



Built Better To Last Longer

**Residential
Central Heat Recovery Ventilator
Product Specifications
and
Installation and User Manual
NuWave Series
Models**

NW130, NW140, NW160, NW220, NW260

APPLICATION WARNING

It is always important to assess how the operation of any Heat Recovery Ventilator (HRV) may interact with vented combustion equipment (i.e. gas furnaces, oil furnaces, wood stoves, fireplaces. etc.)

Never install an HRV in a situation where it's normal operation, lack of operation, or partial failure may result in the back drafting on vented combustion equipment such as water heaters, furnaces and fireplaces

**DO NOT ATTEMPT INSTALLING THIS HRV WITHOUT
FIRST READING THIS ENTIRE MANUAL**

ENERGY STAR RATED PRODUCTS: NW130, NW160



This product earned the ENERGY STAR by meeting strict energy efficiency guidelines set by Natural Resources Canada and the US EPA.

It meets ENERGY STAR requirements only when used in Canada.

**Summerraire Mfg.
Peterborough, Ontario,
Canada, K9J 6X6**

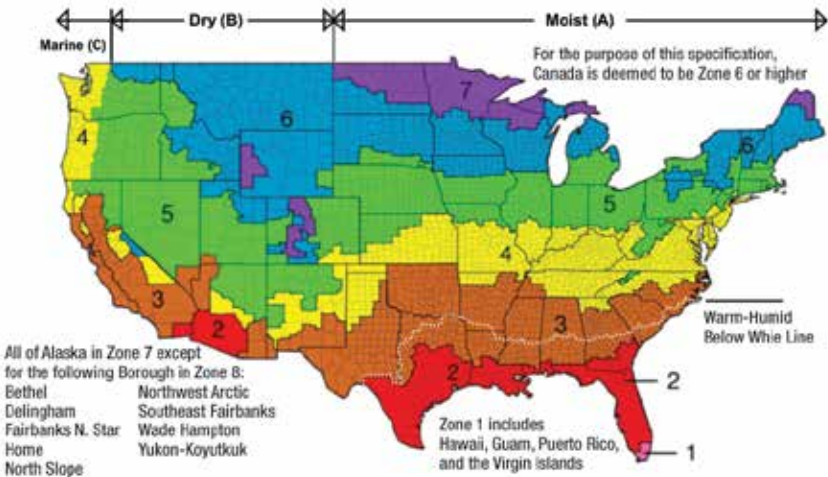


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NOTE: Anytime the HRV is powered on allow 20 seconds for the main control to reset prior to making any operational changes.

This product earned the ENERGY STAR by meeting strict energy efficiency guidelines set by Natural Resources Canada and the US EPA. It meets ENERGY STAR requirements only when used in Heating zones: Canada and/or climate zones ≥ 6 on the adjacent map.



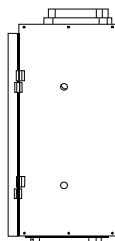


SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

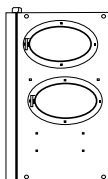
MODEL : NW130

Options Installed: None
Electrical: 120 V - 1.5 Amp
Exhaust Air Transfer Ratio: 0.02

Low Temp. Reduction Reduction During -25°C Test 20.0%
Maximum Unbalanced Airflow During -25°C Test: 8.5 L/s

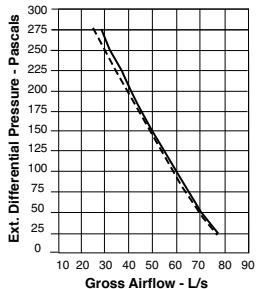


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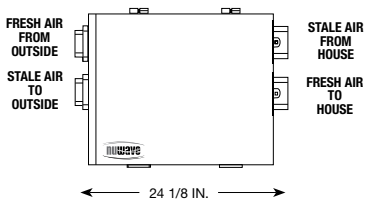


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VENTILATION PERFORMANCE							
EXT. STATIC PRESSURE		NET SUPPLY AIR FLOW		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHUAUST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	67	143	70	149	70	149
50	0.2	62	132	65	137	64	136
75	0.3	56	118	58	123	59	125
100	0.4	49	104	51	108	54	113
125	0.5	43	91	45	95	47	100
150	0.6	38	80	40	84	41	86
175	0.7	34	72	35	75	33	71
200	0.8	30	63	31	66	26	57
225	0.9	25	52	25	54	22	47



— Net Supply - - - - - Net Exhaust



ENERGY PERFORMANCE										
	SUPPLY TEMPERATURE		NET AIR FLOW		SUPPLY/ EXHAUST FLOW RATIO	AVERAGE POWER (WATTS)	SENSIBLE RECOVERY EFFICIENCY	APPARENT SENSIBLE EFFECTIVENESS	NET MOISTURE TRANSFER	
	°C	°F	L/S	CFM						
HEATING	i	0	32	33	70	0.92	60	65	80	0.07
	ii	0	32	45	96	1.00	94	61	70	0.01
	iii	0	32	55	117	.99	94	60	68	-0.01
	iv									
	v	-25	-13	30	64	0.94	71	60	76	0.07



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NW130-SP-EN-REV3

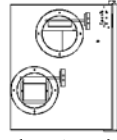


SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

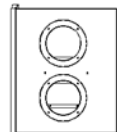
MODEL: NW140

Electrical: 120 V - 1.2 Amp
Exhaust Air Transfer Ratio: 0.04 @ 0.4 in wg. (100 Pa)
Low Temp. Reduction Factor: 17.8% Supply - 13.8% Exhaust
Low Temp. Imbalance Factor: 0.86

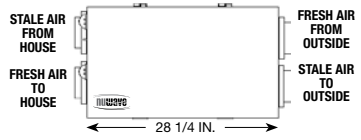
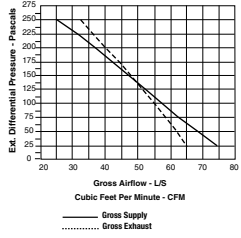
VENTILATION PERFORMANCE							
EXT. STATIC PRESSURE	NET SUPPLY AIR FLOW	GROSS AIR FLOW					
		SUPPLY			EXHAUST		
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	71	151	74	157	64	136
50	0.2	65	138	68	144	61	130
75	0.3	60	127	62	133	58	123
100	0.4	55	117	57	122	55	117
125	0.5	50	107	52	111	52	110
150	0.6	45	96	47	100	48	102
175	0.7	41	87	43	90	44	94
200	0.8	36	76	37	79	41	87
225	0.9	32	68	33	70	37	79
250	1.0	24	52	26	54	34	72



← 14 1/4 IN. →



↑ 20 IN. ↓



ENERGY PERFORMANCE										
	SUPPLY TEMPERATURE		NET AIR FLOW		SUPPLY/ EXHAUST FLOW RATIO	AVERAGE POWER (WATTS)	SENSIBLE RECOVERY EFFICIENCY	APPARENT SENSIBLE EFFECTIVENESS	NET MOISTURE TRANSFER	
	i	°C	°F	L/S						CFM
DUALZEH	i	0	32	30	63	1.03	80	68	82	0.01
	ii	0	32	46	98	1.00	118	63	74	0.02
	iii	0	32	55	118	1.00	136	61	71	0.02
	iv	-25	-13	32	69	.91	102	59	82	0.04

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NW140-SP-EN-REV4



SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

MODEL: NW160

Options Installed: Defrost Internal Dehumidistat

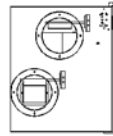
Electrical: 120 V - 1.27 Amp

Exhaust Air Transfer Ratio: .02

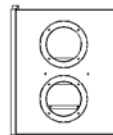
Low Temp. Ventilation Reduction During -25°C Test: 20%

