SUMMERAIRE

BUILT BETTER TO LAST LONGER

Residential
Central Heat Recovery Ventilator
Product Specifications
Installation and Trouble Shooting Guide

SHRV40SD, SHRV125SD, SHRV185SD, SHRV240SD
SHRV120ED, SHRV180ED

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 is 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

CSA® CERTIFIED

Summeraire Mfg.
Peterborough, Ontario,
Canada, K9J 6X6

2100 HVI CERTIFIED™

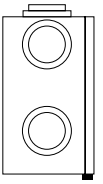
Table of Contents

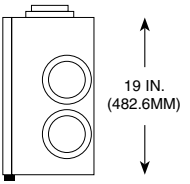
SUMMERAIRE

SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

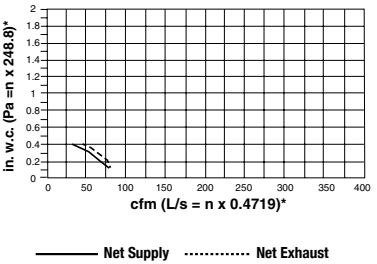
MODEL: SHRV40SD

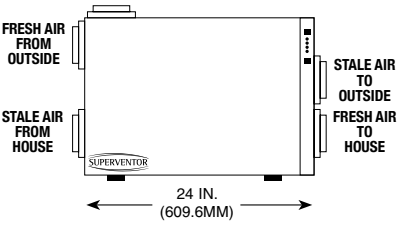
Options Installed: Defrost Internal Dehumidistat
Electrical: 120 V - 2.0 Amp
Exhaust Air Transfer Ratio: 0.04 @ 0.04 in. Wg. - 0.04 @ 0.2 in wg.
0.04 @ 100 Pa - 0.04 @ 50 Pa
Low Temp. Reduction Factor: 12% Supply - 0% Exhaust
Low Temp. Imbalance Factor: 0.90





VENTILATION PERFORMANCE							
EXT. STATIC		NET SUPPLY		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHUAST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	40	84	41	87	43	91
50	0.2	34	71	35	74	39	83
75	0.3	27	57	28	59	34	72
100	0.4	17	37	18	38	24	51





ENERGY PERFORMANCE								LATENT
SUPPLY TEMPERATURE			NET AIR FLOW		POWER CONSUMED	SENSIBLE RECOVERY	APPARENT SENSIBLE	RECOVERY/ MOISTURE
	C°	F°	L/S	CFM	WATTS	EFFICIENCY	EFFECTIVENESS	TRANSFER
HEATING	0	+32	17	36	58	69	93	0.05
	0	+32	25	38	68	74	86	0.08
	0	+32	32	68	117	72	85	0.08
	-25	-13	33	70	122	59	79	0.04
	-25	-13						
						TOTAL RECOVERY EFFICIENCY		
COOLING	+35	+95	35	95	118	19		
	+35	+95						

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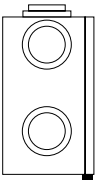
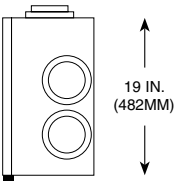
SUMMERAIRE

SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

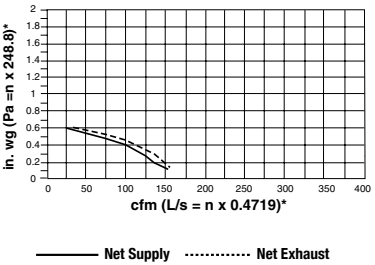
MODEL: SHRV125SD

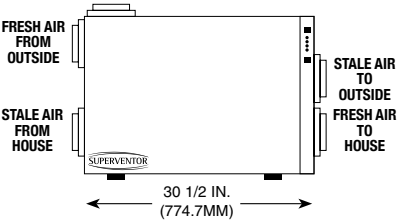
Options Installed: Defrost Internal Dehumidistat
Electrical: 120 V - 2.0 Amp
Exhaust Air Transfer Ratio: 0.03 @ 0.04 in. Wg. - 0.03 @ 0.2 in wg.
0.03 @ 100 Pa - 0.03 @ 50 Pa
Low Temp. Reduction Factor: 18% Supply - 11% Exhaust
Low Temp. Imbalance Factor: 0.92





VENTILATION PERFORMANCE							
EXT. STATIC		NET SUPPLY		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHAUST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	72	152	75	157	78	165
50	0.2	64	135	68	144	74	157
75	0.3	58	123	62	131	66	140
100	0.4	50	106	53	112	57	121
125	0.5	32	68	34	72	47	100
150	0.6	13	28	14	30	17	36





ENERGY PERFORMANCE								LATENT
	SUPPLY TEMPERATURE		NET AIR FLOW		POWER CONSUMED	SENSIBLE RECOVERY	APPARENT SENSIBLE	RECOVERY/ MOISTURE
	C°	F°	L/S	CFM	WATTS	EFFICIENCY	EFFECTIVENESS	TRANSFER
HEATING	0	+32	55	117	100	54	63	0.02
	0	+32	43	91	76	57	66	0.08
	0	+32	31	66	65	62	74	0.08
	-25	-13	30	64	69	56	73	0.01
	-25	-13						
						TOTAL RECOVERY EFFICIENCY		
COOLING	+35	+95	45	95	94	11		
	+35	+95						

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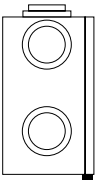
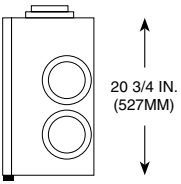
SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

