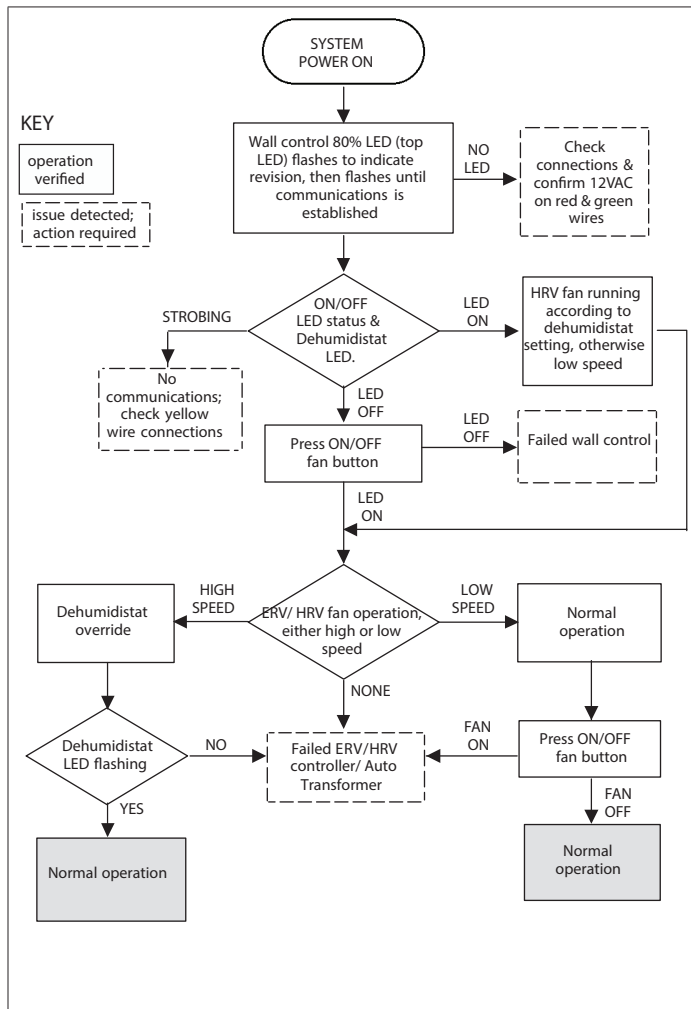


Figure 59. ERV /HRV Operational Flowchart

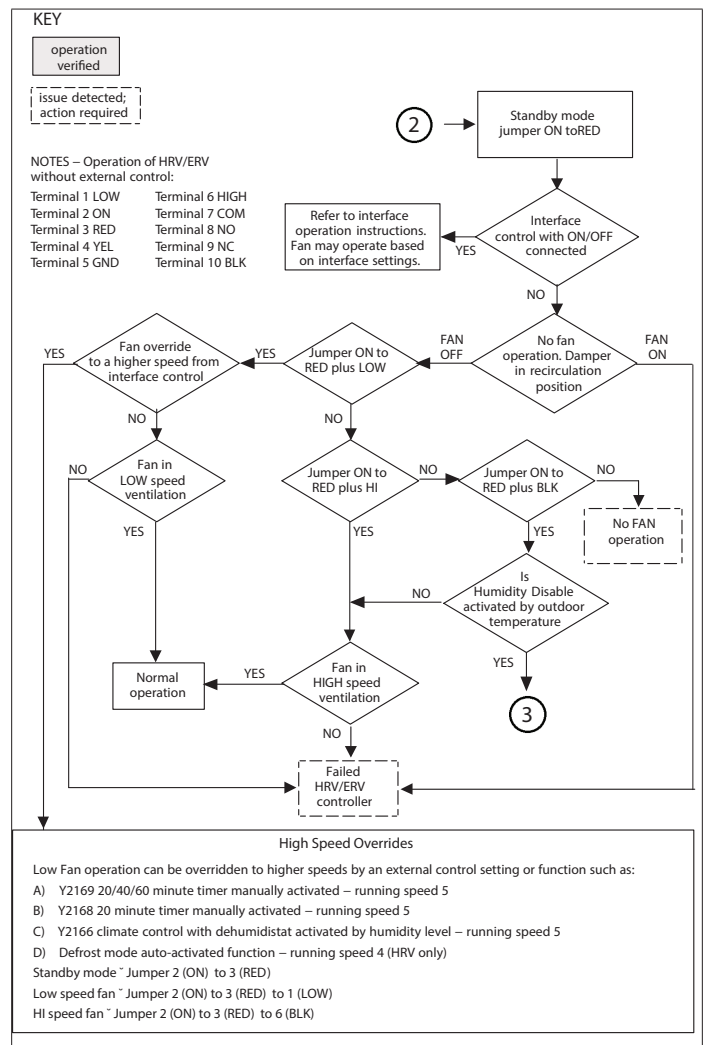


Figure 60. Terminal Block Operation

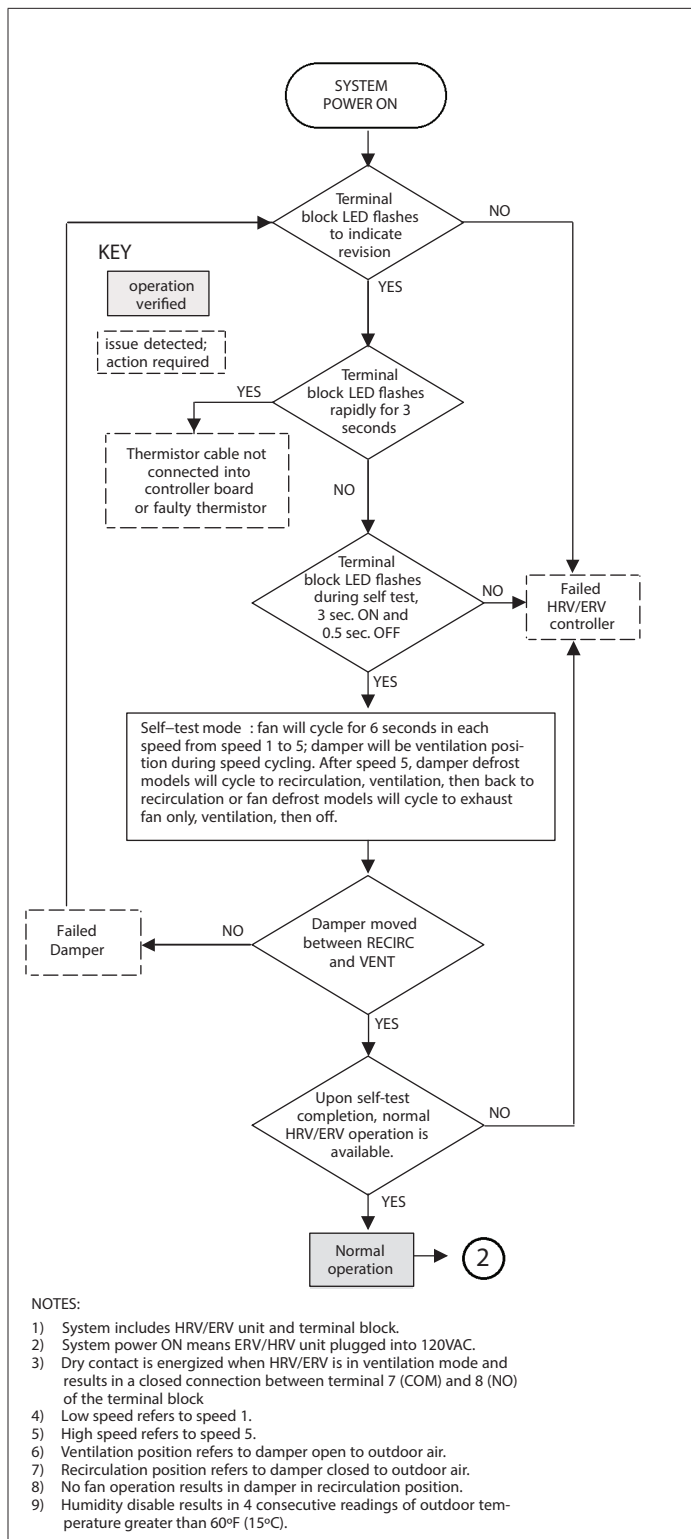