Maximum Unbalanced Airflow During -25°C Test: 7 L/s

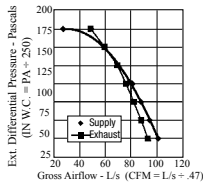
VENTILATION PERFORMANCE							
EXT. STATIC PRESSURE		NET SUPPLY AIR FLOW		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHUAUST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	84	178	86	184	110	234
50	0.2	77	163	79	169	103	220
75	0.3	71	152	74	157	99	210
100	0.4	63	134	65	139	91	194
125	0.5	55	116	56	120	81	173
150	0.6	43	92	45	96	67	143
175	0.7	23	49	24	51	53	113



← 17 3/4 IN. →



↑ 20 3/4 IN. ↓



ENERGY PERFORMANCE								
HEATING	SUPPLY TEMPERATURE		NET AIR FLOW		POWER CONSUMED (WATTS)	SENSIBLE RECOVERY EFFICIENCY	APPARENT SENSIBLE EFFECTIVENESS	LATENT RECOVERY MOISTURE TRANSFER
	°C	°F	L/S	CFM				
	0	32	30	64	71	76	86	0.01
	0	32	45	95	90	71	80	0.02
	0	32	54	114	101	69	77	0.02
	-25	-13	32	68	85	69	88	0.04
TOTAL RECOVERY EFFICIENCY							18	
COOLING	35	95	31	65	83			



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NW160-SP-EN-REV4



SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

MODEL : NW220

Options Installed: Defrost Internal Dehumidistat

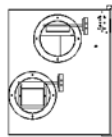
Electrical: 120 V - 1.3 Amp

Exhaust Air Transfer Ratio: 0.014

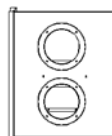
Low Temp. Ventilation Reduction During -25°C Test: 16%

Maximum Unbalanced Airflow During -25°C Test: 14 L/s

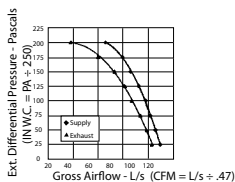
VENTILATION PERFORMANCE							
EXT. STATIC PRESSURE		NET SUPPLY AIR FLOW		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHUAUST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	110	234	112	237	105	223
50	0.2	106	226	108	229	100	214
75	0.3	102	217	103	220	95	203
100	0.4	98	209	100	212	88	187
125	0.5	92	197	94	200	82	175
150	0.6	86	183	87	185	74	157
175	0.7	79	169	81	171	61	129



← 17 3/4 IN. →



↑
20 3/4 IN.
↓



ENERGY PERFORMANCE								
HEATING	SUPPLY TEMPERATURE		NET AIR FLOW		POWER CONSUMED (WATTS)	SENSIBLE RECOVERY EFFICIENCY	APPARENT SENSIBLE EFFECTIVENESS	LATENT RECOVERY MOISTURE TRANSFER
	°C	°F	L/S	CFM				
	0	32	40	84	103	68	77	0.01
	0	32	66	140	132	62	68	0.00
	0	32	86	182	158	58	64	0.00
	-25	-13	34	72	116	61	79	0.03
TOTAL RECOVERY EFFICIENCY								
COOLING	35	95	42	89	104	29		

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NW220-SP-EN-REV4



SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

MODEL : NW260

Options Installed: Defrost Internal Dehumidistat

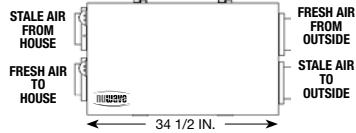
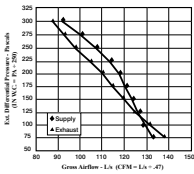
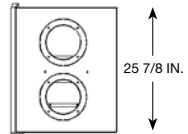
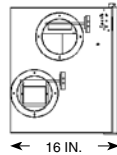
Electrical: 120 V - 3.7 Amp

Exhaust Air Transfer Ratio: 0.05

Low Temp. Ventilation Reduction During -25°C Test: 16.9%

Maximum Unbalanced Airflow During -25°C Test: 15.6 L/s

VENTILATION PERFORMANCE								
EXT. STATIC PRESSURE	NET SUPPLY AIR FLOW				GROSS AIR FLOW			
	Pa	in. wg	L/S	CFM	SUPPLY L/S	CFM	EXHAUST L/S	CFM
75	0.3		125	265	133	283	138	294
100	0.4		121	257	129	274	131	279
125	0.5		118	251	126	268	125	266
150	0.6		116	246	123	262	119	254
175	0.7		113	240	120	256	114	243
200	0.8		110	235	118	251	110	234
225	0.9		106	226	114	241	102	217
250	1.0		100	212	106	226	96	205
275	1.1		94	200	101	214	92	196



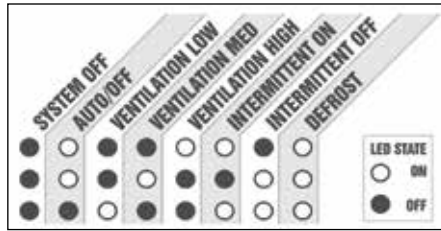
ENERGY PERFORMANCE								
HEATING	SUPPLY TEMPERATURE		NET AIR FLOW		POWER CONSUMED (WATTS)	SENSIBLE RECOVERY EFFICIENCY	APPARENT SENSIBLE EFFECTIVENESS	LATENT RECOVERY MOISTURE TRANSFER
	°C	°F	L/S	CFM				
	0	32	46	97	176	69	86	0.01
	0	32	67	141	222	70	84	0.01
	0	32	100	213	400	64	80	0.01
	-25	-13	41	88	213	66	87	0.03

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NW260-SP-EN-REV4

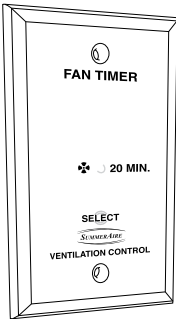
HRV LED function indicators



Note: a flashing LED is an indication that an external timer or dehumidistat has initiated a high speed ventilation sequence.

OPTIONAL CONTROLS

Installation of a user-accessible control with your product will improve comfort and may significantly reduce the product's energy use.



20 Minute Remote Timer Touch Pad Model ECPBT

This 20-Minute Touch Pad **MUST** be connected to the “CT” terminals on the HRV exterior. This control will not function if connected to PBT connection points.

Install using 18/2-thermostat wire or telephone wire. No electrical box is required. Maximum number of ECPBT controls per HRV is six (6).

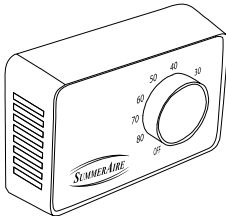
Maximum cumulative lead length is 2000 lineal feet. Touch pads are typically installed where 20 minutes of high speed ventilation may be desired.

Once activated by a momentary push of the SELECT button on the Touch Pad, the HRV switches to high speed ventilation and the Touch Pad LED will illuminate. The HRV will reset to the previously selected mode of operation once the 20 minutes have expired. To cancel the selection, momentarily depress the SELECT button on the 20-minute Touch Pad. The selection can also be cancelled at any other optional control by momentarily depressing the SELECT button.

Should a dehumidistat be activated then the LED on this 20 minute timer will illuminate until the dehumidistat is turned off or automatically resets.

NOTE: This control will not respond while a crank timer or dehumidistat is operational.

OPTIONAL CONTROLS



Wall Mount Dehumidistat

Model - SRDEH

This control is typically installed in an area of the home where humidity may require automatic monitoring. This could be a central location (i.e. near furnace thermostat) or in a specific room (i.e. kitchen, laundry etc.). When wall mount dehumidistats are used, set the HRV internal dehumidistat to OFF. Connect to HRV using 18/2 thermostat wire or telephone wire.

No electrical box is required.



NuWave Digital Control

Model - SHEPHERD

The SHEPHERD is a wall mount liquid crystal display device.

This control provides the opportunity to select all available operating features of the HRV.

Simply push the select button once to highlight the screen. Continue to press the select button until the desired feature is highlighted.