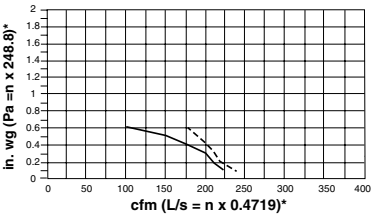
MODEL: SHRV185SD

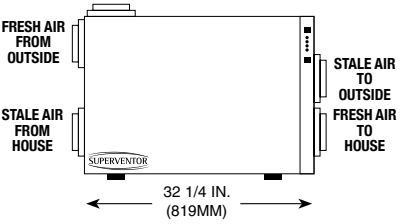
Options Installed: Defrost Internal Dehumidistat
Electrical: 120 V - 2.0 Amp
Exhaust Air Transfer Ratio: 0.02 @ 0.04 in. Wg. - 0.02 @ 0.2 in wg.
0.02 @ 100 Pa - 0.02 @ 50 Pa
Low Temp. Reduction Factor: 14% Supply - 0% Exhaust
Low Temp. Imbalance Factor: 0.90





VENTILATION PERFORMANCE							
EXT. STATIC		NET SUPPLY		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHAUST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	106	225	108	229	115	244
50	0.2	99	210	101	214	105	222
75	0.3	94	200	96	203	102	216
100	0.4	82	175	84	178	96	203
125	0.5	73	154	74	157	90	191
150	0.6	48	102	49	104	83	176





ENERGY PERFORMANCE								LATENT
	SUPPLY TEMPERATURE		NET AIR FLOW		POWER CONSUMED	SENSIBLE RECOVERY	APPARENT SENSIBLE	RECOVERY/ MOISTURE
	C°	F°	L/S	CFM	WATTS	EFFICIENCY	EFFECTIVENESS	TRANSFER
HEATING	0	+32	57	121	100	72	81	0.0
	0	+32	64	136	108	71	78	0.01
	0	+32	80	170	128	67	74	0.0
	-25	-13	67	143	108	61	80	0.0
	-25	-13						
						TOTAL RECOVERY EFFICIENCY		
COOLING	+35	+95	62	132	104	19		
	+35	+95						

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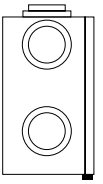
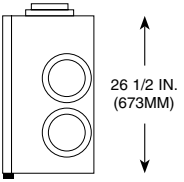
SUMMERAIRE

SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

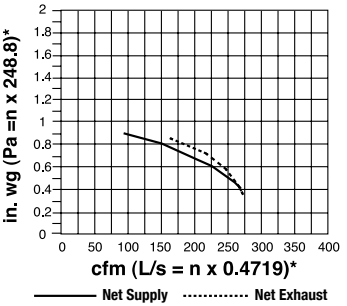
MODEL: SHRV240SD

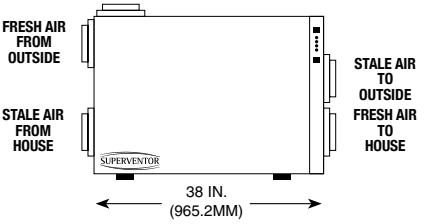
Options Installed: Defrost Internal Dehumidistat
Electrical: 120 V - 2.0 Amp
Exhaust Air Transfer Ratio: 0.04 @ 0.04 in. Wg. - 0.04 @ 0.2 in wg.
0.04 @ 100 Pa - 0.04 @ 50 Pa
Low Temp. Reduction Factor: 0% Supply - 11% Exhaust
Low Temp. Imbalance Factor: 1.18





VENTILATION PERFORMANCE							
EXT. STATIC		NET SUPPLY		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHUAST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
100	0.4	127	268	132	280	134	284
125	0.5	120	254	125	265	128	271
150	0.6	108	228	112	237	122	258
175	0.7	89	189	93	197	114	242
200	0.8	72	153	75	159	104	220
225	0.9	43	92	45	95	81	172





ENERGY PERFORMANCE								LATENT
	SUPPLY TEMPERATURE		NET AIR FLOW		POWER CONSUMED	SENSIBLE RECOVERY	APPARENT SENSIBLE	RECOVERY/ MOISTURE
	C°	F°	L/S	CFM	WATTS	EFFICIENCY	EFFECTIVENESS	TRANSFER
HEATING	0	+32	61	129	146	71	83	0.01
	0	+32	83	176	179	67	76	0.01
	0	+32	107	227	216	62	72	0.01
	-25	-13	71	150	147	55	87	0.08
	-25	-13						
						TOTAL RECOVERY EFFICIENCY		
COOLING	+35	+95	60	127	142	25		
	+35	+95						

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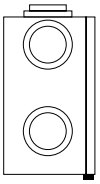
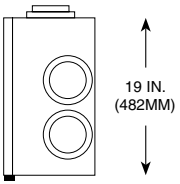
SUMMERAIRE

SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

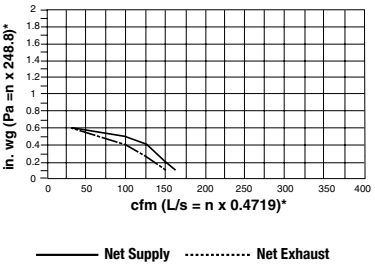
MODEL: SHRV120ED

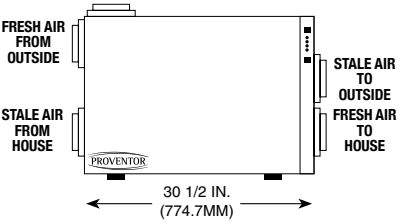
Options Installed: Defrost Internal Dehumidistat
Electrical: 120 V - 2.0 Amp
Exhaust Air Transfer Ratio: 0.03 @ 0.4 in. Wg. - 0.03 @ 0.2 in wg.
0.03 @ 100 Pa - 0.03 @ 50 Pa
Low Temp. Reduction Factor: 18% Supply - 11% Exhaust
Low Temp. Imbalance Factor: 0.92