Figure 61. Self-Test Operational Flowchart

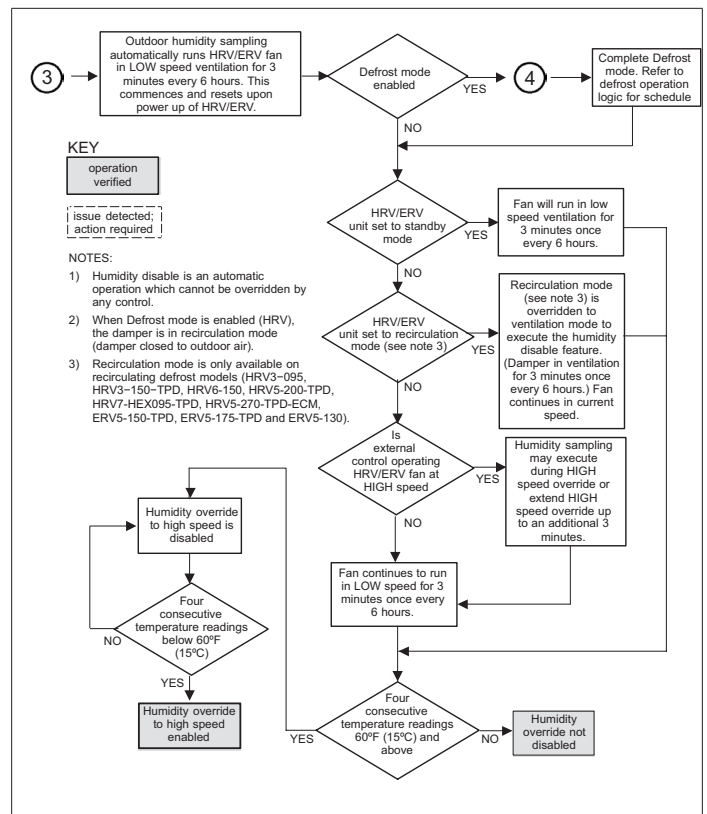


Figure 62. Dehumidistat Disable

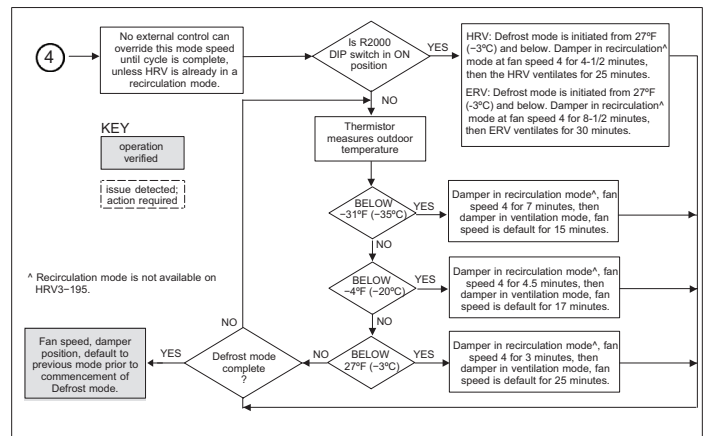


Figure 63. ERV/HRV Defrost Mode

Troubleshooting

Prior to proceeding with troubleshoot, make certain the unit passes the self-test. Refer to “Figure 61. Self-Test Operational Flowchart” on page 55“. 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 27. Troubleshooting

