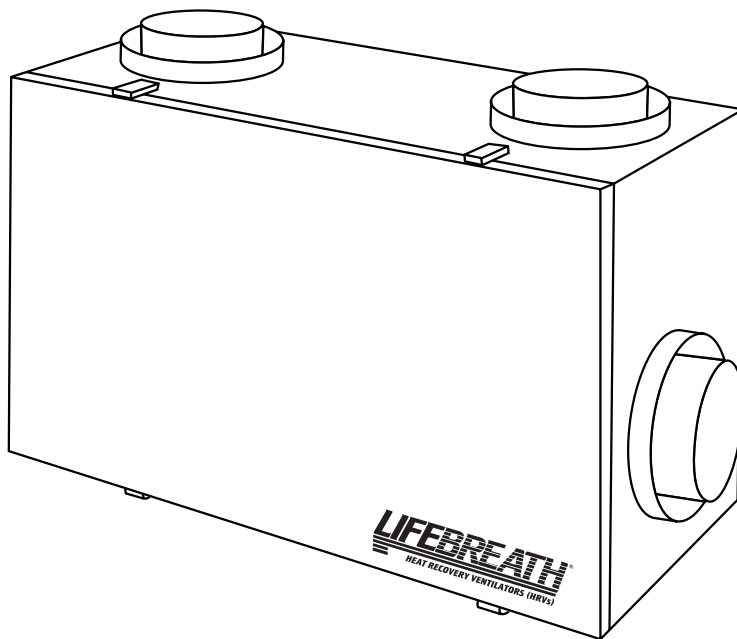


LIFEBREATH[®]

HEAT RECOVERY VENTILATORS (HRVs)

Installation Instructions for Heat Recovery Ventilators with 2 Speed RNC Electronics

RNC Series



Models

RNC95

RNC155

RNC200

RNC10

RNC20

RNC120D

RNC5-TPD

Residential Heat Recovery Ventilators (HRV)

**Manufactured with
2 Speed RNC Electronics**



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Introduction

The Lifebreath HRV (Heat Recovery Ventilator) is designed to introduce fresh outdoor air into a building while exhausting an equal amount of stale indoor air.

During the heating season, heat energy from the stale exhausting air is transferred to the fresh, incoming air via Lifebreath's patented aluminum core.

During the air conditioning season, the HRV will help cool the incoming fresh air with the cooler stale exhausting air.

RNC Electronics

RNC electronics offers standard 2-speed operation of low/high. There is also an installer selectable 2-speed operation of medium low/high (refer to "Increasing Low Speed to Medium Low" in this manual).

The RNC circuit board also includes an interlock relay which is used to Interlock the HRV to an Air Handler/Furnace. Refer to "Interlocking HRV Operation to an Air Handler/Furnace Blower" in this manual.

We recommend using one of the Optional Main Controls (refer to "Remote Control Devices" in this manual) for normal operation.

⚠ CAUTION

Before installation, careful consideration must be given to how this system will operate if connected to any other piece of mechanical equipment, i.e. a forced air furnace or air handler, operating at a higher static. After installation, the compatibility of the two pieces of equipment must be confirmed by measuring the airflows of the HRV (Heat Recovery Ventilator) by using the balancing procedure found in this manual. NEVER install a ventilator in a situation where its normal operation, lack of operation or partial failure may result in the backdrafting or improper functioning of vented combustion equipment.

NOTE

Due to ongoing research and product development, specifications, ratings and dimensions are subject to change without notice.

IMPORTANT
Please read this manual before installing the HRV (Heat Recovery Ventilator).

Leave this Manual for the Homeowner

TO BE COMPLETED BY CONTRACTOR AFTER INSTALLATION

Installing Contractor _____ Telephone / Contact _____

Serial Number _____ Installation Date _____

Model _____



THERMALLY CONDUCTIVE, PATENTED ALUMINUM CORE

The cross-flow heat recovery core transfers heat between the two airstreams. It is easily removed for cleaning or service.

MOTORS AND BLOWERS

Each air stream has one centrifugal blower driven by a common PSC motor. 2 speed fan operation.

FILTERS

Washable air filters in exhaust and supply air streams.

MOUNTING THE HRV

Four threaded inserts at corners of the cabinet designed to accept PVC reinforced polyester straps that are supplied with the unit.

DEFROST

Recirculating defrost system.

CASE

Twenty gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated to prevent exterior condensation.

Drain connections 2 - 1/2" (12 mm) OD.

WEIGHT 52 lbs. (23.6 kg) **Shipping Weight** 56 lbs. (25.4 kg)

CONTROLS - HRV System Control

HRV defaults to LOW SPEED when plugged in. HIGH SPEED option is accessible by connecting remote controls to designated terminals inside electrical box of HRV.

Standard LOW SPEED SETTING can be increased to medium low.

Off (Standby)/Low or OFF/HIGH speed operation is also available.

OPTIONAL MAIN CONTROLS (only one main control can be installed on the system)

- 99-116 **Dehumidistat Ventilation Control** - Dehumidistat Dial, ON/OFF Switch and LOW/HIGH Switch (3 wire) 20 gauge wire (min.) 100' length (max.)
- 99-2040 **20/40 ON/OFF Dehumidistat** - Dehumidistat Dial, ON/OFF Switch and 20/40 Switch. The 20/40 Switch will toggle from continuous low speed ventilation to intermittent low speed ventilation of 20 minutes fan ON and 40 minutes fan OFF. (4 wire) 20 gauge wire (min.) 100' length (max.)
- 99-RECIRC **Recirculation Control** - Dehumidistat Dial, ON/OFF Switch and Recirculation Switch. The Recirculation Switch will toggle from continuous low speed ventilation to continuous low speed recirculation. (4 wire) 20 gauge wire (min.) 100' length (max.)
- 99-130 **Remote Dehumidistat** - Dehumidistat Dial only. (2 wire) 20 gauge wire (min.) 100' length (max.)

OPTIONAL TIMERS

- 99-132 **20 Minute Fan Timer** - initiates high speed ventilation for 20 minutes. (3 wire) 20 gauge wire (min.) 100' length
- 99-104 **Digital Electronic Timer**- initiates high speed ventilation for 20, 40 or 60 minutes, (3 wire) 20 gauge wire (min.) 100' length
- 99-101 **60 Minute Crank Timer** - initiates high speed ventilation for up to 60 minutes, (2 wire) 20 gauge wire (min.) 100' length (max.)

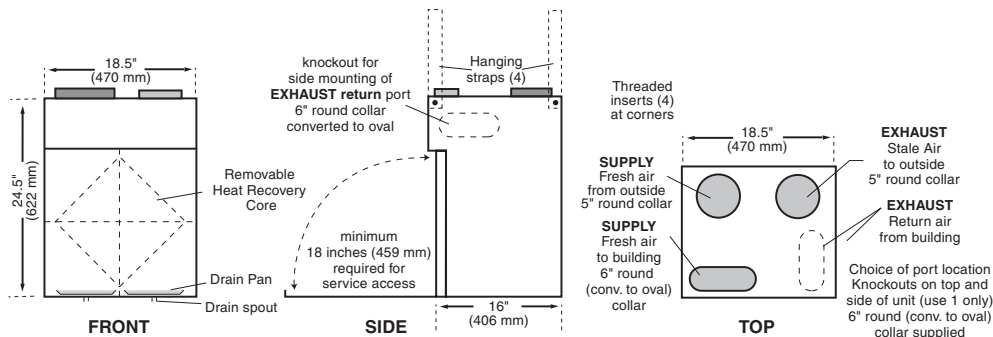
WARRANTY

Units carry a lifetime warranty on the heat recovery core and a 5 year replacement parts warranty.

DIMENSIONS

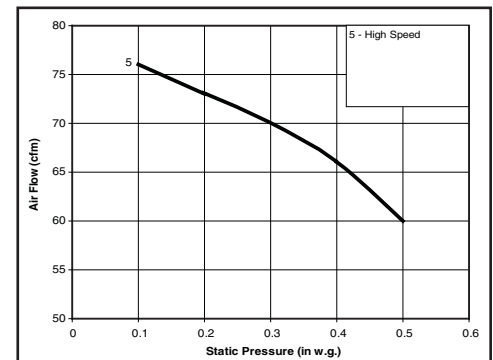
RNC95

inches (mm)



Performance (HVI certified) Net supply air flow in cfm (L/s) against external static pressure		
E.S.P (external static pressure)	[cfm (L/s)]	
@ 0.1" (25 Pa)	76	(36)
@ 0.2" (50 Pa)	73	(34)
@ 0.3" (75 Pa)	70	(33)
@ 0.4" (100 Pa)	66	(31)
@ 0.5" (125 Pa)	60	(29)
Max. Temperature Recovery	88%	
Sensible Effectiveness		
@ 60 cfm (28 L/s)	32°F (0°C)	88%
*Sensible Efficiency		
@ 60 cfm (28 L/s)	32°F (0°C)	75%
*Sensible Efficiency		
@ 61 cfm (29 L/s)	-13°F (-25°C)	68%
VAC @ 60HZ	120	
WATTS / Low speed.	60	
WATTS / High speed	150	
Amp rating	0.9	

*Sensible Efficiency – thermal **Latent Efficiency – moisture
Note: Effectiveness - based on temp. differential between the 2 airstreams
Efficiency - takes into account all power inputs



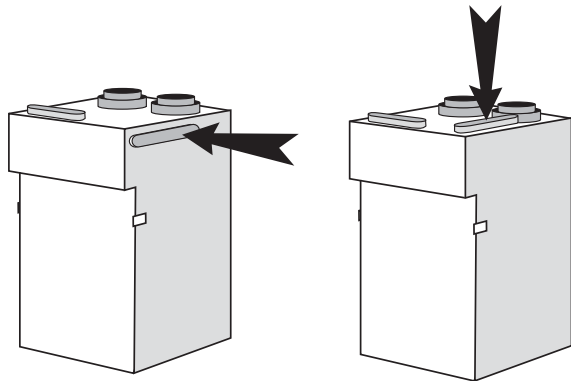
All units conform to CSA and UL standards

Date: _____
 Tag: _____ Qty: _____
 Project: _____
 Engineer: _____

Contractor: _____
 Supplier: _____
 Quote#: _____
 Submitted by: _____

RNC95 Specifications

The RNC95 HRV (Heat Recovery Ventilator) has been designed to allow the installer to choose between two possible positions on the cabinet for the Stale Air Exhaust (from building) port. Illustrations in this manual show standard (side mounted) port location. The same specifications apply to both RNC95 setups, regardless of which port position is selected.



SIDE MOUNTED PORT
standard location

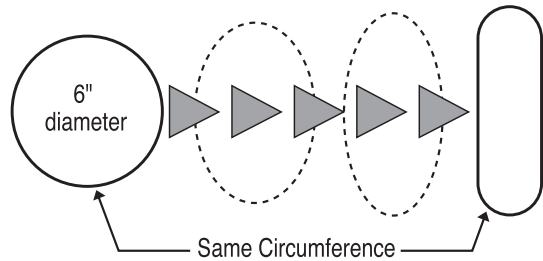
TOP MOUNTED PORT
alternate location

**Variable Port Location / Installation
(Model RNC95 only)**

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

In order to make the RNC95 as space efficient as possible, the INDOOR supply and return ports are converted from round to oval shape. Overall size of the port remains the same. Simply bend a standard duct fitting to the correct shape, and attach to the oval port using the same method as for a round port.

Round port bent to oval



RNC95 Air Flow

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

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



THERMALLY CONDUCTIVE, PATENTED ALUMINUM CORE

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MOTORS AND BLOWERS

Each air stream has one centrifugal blower driven by a common PSC motor. 2 speed fan operation.

FILTERS

Washable air filters in exhaust and supply air streams.

MOUNTING THE HRV

Four threaded inserts at corners of case designed to accept four reinforced polyester straps that are supplied with the unit.

DEFROST

Recirculating damper defrost system.

CASE

Twenty gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated to prevent exterior condensation. Drain connections two - 1/2" (12mm) OD.

WEIGHT 71 lbs. (32.5 kg) **SHIPPING WEIGHT** 73 lbs. (33.5 kg)

CONTROLS - HRV System Control

HRV defaults to LOW SPEED when plugged in. HIGH SPEED option is accessible by connecting remote controls to designated terminals inside electrical box of HRV.

Standard LOW SPEED SETTING can be increased to medium low.

Off (Standby)/Low or OFF/HIGH speed operation is also available.

OPTIONAL MAIN CONTROLS (only one main control can be installed on the system)

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- 99-130 **Remote Dehumidistat** - Dehumidistat Dial only. (2 wire) 20 gauge wire (min.) 100' length (max.)

OPTIONAL TIMERS

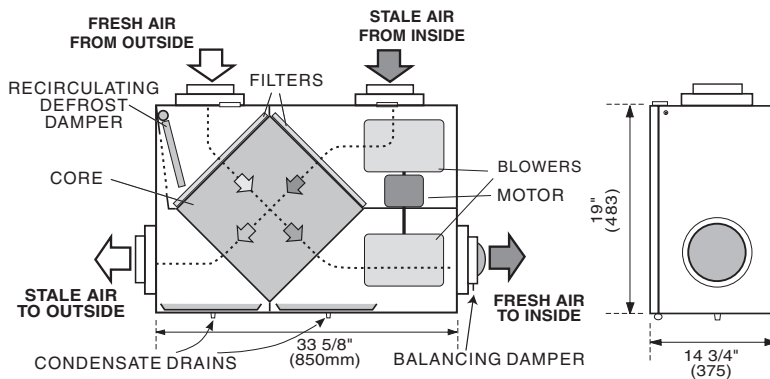
- 99-132 **20 Minute Fan Timer** - initiates high speed ventilation for 20 minutes. (3 wire) 20 gauge wire (min.) 100' length
- 99-104 **Digital Electronic Timer**- initiates high speed ventilation for 20, 40 or 60 minutes, (3 wire) 20 gauge wire (min.) 100' length
- 99-101 **60 Minute Crank Timer** - initiates high speed ventilation for up to 60 minutes, (2 wire) 20 gauge wire (min.) 100' length (max.)

WARRANTY

Units carry a lifetime warranty on the heat recovery core and a 5 year replacement parts warranty.

DIMENSIONS

RNC155
inches (mm)

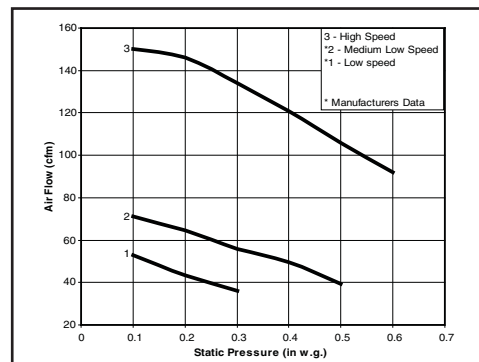


***NOTE:** Front clearance of 25 inches (635 mm) is recommended for servicing unit.

***All Duct Connections** 6" (150mm)

Performance (HVI certified) <i>Net supply air flow in cfm (L/s) against external static pressure</i>	
E.S.P (external static pressure)	[cfm (L/s)]
@ 0.1" (25 Pa)	150 (71)
@ 0.2" (50 Pa)	146 (69)
@ 0.3" (75 Pa)	134 (63)
@ 0.4" (100 Pa)	121 (57)
@ 0.5" (125 Pa)	106 (50)
@ 0.6" (150 Pa)	92 (43)
Max. Temperature Recovery	78%
Sensible Effectiveness	
@ 65 cfm (31 L/s) 32°F (0°C)	76%
*Sensible Efficiency	
@ 65 cfm (31 L/s) 32°F (0°C)	64%
*Sensible Efficiency	
@ 68 cfm (32 L/s) -13°F (-25°C)	66%
VAC @ 60HZ	120
WATTS / Low speed.	49
WATTS / High speed	120
Amp rating	1.4

**Sensible Efficiency – thermal **Latent Efficiency – moisture
Note: Effectiveness - based on temp. differential between the 2 airstreams
Efficiency – takes into account all power inputs*



CSA US HVI CERTIFIED A2000 HRAI
All units conform to CSA and UL standards

Date: _____
 Tag: _____ Qty: _____
 Project: _____
 Engineer: _____

Contractor: _____
 Supplier: _____
 Quote#: _____
 Submitted by: _____



THERMALLY CONDUCTIVE, PATENTED ALUMINUM CORE

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MOTORS AND BLOWERS

Each air stream has one centrifugal blower driven by a common PSC motor. 2 speed fan operation.

FILTERS

Washable air filters in exhaust and supply air streams.

MOUNTING THE HRV

Four threaded inserts at corners of case designed to accept four reinforced polyester straps that are supplied with the unit.

DEFROST

Recirculating damper defrost system.

CASE

Twenty gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated to prevent exterior condensation. Drain connections two - 1/2" (12mm) OD.

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99-130 **Remote Dehumidistat** - Dehumidistat Dial only. (2 wire) 20 gauge wire (min.) 100' length (max.)