VENTILATION PERFORMANCE							
EXT. STATIC		NET SUPPLY		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHUAST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	70	150	73	155	77	163
50	0.2	62	133	67	142	73	155
75	0.3	57	121	60	129	65	138
100	0.4	49	105	52	111	57	120
125	0.5	31	67	33	71	46	99
150	0.6	12	27	13	29	16	35





ENERGY PERFORMANCE								LATENT
SUPPLY TEMPERATURE			NET AIR FLOW		POWER CONSUMED	SENSIBLE RECOVERY	APPARENT SENSIBLE	RECOVERY/ MOISTURE
	C°	F°	L/S	CFM	WATTS	EFFICIENCY	EFFECTIVENESS	TRANSFER
HEATING	0	+32	55	117	100	54	63	0.02
	0	+32	43	91	76	57	66	0.08
	0	+32	31	66	65	62	74	0.08
	-25	-13	30	64	69	56	73	0.01
	-25	-13						
						TOTAL RECOVERY EFFICIENCY		
COOLING	+35	+95	45	95	94	11		
	+35	+95						

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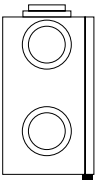
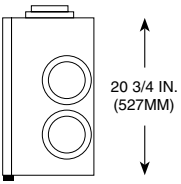
SUMMERAIRE

SPECIFICATIONS HEAT RECOVERY VENTILATORS PERFORMANCE RATINGS

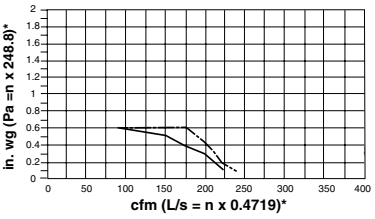
MODEL: SHRV180ED

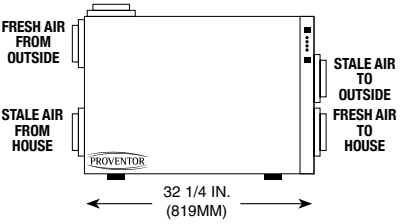
Options Installed: Defrost Internal Dehumidistat
Electrical: 120 V - 2.0 Amp
Exhaust Air Transfer Ratio: 0.02 @ 0.4 in. Wg. - 0.02 @ 0.2 in wg.
0.02 @ 100 Pa - 0.02 @ 50 Pa
Low Temp. Reduction Factor: 14% Supply - % Exhaust
Low Temp. Imbalance Factor: 0.90





VENTILATION PERFORMANCE							
EXT. STATIC		NET SUPPLY		GROSS AIR FLOW			
PRESSURE		AIR FLOW		SUPPLY		EXHUAST	
Pa	in. wg	L/S	CFM	L/S	CFM	L/S	CFM
25	0.1	104	222	106	226	113	241
50	0.2	97	207	99	211	103	219
75	0.3	92	197	94	200	100	213
100	0.4	80	173	82	177	95	202
125	0.5	71	151	73	155	89	189
150	0.6	46	98	47	100	80	171





ENERGY PERFORMANCE								LATENT
SUPPLY TEMPERATURE			NET AIR FLOW		POWER CONSUMED	SENSIBLE RECOVERY	APPARENT SENSIBLE	RECOVERY/ MOISTURE
	C°	F°	L/S	CFM	WATTS	EFFICIENCY	EFFECTIVENESS	TRANSFER
HEATING	0	+32	57	121	100	72	81	0.0
	0	+32	64	136	108	71	78	0.01
	0	+32	80	170	128	67	74	0.0
	-25	-13	67	143	108	61	80	0.0
	-25	-13						
						TOTAL RECOVERY EFFICIENCY		
COOLING	+35	+95	62	132	104	27		
	+35	+95						

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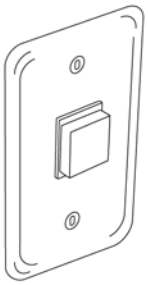
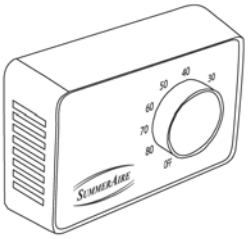
OPTIONAL CONTROLS



Remote Push Button

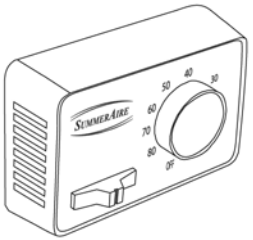
Push buttons stations are connected to external connection points on right side of HRV. HRV will accept up to 6 push buttons at a range of 200 ft. Typically all push buttons leads would be routed a common central location and serviced by a single pair of wires to the HRV.

Wall Mount Dehumidistat



Wall remote dehumidistats are connected to the external connection points on right side of the HRV. Any number of dehumidistats can be installed. The HRV will respond to the control that is set at the lowest point.