Symptom	Cause	Solution
Poor airflow(s)	<ul style="list-style-type: none"> • Mesh on outside hoods plugged • Filters plugged • Core obstructed • House grilles closed or blocked • Dampers closed (if installed) • Poor power supply at site • Ductwork is restricting ERV/HRV • Improper speed control setting • ERV/HRV airflow improperly balanced 	<ul style="list-style-type: none"> • Clean exterior hoods or vents • Remove and clean both filter and core • If unit is equipped with MERV 13 filters, replace every 3 months. • Check and open grilles • Open and adjust dampers • Have electrician check supply voltage at house • Check duct installation • Increase the speed of the ERV/HRV Have contractor balance the ERV/HRV.
Supply air feels cold	<ul style="list-style-type: none"> • Poor location of supply grilles • Airflow may irritate occupants • Outdoor temperature extremely cold 	<ul style="list-style-type: none"> • Locate the grilles high on the walls or under the baseboards • Install ceiling mounted diffuser or grilles so as not to direct airflow onto occupants (e.g. over a sofa). • Turn down the ERV/HRV supply speed. • A small duct heater (1kw) could be used to temper the supply air. • Placement of furniture or closed doors restricting movement of air in home; consider rearranging. • If supply air is ducted into furnace return, the furnace fan may need to run continuously to distribute ventilation air comfortably.
Dehumidistat is not operating	<ul style="list-style-type: none"> • Outdoor temperature is above 59°F (15°C) • Improper low-voltage connection • External low voltage is shorted out by a staple or nail • Check dehumidistat setting; it may be OFF 	<ul style="list-style-type: none"> • Dehumidistat is functioning normally (see “Figure 62. Dehumidistat Disable” on page 55). • Check that the correct terminals have been used, Check external wiring for a short. • Set the dehumidistat at the desired level.
Humidity levels are too high; condensation is appearing on windows	<ul style="list-style-type: none"> • Dehumidistat set too high • ERV/HRV unit is undersized to handle a hot tub, indoor pool, etc. (Occupant Lifestyle) • Moisture coming into the home from an non-vented or non-heated crawl space • Moisture remaining in washroom and/or kitchen areas • Condensation seems to form in the spring and fall seasons • ERV/HRV is set at too low a speed 	<ul style="list-style-type: none"> • Set dehumidistat at lower level. • Cover pool or hot tub when not in use. • Avoid hanging clothes to dry indoors, storing wood indoors, and venting dryer inside. • Vent crawl space and place a vapor barrier on the floor of the crawl space. • Ducts from washroom should be sized to remove moist air as effectively as possible; use of a bathroom fan for short periods will remove additional moisture. • On humid days, as seasons change, some condensation may appear but the home's air quality will remain high with some ERV/HRV use. Increase speed of ERV/HRV.
Humidity levels are too low	<ul style="list-style-type: none"> • Dehumidistat control set too low • Blower speed of ERV/HRV is too high • Occupant lifestyle issue • ERV/HRV airflows may be improperly balanced 	<ul style="list-style-type: none"> • Set dehumidistat at higher level. Decrease ERV/HRV blower speed. • Humidity may have to be added through use of humidifiers. • Have a contractor balance ERV/HRV airflows.
HRV units and/or ducts frosting up	<ul style="list-style-type: none"> • HRV air flows are improperly balanced • Malfunction of the HRV defrost system 	<p>NOTE: Minimal frost build-up is expected on cores before unit initiates defrost cycle functions.</p> <p>Have HVAC contractor balance the HRV airflows. 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"> • Incomplete vapor barrier around insulated duct • Hole or tear in outer duct covering 	<ul style="list-style-type: none"> • Tape and seal all joints. • Tape any holes or tears made in the outer duct covering. Ensure that the vapor barrier is complete sealed.
Water in the bottom of the ERV/HRV unit	<ul style="list-style-type: none"> • Drain pans plugged • Improper connection of ERV/HRV drain lines • ERV/HRV is not level • Drain lines obstructed • ERV/HRV heat exchange core is not properly installed 	<ul style="list-style-type: none"> • Ensure o-ring on drain nozzle sits properly. • Look for kinks in the drain line. • Check water drain connections. • Make sure water drains properly from pan(s).