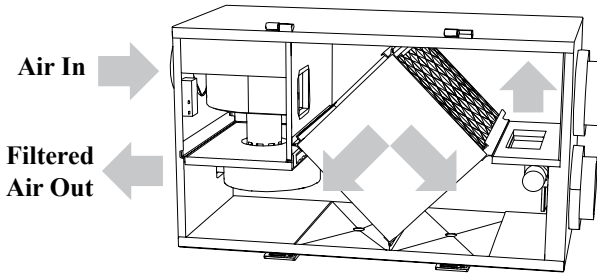
The HRV will then assume the selected mode of operation.

Install using 18/2 thermostat wire or telephone wire up to two may be installed per HRV.

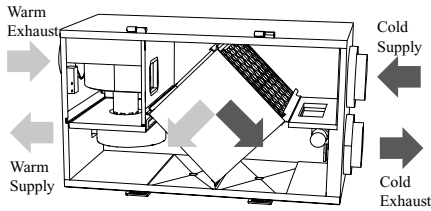
No electrical box is required.

Refer to wiring diagram in this manual.

Model NW160 Illustrated



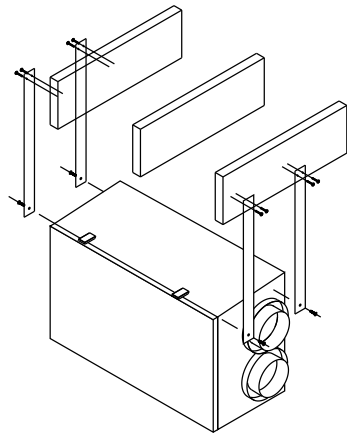
Installation Options



Standard Ventilation

1. Selecting a location

Typically the HRV is located in the mechanical room with close proximity to an outside wall. Other installation locations are acceptable provided that the ambient air temperature does not fall below freezing. This is to prevent the condensate drain lines from freezing.



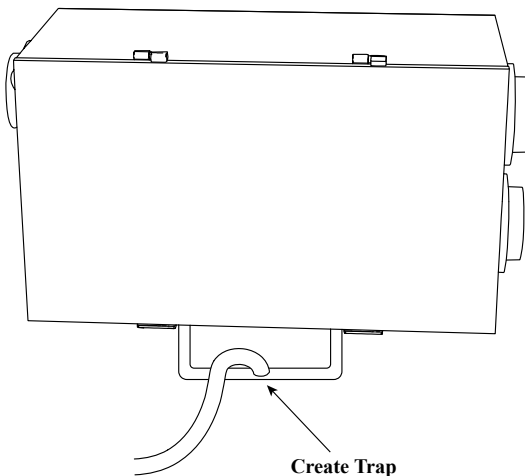
2. Mounting the HRV

Included with the HRV are four (4) laminated rubber hanging straps. These are to be secured at each of the four corners of the HRV using the screws provided. The other ends of the straps should be secured to the floor joists using large head screws. To ensure proper condensate flow, HRV must be installed level in both directions.

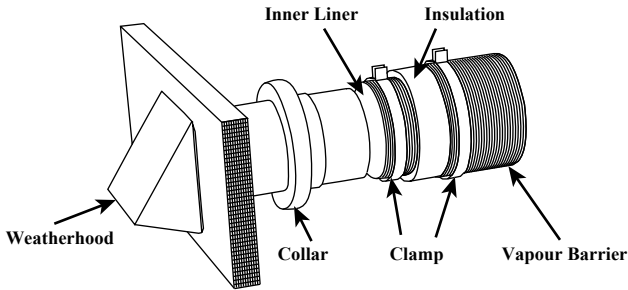
To ensure quiet operation of ENERGY STAR qualified HRV/ERV's, each product should be installed using sound attenuation techniques appropriate for the installation.

3. Condensate Drain hose installation

Two (2) drain spigot assemblies are provided. These are to be installed through the drain pan holes provided. Simply install the spigot through the openings and secure in place by installing the nylon washer and nut on the outside of the cabinet. Once installed, attach 1/2" plastic tubing (not supplied) to the spigots. Create a trap by forming a loop in the tubing. This will prevent the cross contamination of the air streams through the tubing. Ensure that the condensate drain tubing is not exposed to freezing temperatures. Typically the drain line is connected into a floor drain, sink or stand pipe.



4. Outside Weatherhoods and Ducting to the outside.



The outside weather hoods must have built in bird screens to prevent birds and rodents from entering the duct system. Minimum mesh size of 1/4" must be used. Smaller mesh size will result in restricted air flows with increased potential for the development of blockages.

Vent hoods with gravity dampers must not be used.

Weather hoods should be installed:

- a) A minimum of 6 ft. apart from each other.
- b) At least 18" above ground level
- c) Away from sources of contaminants such as automobile exhaust fumes, gas meters, garbage cans.
- d) Locate away from prevailing winds whenever possible.

The size and design of the weather hoods shall be selected to ensure adequate free area to minimize air flow restrictions.

It is recommended that 6" insulated ducting with a integral single piece vapour barrier be provided. Due to the high air flow restrictions in insulated flex duct it is recommended that run lengths be kept to a minimum, stretched tightly and with as few elbows as possible, if length greater 25 ft. use 7" insulated duct. Minimum RSI value of 0.75 (R4) is required.

Weather hood collar should be screwed to inner surface of sill plate and sealed with high quality caulking or aluminum faced tape. Both the inner and outer liners of flexible ducting should be securely attached to the weather hood tubing and collar and to the HRV collar. A good bead of high quality caulking (preferably acoustical sealant) should be used prior to clamping the liners. It is very important to ensure that the fresh air intake line is well sealed and that the vapour barrier is sealed.

5. Installation Methods

The way that your Heat/Energy-recovery ventilator is installed may make a significant difference to the electrical energy that you will 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 airhandler for room-to-room ventilation, an electrically efficient furnace that has an electronically commuted (EC) variable speed blower motor will minimize your electrical energy consumption and operating cost.

Dedicated Duct System.

In this arrangement the HRV is installed with a dedicated duct system. All applicable rooms are exhausted and provided with fresh supply air as required. The main advantage of this type of installation is it provides the ability to balance the exhaust and supply air streams from each serviced room.

The HRV system operates independent of the home's heating system.

Please refer to fig I. below.

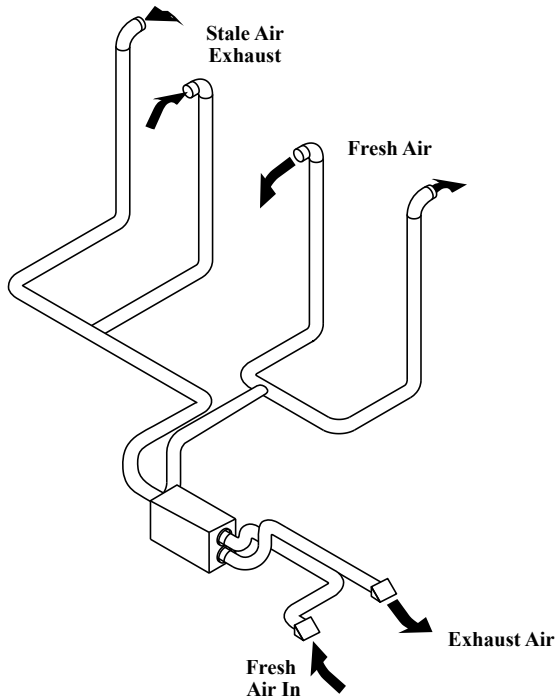


fig. I

Indirect Duct System

Safety Warning

Some Building Code and Combustion Appliance Installation Codes do not allow location of return air grills or any opening such as a breather 'T' in an enclosed room with spillage susceptible combustion appliances. If combustion appliances are used, and not yet enclosed in a room, locate the grill or breathing 'T' outside any future wall locations and a minimum distance of 6 feet from the combustion appliance.

This method of installation permits localized exhaust of indoor air and uses the existing forced air system to distribute fresh air.