Econo Airmonitor

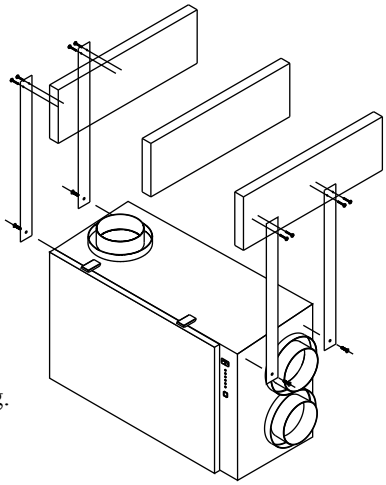


Econo Airmonitor is connected to the external points on the “ED” series of HRV’s. Only one per installation is recommended. Connect using 18/3 thermostat wire.

Airmonitor

The Airmonitor control is connected to the external points on the “SD” series of HRV’s only. Up to two controls can be connected to each HRV. Each control is connected using 18/4 thermostat wire with a range up to 200 ft.

1. Selecting a location



Typically the HRV is located in the mechanical room close to an outside wall. When installed in the mechanical room of a building, the top defrost intake collar should be ducted to the outside of the mechanical room.
To ensure optimum performance of the HRV, the air temperature entering the defrost port must not fall below 18 deg. C (65 deg. F)
Other installation locations are acceptable provided that the ambient air temperature does not fall below freezing.

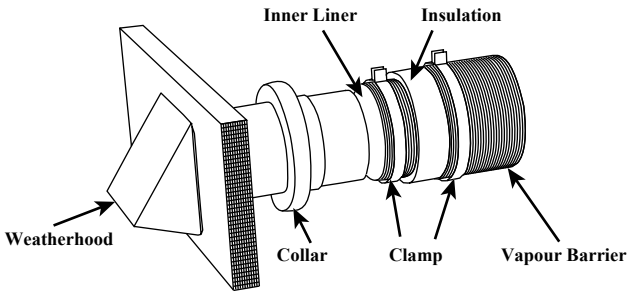
2. Mounting the HRV

Included with the HRV are (4) four 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 nails. Care must be taken to ensure that the HRV is installed level.
It is recommended that as much space as possible be left between the HRV and the floor joists. This will permit easier access if installing ductwork to the defrost collar.

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 opening 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 contaminates such as automobile exhaust fumes, gas meters, garbage cans.
d) So as not to be exposed to prevailing winds whenever possible.

The size and design of the weatherhoods 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. 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. 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

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 can also be operated independent of the forced air heating system

Please refer to fig I. below.

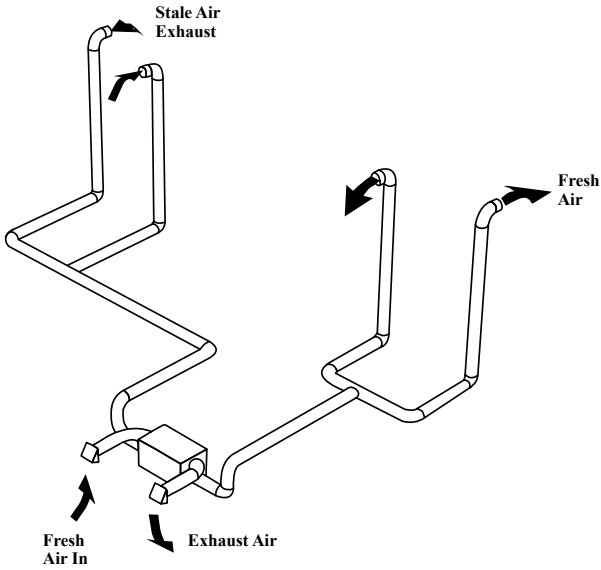


fig. I

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' in 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 accidently left out of the installation.

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

Please refer to fig II.

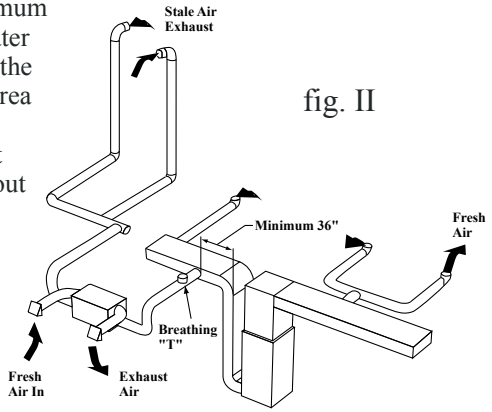


fig. II

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.

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 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’ in 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 accidently 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.

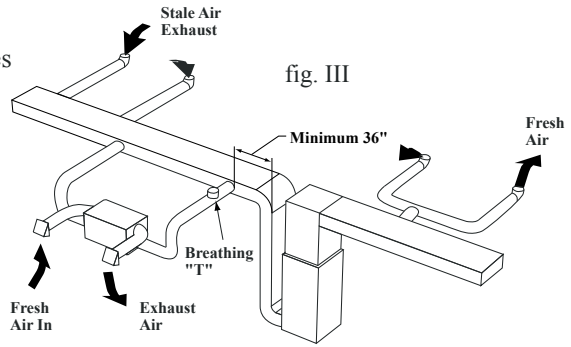


fig. III

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 prevent the central distribution fan from interfering with the operation of the HRV fan.

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.

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

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

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 a normal ventilation speed.

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.

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.