Replacement Parts Summary

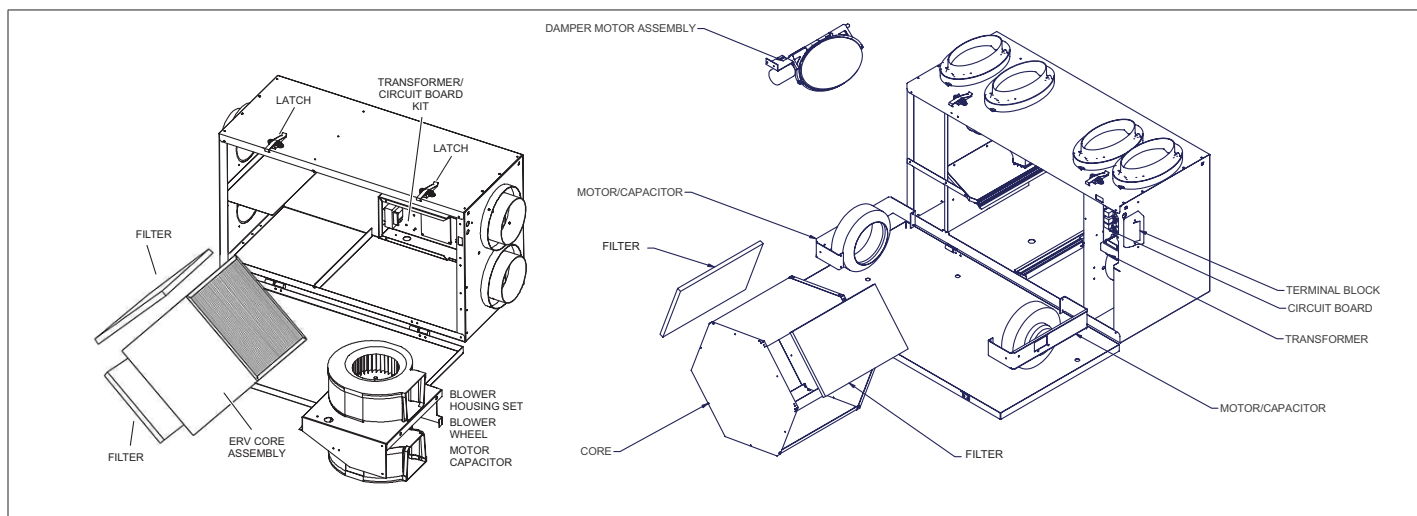


Figure 64. Parts Locations

Table 28. Replacement Parts Summary

Model Cat #	27C78		17Y62		27C79		17Y54		17Y55		17Y57		17Y53	17Y65	17Y58
Model	HRV5-150-TPD	HRV5-150-TPD-01	HRV5-200-TPD	HRV5-200-TPD-01	HRV7-HEX095-TPD	HRV7-HEX095-TPD-01	ERV5-130	ERV5-130-01	ERV5-150-TPD	ERV5-150-TPD-01	ERV5-175-TPD	ERV5-175-TPD-01	HRV5-270-TPD-ECM	HRV3-195	HRV6-150
Motor / Capacitor	27C76	27C75	Y5438	27A70	Y9953	27A72	Y9951	27A69	Y5438	27A70	Y5438	27A70	Y9952	Y5437	Y2145
Polyester Filter Set (2)	Y2162		Y5442		Y5442		Y9956		Y2162		Y2162		Y5442	Y2162	Y5442
MERV 13 Filter Set (4)	20A91		21V13		21V13		20A90		20A91		20A91		21V13	20A91	21V13
Blower Housing Set	---		---		---		---		---		---		---	Y2150	Y5439
Blower Wheel CW Red Dot	---		---		---		---		---		---		---	Y2152	Y2152
Blower Wheel CCW	---		---		---		---		---		---		---	Y2155	Y2154
Core Assembly	Y5441		Y5440		Y5440		Y9955		Y9954		10F87		Y5440	Y2159	Y5440
Transformer /Circuit Board Kit	Y2164		Y2164		Y2164		Y9958		Y9958		Y9958		Y9957	Y2164	Y2164
Latches / Keeper	11U82		11U82		11U82		11U82		11U82		11U82		11U82	11U82	11U82
Damper Motor Assembly	27A74		27A75		27A79		27A73		27A74		27A75		27A75	27A78	27A80
Damper Motor (Motor only)	Y6448		Y6448		Y6448		Y6448		Y6448		Y6448		Y6448	Y6448	Y6448

BLOWER ASSEMBLY REMOVAL

⚠ 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 ERV/HRV 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.