OPTIONAL TIMERS

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99-104 **Digital Electronic Timer**- initiates high speed ventilation for 20, 40 or 60 minutes, (3 wire) 20 gauge wire (min.) 100' length

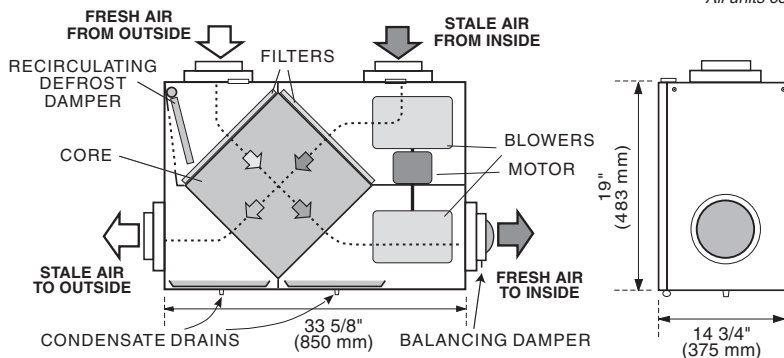
99-101 **60 Minute Crank Timer** - initiates high speed ventilation for up to 60 minutes, (2 wire) 20 gauge wire (min.) 100' length (max.)

WARRANTY

Units carry a lifetime warranty on the heat recovery core and a 5 year replacement parts warranty.

Dimensions RNC200

inches (mm)

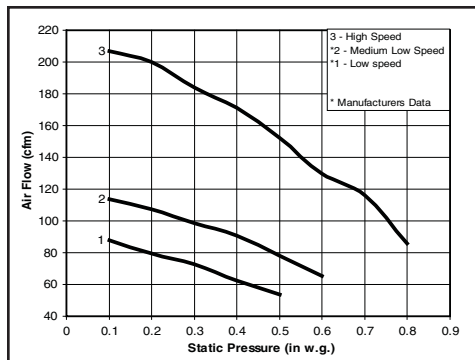


***NOTE:** Front clearance of 25 inches (635 mm) is recommended for servicing unit.

***All Duct Connections 6" (150 mm)**

Performance (HVI certified) Net supply air flow in cfm (L/s) against external static pressure		
E.S.P (external static pressure)		[cfm (L/s)]
@ 0.1" (25 Pa)		207 (97)
@ 0.2" (50 Pa)		200 (94)
@ 0.3" (75 Pa)		184 (87)
@ 0.4" (100 Pa)		171 (80)
@ 0.5" (125 Pa)		152 (71)
@ 0.6" (150 Pa)		130 (61)
@ 0.7" (175 Pa)		116 (55)
@ 0.8" (200 Pa)		86 (40)
Max. Temperature Recovery		74%
Sensible Effectiveness		
@ 66 cfm (31 L/s)	32°F (0°C)	74%
*Sensible Efficiency		
@ 66 cfm (31 L/s)	32°F (0°C)	64%
*Sensible Efficiency		
@ 109 cfm (51 L/s)	-13°F (-25°C)	62%
VAC @ 60HZ		120
WATTS / Low speed.		87
WATTS / High speed		164
Amp rating		1.4

**Sensible Efficiency – thermal **Latent Efficiency – moisture
Note: Effectiveness - based on temp. differential between the 2 airstreams
Efficiency - takes into account all power inputs*



All units conform to CSA and UL standards

Date: _____
 Tag: _____ Qty: _____
 Project: _____
 Engineer: _____

Contractor: _____
 Supplier: _____
 Quote#: _____
 Submitted by: _____



THERMALLY CONDUCTIVE, PATENTED ALUMINUM CORE

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MOTORS AND BLOWERS

Each air stream has one centrifugal blower driven by a common PSC motor. 2 speed fan operation.

FILTERS

Washable air filters in exhaust and supply air streams.

MOUNTING THE HRV

Four threaded inserts at corners of case designed to accept four PVC reinforced polyester straps that are supplied with the unit.

DEFROST

Damper defrost system; defrosts automatically as the outdoor temperature falls.

CASE

Twenty gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated to prevent exterior condensation. Drain connections two - 1/2" (12mm) OD.

WEIGHT 63 lbs. (28.7 kg) **SHIPPING WEIGHT** 67 lbs. (30.4 kg)

CONTROLS - HRV System Control

HRV defaults to LOW SPEED when plugged in. HIGH SPEED option is accessible by connecting remote controls to designated terminals inside electrical box of HRV.

Standard LOW SPEED SETTING can be increased to medium low.

Off (Standby)/Low or OFF/HIGH speed operation is also available.

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OPTIONAL TIMERS

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99-104 **Digital Electronic Timer**- initiates high speed ventilation for 20, 40 or 60 minutes, (3 wire) 20 gauge wire (min.) 100' length

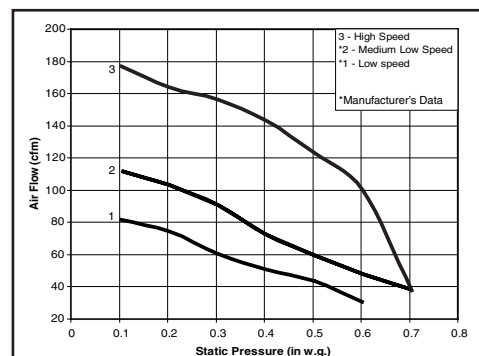
99-101 **60 Minute Crank Timer** - initiates high speed ventilation for up to 60 minutes, (2 wire) 20 gauge wire (min.) 100' length (max.)

WARRANTY

Units carry a lifetime warranty on the heat recovery core and a 5 year replacement parts warranty.

Performance (HVI certified) Net supply air flow in cfm (L/s) against external static pressure		
E.S.P (external static pressure)	[cfm (L/s)]	
@ 0.1" (25 Pa)	177 (83)	
@ 0.2" (50 Pa)	164 (77)	
@ 0.3" (75 Pa)	156 (73)	
@ 0.4" (100 Pa)	143 (67)	
@ 0.5" (125 Pa)	123 (58)	
@ 0.6" (150 Pa)	100 (47)	
@ 0.7" (175 Pa)	38 (18)	
Max. Temperature Recovery	78%	
Sensible Effectiveness		
@ 67 cfm (32 L/s)	32°F (0°C)	76%
*Sensible Efficiency @ 67 cfm (32 L/s)	32°F (0°C)	66%
*Sensible Efficiency @ 68 cfm (32 L/s)	-13°F (-25°C)	60%
VAC @ 60HZ	120	
WATTS / Low speed.	63	
WATTS / High speed	173	
Amp rating	1.4	

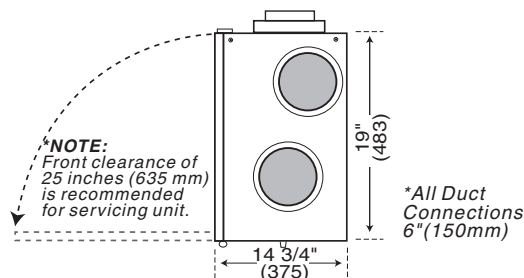
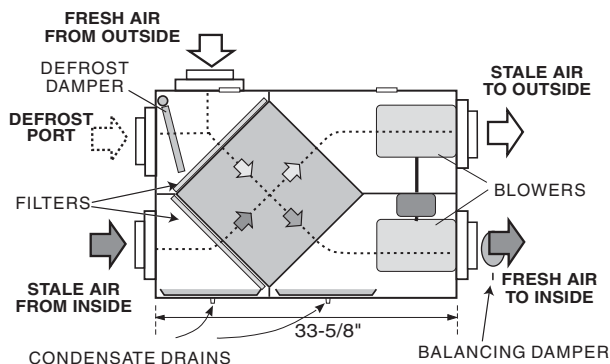
*Sensible Efficiency - thermal **Latent Efficiency - moisture
Note: Effectiveness - based on temp. differential between the 2 airstreams
Efficiency - takes into account all power inputs



Dimensions

RNC10

inches (mm)



Date: _____
 Tag: _____ Qty: _____
 Project: _____
 Engineer: _____

Contractor: _____
 Supplier: _____
 Quote#: _____
 Submitted by: _____



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OPTIONAL TIMERS

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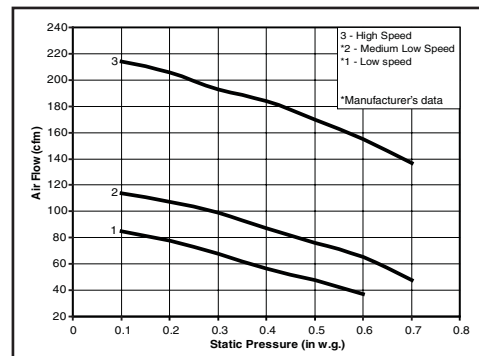
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WARRANTY

Units carry a lifetime warranty on the heat recovery core and a 5 year replacement parts warranty.

Performance (HVI certified)	
Net supply air flow in cfm (L/s) against external static pressure	
E.S.P (external static pressure)	[cfm (L/s)]
@ 0.1" (25 Pa)	214 (101)
@ 0.2" (50 Pa)	206 (97)
@ 0.3" (75 Pa)	193 (91)
@ 0.4" (100 Pa)	184 (87)
@ 0.5" (125 Pa)	170 (80)
@ 0.6" (150 Pa)	155 (73)
@ 0.7" (175 Pa)	137 (65)
Max. Temperature Recovery	69%
Sensible Effectiveness	
@ 119 cfm (56 L/s)	32°F (0°C) 67%
*Sensible Efficiency @ 119 cfm (56 L/s)	32°F (0°C) 60%
*Sensible Efficiency @ 117 cfm (55 L/s)	-13°F (-25°C) 60%
VAC @ 60HZ	120
WATTS / Low speed.	70
WATTS / High speed	182
Amp rating	1.4

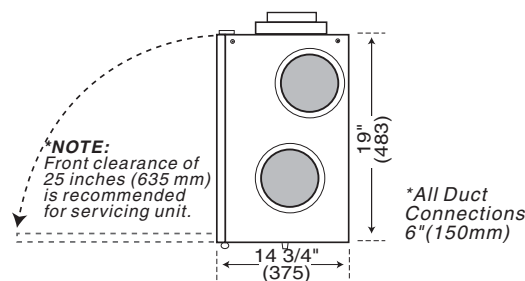
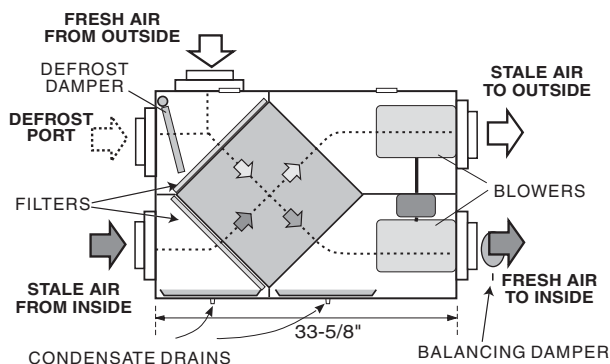
*Sensible Efficiency - thermal **Latent Efficiency - moisture
 Note: Effectiveness - based on temp. differential between the 2 airstreams
 Efficiency - takes into account all power inputs



CS US HVI CERTIFIED R2000 HRAI
 All units conform to CSA and UL standards

Dimensions RNC20

inches (mm)



Date: _____
 Tag: _____ Qty: _____
 Project: _____
 Engineer: _____

Contractor: _____
 Supplier: _____
 Quote#: _____
 Submitted by: _____



THERMALLY CONDUCTIVE, PATENTED ALUMINUM CORE

The cross-flow heat recovery core transfers heat between the two airstreams. It is easily removed for cleaning or service.

MOTORS AND BLOWERS

Each air stream has an independent motorized impeller. 2 speed fan operation.

FILTERS

Washable air filters in exhaust and supply air streams.

DEFROST

Recirculating damper defrost system.

CASE

Twenty gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated to prevent exterior condensation. Drain connections 1/2" (12 mm) OD.

MOUNTING THE HRV

Four threaded inserts at corners of case designed to accept four reinforced polyester straps that are supplied with the unit.

DUCT CONNECTIONS

4 - 5" (127 mm) duct connections.

WEIGHT 61 lbs. (28 kg) **SHIPPING WEIGHT** 64 lbs. (29 kg)

CONTROLS- HRV System Control

HRV defaults to user selected speed from switch on top of cabinet when plugged in. HIGH SPEED option is accessible by connecting remote controls to designated terminals inside electrical box of HRV. OFF(Standby)/LOW or OFF/HIGH speed operation is also available.

OPTIONAL MAIN CONTROLS (only one main control can be installed on the system)

- 99-116 **Dehumidistat Ventilation Control** - Dehumidistat Dial, ON/OFF Switch and LOW/HIGH Switch (3 wire) 20 gauge wire (min.) 100' length (max.)
- 99-2040 **20/40 ON/OFF Dehumidistat** - Dehumidistat Dial, ON/OFF Switch and 20/40 Switch. The 20/40 Switch will toggle from continuous low speed ventilation to intermittent low speed ventilation of 20 minutes fan ON and 40 minutes fan OFF. (4 wire) 20 gauge wire (min.) 100' length (max.)
- 99-RECIRC **Recirculation Control** - Dehumidistat Dial, ON/OFF Switch and Recirculation Switch. The Recirculation Switch will toggle from continuous low speed ventilation to continuous low speed recirculation. (4 wire) 20 gauge wire (min.) 100' length (max.)
- 99-130 **Remote Dehumidistat** - Dehumidistat Dial only. (2 wire) 20 gauge wire (min.) 100' length (max.)

OPTIONAL TIMERS

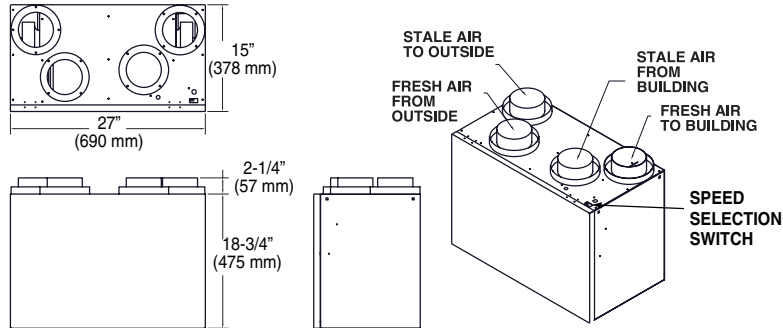
- 99-132 **20 Minute Fan Timer** - initiates high speed ventilation for 20 minutes. (3 wire) 20 gauge wire (min.) 100' length
- 99-104 **Digital Electronic Timer**- initiates high speed ventilation for 20, 40 or 60 minutes, (3 wire) 20 gauge wire (min.) 100' length
- 99-101 **60 Minute Crank Timer** - initiates high speed ventilation for up to 60 minutes, (2 wire) 20 gauge wire (min.) 100' length (max.)

WARRANTY

Units carry a lifetime warranty on the heat recovery core and a 5 year replacement parts warranty.

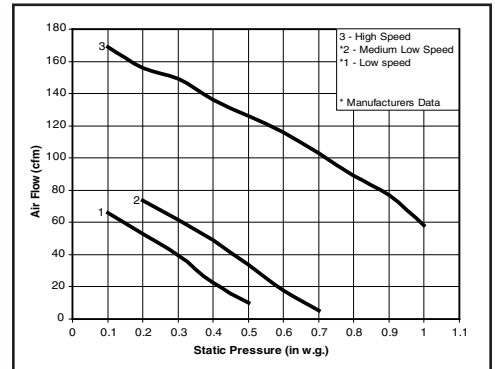
Dimensions RNC5-TPD

inches (mm)



Performance (H.V.I. certified)		
Net supply air flow in cfm (L/s) against external static pressure		
E.S.P (external static pressure)		[cfm (L/s)]
@ 0.1" (25 Pa)		169 (80)
@ 0.2" (50 Pa)		156 (73)
@ 0.3" (75 Pa)		149 (70)
@ 0.4" (100 Pa)		136 (64)
@ 0.5" (125 Pa)		126 (59)
@ 0.6" (150 Pa)		116 (54)
@ 0.7" (175 Pa)		103 (48)
@ 0.8" (200 Pa)		89 (42)
@ 0.9" (225 Pa)		77 (36)
@ 1.0" (250 Pa)		58 (27)
Max. Temperature Recovery		78%
Sensible Effectiveness		
@ 66 cfm (31 L/s)	32°F (0°C)	74%
*Sensible Efficiency		
@ 66 cfm (31 L/s)	32°F (0°C)	61%
*Sensible Efficiency		
@ 76 cfm (36 L/s)	-13°F (-25°C)	63%
VAC @ 60HZ		120
WATTS / Low speed.		69
WATTS / High speed		147
Amp rating		1.7

*Sensible Efficiency - thermal **Latent Efficiency - moisture
 Note: Effectiveness - based on temp. differential between the 2 airstreams
 Efficiency - takes into account all power inputs



All units conform to CSA and UL standards

Date: _____
 Tag: _____ Qty: _____
 Project: _____
 Engineer: _____

Contractor: _____
 Supplier: _____
 Quote#: _____
 Submitted by: _____



THERMALLY CONDUCTIVE, PATENTED ALUMINUM CORE

The cross-flow heat recovery core transfers heat between the two airstreams. It is easily removed for cleaning or service.