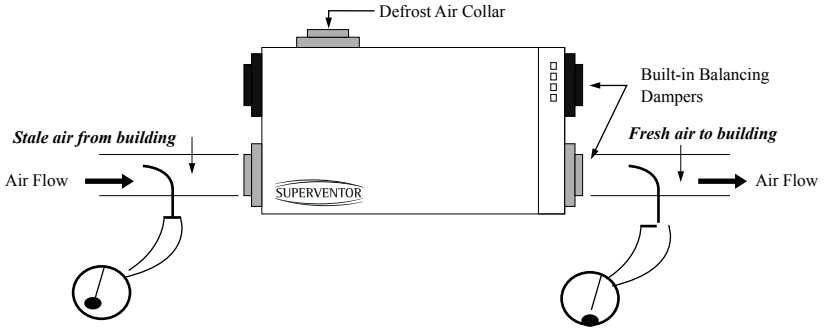
When it is possible for excessive pressurization or depressurization of a dwelling to occur it may be necessary to perform a House Pressure Test. This test is most important where fuel fired devices are installed that are susceptible to spillage.

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

Summeraire HRV Air Flow Balancing

A. Preliminary Procedures:

1. Seal all the unitís 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 pilot tube insertion.



B. Balancing Procedures:

1.Set HRV to high speed. Make sure that the furnace blower is ON HEATING SPEED if the installation is in any way connected to the ductworkof the cold air return. 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 26^{0}F (-3^{0}C), make sure defrost light is noton while balancing.

3.Place magnahelic gauge on a level surface and adjust it to zero. Insert pilot 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 side of 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 exhaustbalancing damper to equal the fresh air flow.

5. Secure dampers in place with fastening screw. Duct tape over pilot 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 ± 10 cfm.

HRV TROUBLE SHOOTING GUIDE
OPERATION GUIDE

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

PROBLEM	PROBABLE CAUSE	SOLUTION
HUMIDITY LEVEL TOO HIGH	HRV AIR FLOWS IMPROPERLY BALANCED.	BALANCE HRV
	HRV UNDERSIZED.	
	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 FLOWS IMPROPLERLY BALANCED	BALANCE HRV NOTE: FROST BUILD UP IS EXPECTED ON CORES PRIOR TO INITIATING A DEFROST CYCLE.
SUPPLY AIR FEELS COOL	HRV AIR FLOWS IMPROPERLY BALANCED.	BALANCE HRV.
	POOR LOCATION OF SUPPLY GRILLS.	LOCATE GRILLS HIGH ON WALLS OR UNDER BASEBOARDS.
	OUTDOOR TEMPERATURE EXTREMELY COLD.	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	ENSURE "O" RINGS ON DRAIN SPIGOT SEATS PROPERLY LOOK FOR KINKS IN LINE.
	DRAIN LINES OBSTRUCTED	CHECK WATER DRAIN CONNECTIONS. MAKE SURE WATER DRAINS PROPERLY FROM THE PAN(S)
	HRV HEAT EXCHANGE CORE NOT	CHECK ORIENTATION LABEL ON FRONT OF CORE AND POSITION
	INSTALLED PROPERLY	CORE CORRECTLY. HRV MAY NOT BE LEVEL

PROBLEM	PROBABLE CAUSE	SOLUTION
AIR FLOWS ARE POOR	HRV AIR FLOW IMPROPERLY BALANCED	BALANCE HRV.
	FILTER/CORE PLUGGED UP	CLEAN AND REINSTALL
	¼" MESH ON OUTSIDE HOODS PLUGGED	REMOVE OBSTRUCTIONS IN DUCT(S), HOODS AND GRILLS.
	IMPROPERLY SIZED DUCTING UNDER SIZED HRV	
	MALFUNCTION WITH HRV	INSPECT FAN WHEELS TO ENSURE THEY ARE TURNING.
CONDENSATION OR ICE BUILD UP IN INSULATIED DUCT	INCOMPLETE VAPOUR BARRIER AROUND INSULATED DUCT	TAPE ALL JOINTS ENSURE THAT VAPOUR BARRIER IS COMPLETELY SEALED.
	UNUSUALLY HUMID AMBIENT,	WRONG APPLICATION OF HRV
	DOOR GASKET DAMAGED,	REPLACE GASKETING
WATER LEAKS	HRV NOT LEVEL,	LEVEL HRV
	EXCESSIVE WATER DUE TO NEW WET CONSTRUCTION	OPERATE HRV ON LOWER SPEED ie. INTERMITTENT
	.	
FROST ON FRESH AIR INTAKE & STALE AIR EXHAUST FLEX	HRV CORE INSTALLED IN REVERSE	INSTALL CORE CORRECTLY "FRONT" OF CORE HAS INSTALLATION INSTRUCTION LABEL INSTALL WITH LABEL FACING HRV DOOR.
	VAPOUR BARRIER INCOMPLETE	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 RELATED GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
NO POWER INDICATION AT ON/OFF SWITCH	LACK OF POWER AT SUPPLY.	CHECK FOR POWER
	DOOR SAFETY SWITCH NOT ENGAGED BY MAIN ACCESS DOOR PROBE.	ENSURE THAT PROBE ON DOOR ENTERS SLOT IN CONTROL COVER.
	DEFECTIVE DOOR SWITCH	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 KNOW NEUTRAL DISCONNECT POWER TO HRV. IDENTIFY KNOWN NEUTRAL,POSITION ONE LEAD OF OHM METER ON KNOWN NEUTRAL AND OTHER AT NEUTRAL LEAD AT REAROF SWITCH. IF NO READING THEN INVESTIGATE CONNECTION OF NEUTRAL LEAD WIRE.
NO POWER AT CONTROL BOARD BUT POWER SWITCH ILLUMINATES.	DEFECTIVE SCHAFFNER LINE FILTER	USING VOLT METER, ATTACH ONE LEAD TO KNOWN NEUTRAL AND TEST POWER INPUT AND OUTPUT ON FILTER. IF NO READING AT ONE OR THE OTHER THEN REPLACE. ALSO, USING VOLTMETER ATTACH ONE LEAD TO KNOWN POWER LEAD AND CHECK NEUTRAL INPUT AND OUTPUT. IF NO READING THEN REPLACE FILTER.
NOTHING WORKS	POWER OFF – UPLUGGED FROM POWER SOURCE.	RESTART HRV. THIS WILL RESET THE ELECTRONIC CONTROL BOARD.