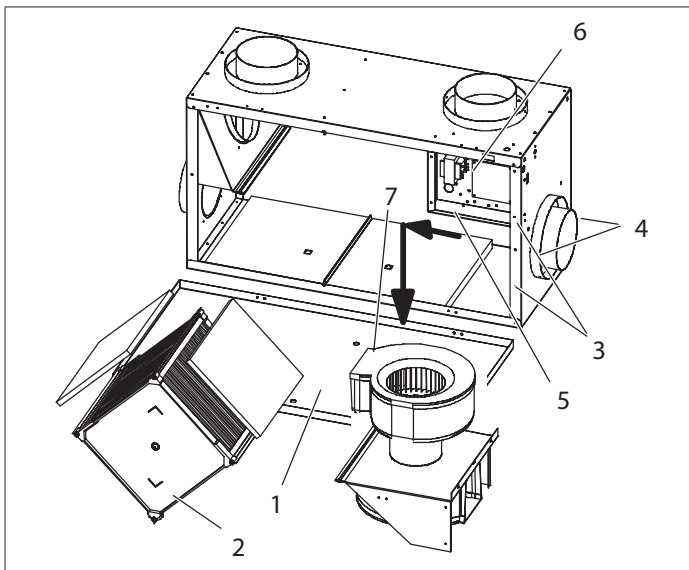


Figure 65. Removing Blower Assembly

⚠ IMPORTANT

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

BLOWER MOTOR DISASSEMBLY

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.

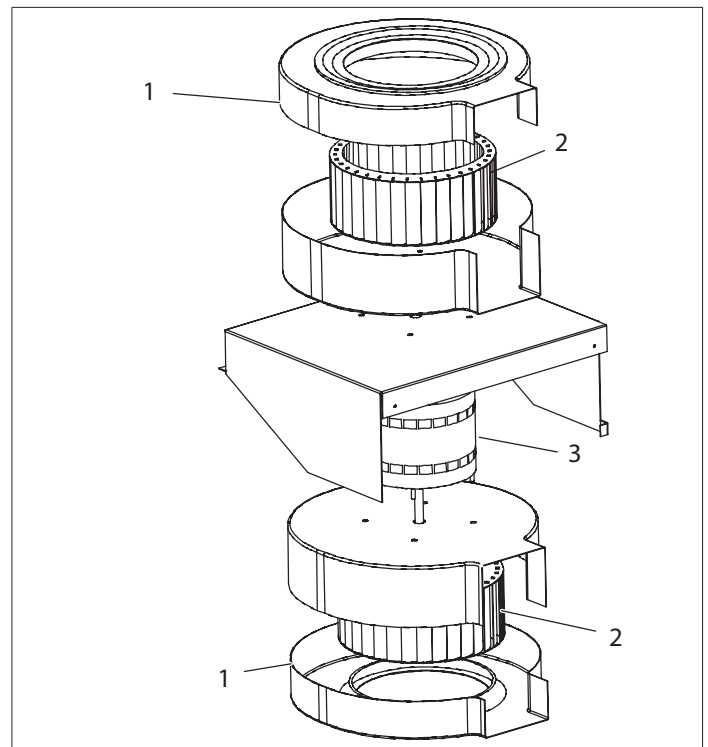


Figure 66. Replacing Motor

BLOWER MOTOR REASSEMBLY

Follow the above steps in reverse order.

BLOWER ASSEMBLY INSTALLATION

Follow the steps in reverse order from the Blower Assembly Removal section.

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. If your unit is equipped with MERV13 filters, replace every 3 months. Do not wash MERV13 filters but wash the polyester filter. The standard filters equipped with the ERV/HRV 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 ERV or HRV core.
DO NOT use dishwasher to clean the ERV or HRV 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 ERV/HRV 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 ERV/HRV 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 ERV/HRV 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 - ERV/HRV Ventilators