MOTORS AND BLOWERS

Each air stream has an independent motorized impeller. 2 speed fan operation.

FILTERS

Washable air filters in exhaust and supply air streams.

MOUNTING THE HRV

Four threaded inserts at corners of case designed to accept four reinforced polyester straps that are supplied with the unit.

DEFROST

Recirculating damper defrost system.

CASE

Twenty gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated to prevent exterior condensation. Drain connections- 1/2" (12 mm) OD.

DUCT CONNECTIONS

5" duct connections.

WEIGHT 42 lbs. (19 kg.) **SHIPPING WEIGHT** 45 lbs. (20.5 kg.)

CONTROLS - HRV System Control

HRV defaults to LOW SPEED when plugged in. HIGH SPEED option is accessible by connecting remote controls to designated terminals inside electrical box of HRV.

Standard LOW SPEED SETTING can be increased to medium low.

Off (Standby)/Low or OFF/HIGH speed operation is also available.

OPTIONAL MAIN CONTROLS (only one main control can be installed on the system)

99-116 **Dehumidistat Ventilation Control** - Dehumidistat Dial, ON/OFF Switch and LOW/HIGH Switch (3 wire) 20 gauge wire (min.) 100' length (max.)

99-2040 **20/40 ON/OFF Dehumidistat** - Dehumidistat Dial, ON/OFF Switch and 20/40 Switch. The 20/40 Switch will toggle from continuous low speed ventilation to intermittent low speed ventilation of 20 minutes fan ON and 40 minutes fan OFF. (4 wire) 20 gauge wire (min.) 100' length (max.)

99-RECIRC **Recirculation Control** - Dehumidistat Dial, ON/OFF Switch and Recirculation Switch. The Recirculation Switch will toggle from continuous low speed ventilation to continuous low speed recirculation. (4 wire) 20 gauge wire (min.) 100' length (max.)

99-130 **Remote Dehumidistat** - Dehumidistat Dial only. (2 wire) 20 gauge wire (min.) 100' length (max.)

OPTIONAL TIMERS

99-132 **20 Minute Fan Timer** - initiates high speed ventilation for 20 minutes. (3 wire) 20 gauge wire (min.) 100' length

99-104 **Digital Electronic Timer**- initiates high speed ventilation for 20, 40 or 60 minutes, (3 wire) 20 gauge wire (min.) 100' length

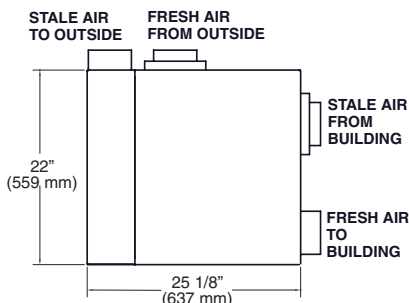
99-101 **60 Minute Crank Timer** - initiates high speed ventilation for up to 60 minutes, (2 wire) 20 gauge wire (min.) 100' length (max.)

WARRANTY

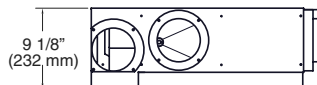
Units carry a lifetime warranty on the heat recovery core and a 5 year replacement parts warranty.

Dimensions RNC120D

inches (mm)



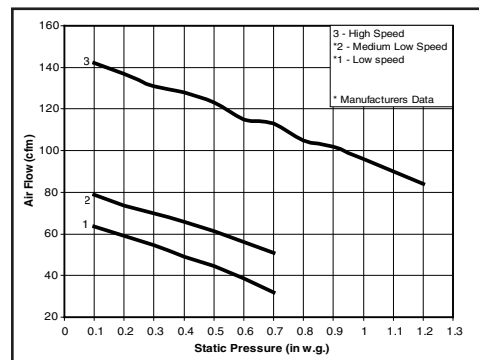
All duct collars are 5" diameter (127 mm)



Front View (if mounting vertically)
Bottom View (if mounting horizontally)

Performance (HVI certified)		
Net supply air flow in cfm (L/s) against external static pressure		
E.S.P (external static pressure)		[cfm (L/s)]
@ 0.1" (25 Pa)		142 (67)
@ 0.2" (50 Pa)		137 (64)
@ 0.3" (75 Pa)		131 (62)
@ 0.4" (100 Pa)		128 (60)
@ 0.5" (125 Pa)		123 (58)
@ 0.6" (150 Pa)		115 (54)
@ 0.7" (175 Pa)		113 (53)
@ 0.8" (200 Pa)		105 (49)
@ 0.9" (225 Pa)		102 (48)
@ 1.0" (250 Pa)		96 (45)
Max. Temperature Recovery		72%
Sensible Effectiveness		
@ 70 cfm (33 L/s)	32°F (0°C)	68%
*Sensible Efficiency		
@ 70 cfm (33 L/s)	32°F (0°C)	59%
*Sensible Efficiency		
@ 67 cfm (32 L/s)	-13°F (-25°C)	56%
VAC @ 60HZ		120
WATTS / Low speed.		70
WATTS / High speed		160
Amp rating		1.5

*Sensible Efficiency - thermal **Latent Efficiency - moisture
Note: Effectiveness - based on temp. differential between the 2 airstreams
Efficiency - takes into account all power inputs



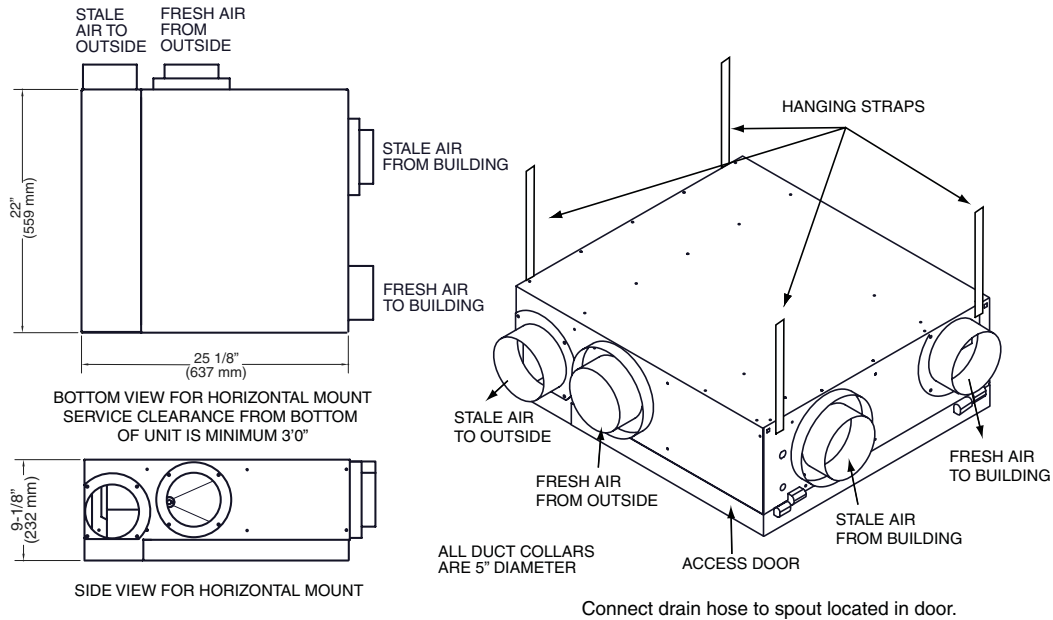
CSA HVI CERTIFIED A2000 HRAI
All units conform to CSA and UL standards

Date: _____
 Tag: _____ Qty: _____
 Project: _____
 Engineer: _____

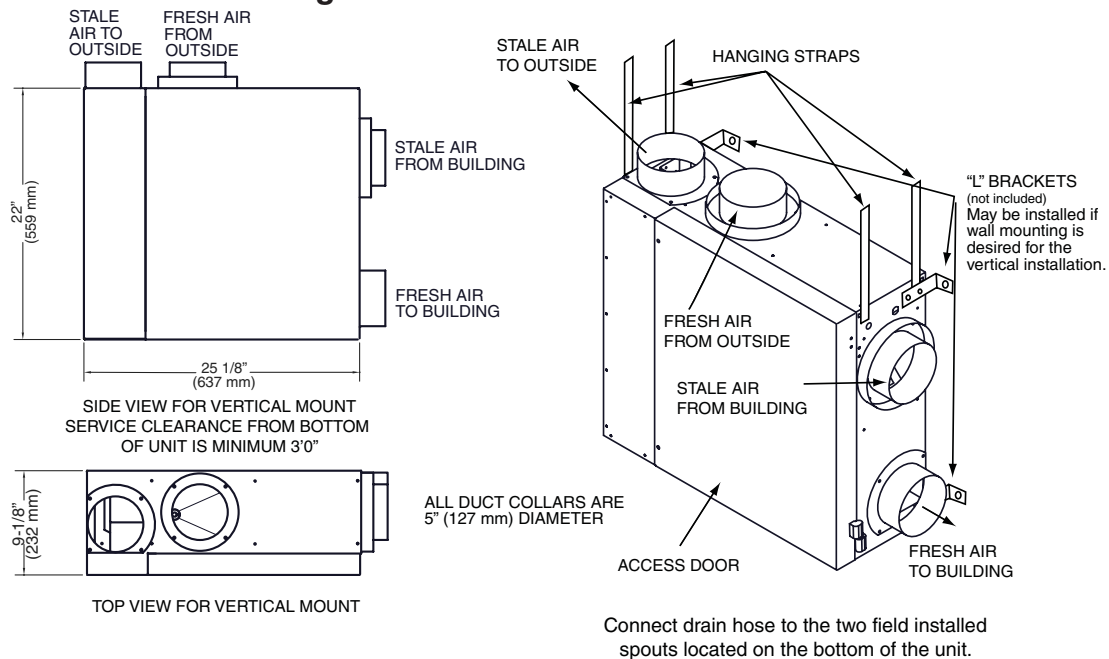
Contractor: _____
 Supplier: _____
 Quote#: _____
 Submitted by: _____



Option 1 - Horizontal Duct Configuration Dimensions inches



Option 2 - Vertical Duct Configuration Dimensions inches



The HRV can be installed horizontally or vertically as illustrated on the following pages. The unit should be suspended using the provided hanging straps. **The unit must be level for proper condensate drainage.**

Sufficient clearance below the access door is required for servicing the air filters and core. A minimum of 25" (635mm) clearance is recommended so the door can be removed. Four PVC reinforced polyester hanging straps are provided for hanging the HRV.

Optional Main Control Features

The amount of ventilation required in your home will fluctuate according to the activity level in the house. Higher activity levels require more ventilation.

Main controls can be mounted in a central location of the home (i.e. beside the furnace thermostat) which will provide the user with complete control over their ventilation system from a convenient location.

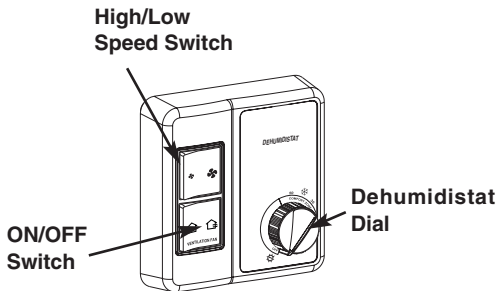
The ON/OFF Switch

The ON/OFF Switch will turn the HRV ON or OFF. Controls with an ON/OFF switch can be modified to ON/Standby by adjusting the circuit board DIP Switches (Refer to "Mode DIP Switch Settings").

Ventilation Dehumidistat

PART NO. 99-116

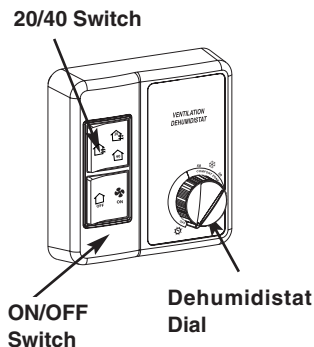
The High/Low Speed Switch initiates High or Low speed ventilation. This control also has an ON/OFF Switch and a Dehumidistat Dial.



20/40 ON/OFF Dehumidistat

PART NO. 99-2040

The 20/40 Switch will toggle from continuous low speed ventilation to an intermittent mode of 20 minutes fan ON (in low speed) and 40 minutes fan OFF. The Dehumidistat Dial will initiate High Speed ventilation when the indoor humidity level exceeds the set point (regardless position of the 20/40 Switch.). This control also has an ON/OFF Switch.



The Dehumidstat

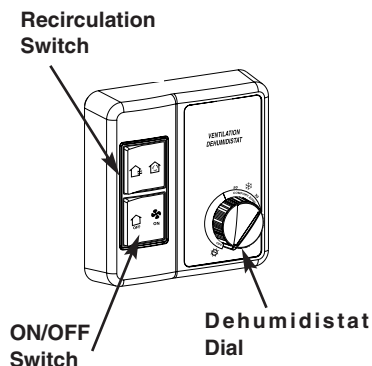
Main controls feature a dehumidistat which is used to reduce high indoor humidity levels during the heating season. The control has a selector knob with setpoints ranging from 20% to 80% relative humidity (RH). Most people are comfortable when indoor relative humidity levels are in a range from 30% to 45%.

The dehumidistat switches the HRV to high speed ventilation when the moisture level in the home exceeds the desired setpoint. The dehumidistat should only be used during the heating season. It must be set to the OFF position throughout the rest of the year.

Recirculation Control

PART NO. 99-RECIRC

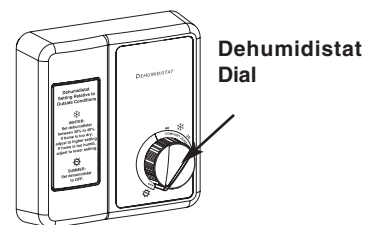
The Recirculation Switch will toggle from continuous low speed ventilation to recirculation mode (closes the fresh air damper and circulates the building air). The Dehumidistat Dial will initiate High Speed ventilation when the indoor humidity level exceeds the set point (regardless position of the RECIRC Switch.). This control also has an ON/OFF Switch and a Dehumidistat Dial.



Remote Dehumidistat

PART NO. 99-130 White

The Remote Dehumidistat activates high speed ventilation when the indoor humidity level exceeds the set point.

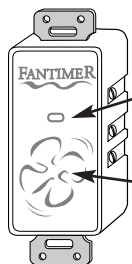


Optional Timers

Install timers at each exhaust location of your system.

20 Minute Timer

PART NO. 99-132



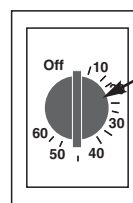
20 Minute Status Lights
The 20 Minute Status Light indicates high speed operation is activated.

Touch Pad
The Touch Pad initiates high speed operation.

- Connects to RED, BLACK and GREEN (LED drive) terminals.
- Use a minimum of three 20 gauge low voltage wires.
- Connect up to 4 on 100 ft (91 m) wire max.
- Mounts in a 2 x 4 box.

Crank Timer

PART NO. 99-101



Crank Dial
Rotate the dial for up to 60 minutes high speed operation.

- Initiates high speed ventilation for up to 60 minutes.
- Requires 2 lead low voltage (20 gauge) wire.
- Mounts in a 2" x 4" box.

Locating and Suspending the HRV

Location Selection

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

Attic installations are not normally recommended due to:

- A) the complexity of work to install
- B) freezing conditions in the attic
- C) difficulty of access for servicing

⚠ CAUTION

Unit must be installed level to ensure proper condensate drainage. Due to the broad range of installation and operational conditions, consideration must be given for the possibility of condensation forming on the unit or connecting ducting. Objects below the installation may be exposed to condensate.

⚠ WARNING



Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

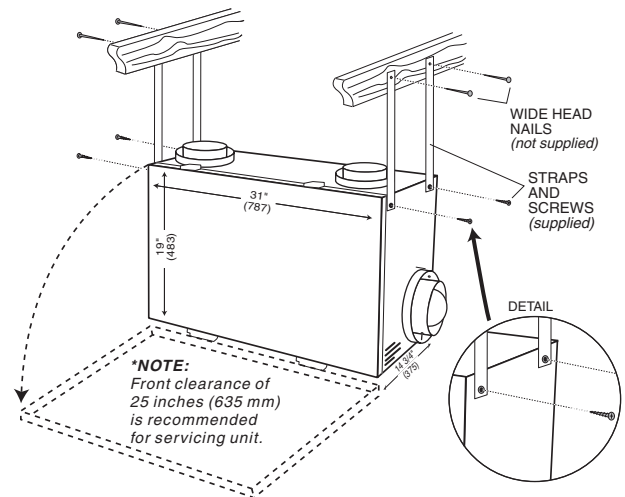
⚠ WARNING

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 qualified installer or service agency.