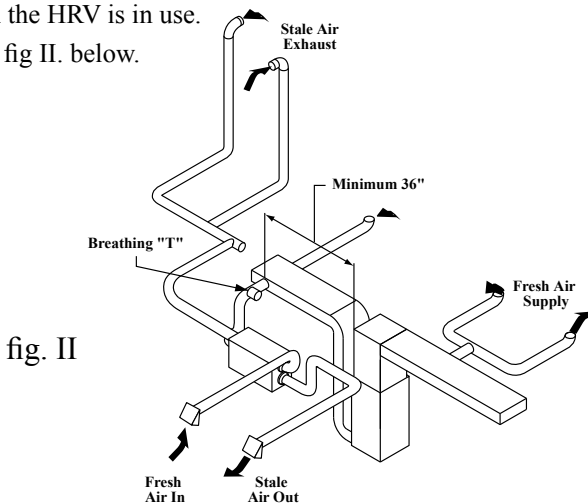
Although independent room balancing of exhaust air can be achieved with the indirect duct system, the distribution of fresh supply air cannot be balanced.

Where required by local codes, the HRV/ERV supply duct may be directly connected to the furnace return air duct. The supply duct shall be positioned as shown on the attached drawing. In this application no opening such as a breather 'T' is used.

Also, where permitted by local codes, the HRV/ERV supply duct may be indirectly connected to the furnace return air duct using a breather 'T'. In this application, the breather 'T' is installed into the HRV/ERV supply duct before the connection to the return air duct. Leaving a gap in the ventilation supply duct in place of the breather 'T' is acceptable but not recommended. In this installation, a grill is placed in the furnace return air duct and the HRV/ERV supply duct is pointed at this grill at a minimum distance of 100mm (4") but not greater than 300mm (12"). The free area of the grill shall not be less than the free area of the supply duct. Call backs have occurred because it was thought that something had been accidentally left out of the installation.

This method of installation requires that the forced air circulation fan be operated when the HRV is in use.

Please refer to fig II. below.



Direct Duct System

Safety Warning

Some Building Code and Combustion Appliance Installation Codes do not allow location of return air grills or any opening such as a breather 'T' in an enclosed room with spillage susceptible combustion appliances. If combustion appliances are used, and not yet enclosed in a room, locate the grill or breathing 'T' outside any future wall locations and a minimum distance of 6 feet from the combustion appliance.

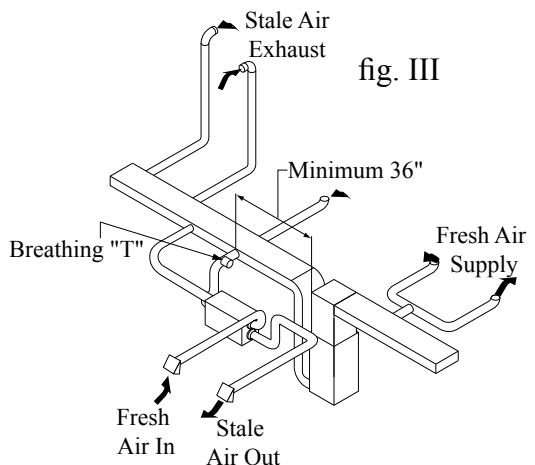
This method of installation is used primarily when it is not reasonable to install dedicated duct runs from the HRV to the various rooms of the dwelling. In this installation the warm exhaust and warm supply duct runs from the HRV are connected directly to the forced air heating system ductwork.

This method of installation does not permit source capture of the indoor air nor does it permit room balancing.

Where required by local codes, the HRV/ERV supply duct may be directly connected to the furnace return air duct. Where both the exhaust and the supply duct are installed into the return air duct the exhaust air duct shall be positioned upstream at a distance of not less than 1 meter (or 3 feet) from the supply duct. The supply duct shall be positioned as shown on the attached drawing. In this application no opening such as a breather 'T' is used.

Also, where permitted by local codes, the HRV/ERV supply duct may be indirectly connected to the furnace return air duct using a breather 'T'. In this application, the breather 'T' is installed into the HRV/ERV supply duct before the connection to the return air duct. Leaving a gap in the ventilation supply duct in place of the breather 'T' is acceptable but not recommended. In this installation, a grill is placed in the furnace return air duct and the HRV/ERV supply duct is pointed at this grill at a minimum distance of 100mm (4") but not greater than 300mm (12"). The free area of the grill shall not be less than the free area of the supply duct. Call backs have occurred because it was thought that something had been accidentally left out of the installation.

The Direct Duct System method of installation requires that the forced air system circulation fan be operated when the HRV is in use.



Please refer to fig. III.

6. Interior Ducting

Ducting to the central forced air ductwork system, or if used, a dedicated duct system, should be made of galvanized metal whenever possible.

To minimize airflow losses, runs should be kept as short as possible using 45 degree elbows instead of 90 degree. Whenever possible use “Y” fittings instead of “T” fittings.

All joints must be fastened with screws, rivets or duct sealant and wrapped with a quality duct tape to prevent leakage. If standard grills are used, it is recommended that wall grills of not less than 6” x 12” and floor grills of no less than 4” x 10” be used to minimize air flow restrictions.

7. Fresh Air Supply Ducting

Fresh air supply ducting to the living space may be either a dedicated or an indirect duct system. Please refer to figures I and II.

Should the indirect method be used it is suggested that at the point of connection to the HRV that a short length of flex duct be used to electrically isolate the two systems.

Fresh air supply grills may be either wall or ceiling mounted. Avoid locating these grills where room occupants may be exposed to the fresh air supply as this air temperature may be slightly less than the room air temperature.

Also, it is recommended that adjustable grills such as round “Tech Grills” be used to permit balancing of the ventilation by room application.

It is recommended that a breathing “T” be installed in the fresh air duct between the HRV and the central distribution system. This will maximize efficiency, but hard connection is acceptable.

8. Stale Air Return System

The stale air return system is used to extract humid, stale air from the areas of the dwelling where the worst air quality conditions might exist. These may include areas such as laundry rooms, bathrooms and kitchens. Note that C.S.A. Standard F326 requires that air be exhausted from each room with a forced air furnace.

Wall stud spaces can be used as ducting for high wall returns provided that they are lined with galvanized metal.

Note: Check local code compliance before implementing.

Adjustable “Tech Grills” are recommended for use in the return air system. They can be wall or ceiling mounted thereby permitting balancing of the air being exhausted. Stale air return grills should be located at opposite ends in the room to the fresh air grills to ensure good air exchange.

Please note that the exhaust air stream from a kitchen area must never be connected to the kitchen range hood. Instead an exhaust grill should be mounted high on the wall as required by local codes so as not to extract cooking by products.

9. Air Flow Balancing

READ THE APPLICATION WARNING AT THE FRONT OF THIS MANUAL.

A magnehelic gauge and pilot tube flow measuring system is used for easy and accurate air flow measurement
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Upon completion of the installation it is necessary that the Ventilation System be balanced. This is necessary to ensure that the volume of air being exhausted from the dwelling is equal to the volume of air being supplied. Balancing will also ensure that the HRV is operating at it’s maximum efficiency.

Detailed check list to be carried out prior to balancing.

- a) Install air flow station in each of the warm air streams.
- b) Ensure that all ductwork is secured and sealed.
- c) Drain connections are in place and drain trap filled with water.
- d) Dwelling vapour barrier is complete and intact.
- e) Fireplace dampers, windows and doors are closed.

- f) Clothes dryer off, (if vented to the outdoors)
- g) Furnace, hot water heater, (non direct vent) are turned off.
- h) All other exhaust fans are off.
- i) Ensure that HRV filters and core are in place and integral balancing dampers are wide open.
- j) Power up HRV and set to high speed.
- k) Adjust all branch tech grills and registers to desired air flows.
- l) After taking readings at both the stale air being exhausted and the fresh air supply air stream, damper down the higher air flow stream with the integral balancing damper to equal the lower volume air stream.
- m) Once the air flows are balanced lock the balancing dampers in place.
- n) While it is necessary to ensure that both air streams are balanced within 10% of each other, a near balanced condition should be possible.
- o) Upon completion, return the fan speed selection to the normal speed of low.