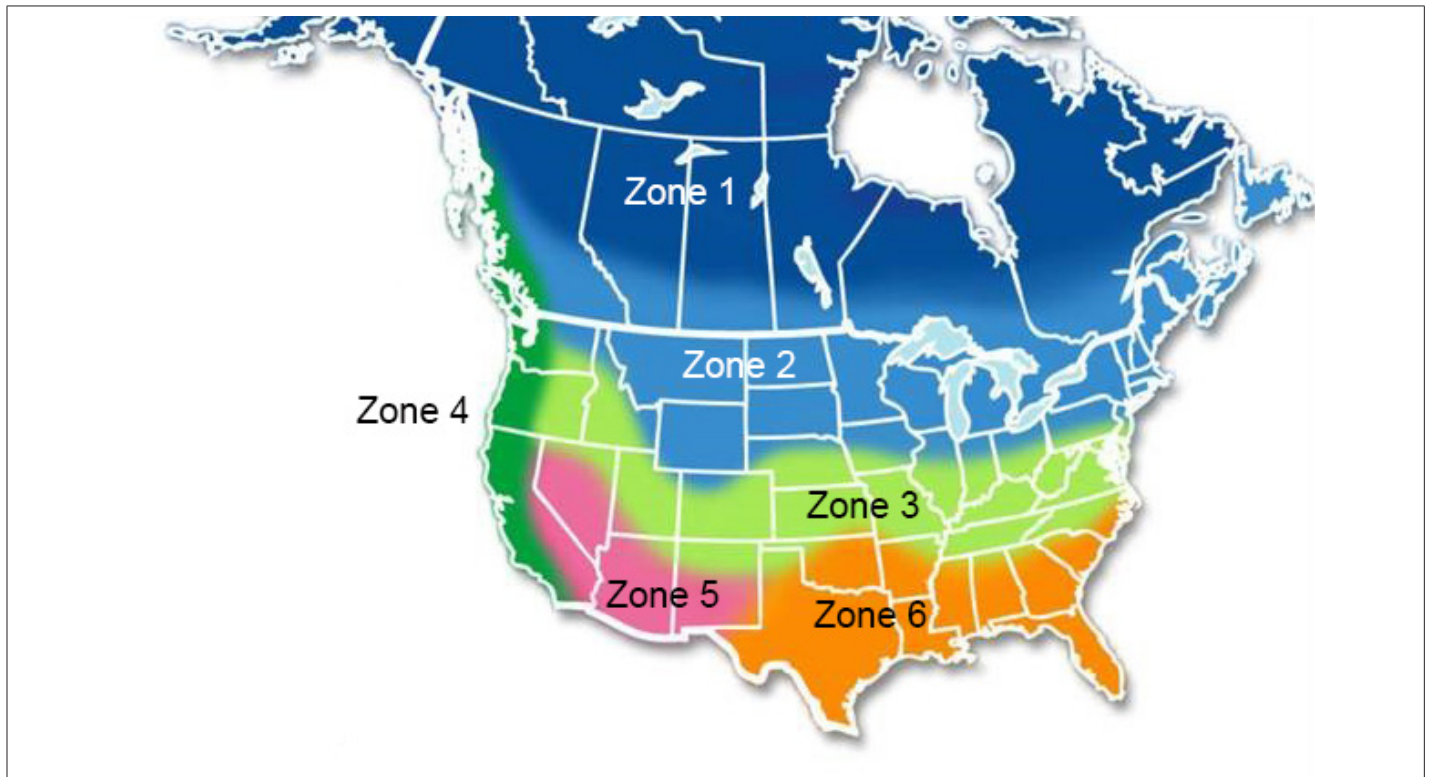








Figure 67. Application Map - ERV/HRV Ventilators

Table 29. Application Map Descriptions

	ZONE 1	True North - Cold Winter and Dry Summer HRV	HRV is best for a very cold and prolonged winter.
	ZONE 2	US - Canada Border - Cold Winter and Hot Humid Summer - HRV or ERV	HRV is best for a cold or prolonged winter. ERV will help reduce the AC load in the summer by transferring moisture.
	ZONE 3	Central US - Moderate Climate - HRV or ERV	HRV and ERV will work equally well. ERV will help reduce the AC load in the summer by transferring moisture.
	ZONE 4	Marine Climate - HRV or ERV	Humidity and temperature are moderated by HRV or ERV.
	ZONE 5	Arid Climate - Hot and Dry - HRV	HRV will transfer energy summer and winter. With little moisture to transfer an ERV is not needed.
	ZONE 6	Gulf Region - Hot and Humid Climate - ERV	ERV is recommended. Primary benefit is transferring energy and moisture throughout summer and winter.

NOTE: All HRV and ERV models have an integrated defrost system for cold climates.

ERV is recommended in regions where high outdoor humidity causes air conditioning operation for dehumidification more frequently than heating system operation.

** Certified by the Home Ventilating Institute (HVI) according to test procedures developed by HVI members and based on internationally recognized standards. For performance ratings at other conditions not shown, please visit the HVI website.