Suspending the HRV

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

Suspending the HRV using the Provided Hanging Straps

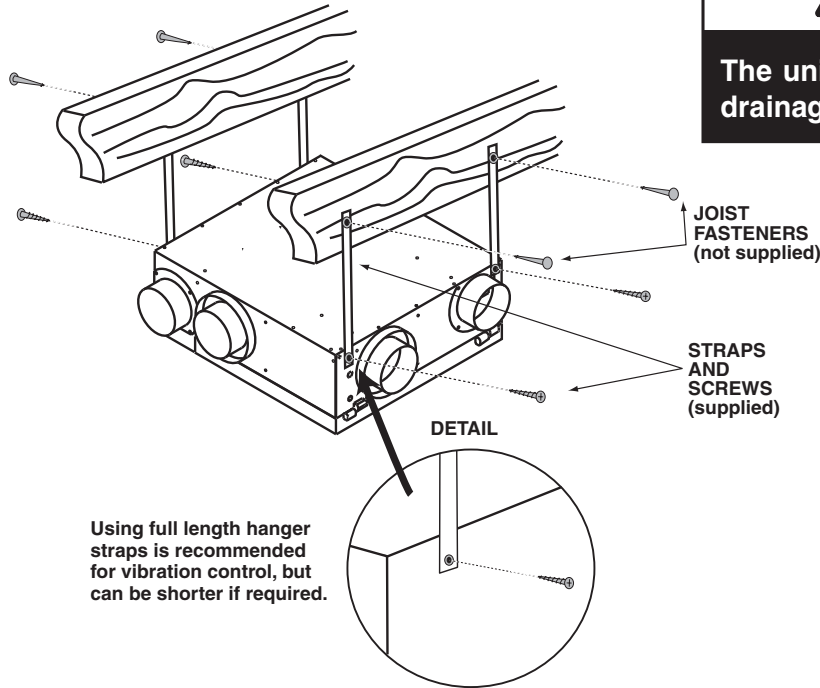


All models except the RNC120D are designed for horizontal installation only as shown.

Using full length hanger straps is recommended for vibration control, but can be shorter if required.

A minimum of 25" (635mm) clearance is recommended so the door can be opened.

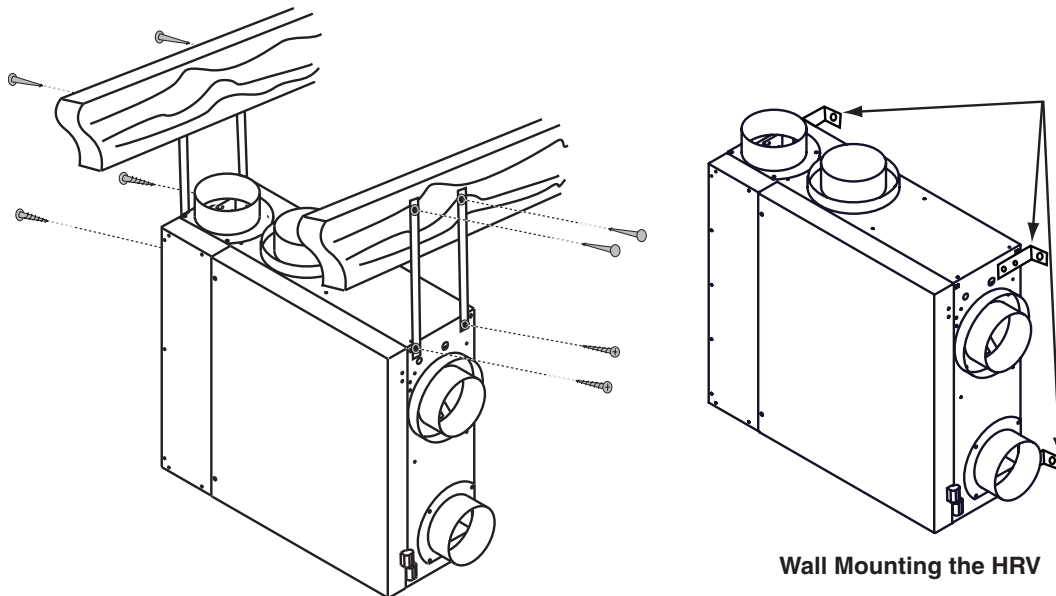
Horizontal Installation



⚠ ATTENTION

The unit must be mounted level for proper drainage of the condensate pans.

Vertical Installation



Wall Mounting the HRV

Suspending the RNC120D

The hanging straps should be attached to the unit at the top corners (mounting screws are already located on the HRV case). Securely fasten the other end of the straps to the ceiling making sure the UNIT IS LEVEL. The straps are designed to reduce the possibility of noise, resonance or harmonics; therefore using the full length of the strap between the HRV and the floor joists is recommended.

"L" BRACKETS (not included) may be installed if wall mounting is desired for the vertical installation.

It is important to isolate the "L" BRACKET from the attached surface to minimize vibration.

Use the hanging strap hardware to attach the brackets. Do not drill additional holes in the HRV.

Drain Connection (HRV Only)

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

⚠ CAUTION

The HRV and all condensate lines must be installed in a space where the temperature is maintained above the freezing point or freeze protection must be provided.

The HRV cabinet has prepunched holes for the drain (see below). Insert the drain spout through the hole in the drain pan. Do not forget the "O ring" which seals each spout to the pan. REMEMBER TO HAND TIGHTEN ONLY the washer and lock nut which hold the drain spout in place.

Construct a P-Trap using the plastic tee connector. Cut two lengths of hose and connect each piece to an end of the "T" fitting, then connect the other ends to the two drain spouts. Position the "T" fitting to point upward and connect the drain line. Tape or fasten base to avoid any kinks. 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.

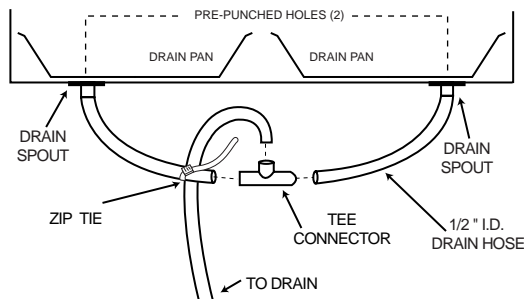
⚠ CAUTION

Drain trap and tubing MUST be below bottom of door with 1/4" per foot downwards slope away from unit.

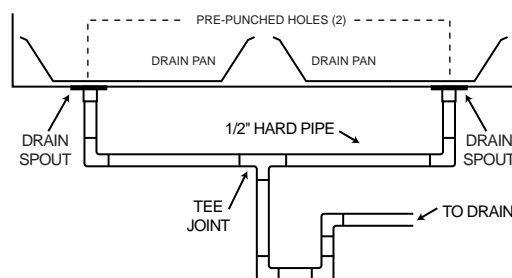
Note: Secondary drain pan may be required to protect from condensate leakage.

"P" Trap (HRV only)

DRAIN HOSE PLUMBING

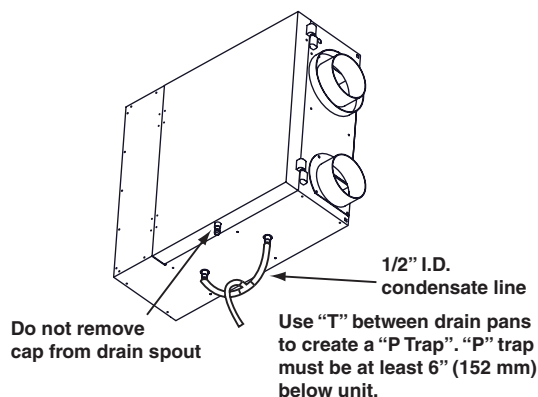


HARD PIPE PLUMBING

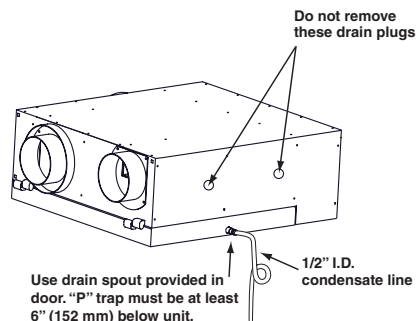


Model RNC120D

Drain Set-up for Vertical Installation



Drain Set-up for Horizontal Installation



The Three Methods of Installation

The three methods of installation for the HRV system are the Simplified, Partially Dedicated and Fully Dedicated Installations. Refer to the installation illustrations in this manual.

Simplified Installations

The Simplified Installation 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. Refer to "The Simplified Installation" in this manual.

The air handler/furnace blower must be running when the unit is operating for this system to be effective. Refer to "Interlocking HRV Operation to an Airhandler/Furnace Blower".

Partially Dedicated Installations

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. Refer to "The Partially Dedicated Installation" in this manual.

Stale air ducts should be installed where the worst air quality problems occur (bathroom, kitchen, and laundry room). Each location with a stale air duct should have a timer which will initiate high speed ventilation. Refer to "Optional Timers" in this manual.

The air handler/furnace blower should be running when the HRV is operating to evenly distribute the fresh air throughout the house. Refer to "Interlocking HRV Operation to an Airhandler/Furnace Blower".

Fully Dedicated Installations

The Fully Dedicated Installation draws stale air from specific points in the house and introduces an equal amount of fresh air to specific locations of the house. This system is not connected to an air handler/furnace. Refer to "The Fully Dedicated Installation" in this manual.

Stale air ducts should be installed where the worst air quality problems occur (bathroom, kitchen, and laundry room). Each location with a stale air duct should have a timer which will initiate high speed ventilation. Refer to "Optional Timers" in this manual.

Fresh air ducts should be installed to all bedrooms and living areas, excluding bathrooms, kitchen and utility areas. Grilles should be located high on a wall or in ceiling locations. Grilles that diffuse the air comfortably such as the Round Diffuser are recommended. If the floor is the only option available, then special care should be taken in locating grilles. Areas such as under baseboard heaters will help to temper the air. Also, optional inline duct heaters are available for mounting in the supply duct work to add heat if required.

ATTENTION

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

Air Duct Design and Installation

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

Always try to keep duct runs as short and straight as possible. See Installation Diagrams for various installation options.

The inner and outer liners of the flexible insulated duct must be clamped to the sleeve of the weatherhoods (as close to the outside as possible) and the appropriate port on the HRV. 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 silicone sealant) will seal the inner flexible duct to both the HRV port and the weatherhood prior to clamping with a large zip tie.

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

Twisting or folding the duct will severely restrict air flow.

Installing the Ducting Between the HRV & Living Areas in the House

To maximize airflow in the duct system, all ducts should be kept short and have as few bends or elbows as possible. Forty-five degree elbows are preferred to 90° elbows. Use "Y" tees instead of 90° elbows whenever possible.

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

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

To avoid possible noise transfer through the duct system, a short length (approximately 12 inches or 300mm) of non-metallic flexible insulated duct should be connected between the HRV and the supply/exhaust duct system.

The main supply and return lines to/from the HRV must be 6 inches (150mm) minimum. Branch lines to the individual rooms may be as small as 4 inches (100mm), but 5 inch (125mm) lines are preferred .

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

WARNING

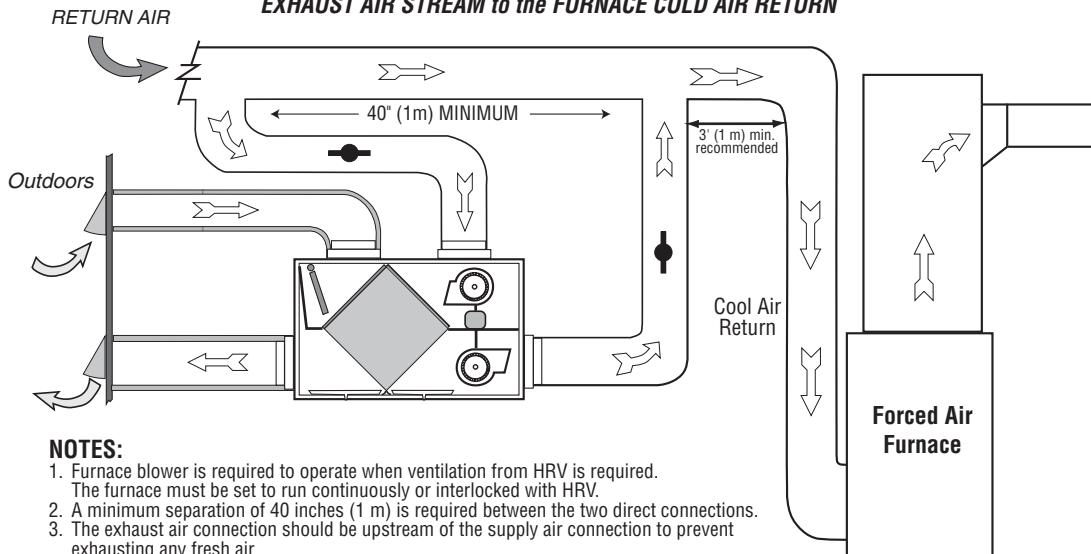
Include a short length of fabric, flex duct or other non-metallic connector in the "Fresh Air to Building" hard ducted line in order to keep the HRV separately grounded (electrically) from the air handler. This will avoid a possible shock hazard to service people if a short to ground develops in one of the devices.

The Simplified Installation (Return/Return Method)

- It is mandatory that the furnace run continuously or HRV operation be interlocked with the furnace.
- Check local codes/authority having jurisdiction for acceptance.

FOUR PORT MODELS

DIRECT CONNECTION of both the HRV SUPPLY AIR STREAM and EXHAUST AIR STREAM to the FURNACE COLD AIR RETURN

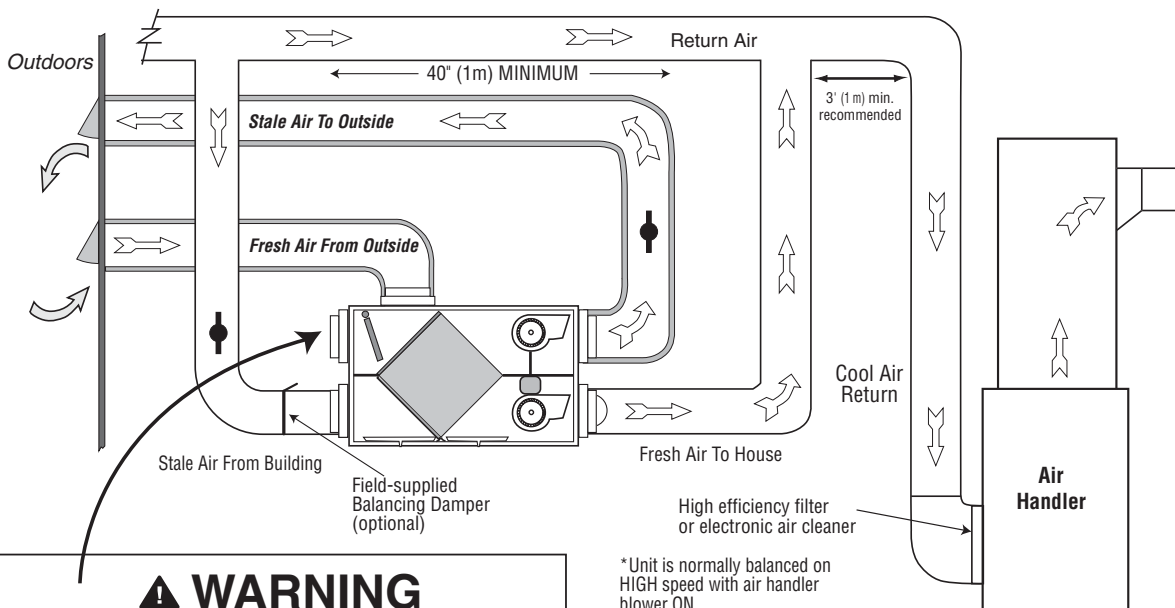


NOTES:

1. Furnace blower is required to operate when ventilation from HRV is required. The furnace must be set to run continuously or interlocked with HRV.
2. A minimum separation of 40 inches (1 m) is required between the two direct connections.
3. The exhaust air connection should be upstream of the supply air connection to prevent exhausting any fresh air.
4. Weatherhood arrangement is for drawing purposes only. Six feet (2 m) minimum separation required. Eighteen inches (460 mm) above grade minimum.
5. Due to the differences in pressure between the HRV and the equipment it is being connected to, the HRV's airflow must be confirmed on site, using the balancing procedure found in the installation manual.

*Unit is normally balanced on HIGH speed with air handler blower ON.

FIVE PORT MODELS - Simplified Installation for Models RNC10/RNC20



⚠ WARNING

Defrost air port needs to be drawn from clean area without combustion appliances. To avoid backdrafting of combustion products, never draw defrost air from a room with a naturally aspirated appliance, i.e. furnace, hot water heater, gas dryer, stove, fire place etc.

*Unit is normally balanced on HIGH speed with air handler blower ON.

⚠ CAUTION

Weatherhood arrangement - requires a minimum of 6' (2m) separation and a minimum of 18" (460mm) clearance above grade or anticipated snow level.