A positive pressure situation within the dwelling may drive moist air into the external walls of the dwelling where, in cold weather, it may condensate, potentially causing structural damage.

A negative pressure within the dwelling may have severe undesirable effects. In some geographic locations, radon gas may be drawn into the living space. A negative condition may also cause back drafting of vented combustion appliances such as fireplaces and furnaces.

When it is possible for excessive pressurization or depressurization of a dwelling to occur it may be necessary to perform a House Pressure Test. This test is most important where fuel fired devices are installed that are susceptible to spillage.

IT IS YOUR RESPONSIBILITY TO DETERMINE IF THE “HOUSE PRESSURE TEST” IS REQUIRED.

AIR FLOW BALANCING

READ THE APPLICATION WARNING AT THE FRONT OF THIS MANUAL.

Upon completion of the installation it is necessary that the Ventilation System be balanced. This is necessary to ensure that the volume of air being exhausted from the dwelling is equal to the volume of air being supplied. Balancing will also ensure that the HRV is operating at it's maximum efficiency.

Equipment Required:

- Magnahelic Gauge or Inclined Manometer with scale to 1" WC
- ¼" diameter rigid tube to provide 2", +/- 1/16" insertion into each of the 2 door ports
- Flexible ¼" tubing

Procedure:

Turn off all appliances and fans that may vent to the outdoors (i.e. vacuums, furnaces, range hoods, clothes dryers, water heaters etc.).

All dwelling windows and doors are closed, close fireplace dampers.

Dwelling vapour barrier is complete and intact.

Ensure HRV drain connections are in place, drain trap is created in drain hose and that the trap is filled with water.

HRV filters and energy recover cores are in place.

Turn on furnace circulating fan if HRV is connected to furnace ducting.

Ensure all duct connections are sealed.

Open HRV balancing dampers fully.

Power up HRV and set speed to high.

Allow system to stabilize, approximately 2 minutes.

Position magnahelic gauge close to HRV and set to zero.

With flexible line connected to magnahelic and rigid tube connected to flexible tube, insert rigid tube into lower door port 2" and record reading at magnahelic.

Remove tube and insert into upper door port 2" and record reading.

Close balancing damper associated with the higher reading until that reading equals the required value shown in Fig. 5 to provide the same CFM. Secure both dampers by tightening the locking screws once the set points are established.

Recheck both pressures and record.

Install 1/4" white hole plugs provided into balancing ports in door.

While it is necessary to ensure that both air streams are balanced within 10%, a near balanced condition should be possible.

Fig. 5

MODEL NW130 ONLY

Refer to the following conversion chart to determine CFM flow.

Mag Reading Inches WG Supply Air Stream	Mag Reading Inches WG Supply Air Stream	CFM Equivalent
Note 1	Note 2	
0.29	0.28	70
0.31	.029	80
0.34	0.34	93
0.38	0.35	100
0.41	0.40	108
0.43	0.42	112
0.45	0.44	117
0.47	0.48	125
Note 1 - Dedicated Supply and Exhaust System, NO furnace present		
Note 2 - Furnace fan running on Heat Speed, Return @ .10" ESP.		

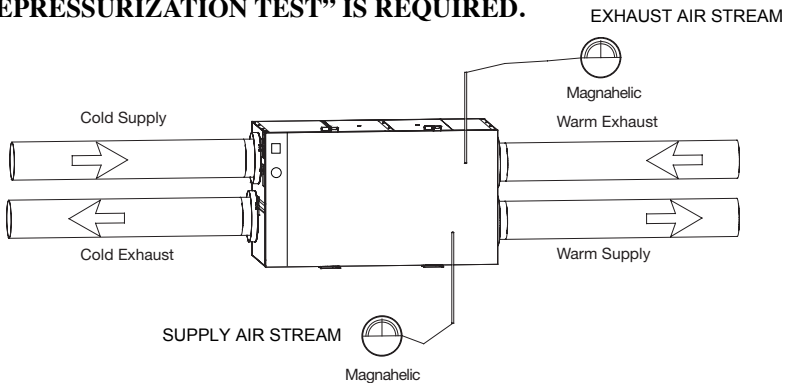
Mag Reading Inches WG Exhaust Air Stream	Mag Reading Inches WG Exhaust Air Stream	CFM Equivalent
Note 1	Note 2	
0.57	0.56	70
0.53	0.52	80
0.41	0.38	93
0.38	0.32	100
0.32	0.27	108
0.26	0.24	117
0.22	0.22	117
0.18	0.18	125
Note 1 - Dedicated Supply and Exhaust System, NO furnace present		
Note 2 - Furnace fan running on Heat Speed, Return @ .10" ESP.		

A positive pressure situation within the dwelling may drive moist air into the external walls where, in cold weather it may condense, potentially causing structural damage.

A negative pressure situation within the dwelling may have severe undesirable effects. In some geographic locations, radon gas may be drawn into the living space. A negative condition may also cause back drafting of vented combustion appliances such as fireplaces and furnaces.

When it is possible for excessive pressurization or depressurization of a dwelling to occur it may be necessary to perform a House Depressurization Test. This test is most important where fuel fired devices are installed that are susceptible to spillage.

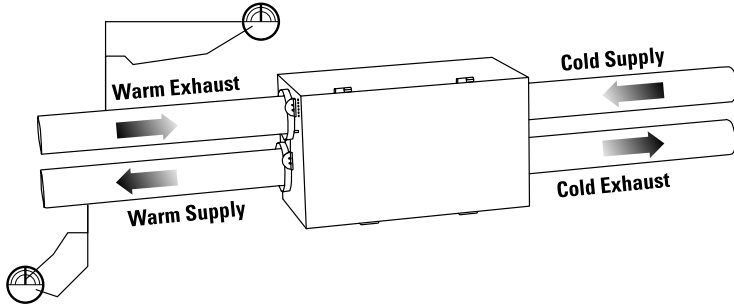
IT IS YOUR RESPONSIBILITY TO DETERMINE IF THE “HOUSE DEPRESSURIZATION TEST” IS REQUIRED.



Summaire HRV Air Flow Balancing Models: NW140, NW160, NW220, NW260

A. Preliminary Procedures:

1. Seal all the unit's ductwork with foil tape.
2. Close all windows and doors and fireplace damper, turn off all exhaust devices (range hoods, clothes dryer, bath fan, etc.), make sure all filters are clean.
3. Set build-in balancing dampers fully open. Tap 1/8" hole in ductwork for pitot tube insertion.



B. Balancing Procedures:

1. Set HRV to high speed. Make sure that the furnace blower is ON if the installation is in any way connected to the ductwork of the furnace. If not, leave the furnace blower OFF. Adjust air flow in branch lines if using source point exhaust and/or supply.
2. If outside temperature is below -3°C (26°F), make sure defrost light is not on while balancing.
3. Place magnahelic gauge on a level surface and adjust it to zero. Insert pitot tube into exhaust air ductwork with tip aligned with ductwork, pointing away from HRV, into air flow. Record the reading on gauge.
4. Move kit to other air stream HRV, insert pilot tube into fresh air ductwork with tip aligned with ductwork, pointing towards HRV, into air flow. Record reading on gauge. Adjust fresh air balancing damper until reading is approximately the same as in exhaust air ductwork. If the reading in the fresh air ductwork is less than in the exhaust air, go back and adjust the exhaust balancing damper to equal the fresh air flow.
5. Secure dampers in place with fastening screw. Duct tape over pitot tube holes. Convert FPM reading on gauge to CFM with conversion chart and record on balancing sticker and affix to HRV near label.
6. Note: Unit is considered balanced if readings are within $\pm 10\%$.