PROBLEM	PROBABLE CAUSE	SOLUTION
DAMPER MOTOR NOT ACTUATING, NO ACTION WHEN SHORTING	CHECK ELECTRICAL PANEL - CIRCUIT BREAKER – FUSE.	RESET CIRCUIT BREAKER OR REPLACE FUSE, OR YOU MAY BE
	CHECK HRV	REQUIRED TO CALL AN ELECTRICIAN.
DEHUMIDISTAT TERMINALS	DOOR INTERLOCK SWITCH	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 & REMOTE WALL MOUNTED)		DISCONNECT LEADS AT DEHUMIDISTAT AND SHORT TOGETHER. IF HRV RESPONDS TO HIGH SPEED THEN REPLACE DEHUMIDISTAT.
HRV MAKES AN ANNOYING NOISE	VENTILATION OR EXHAUST WHEEL OUT OF ADJUSTMENT	REMOVE MOTOR ASSEMBLY AND TIGHTEN SCREW ON MOTOR. SHAFT. CHECK VENTILATION /EXHAUST WHEELS FOR BALANCE. REPLACE IF NECESSARY. ENSURE THAT FAN WHEELS ARE NOT RUBBING ON FAN HOUSIN INLET RING.
NOISE LEVEL TOO HIGH AT DISTRIBUTION REGISTERS WHEN HRV ON HIGH SPEED	AIR DUCT SYSTEM TOO SHORT	REDESIGN DUCT SYSTEM OR INTALL SILENCER.
OPTIONAL 20 MINUTE PUSH BUTTON NOT OPERATING OR INDICATOR DOESN'T REMAIN ON	CHECK FOR CORRECT WIRE GUAGE (18) OR WIRING TO HRV OR SWITCH IMPROPER CONNECTION TO 24V TERMINALS.	CONFIRM WIRING TO WIRING DIAGRAM. CHANGE TO CORRECT WIRE GAUGE. CHECK WALL SWITCH FOR PROPER CONNECTIONS. ENSURE THAT CORRECT SWITCHES ARE BEING USED.

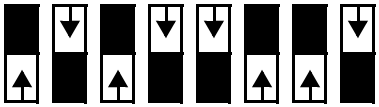
PROBLEM	PROBABLE CAUSE	SOLUTION
	EXTENAL LOW VOLTAGE WIRE IS SHORTED OUT BY A STAPLE OR NAIL	DISCONNECT LEADS AT BOTH ENDS @ TEAT FOR CONTINUITY . BETWEEN LEADS.
DAMPER MOTOR STAYS IN DEFROST. DEFROST L.E.D NOT ILLUMINATED. NEW STYLE LEAD.	DEFECTIVE DAMPER MOTOR DEFECTIVE CONTROL BOARD	PICK COMMON COLOURED (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. INCORRECT VOLTAGE, MEASURE LINE VOLTAGE & VOLTAGE TO MOTOR.	ENSURE THAT MOTOR AMP DRAW DOES NOT EXCEED NAMEPLATE RATING. INCREASED STATIC MAY BE NECESSARY. DETERMINE IF IT'S CORRECT AND CONFIRM THAT VOLT METER IS READING CORRECTLY. ALL VOLTAGES MUST BE MEASURED WITH DUCT SYSTEM INSTALLED. LOW SPEED 63 VOLTS MEDIUM SPEED 87 VOLTS MED/HI SPEED 102 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.

PROBLEM	PROBABLE CAUSE	SOLUTION
WHEN UNIT IS INITIALLY POWERED ON, UNIT STAY IN DEFROST MODE	INCORRECT LOW VOLTAGE WIRE CONNECTIONS	CHECK VOLTAGE AT TERMINALS 1 & 2. IF VOLTAGE READING IS OKAY CHECK ALL WIRE CONNECTIONS TO BOARD. IF NO WIRES ARE TOUCHING & NO LOW VOLTAGE AT TERMINALS 1 & 2 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. IMPROPER ALIGNMENT OF DOOR SWITCH PROBE ('SD' MODELS) WHEN CLOSING DOOR, 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	BOARD FAILURE, PUSH BUTTON CIRCUIT BREAKS DOWN IN BOARD DEHUMIDISTAT SET TOO LOW. DEHUMIDISTAT DEFECTIVE.	CHANGE BOARD REDUCE SET POINT. REPLACE.
NOT ALL PUSH BUTTONS ILLUMINATE WHEN ONE IS ACTIVATED	DEFECTIVE PUSH BUTTON. FEED LINE TO PUSH BUTTON TOO LONG	REPLACE SHOULD BE LESS THAN 250 FT. IN TOTAL

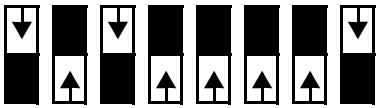
PC Board Dip Switch Settings

Model # Run/Defrost Timing

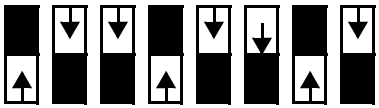
SHRV40SD 25.0 / 5.0



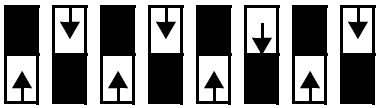
SHRV125SD 25.4 / 4.5



SHRV185SD 23.0 / 6.0



SHRV240SD 28.0 / 5.5



SHRV120ED 25.4 / 5

No Dip Switches, Automatic Defrost Timing

SHRV180ED 23.0 / 6

No Dip Switches, Automatic Defrost Timing

DEFROST DAMPER DOOR MOTOR TROUBLE SHOOTING.