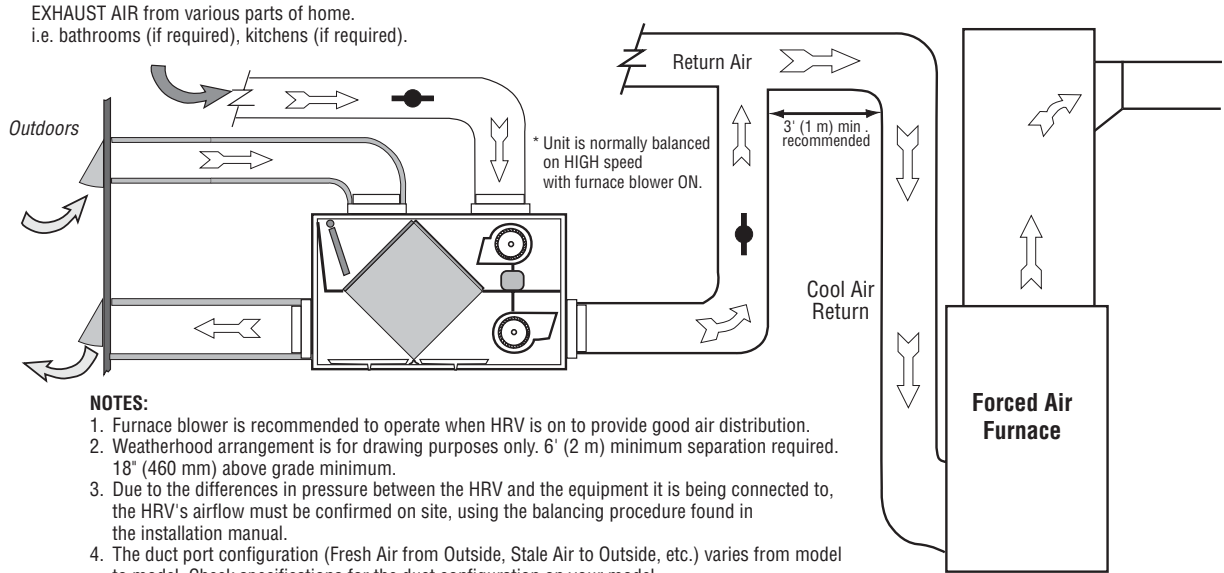
- Stale air drawn from key areas of home (bathroom, kitchen, laundry)
- Fresh air supplied to return air duct of air handler

⚠ WARNING

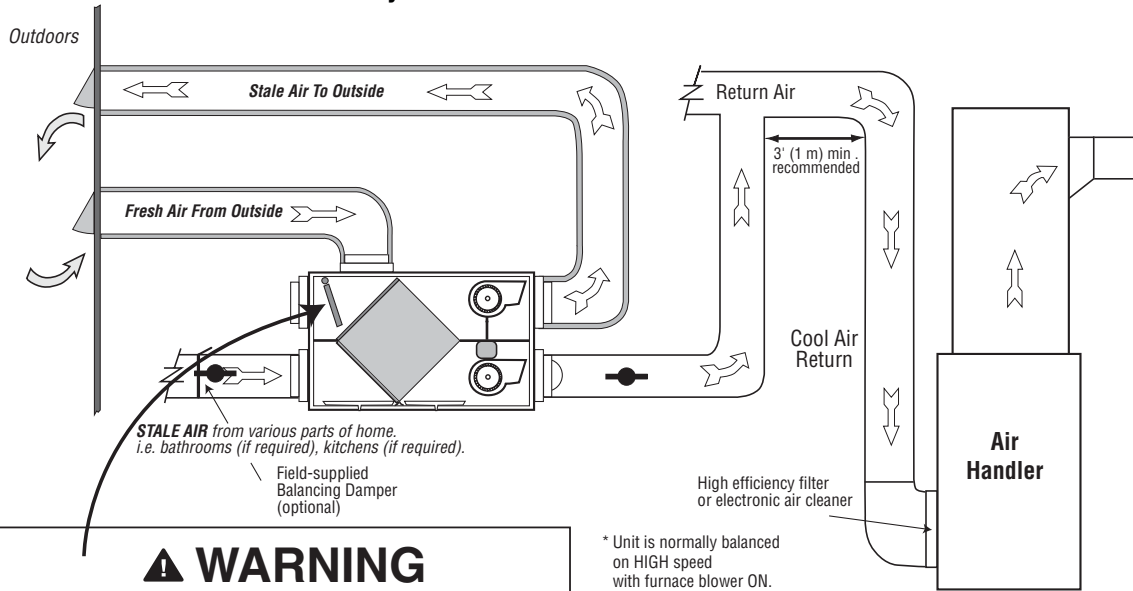
HRV must be balanced.
Refer to "Airflow Balancing" in this manual.

FOUR PORT MODELS

DIRECT CONNECTION of the SUPPLY AIR STREAM to the FURNACE COLD AIR RETURN
(Stale air drawn from key areas of home)



FIVE PORT MODELS - Partially Dedicated Installation for Models RNC10/RNC20



⚠ WARNING

Defrost air port needs to be drawn from clean area without combustion appliances. To avoid backdrafting of combustion products, never draw defrost air from a room with a naturally aspirated appliance, i.e. furnace, hot water heater, gas dryer, stove, fire place etc.

⚠ CAUTION

Weatherhood arrangement - requires a minimum of 6' (2m) separation and a minimum of 18" (460mm) clearance above grade or anticipated snow level.

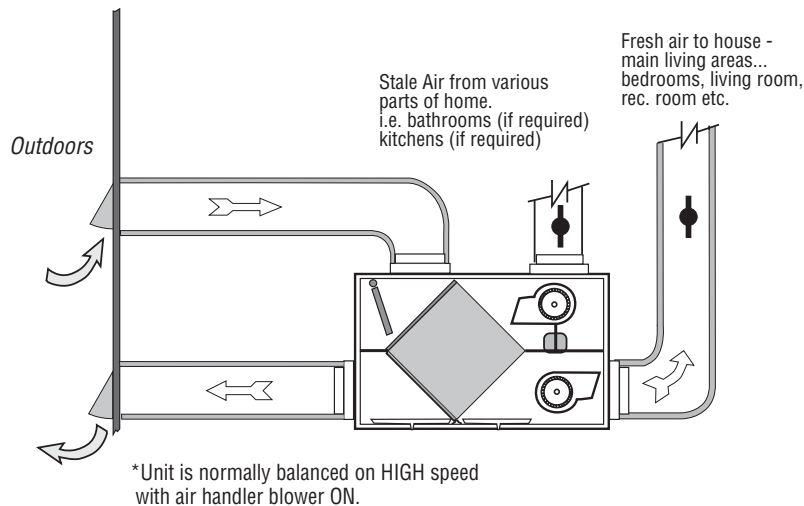
The Fully Dedicated Installation

- Stale air drawn from key areas of home (bathroom, kitchen, laundry)
- Fresh air supplied to main living areas of house

⚠ WARNING

HRV must be balanced.
Refer to "Airflow Balancing" in this manual.

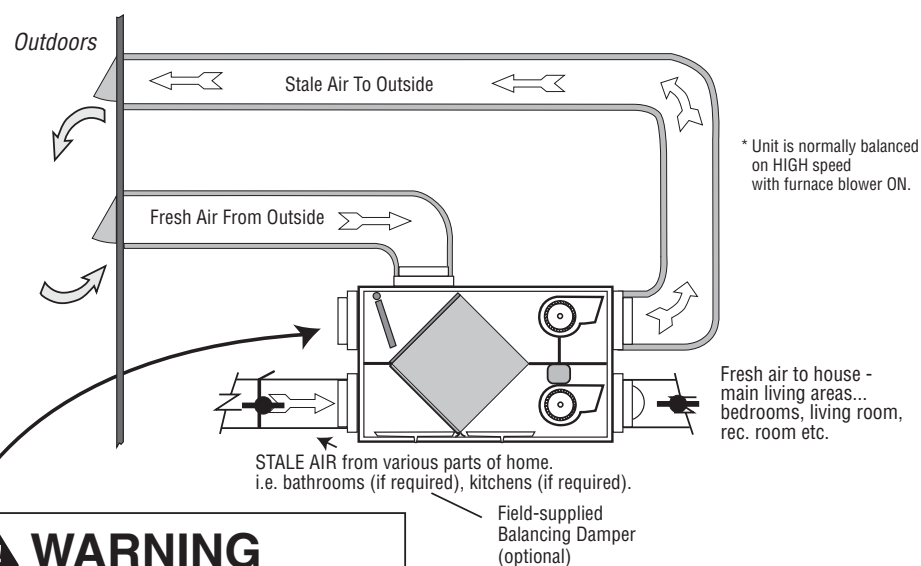
FOUR PORT MODELS - Models RNC155/RNC200



NOTES:

1. Weatherhood arrangement is for drawing purposes only. 6' (2m) minimum separation required. 18" (460mm) above grade minimum or above anticipated snow level.
2. The HRV air flow must be confirmed on site, using the balancing procedure found in the installation manual.

FIVE PORT MODELS - Fully Dedicated Installation for Models RNC10/RNC20



⚠ WARNING

Defrost air port needs to be drawn from clean area without combustion appliances. To avoid backdrafting of combustion products, never draw defrost air from a room with a naturally aspirated appliance, i.e. furnace, hot water heater, gas dryer, stove, fire place etc.

⚠ CAUTION

Weatherhood arrangement - requires a minimum of 6' (2m) separation and a minimum of 18" (460mm) clearance above grade or anticipated snow level.

Grilles

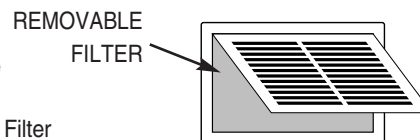
Adjustable grilles should be used to balance the flow rates into and out of various rooms.

Grilles or diffusers should be positioned high on the wall or in the ceiling. Kitchen exhaust grilles must never be connected to a range hood. They should be installed at least 4 feet (1.2m) horizontally away from the stove. This grille includes a removable grease filter. Canadian building codes require that kitchen grilles be equipped with washable filters.

Field-supplied balancing dampers should be installed external to the unit to balance the amount of stale air being exhausted with the amount of fresh air being brought into the house. Refer to Air flow Balancing section.

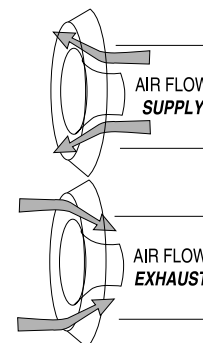
Lifebreath Kitchen Grille

- 6" x 10" Kitchen Grille Part No. 10-002
- Replacement Grease Filter Part No. 10-002-2



Lifebreath Techgrille

- 4" (100mm) Part No. 99-140
- 5" (125mm) Part No. 99-145
- 6" (150mm) Part No. 99-141
- 8" (200mm) Part No. 99-148



⚠ CAUTION

Do not mount exhaust grille within 4' (1.2m) (horizontally) from stove to prevent grease from entering HRV.

Intake Weatherhood Requirements

- Should be located upstream (if there are prevailing winds) from the exhaust outlet.
- At least 6' (2m) from the exhaust weatherhood.
- At least 6' (2m) away from dryer vents and air handler exhaust.
- A minimum of 6' (2m) from driveways, oil fill pipes, gas meters, swimming pools or garbage containers.
- At least 18" (460mm) above the ground, or above the depth of expected snow accumulation.
- At least 3' (1m) from the inside/outside corner of the building.
- Do not locate in a garage, attic, or crawl space.

Exhaust Weatherhood Requirements

- At least 6' (2m) from the ventilation air intake.
- At least 18" (460mm) above ground or above the depth of snow accumulation.
- At least 3' (1m) away from the corner of the building.
- At least 3' away from gas meter, electric meter or a walkway where fog or ice could create a hazard.
- not into a garage, workshop or other unheated space.

When installing the weatherhood, its outside perimeter must be sealed with exterior caulking.

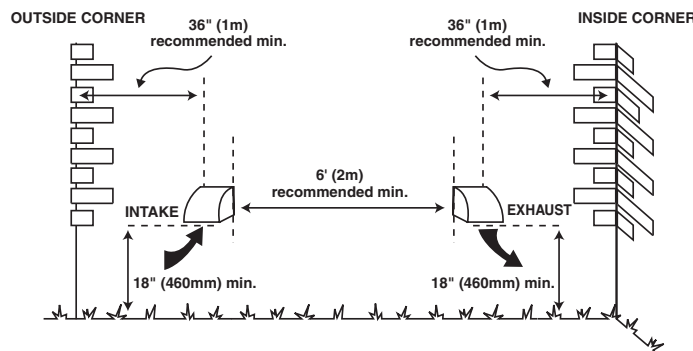
⚠ ATTENTION

Local codes may require greater distances.

⚠ CAUTION

Weatherhood arrangement - requires a minimum of 6' (2m) separation and a minimum of 18" (460mm) clearance above the higher of the grade or anticipated snow level.

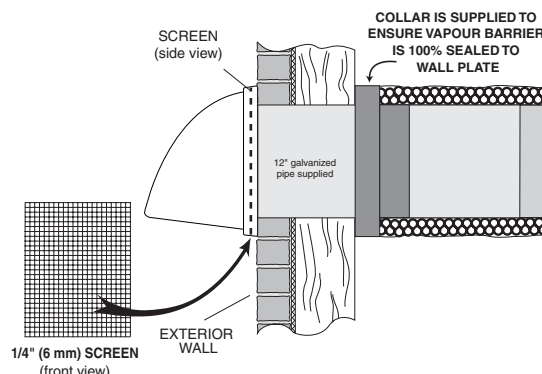
Weatherhood Clearances



Lifebreath Weatherhoods

- 5" (125mm) Part No. 99-185
- 6" (150mm) Part No. 99-186
- 7" (200mm) Part No. 99-187

Weatherhood Installation



1. Thermal Collar slides over galvanized sleeve of Weatherhood.
2. Fasten Thermal Collar to Belt.
3. Slide the Insulated Flexible Ducting over the Weatherhood's galvanized sleeve and fasten it to the Thermal Collar.
4. Hood is hinged to allow for easy access for cleaning of bird screen.

Electrical

The HRV unit should be plugged into a standard designated (120VAC) electrical outlet with a ground. The outlet should be serviced by a separate 15 amp/120V circuit. An extension cord should not be used with this appliance. A qualified service technician should make any required electrical connections.

Remote Control Connections

Prior to connecting remote devices, it is advisable to run self test on the HRV/ERV.

Low voltage connections between the remote controls, the dehumidistat, or the fan timer should be made by a qualified service technician. Low voltage wires from the remote controls are connected to the HRV micro-processor board.

⚠ WARNING

In order to prevent electric shock when cleaning or servicing the HRV, it is extremely important to confirm the polarity of the power line that is switched by the safety (disconnect) switch. The hot line (black) is the proper line to be switched. To confirm the proper polarity, use a voltmeter or test lamp to ensure there is no power after the switch when the door is open. Check between that point and ground (on the cabinet). Always make sure that the HRV is properly grounded.

Changing OFF to STANDBY

Figure 1 - Factory DIP Switch Settings

The factory setting of the DIP switches (located on the circuit board) provides continuous low speed ventilation. Optional Remote Controls will initiate high speed ventilation.

Remote controls with an ON/OFF switch (refer to "Remote Control Devices" in this manual) will shut the entire system down when the remote control is in the OFF position. Changing the remote control from OFF to STANDBY can be achieved by Setting the DIP Switch as per Figure 2.

Figure 1 - Factory setting for OFF



⚠ ATTENTION

Figure 2 may not meet building code conformance in certain geographical areas. Check with your local building authority.

Figure 2-DIP Switch Settings for Standby (When using a Remote Control Device that has an ON/OFF Switch)

This DIP Switch Setting can be adjusted when using a system control that has an ON/OFF switch (refer to "Remote Control Devices" in this manual). "STANDBY" is achieved when the Remote Control Switch is in the "OFF" position. The Dehumidistat and Timers will initiate high speed ventilation regardless of the "ON/OFF" switch position when this DIP switch configuration is used.

Figure 2 - Contractor adjusted setting for STANDBY



Increasing Low Speed to Medium Low

The ventilator automatically operates on its lowest speed when plugged in or switched on. This setting is factory supplied from an autotransformer with two selectable low speeds. To switch to a continuous medium low speed, an installing contractor must interchange the red and blue wires from

the autotransformer inside the electrical box. Whether or not this change is made, the HRV will only be able to access a single selected low speed.

High speed is available with the use of optional remote controls connected to the appropriate terminals inside the electrical box.