HRV TROUBLE SHOOTING GUIDE OPERATION GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
PERSISTENT CONDENSATION ON WINDOWS	IMPROPER ADJUSTMENT OF DEHUMIDISTAT(S). IMPROPER VENTILATION RATE.	ADJUST DEHUMIDISTAT(S) TO CORRECT RH READING (see operation manual), ADJUST TO A LOWER SETTING. CHECK OPERATION OF DEHUMIDISTAT. IF DEFECTIVE, REPLACE. INSTALL A DEHUMIDISTAT IN LIVING AREA OF HOME. ENSURE HRV IS ON CONTINUOUSLY. INCREASE FAN SPEED. BALANCE SYSTEM.
DEFROST NOT WORKING.	BROKEN DAMPER BLADE ASSY.	REPLACE.
FRESH AIR DUCT FROZEN OR VERY COLD (DEFROST LIGHT COMES ON).	FAILED MAIN CONTROL BOARD. DEFECTIVE DAMPER MOTOR.	IF DAMPER DOOR DOES NOT OPERATE DURING "START UP SELF DIAGNOSTIC" BUT POWER LIGHTS ARE ON, BOARD MAY REQUIRE REPLACEMENT. REPLACE. INSPECT CONNECTION BETWEEN MOTOR SHAFT AND DAMPER, COUPLING MAY BE LOOSE.
HUMIDITY LEVEL TOO LOW	HRV AIR FLOWS IMPROPERLY BALANCED. DEHUMIDISTAT CONTROL SET TO LOW. LIFE STYLE OF OCCUPANTS. VENTILATION RATE TOO HIGH	BALANCE HRV SET DEHUMIDISTAT TO A HIGHER SET POINT. HUMIDITY MAY HAVE TO BE ARTIFICIALLY ADDED, i.e. HUMIDIFIER. ADJUST TO LOWER FAN SPEED OR INTERMITTENT
HUMIDITY LEVEL TOO HIGH	HRV AIR FLOWS IMPROPERLY BALANCED HRV UNDERSIZED.	BALANCE HRV

PROBLEM	PROBABLE CAUSE	SOLUTION
	DEHUMIDISTAT SET TOO HIGH	SET DEHUMIDISTAT TO A LOWER SETTING.
	HRV UNDERSIZED TO HANDLE HOT TUB, INDOOR POOLS, ETC.	COVER POOLS, HOT TUBS ETC. WHEN NOT IN USE.
	LIFESTYLES OF OCCUPANTS	AVOID HANGING CLOTHES TO DRY INSIDE. AVOID STORING WOOD INSIDE AND VENT DRYERS OUTSIDE.
HRV AND/OR DUCTS FROSTING UP	HRV AIR FLOW'S IMPROPERLY BALANCED	BALANCE HRV NOTE: FROST BUILD UP IS EXPECTED ON CORES PRIOR TO INITIATING A DEFROST CYCLE.
SUPPLY AIR FEELS COOL	HRV AIR FLOW'S IMPROPERLY BALANCED. POOR LOCATION OF SUPPLY GRILLS. OUTDOOR TEMPERATURE EXTREMELY COLD.	BALANCE HRV. LOCATE GRILLS HIGH ON WALLS OR UNDER BASEBOARDS. IF SUPPLY AIR IS INSTALLED INTO RETURN AIR OF FURNACE, FURNACE FAN NEEDS TO RUN CONSTANTLY TO DISTRIBUTE VENTILATION AIR COMFORTABLY. ENSURE THAT A BREATHER "T" IS INSTALLED IN SUPPLY DUCT. PREHEATER MAY BE REQUIRED.
WATER IN BOTTOM OF HRV	DRAIN PAN (S) PLUGGED DRAIN LINES OBSTRUCTED HRV HEAT EXCHANGE CORE NOT INSTALLED PROPERLY	ENSURE "O" RINGS ON DRAIN SPIGOT SEATS PROPERLY LOOK FOR KINKS IN LINE. CHECK WATER DRAIN CONNECTIONS. MAKE SURE WATER DRAINS PROPERLY FROM THE PAN(S) CHECK ORIENTATION LABEL ON FRONT OF CORE AND POSITION CORE CORRECTLY. HRV MAY NOT BE LEVEL
AIR FLOW'S ARE POOR	HRV AIR FLOW IMPROPERLY BALANCED FILTER/CORE PLUGGED UP 1/4" MESH ON OUTSIDE HOODS PLUGGED IMPROPERLY SIZED DUCTING	BALANCE HRV. CLEAN AND REINSTALL. REMOVE OBSTRUCTIONS IN DUCT(S), HOODS AND GRILLS.

PROBLEM	PROBABLE CAUSE	SOLUTION
	UNDER SIZED HRV MALFUNCTION WITH HRV	INSPECT FAN WHEELS TO ENSURE THEY ARE TURNING FREELY
CONDENSATION OR ICE BUILD UP IN INSULATED DUCT	INCOMPLETE VAPOUR BARRIER AROUND INSULATED DUCT UNUSUALLY HUMID AMBIENT DOOR GASKET DAMAGED	TAPE ALL JOINTS ENSURE THAT VAPOUR BARRIER IS COMPLETELY SEALED WRONG APPLICATION OF HRV REPLACE GASKETING
WATER LEAKS	HRV NOT LEVEL EXCESSIVE WATER DUE TO NEW WET CONSTRUCTION	LEVEL HRV OPERATE HRV ON LOWER SPEED ie. INTERMITTENT
FROST ON FRESH AIR INTAKE & STALE AIR EXHAUST FLEX	HRV CORE INSTALLED IN REVERSE VAPOUR BARRIER INCOMPLETE	INSTALL CORE CORRECTLY "FRONT" OF CORE HAS INSTALLATION INSTRUCTION LABEL INSTALL WITH LABEL FACING HRV DOOR REPAIR SEAL OF ALL CRACKS AND TEARS
HRV STATUS PANEL FLASHING HIGH CONTINUOUSLY	HRV INTERNAL DEHUMIDISTAT SET TO LOW	ADJUST DEHUMIDISTAT TO HIGHER SET POINT

CONTROL FUNCTION

NOTE: ALL EXTERNAL MAINTENANCE TO BE PERFORMED BY A CERTIFIED ELECTRICIAN ONLY

PROBLEM	PROBABLE CAUSE	SOLUTION
NO POWER INDICATION AT ON/OFF SWITCH	LACK OF POWER AT SUPPLY	CHECK FOR POWER
	DOOR SAFETY SWITCH NOT ENGAGED DEFECTIVE DOOR SWITCH	ENSURE THAT DOOR SWITCH IS OPERATING REMOVE MAIN ACCESS DOOR AND CONTROL COVER PLATE. APPLY POWER TO HRV AND CLOSE DOOR SWITCH AND TEST THE TWO LEADS ON BACK OF SWITCH, ONE SHOULD HAVE A READING. CLOSE DOOR SWITCH AND CHECK OTHER LEAD WITH METER AND KNOWN NEUTRAL. IF NO READING IS PRESENT THEN REPLACE SWITCH.
	DEFECTIVE POWER SWITCH	POWER UP HRV, CLOSE DOOR SAFETY SWITCH, TURN POWER SWITCH TO ON. PLACE ONE LEAD OF VOLT METER ON KNOWN NEUTRAL AND THE OTHER ON TERMINALS ON BACK OF SWITCH, ONE AT A TIME. VOLTAGE READING SHOULD BE LINE VOLTAGE ON BOTH BLACK LEADS. IF NOT, THEN REPLACE SWITCH. CONFIRM NEUTRAL AT SWITCH LEAD WITH KNOWN NEUTRAL. DISCONNECT POWER TO HRV. IDENTIFY KNOWN NEUTRAL, POSITION ONE LEAD OF OHM METER ON KNOWN NEUTRAL AND OTHER AT NEUTRAL LEAD AT REAR OF SWITCH. IF NO READING THEN INVESTIGATE CONNECTION OF NEUTRAL LEAD WIRE. AND OUTPUT. IF NO READING THEN REPLACE FILTER.
NOTHING WORKS	POWER OFF – UNPLUGGED FROM POWER SOURCE	RESTART HRV. THIS WILL RESET THE ELECTRONIC CONTROL BOARD