(Powered Reversing Motors Only)

As a means to determine the integrity of the defrost damper motor circuit of the HRV control board (Rev-1 or Rev-2 type) a voltage check can be carried out.

Voltage Check Procedure

Note: The following should be done by a qualified electrician. Failure to perform this test exactly as described may result in personal injury and/or damage.

Procedure:
1. Disconnect power supply.
2. Access HRV control board by removing control board cover.
3. Determine HRV serial # on identification sticker on right side of HRV.
4. *For HRVís with Serial # ending in -0 or -R:* Position the boardís black "Test" clip, located directly below the transformer and labeled "Self-Test", from a "run" to a "Test Mode Position" (position clip over both pins). Note: In "Test Mode", a properly functioning damper motor will move the damper door to close off the top red hood for approximately 10 seconds, then will move the damper door to close off the blue fresh air hood for approximately 10 seconds and will continue this cycle until the test clip is put back to the "Run" position. (*For HRV's with Serial # ending in -I or -IAB*) Self test is automatically initiated when unit is turned on. At start-up, the damper door will power up toward the top defrost collar, then power down toward the fresh air intake collar, then power up all the way and close off the top defrost collar. Turning the unit off and on will re-initiate this cycle.
5. Locate the 3 damper motor wire connection terminals in the upper left hand corner of the control board, labeled as BR(brown)-RE(red)-WH(white).
6. To confirm the proper voltage to the damper motor, the HRV must be powered up and the volt meter leads positioned separately on the respective terminals as listed below.

Caution: Care must be taken not to short these terminals together or to cause either to be shorted to ground. If this should occur, the control board will be damaged.

At 118VAC supply and a cold damper motor condition, the results should be follows:

	Terminal	Approx. (+ or -1.5) Voltage
1. Voltage readings when installed in the run cycl	**WH & RE**	**31**
(damper door closing off the top red collar	**WH & BR**	**24**
should be:		
2. Voltage readings when stalled in the defrost cycl	**WH & RE**	**24**
(damper door closing off the blue fresh air side collar)	**WH& BR**	**31**
should be:		

Findings

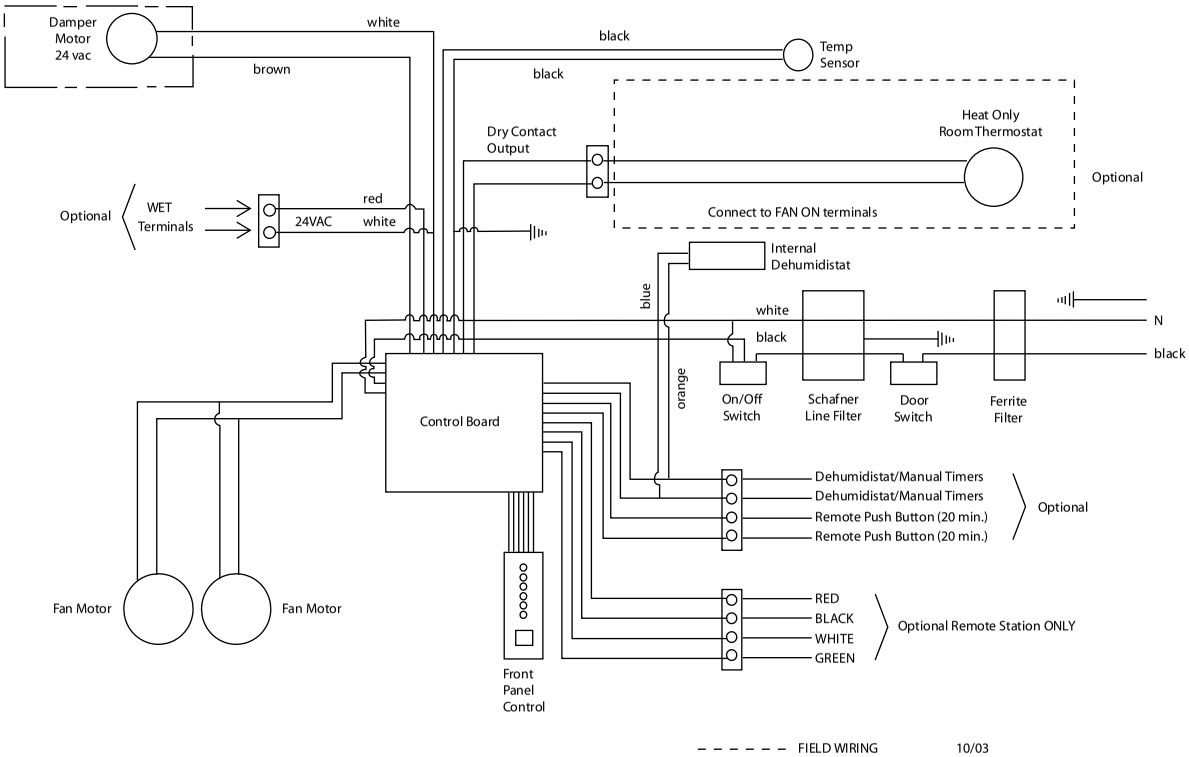
1. If voltage readings in either the "run" or "defrost" cycle are the same, vary by more than (+) or (-) 1.5 from the values listed on the previous page, or show no voltage at all, then there's a malfunction in the control board.