Wiring the Controls

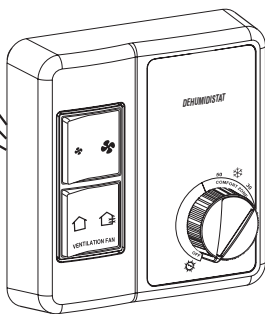
Dehumidistat Ventilation Control

Part No. 99-116

Remove factory installed jumper when installing this control

RED +12V	Red to Red
ORANGE OBCS	Orange to Orange
BLACK DEHUMIDISTAT	Black to Black
GREEN LED DRIVE	
RECIRCULATE	
LOW FAN	
GREEN GROUND	
COMMS	

Circuit Board Terminal Strip



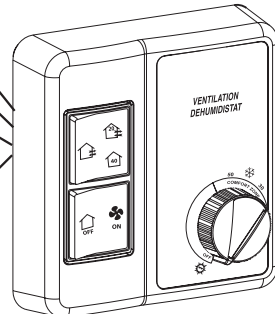
2040 ON/OFF Dehumidistat

Part No. 99-2040

Remove factory installed jumper when installing this control

RED +12V	Red to Red
ORANGE OBCS	Orange to Orange
BLACK DEHUMIDISTAT	Black to Black
GREEN LED DRIVE	
RECIRCULATE	
LOW FAN	Low Fan to Blue
GREEN GROUND	
COMMS	

Circuit Board Terminal Strip



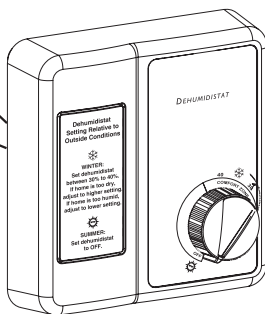
Remote Dehumidistat

Part No. 99-130W

Factory installed jumper

RED +12V	Red to Red
ORANGE OBCS	
BLACK DEHUMIDISTAT	Black to Black
GREEN LED DRIVE	
RECIRCULATE	
LOW FAN	
GREEN GROUND	
COMMS	

Circuit Board Terminal Strip



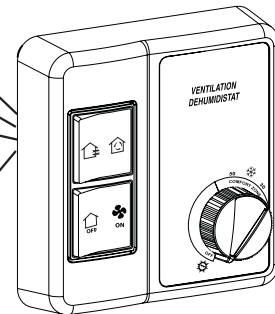
Recirculation Control

Part No. 99-RECIRC

Remove factory installed jumper when installing this control

RED +12V	Red to Red
ORANGE OBCS	Orange to Orange
BLACK DEHUMIDISTAT	Black to Black
GREEN LED DRIVE	
RECIRCULATE	Recirculate to Blue
LOW FAN	
GREEN GROUND	
COMMS	

Circuit Board Terminal Strip



20 Minute Timer

(shown in a Decora cover plate)*

Factory installed jumper

RED +12V	Red to Red
ORANGE OBCS	Black to Black
BLACK DEHUMIDISTAT	
GREEN LED DRIVE	Green LED Drive to Green
RECIRCULATE	
LOW FAN	
GREEN GROUND	
COMMS	

Circuit Board Terminal Strip



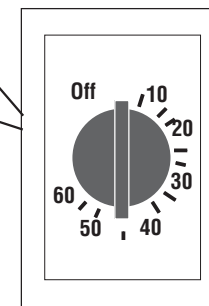
Crank Timer

Part No. 99-101

Factory installed jumper

RED +12V	Red to Red
ORANGE OBCS	Black to Black
BLACK DEHUMIDISTAT	
GREEN LED DRIVE	
RECIRCULATE	
LOW FAN	
GREEN GROUND	
COMMS	

Circuit Board Terminal Strip



* The Decora cover plate (Part No. 99-107W) is a standard switch plate.

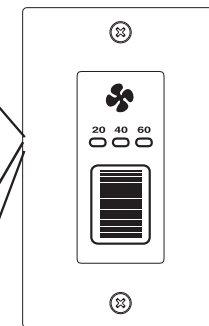
Digital Electronic Timer (DET)

Part No. 99-104

Factory installed jumper

RED +12V	Red to Red
ORANGE OBCS	
BLACK DEHUMIDISTAT	
GREEN LED DRIVE	
RECIRCULATE	
LOW FAN	
GREEN GROUND	Green Ground to Green
COMMS	Comms to Yellow

Circuit Board Terminal Strip



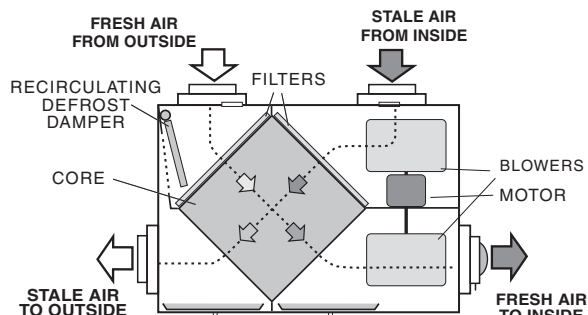
⚠ ATTENTION

Controls will use 2, 3 or 4 lead 20 gauge wire. Note the number of leads required for each control (refer to the above illustrations).

Defrost Operation

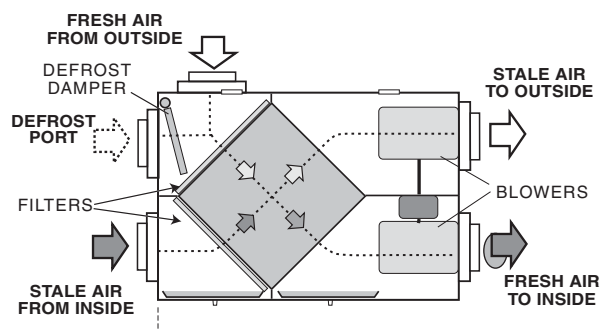
Recirculating Damper Defrost (4 port models)

The recirculating damper defrost HRV has an electronically controlled damper defrost mechanism. The defrost timer is activated when the outside temperature drops below 27°F (-3°C). A motor driven damper door mechanism closes off the supply air from outside allowing the exhaust air to recirculate through the unit. After the defrost period, the damper operates in the opposite direction to reopen the fresh air port. Defrost cycle repeats until the temperature again rises above 27°F (-3°C).



Damper Defrost (5 port models)

The damper defrost HRV has a fifth port for defrost. An electronically controlled damper defrost mechanism activates the defrost timer when the outside temperature drops below 27°F (-3°C). A motor driven damper door mechanism closes off the supply air from outside allowing room air to enter through the fifth port of the unit. After the defrost period, the damper operates in the opposite direction to reopen the fresh air port. Defrost cycle repeats until the temperature again rises above 27°F (-3°C).

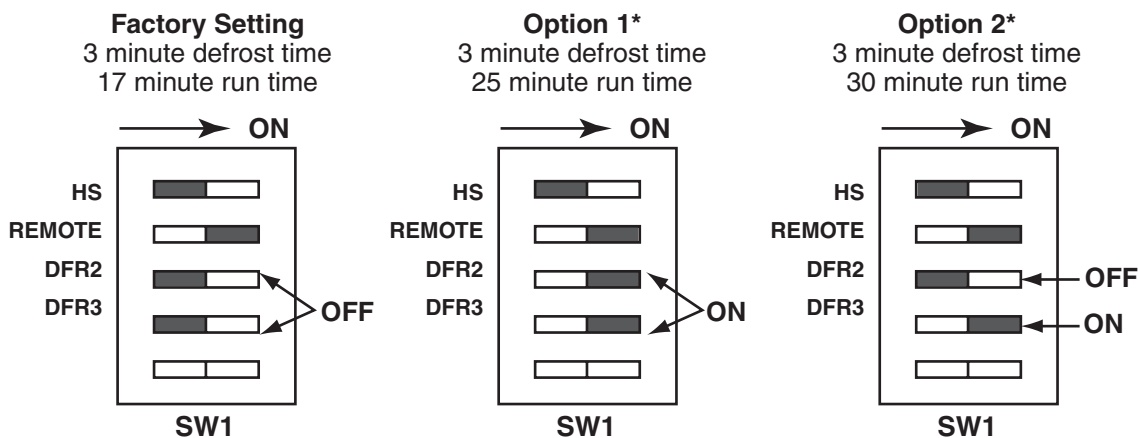


Defrost Cycle DIP Switch Settings - Increasing the Run Time

Defrost DIP Switch Settings (located on the circuit board) can be adjusted to increase the unit's run (ventilation) time. The three minute defrost time cannot change.

CAUTION

Lengthening the run time may result in ice buildup on the core.



*Lengthening the run time may result in ice build-up on the core.

Air Flow Balancing

It is necessary to have balanced air flow in an HRV. The volume of air brought in from the outside must equal the volume of air exhausted by the unit. If the air flow is not properly balanced, then:

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

⚠ CAUTION

Ensure balanced air flow in HRV. Excessive positive pressure may drive moist indoor air into the external walls of the building where it may condense (in cold weather) and degrade structural components. May also cause key holes to freeze up.

Excessive negative pressure may have several undesirable effects. In some geographic locations, soil gases such as methane and radon gas may be drawn into the home through basement/ground contact areas.

Read the Application Warning in Clearances & Requirements section of this manual!

⚠ WARNING

Ensure balanced air flow in HRV/ERV. Excessive negative pressure may also cause the back-drafting of vented combustion equipment.

Prior to balancing, ensure that:

1. All sealing of the duct system has been completed.
2. All of the HRV's components are in place and functioning properly.
3. Balancing dampers are fully open.
4. Unit is on HIGH speed.
5. Air flow 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 air flow.
6. After taking readings of both the stale air to the HRV duct and fresh air to the house duct, the duct with the lower CFM ([L/s] velocity) reading should be left alone, while the duct with the higher reading should be dampered back to match the lower reading.
7. Return unit to appropriate fan speed for normal operation
8. A field-supplied balancing damper for the stale air side is required for system balancing.

Balancing Procedure

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

The first step is to operate all mechanical systems on high speed, which have an influence on the ventilation system, i.e. the HRV itself and the air handler, if applicable. This will provide the maximum pressure that the HRV will need to overcome, and allow for a more accurate balance of the unit.

Drill a small hole in the duct (about 3/16"), three feet downstream of any elbows or bends, and one foot upstream of any elbows or bends. These are recommended distances but the actual installation may limit the amount of straight duct.

The Pitot tube should be connected to a magnehelic gauge or digital manometer capable of reading from 0 to 0.25 in. (0-62 Pa) of water, preferably to 3 digits of resolution. The tube coming out of the end of the Pitot is connected to the high pressure side of the gauge. The tube coming out of the branch of the Pitot is connected to the low pressure or reference side of the gauge.

Insert the Pitot tube into the duct; pointing the tip into the air flow.

For general balancing it is sufficient to move the Pitot tube around in the duct and take an average or typical reading. Repeat this procedure in the other (supply or return) duct. Determine which duct has the highest air flow (highest reading on the gauge). Then damper that air flow back to match the lower reading from the other duct. The flow should now be balanced.

Actual air flow 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 air flow velocity based on the velocity pressure indicated by the gauge. This velocity will be in either feet per minute or meters per second. To determine the actual air flow, the velocity is multiplied by the cross sectional area of the duct being measured.

This is an example for determining the air flow in a 6" duct.

The Pitot tube reading was 0.025 inches of water.

From the chart, this is 640 feet per minute.

The 6" duct has a cross sectional area of

$$= [3.14 \times (6" \div 12)^2] \div 4 \\ = 0.2 \text{ square feet}$$

The air flow is then:

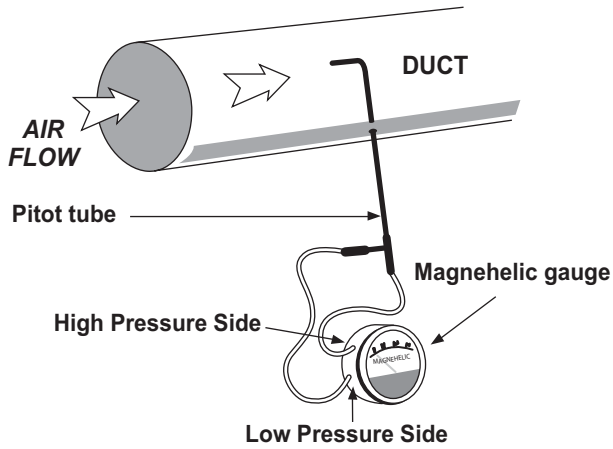
$$640 \text{ ft./min.} \times 0.2 \text{ square feet} = 128 \text{ cfm}$$

For your convenience, the cross sectional area of some common round duct is listed below:

DUCT DIAM. (inches)	CROSS SECTION AREA (sq. ft.)
5	0.14
6	0.20
7	0.27

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

Pitot Tube and Gauge



Pitot Tube Air Flow Balancing Kit

Part No. 99-167

- 1 - magnehelic gauge
- 1 - Pitot Tube and hose
- 1 - Carry Case

⚠ ATTENTION

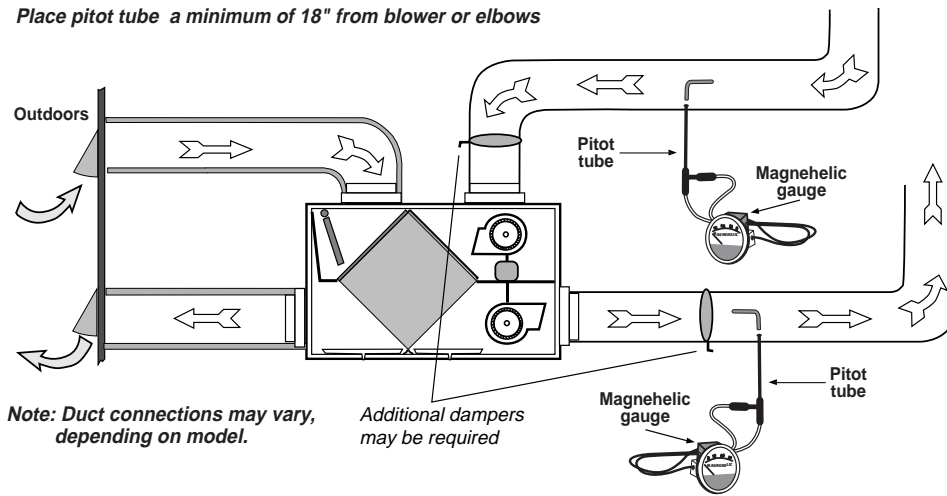
Apply use of balancing dampers as required.

NOTE

Graphic is for illustrative purposes only. Duct connection ports may vary.

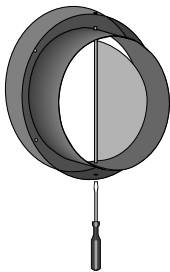
Placement of Pitot Tube HRV

Place pitot tube a minimum of 18" from blower or elbows

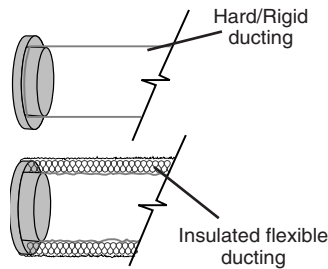


Balancing Collar Instructions

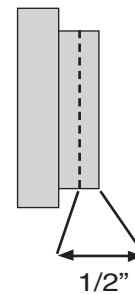
Often the "Fresh Air to House" ducting will have the heaviest air flow which must be dampered down. A Balancing Damper is located in the "Fresh Air to House" collar. The Balancing Collar feature is not available on all models.



Push and turn with slotted screwdriver. Damper automatically locks when pressure is released.



Installations where the HRV is ducted directly to the return of a furnace may require additional dampening on the fresh air to building duct. This is due to the high return static pressures found in some furnace installations.

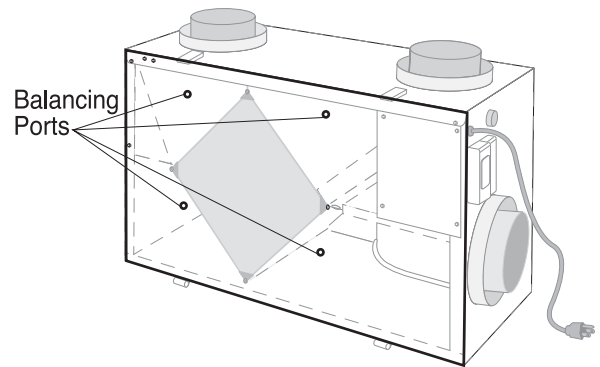


When connecting ductwork to the collar, take note where screws are located. Screws should be located no further than 1/2" from outside edge of collar, so as not to impede operation of the damper.