NOTE: ALL EXTERNAL MAINTENANCE TO BE PERFORMED BY A CERTIFIED ELECTRICIAN ONLY

PROBLEM	PROBABLE CAUSE	SOLUTION
DAMPER MOTOR NOT ACTUATING, NO ACTION WHEN SHORTING DEHUMIDISTAT TERMINALS	CHECK ELECTRICAL PANEL - CIRCUIT BREAKER – FUSE. CHECK HRV DOOR INTERLOCK SWITCH	RESET CIRCUIT BREAKER OR REPLACE FUSE, OR YOU MAY BE REQUIRED TO CALL AN CERTIFIED ELECTRICIAN. REPLACE DOOR SWITCH.
BLOWER MOTOR NOT OPERATING BUT POWER LIGHT ON.		UNPLUG 120V POWER SOURCE, APPLY 120V DIRECTLY TO MOTOR. IF MOTOR DOES NOT RUN, REPLACE CAPACITOR, IF MOTOR DOES NOT RUN, REPLACE MOTOR.
DEHUMIDISTAT (S) NOT WORKING (INTERNAL AND/OR REMOTE WALL MOUNTED)		DISCONNECT LEADS AT DEHUMIDISTAT AND SHORT TOGETHER. IF HRV RESPONDS TO HIGH SPEED THEN REPLACE DEHUMIDISTAT.
HRV MAKES AN ANNOYING NOISE	SUPPLY OR EXHAUST BLOWER WHEEL OUT OF ADJUSTMENT	REMOTE MOTOR ASSEMBLY AND TIGHTEN SCREW ON MOTOR SHAFT. CHECK SUPPLY /EXHAUST WHEELS FOR BALANCE. REPLACE IF NECESSARY. ENSURE THAT FAN WHEELS ARE NOT RUBBING ON FAN HOUSING INLET/FRING.
NOISE LEVEL TOO HIGH AT DISTRIBUTION REGISTERS WHEN HRV ON HIGH SPEED	AIR DUCT SYSTEM TOO SHORT	REDESIGN DUCT SYSTEM OR INSTALL SILENCER.
TOUCH PAD	CHECK FOR CORRECT WIRE GAUGE (18) OR WIRING TO HRV OR SWITCH IMPROPER CONNECTION TO 24V TERMINALS	CONFIRM WIRING TO WIRING DIAGRAM. CHANGE TO CORRECT WIRE GAUGE. CHECK TOUCH PAD FOR PROPER CONNECTIONS. ENSURE THAT CORRECT SWITCHES ARE BEING USED.

NOTE: ALL EXTERNAL MAINTENANCE TO BE PERFORMED BY A CERTIFIED ELECTRICIAN ONLY

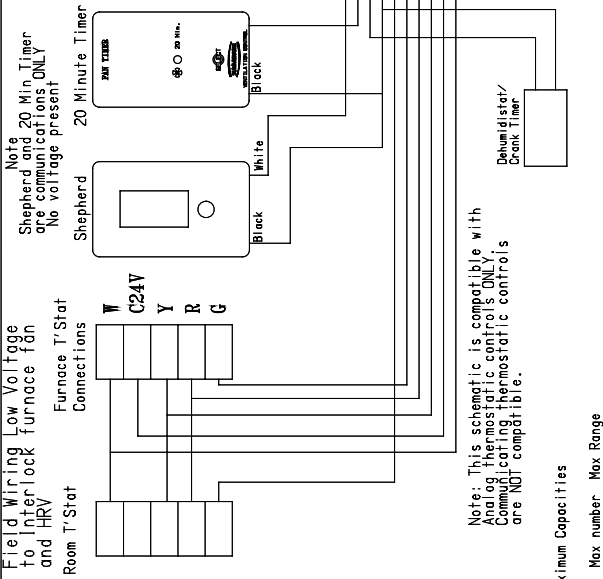
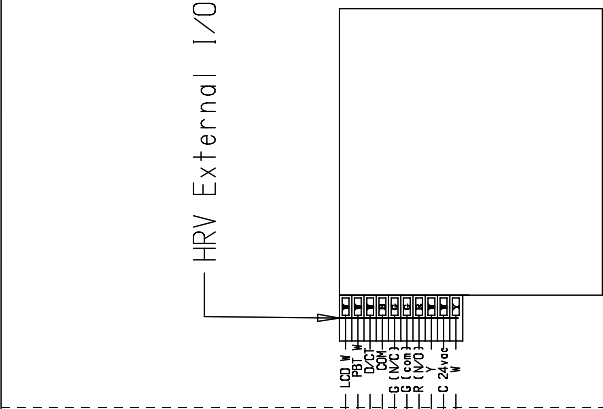
PROBLEM	PROBABLE CAUSE	SOLUTION
DAMPER MOTOR STAYS IN DEFROST. DEFROST L.E.D NOT ILLUMINATED. LEAD.	EXTERNAL LOW VOLTAGE WIRE IS SHORTED OUT BY A STAPLE OR NAIL	DISCONNECT LEADS AT BOTH ENDS @ TEST FOR CONTINUITY BETWEEN LEADS.
DAMPER MOTOR STAYS IN DEFROST. DEFROST L.E.D NOT ILLUMINATED. LEAD.	DEFECTIVE DAMPER MOTOR DEFECTIVE CONTROL BOARD	PICK COMMON COLOURED (2) DAMPER MOTOR LEADS. PROBE 1 OF THESE LEADS WITH 1 LEAD FROM METER. WITH THE OTHER METER LEAD PROBE 1 OF THE OTHER SINGLE METER SHOULD READ 30V OR 27V. THE POSITION OF THE DAMPER MOTOR DETERMINES THE VOLTAGE YOU WILL READ (IT WILL BE ONE OR THE OTHER) IF THESE READINGS ARE OBTAINED, CHANGE THE DAMPER MOTOR. IF NO VOLTAGE PRESENT, OR VOLTAGES ARE THE SAME, CHANGE THE CONTROL BOARD.
FAN SPEED DOESN'T SEEM TO CHANGE AS SELECTIONS ARE MADE ON SELECT BUTTON.	IMPROPER DUCT SYSTEM INSTALLED.	ENSURE THAT MOTOR AMP DRAW DOES NOT EXCEED NAMEPLATE RATING. INCREASED STATIC (I.E. DAMPERING) MAY BE NECESSARY.
	INCORRECT VOLTAGE; MEASURE LINE VOLTAGE & VOLTAGE TO MOTOR.	DETERMINE IF IT'S CORRECT AND CONFIRM THAT VOLT METER IS READING CORRECTLY. ALL VOLTAGES MUST BE MEASURED WITH DUCT SYSTEM INSTALLED. LOW SPEED 97 VOLTS MEDIUM SPEED 105 VOLTS HIGH SPEED 120 VOLTS IF THE VOLTAGES ARE CORRECT THEN THE DUCT SYSTEM STATIC IS TOO LOW.
CONTROL BOARD CHANGED UNIT DOES NOT SEEM TO RUN PROPERTY	DIP SWITCHES NOT SET AS INSTRUCTED	RESET DIP SWITCHES TO ORIGINAL SPECIFICATIONS.