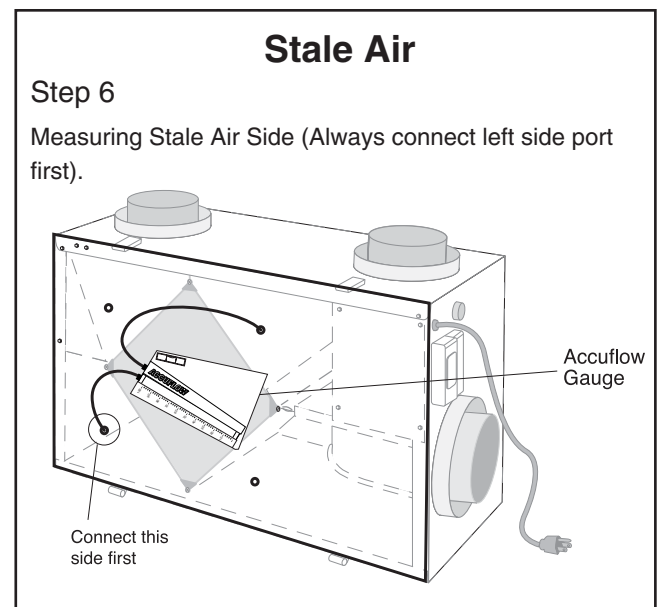
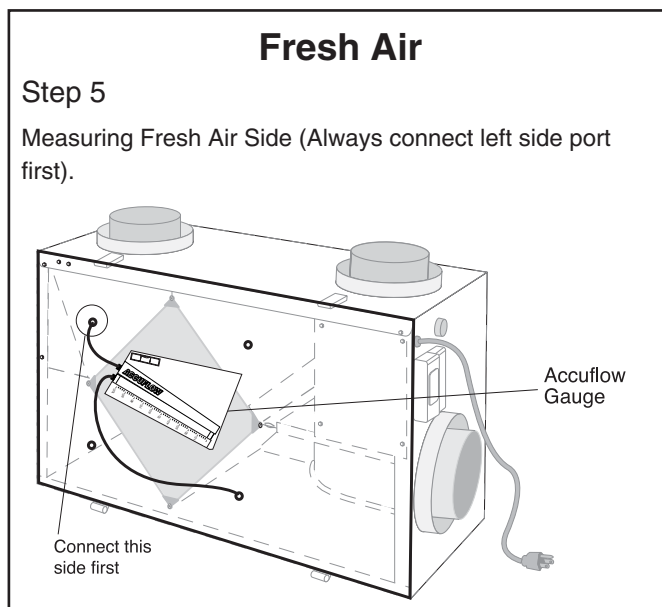
AccuFlow Gauge Kit

- 1 - Accu-Flow Balancing Gauge
- 2 - Connection Hoses
- 4 - Rubber Fittings
- 1 - Instruction Page

Lifebreath Accu-Flow is designed to quickly and accurately balance the airflows on units equipped with balancing ports. Normally the HRV/ERV would be balanced on high speed. If the HRV/ERV is connected to a forced air system, both systems should be set to run at the highest operational speed when balancing is performed.

**Procedure:**

- Step 1** Remove balancing port covers.
- Step 2** Insert rubber fittings into balancing ports on door. (Use light pressure until fitting is snug).
- Step 3** Attach tubes to balancing gauge.
- Step 4** Place gauge on metal door (gauge is equipped with a magnetic strip). Ensure gauge is level/plumb.
- Step 5** Connect tubes to door ports as illustrated in step 5 (record readings).
- Step 6** Connect tubes to door ports as illustrated in Step 6. (record readings).



Note: It is normal practice to lightly tap gauge if reading is non-responsive.

Step 7

Damper airflows as required.

Step 8

Repeat Steps 5 and 6 as required to confirm airflows

The door ports (MODELS RNC155 & RNC 200) are designed to quickly and measure the airflows for balancing.

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

Balancing Procedure

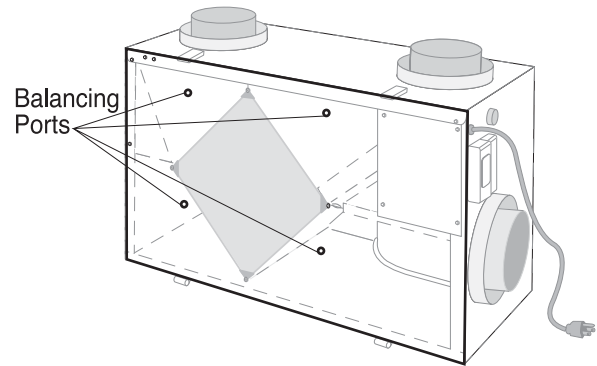
- Step 1** Remove balancing port covers.
- Step 2** Insert one end of each connection hose into a rubber fitting. (Use light pressure until fitting is snug).
- Step 3** Attach the connection hoses to pressure gauge
- Step 4** Fresh Air - Connect hoses to door ports as illustrated (record reading).
- Step 5** Stale Air - Connect hoses to door ports as illustrated (record reading).
- Step 6** Refer to the Airflow Reference Chart for the conversion of gauge reading to airflow reading.
- Step 7** Damper the airflows as required to balance the system. The fresh airflow must equal the stale airflow.
- Step 8** Repeat steps 4 to 7 as required to confirm airflows.

Magnehelic Door Port Balancing Kit

Part No. 99-206

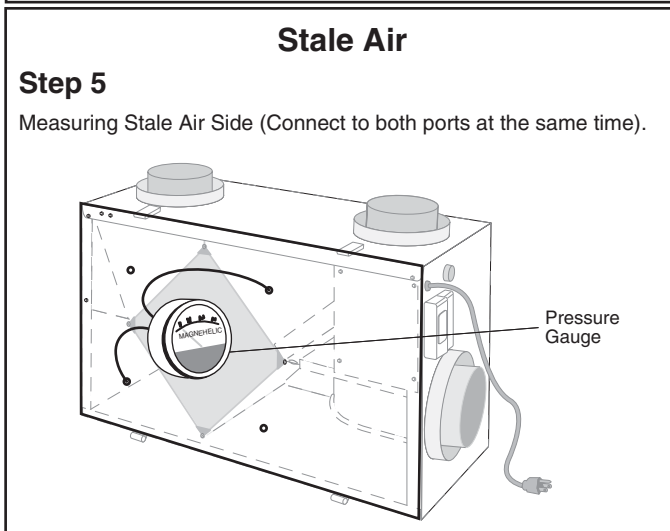
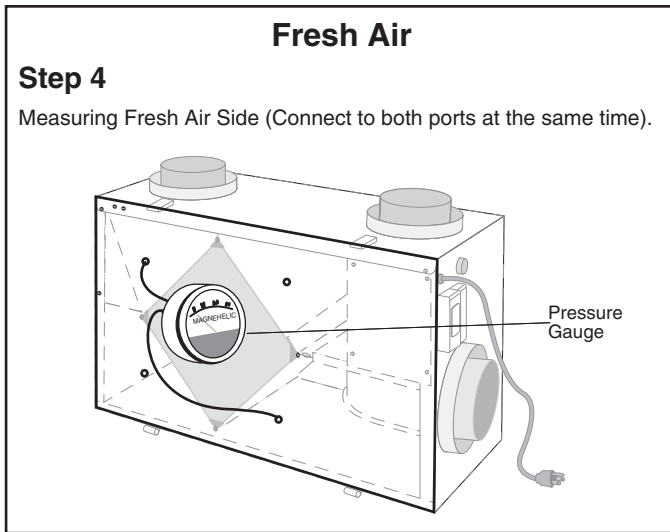
Use the Magnehelic Gauge Kit (Part No. 99-206) for door port balancing.

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



Airflow Reference Chart

Pressure Gauge Reading (in w.g.)	Fresh Air Stream Flow (cfm)	Stale Air Stream Flow (cfm)
0.070	75	54
0.080	80	59
0.090	84	65
0.100	89	70
0.110	93	75
0.120	98	81
0.130	102	86
0.140	106	91
0.150	111	97
0.160	115	102
0.170	120	114
0.180	124	118
0.190	128	123
0.200	133	128
0.210	137	133
0.220	142	138
0.230	146	143
0.240	151	148
0.250	155	153
0.260	159	158
0.270	164	163
0.280	168	167
0.290	173	172
0.300	177	177
0.310	181	182
0.320	186	187
0.330	190	192
0.340	195	197

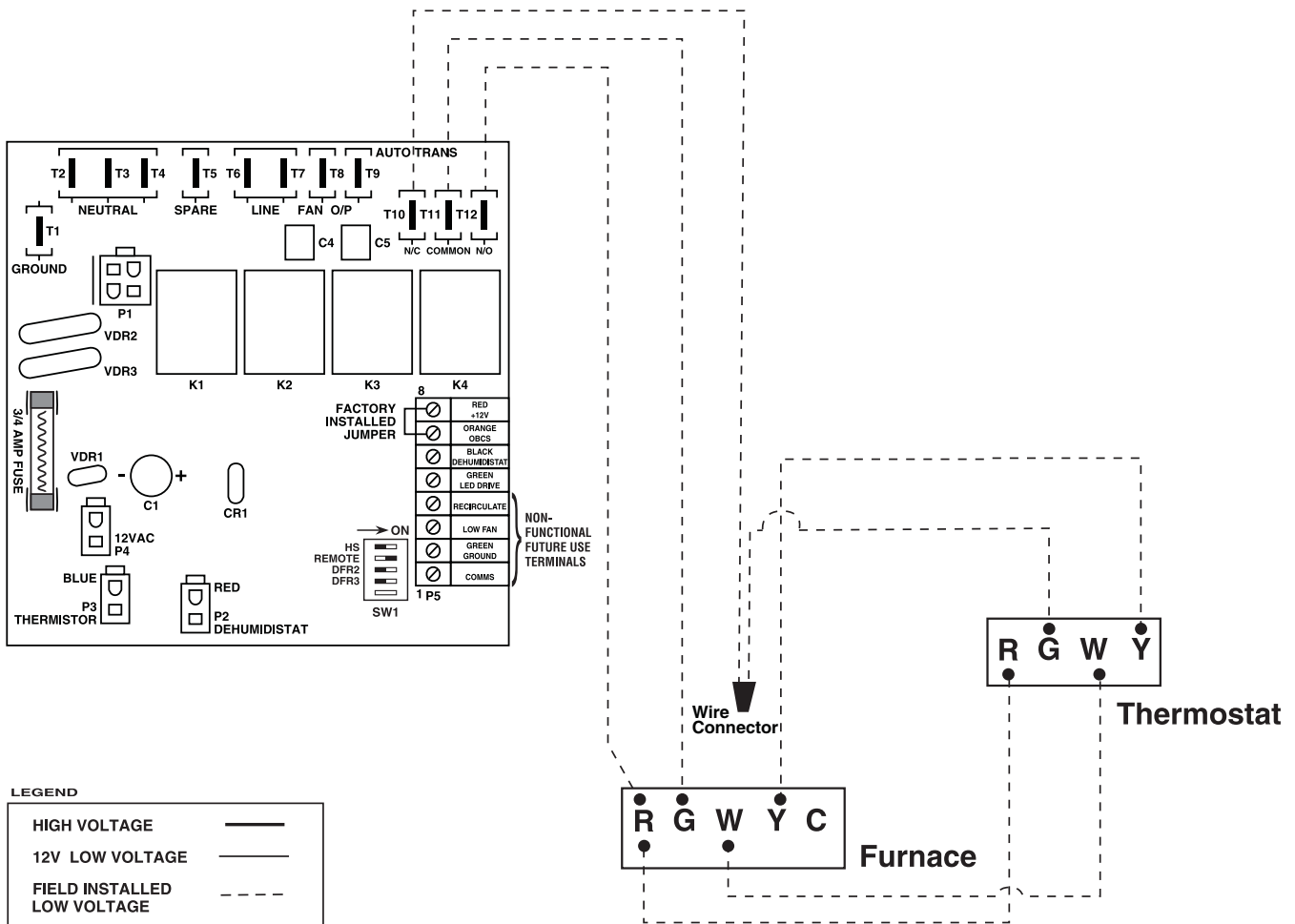


⚠ ATTENTION

Door port balancing is only available for Models RNC155 and RNC200.

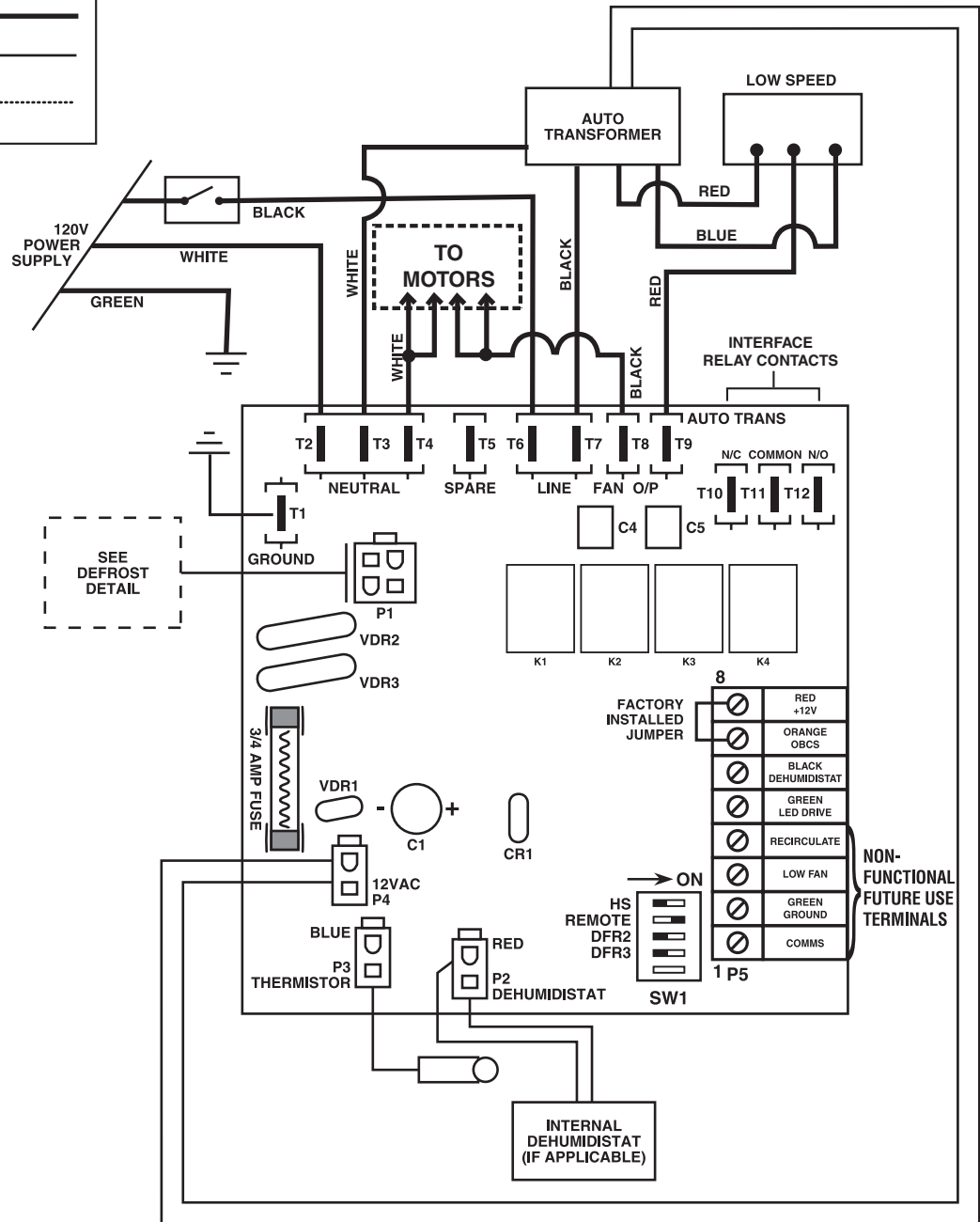
When using the Interface relay contacts to initiate blower operation on a furnace, certain thermostats will initiate the outdoor cooling condenser when R and G are closed.

Use this wiring configuration to prevent the Interface relay contacts from initializing the condenser unit. This problem can occur at the thermostat because the **Y** terminal is connected to the **G** terminal internal to the stat. When **R** and **G** are closed at the furnace (by dehumidistat or relay) 24 Volts is sent to **G** at thermostat. 24 Volts is then sent through **Y** which will initiate outdoor condenser.

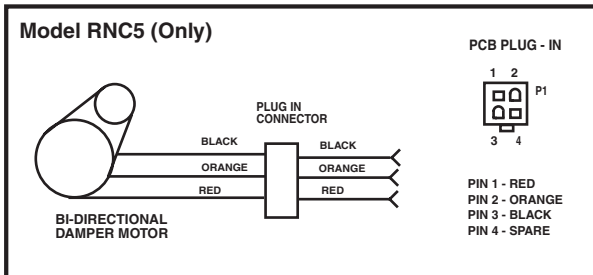


LEGEND

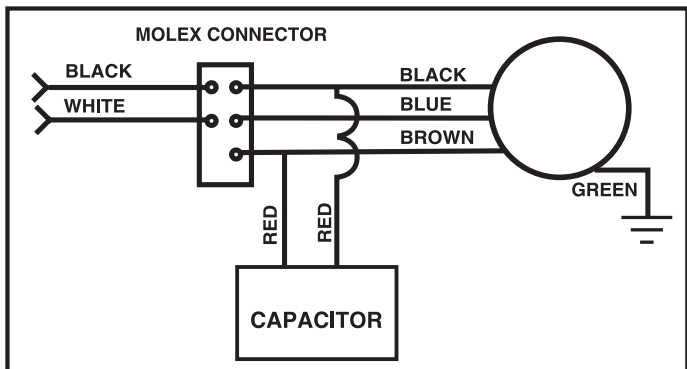
HIGH VOLTAGE	
12V LOW VOLTAGE	
FIELD INSTALLED 12V LOW VOLTAGE	



DEFROST DETAILS

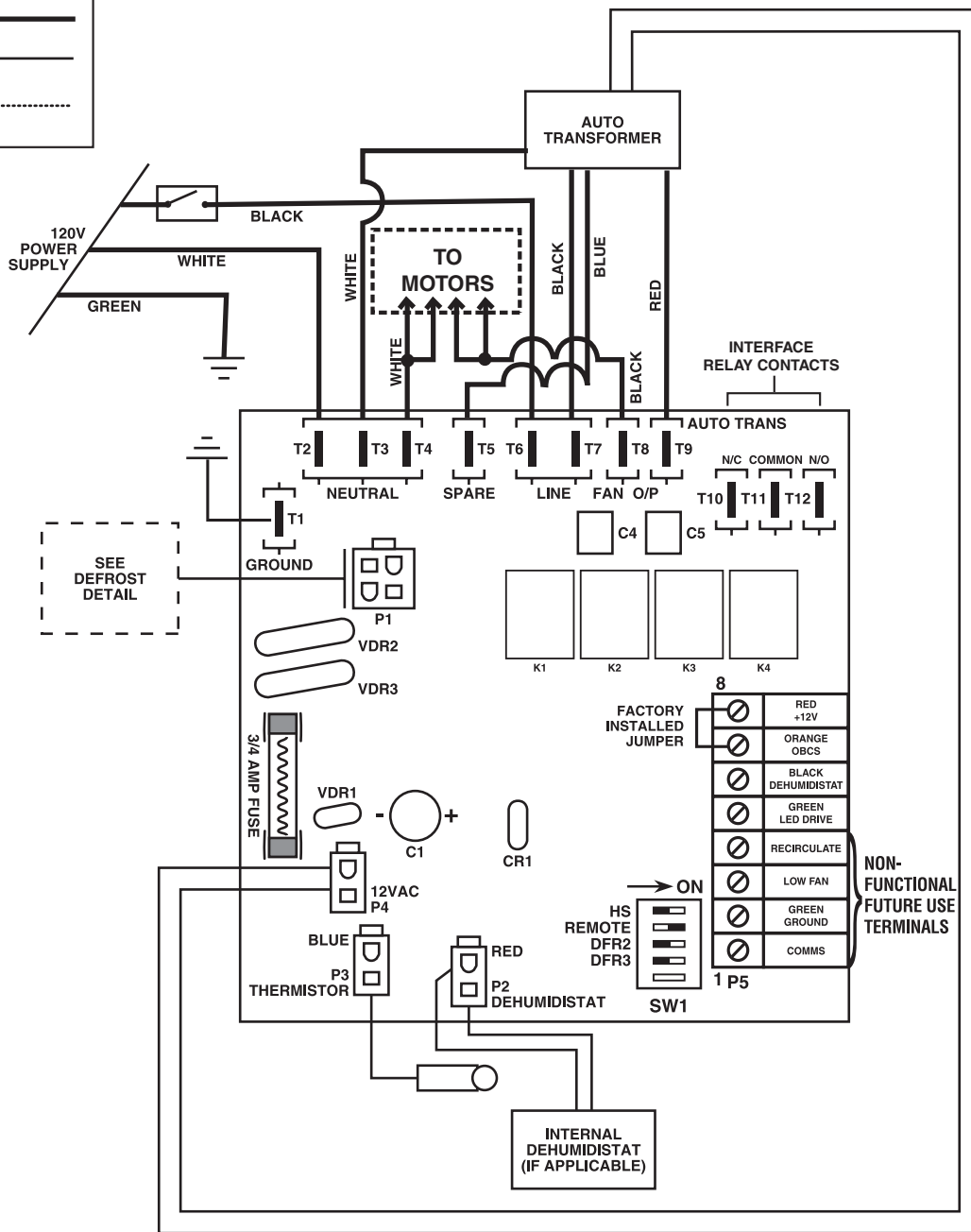


FAN MOTOR DETAILS

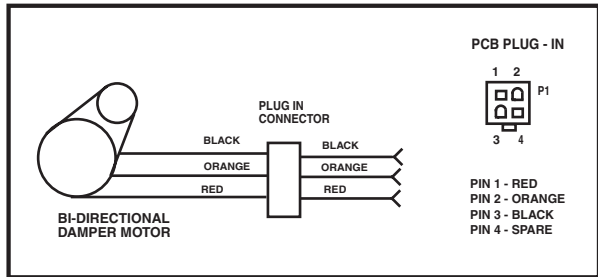


LEGEND

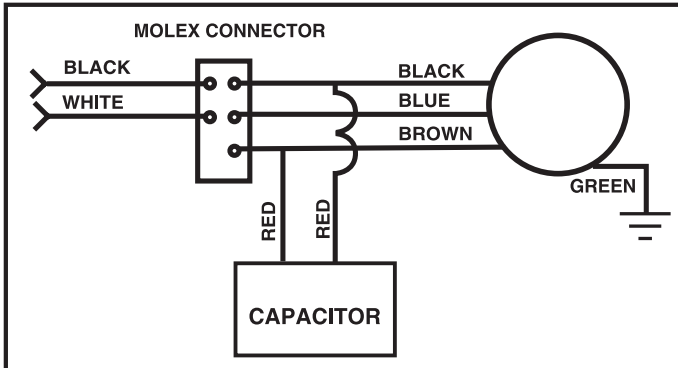
HIGH VOLTAGE	
12V LOW VOLTAGE	
FIELD INSTALLED 12V LOW VOLTAGE	



DEFROST DETAILS



FAN MOTOR DETAILS

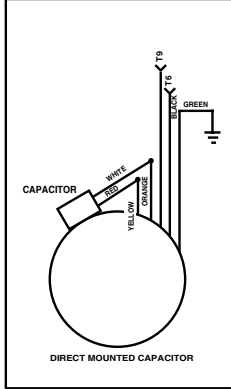


RNC3 WIRING DIAGRAM

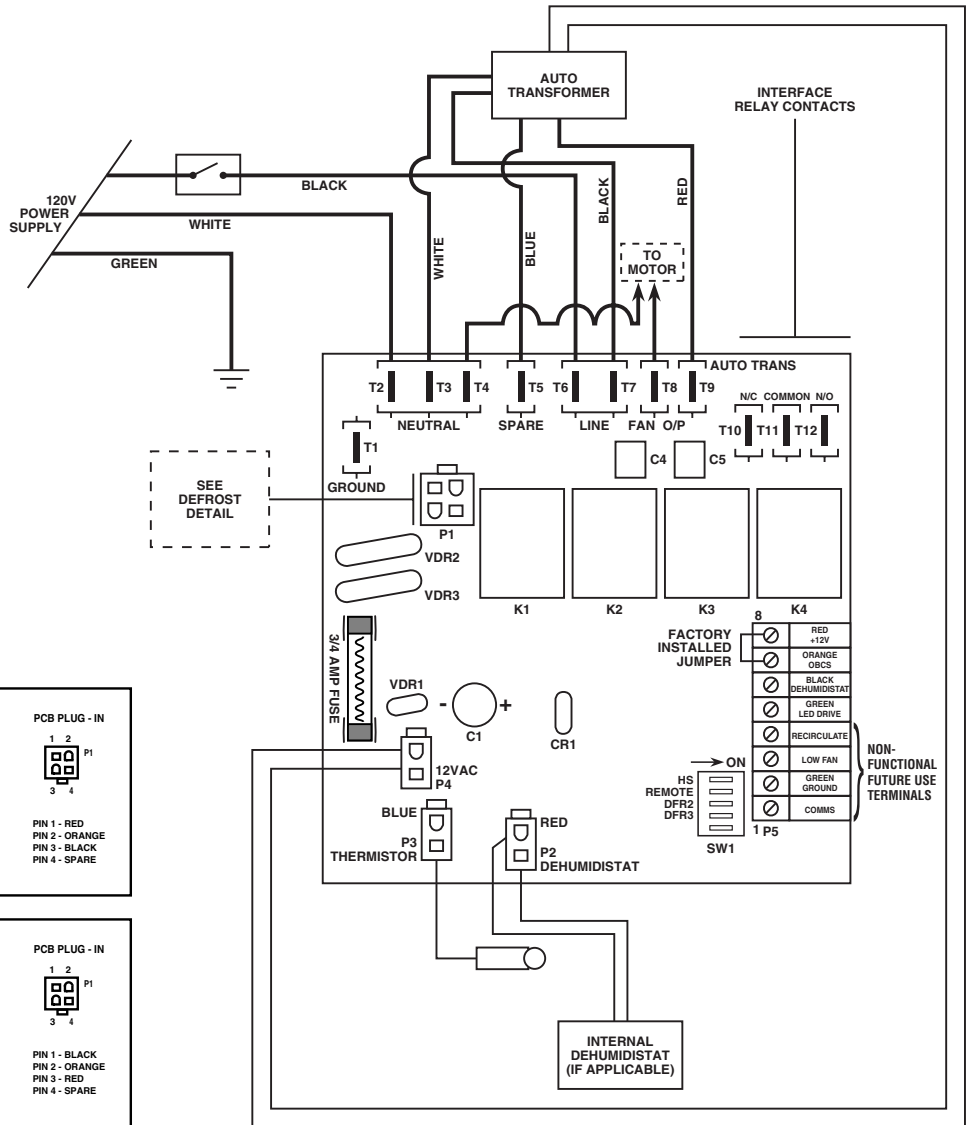
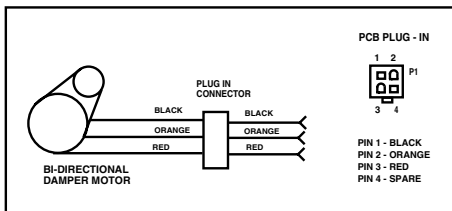
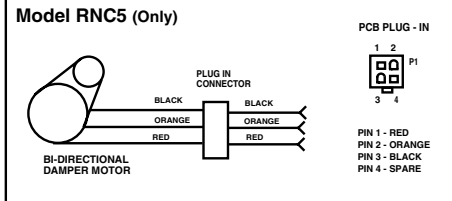
LEGEND

HIGH VOLTAGE	
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FIELD INSTALLED 12V LOW VOLTAGE	

FAN MOTOR DETAILS



DEFROST DETAILS



98-RNC3-001 INSHRV
0104

Troubleshooting

Symptom	Cause	Solution
Poor Air Flow	<ul style="list-style-type: none"> • 1/4" (6mm) mesh on the outside hoods is plugged • filters plugged • core obstructed • house grilles closed or blocked • dampers are closed if installed • poor power supply at site • duct is restricting HRV • improper speed control setting • HRV air flow improperly balanced 	<ul style="list-style-type: none"> • clean exterior hoods or vents • remove and clean filter • remove and clean core • check and open grilles • open and adjust dampers • have electrician check supply voltage at house • check duct installation • increase the speed of the HRV • have contractor balance HRV
Supply air feels cold	<ul style="list-style-type: none"> • poor location of supply grilles, the air flow may irritate the occupant • 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 directly spill the supply air on the occupant (eg. over a sofa) • turn down the HRV supply speed. A small duct heater (1kw) could be used to temper the supply air • placement of furniture or closed doors is restricting the movement of air in the home • if supply air is ducted into air handler return, the air handler fan may need to run continuously to distribute ventilation air comfortably
Dehumidistat is not Operating	<ul style="list-style-type: none"> • improper connection to ventilator • external low voltage is shortened out by a staple or nail • check dehumidistat setting it may be on OFF 	<ul style="list-style-type: none"> • check that the correct terminals have been used • check external wiring for a short • set the dehumidistat at the desired setting
Humidity Levels are too High in Winter Condensation is appearing on the windows	<ul style="list-style-type: none"> • dehumidistat is set too high • lifestyle of the occupants • moisture coming into the home from an unvented or unheated crawl space • moisture is remaining in the washroom/bathroom and kitchen areas • condensation seems to form in the spring and fall • HRV is set at too low a speed 	<ul style="list-style-type: none"> • set dehumidistat lower • avoid hanging clothes to dry, storing wood and venting clothes dryer inside. Heating wood may have to be moved outside • vent crawl space and place a vapor barrier on the floor of the crawl space • ducts from the washroom/bathroom should be sized to remove moist air as effectively as possible, use of a washroom/bathroom fan for short periods will remove additional moisture • timer or fan can be added to washroom/bathroom exhaust • on humid days, as the seasons change, some condensation may appear but the home's air quality will remain high with some HRV use • increase speed of the HRV
Humidity Levels are too Low	<ul style="list-style-type: none"> • dehumidistat control set too low • blower speed of HRV is too high • lifestyle of occupants • HRV air flow may be improperly balanced 	<ul style="list-style-type: none"> • set dehumidistat higher • decrease HRV blower speed • humidity may have to be added through the use of humidifiers • have a contractor balance HRV air flow
HRV and / or Ducts Frosting up	<ul style="list-style-type: none"> • HRV air flow is improperly balanced • malfunction of the HRV defrost system 	<ul style="list-style-type: none"> • Note: minimal frost build-up is expected on cores before unit initiates defrost cycle functions • have HVAC contractor balance the HRV • ensure working properly.
Condensation or Ice Build Up in Insulated Duct to the Outside	<ul style="list-style-type: none"> • incomplete vapor barrier around insulated duct • a 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 completely sealed
Water in the bottom of the HRV	<ul style="list-style-type: none"> • drain pans plugged • improper connection of HRV drain lines • HRV is not level • drain lines are obstructed • 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 line • check water drain connections • make sure water drains properly from pan
20 Minute Timer Not Working	<ul style="list-style-type: none"> • Wiring • Faulty control • Faulty circuit board 	<ul style="list-style-type: none"> • disconnect external controls and run unit through self test. If the unit runs through self test successfully, then the circuit board is okay. • check wiring connection. • make sure wires are connected to proper terminals. • test 20 Minute Timer, press and hold the button for 10 seconds then release. The unit should run on high speed and then return to normal operation when the button is released.

1. Inspect Exterior Hoods at least once a month.

Make sure exhaust and fresh air supply hoods are not blocked or restricted by leaves, grass, or snow. In winter, it is especially important to make sure snow is not blocking the hoods or that frost has not built up on the wire mesh (bird screen).

WARNING: *Blockage of hoods may cause an imbalance.*

2. Clean Air Filters - Twice a Year

The standard filters equipped with your HRV are removable and washable.

- a) simply open access door and slide core out
- b) remove filter clips
- c) once clips are removed filters can be taken off the core to be rinsed with water or a combination of mild soap and water. Do not clean in the dishwasher
- d) to re-assemble, place clean filter(s) (wet or dry) back into their positions against the core and return clips to their original position
- e) slide core back into its original position

3. Clean Core - Twice a Year

- a) open access door
- b) carefully grip ends of core and pull evenly outward.
-core may be snug, but will slide out of the channel
- c) once removed from the cabinet remove filters
- d) wash core in warm soapy water
(do not use dishwasher)
- e) install the clean filters
- f) install clean core

Note: *Core installation label on the outer end of the core.*

To install the clean core:

- a) first mount the bottom flange of the core guide into the bottom H channel approximately 1/4" (6mm)
- b) mount the left or right side flange of the core guide approximately 1/4" (6mm) followed by the other side
- c) mount the top flange of the core guide into the top H channel approximately 1/4" (6mm)
- d) with all four corners in place and the core straight and even, push hard in the center of the core until the core stops on the back of the cabinet

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

4. Motors - Maintenance Free

5. Drain (condensate) Line - Clean Once a Year

Inspect drain line, drain spout and "P" trap for blockage, mold or kinks. Flush with warm soapy water and replace if worn, bent or unable to clean.

6. Clean Duct System if Required

The duct system running to and from the HRV may accumulate dirt. Wipe and vacuum the duct once every year. You may wish to contact a Heating/Ventilation company to do this.

7. General Maintenance - Twice a Year

Wipe down the inside of the cabinet with a damp cloth to remove dirt, bugs and debris that may be present.

8. Cleaning the Fans

Fans may accumulate dirt causing an imbalance and/or excessive vibration of the HRV. A reduction in the air flow may also occur. In new construction this may result within the first year due to heavy dust and may occur periodically after that over time depending on the outdoor conditions.

- unplug the HRV and open the service door
- remove the core
- remove ducting (metal and/or flexible insulated type) from the red and/or blue ports which are connected immediately inline with the fan assembly
- use a small brush, such as a toothbrush or pipe cleaner, and insert first
 - (a) through the large opening of the fan assembly and then
 - (b) through the smaller opening in the end of the fan assembly
- 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
- vacuum and wipe
- reassemble making sure ducting is reattached firmly and insulation and moisture barrier are sealed and taped

Before attempting this task, thought should be given to having a qualified service technician complete the service work.



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