NOTE: ALL EXTERNAL MAINTENANCE TO BE PERFORMED BY A CERTIFIED ELECTRICIAN ONLY

PROBLEM	PROBABLE CAUSE	SOLUTION
WHEN UNIT IS INITIALLY POWERED ON, UNIT STAYS IN DEFROST MODE LONGER THAN 10 MINUTES	DEFECTIVE MAIN CONTROL BOARD	CHANGE BOARD. WHEN CHANGING BOARD ALWAYS SET DIP SWITCHES TO EXACT POSITION OF DEFECTIVE BOARD BEING REPLACED.
DEFROST CYCLE ACTIVE DURING ABOVE FREEZING OUTDOOR TEMPERATURE	DEFECTIVE TEMPERATURE SENSOR	CHANGE SENSOR
LATCH OPENS	EXCESSIVE CLOSING FORCE REPEATED FORCING OF LATCH WEARS OFF LOCKING TAB ALLOWING IT TO POP OPEN. FORCING DOOR SHUT, THEN FORCING LATCH WEARS OFF LOCKING TAB ON LATCH.	REPLACE LATCH LATCH MUST BE OPEN PRIOR TO LATCHING DO NOT PULL DOOR SHUT
LOCKED ON HIGH SPEED	DEHUMIDISTAT SET TOO LOW DEHUMIDISTAT DEFECTIVE	REDUCE SET POINT REPLACE
NOT ALL WALL SWITCH CONTROL ILLUMINATE WHEN ONE IS ACTIVATED	DEFECTIVE CONTROL. FEED LINE TO WALL SWITCH CONTROL TOO LONG	REPLACE SHOULD BE LESS THAN 2,000 LINEAL FEET IN TOTAL

NW Series (NUWAVE), NW130, NW140, NW160, NW220, NW160, NW220, NW160

Trent Metals (2012) Limited
 Summeraire Manufacturing
 Wt (Nuvave) External controls
 Wiring Diagram
 Date: Jan 25, 2013
 Drawn: Nuvave controls (X-NMECIS)



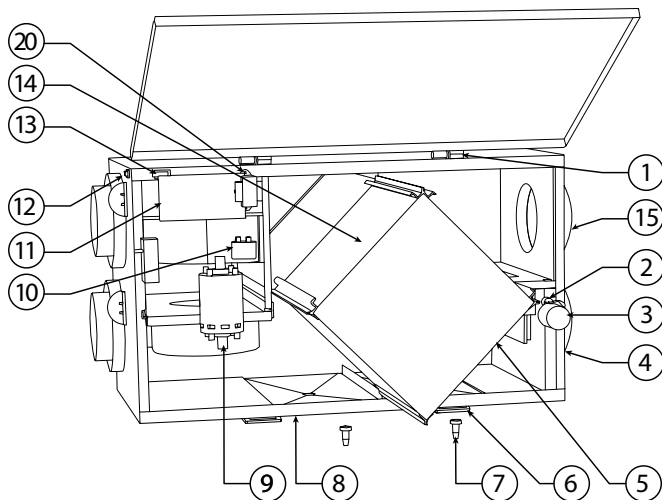
Note: This schematic is compatible with analog thermostat controls ONLY. Controls with digital thermostats are NOT compatible.

Note: Maximum Capacities

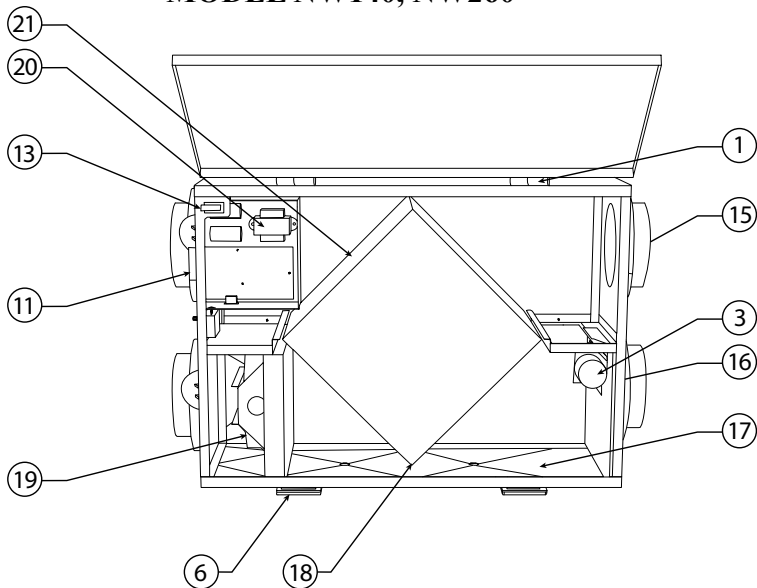
Device	Max number	Max Range
PBT	20 MINUTE	6
SHEPHERD	2	1600 feet of cable in total

All external low voltage wiring can be telephone or thermostat wire.
 NO Electrical box is required.

**Replacement parts listing
MODELS NW160, NW220**



**Replacement parts listing
MODEL NW140, NW260**



Number	Item Part	Description
1	8.HINGEPL	Hinge Door
2	8.COUPLINGDMPR	Damper Motor Coupling
3	8.MTRDMPR24VR	Damper Motor
4	8.SEAL130	Damper Door Seal
5	8.CORENW160	Heat Recovery Core
6	8.LATCH3	Door Latch
7	8.DRAINKITSHRV	Spigot Assy
8	8.PAN130SHRV	Drain Pan
9	8.MTR1186	Fan Motor
10	8.CAP375V5MF	Capacitor
11	8.BOARNW	Main control board
12	8.SWRCKR	On/ Off Switch
13	8.SWPADDLE	Door Safety Switch
14	8.FILT103414	Air Filter
15	8.SENS22	Temperature Sensor
16	8.SEAL240	Damper Door Seal
17	8.PAN115SHRV	Drain Pan
	8.PAN240SSHRV	Drain Pan
	8.PAN240LSHRV	Drain Pan
18	8.CORENW140	Heat Recovery Core
	8.CORENW260	Heat Recovery Core
19	8.MTRE19	Impellar Motor
	8.MTRG11A6	Impellar Motor
20	8.TRANS1	Transformer
21	8.FILT103412	Replacement Air Filter
	8.FILT143414	Replacement Air Filter

Not On Diagram

8.PLUG14	1/4" Plug
8.CAP370V5MF	Capacitor
8.CAP475V6MF	Capacitor
8.CAP475V18MF	Capacitor
8.DRAINTEE12	Drain Tee
8.STRAP24	24" Strapping
8.SENS8	Temp Sensor

WARRANTY

HRV Unit

Summaire Mfg. warrants the entire Heat Recovery Ventilator to the original purchaser should it prove to be defective by reason of defective material and/or faulty workmanship within two (2) years of the purchase date. Extended warranties are offered for the “Core” and “Electrical components” as outlined below.

Core

Summaire Mfg. warrants the “Core” of the Heat Recovery Ventilator to the original purchaser if the core has become defective by reason of defective material and/or faulty workmanship. This warranty applies to the original purchaser of the Heat Recovery Ventilator for as long as they own the dwelling.

Electrical Components

Summaire Mfg. warrants the “Electrical components” of the Heat Recovery Ventilator to the original purchaser if any of the electrical components have become faulty by reason of defective material and/or faulty workmanship. This warranty applies to the original purchaser of the Heat Recovery Ventilator for a period of five (5) years from the date of purchase as long as they own the dwelling.

GENERAL PROVISIONS

Summaire Mfg. will supply a replacement HRV unit or component as prescribed in the forgoing section, F.O.B. Peterborough, Ontario, Canada. Replacement units and/or components are warranted for the remainder of the original warranty period.

This warranty does not cover defects caused by: modifications, alteration, abuse to, or misuse of the product or its operation in a manner contrary to the instructions included with the unit at the time of shipment, or failure to perform maintenance as detailed in aforementioned instructions.

This warranty expressly supersedes all other warranties and obligations of Summaire Mfg.. No person has authority to alter or modify the terms of this warranty in any matter.

This warranty does not include any freight, labour, including diagnostic labour, or sales tax that might be incurred by the purchaser if a unit and/or parts require replacement.

Under no circumstances shall Summaire Mfg. be liable to the purchaser or any other person(s) for any consequential damages, whether arising out of breach of warranty, breach of contract, negligence or otherwise.

Keep your warranty at work for you. Please complete and mail your warranty Registration Card to Summaire Mfg., 2040 Fisher Drive, Peterborough, Ontario, Canada, K9J 6X6 to register this warranty.



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Summaire Mfg.
Peterborough, Ontario
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X-NuWave-INSMAN-EN-REV29
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