Solution: Replace control board.

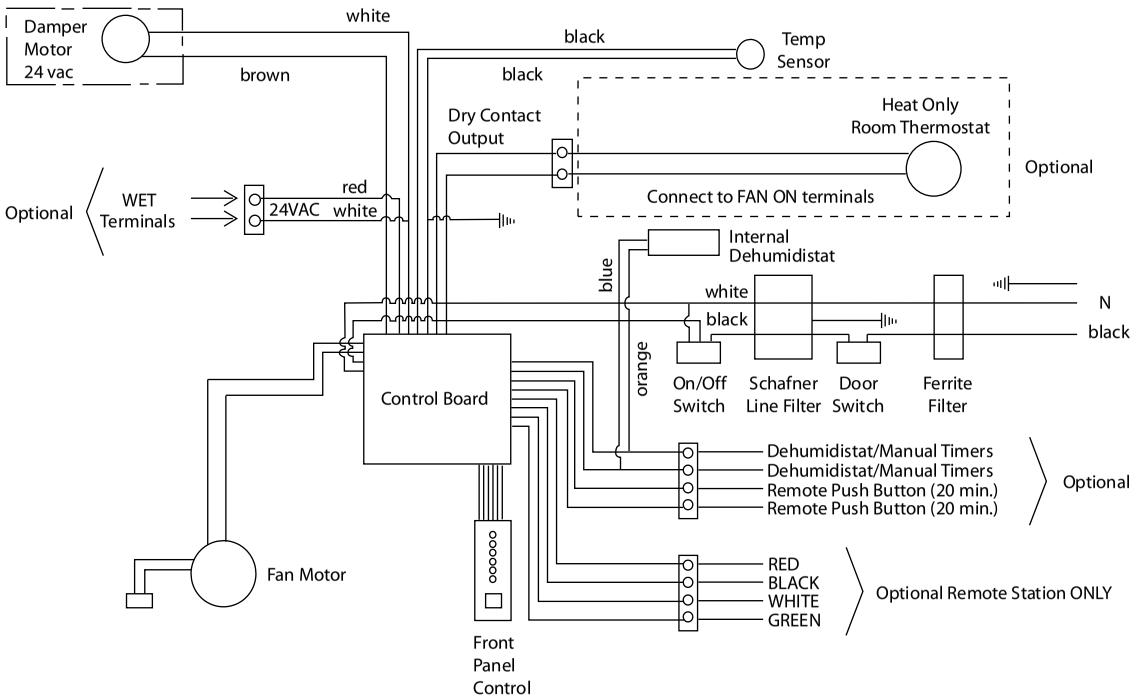
2. If voltage readings are in accordance with previous page voltage levels.

Solution: Jumper temperature sensor connections power up HRV. Run cycle will operate first for approximately 20-25 minutes, then defrost cycle will start. If damper door does not reposition to close off blue collar but control delay indicates a defrost cycle then replace damper motor. If damper door does respond then replace temperature sensor.

Wiring Diagram
SHRV40SD

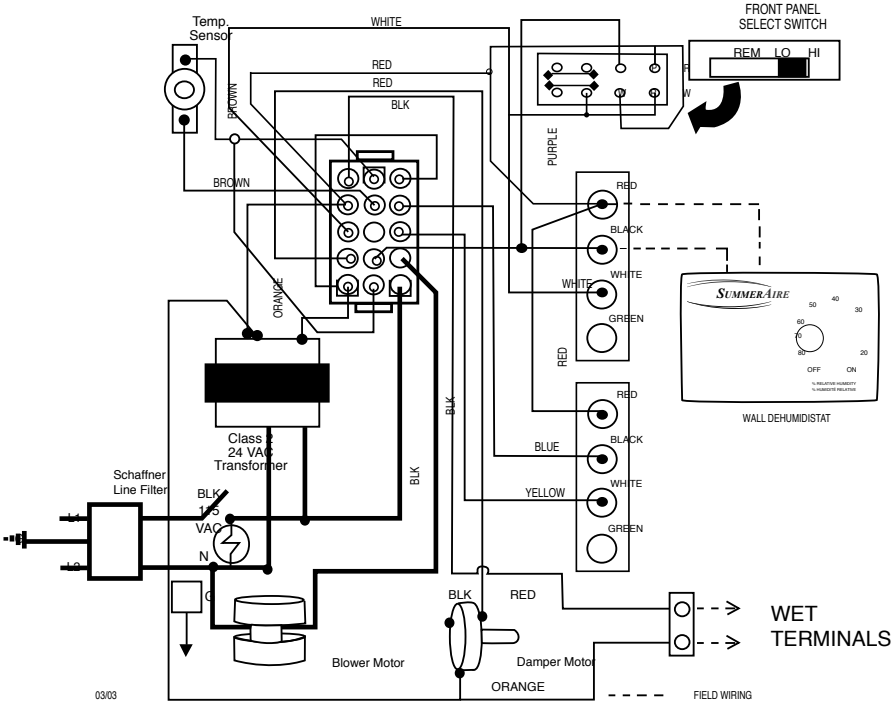


Wiring Diagram
SHRV125SD, SHRV185SD, SHRV240SD



10/03

SHRV120ED/SHRV180ED
Wiring Diagram



FIELD INSTALLATION OF EXTERNAL CIRCULATING FAN CONTROL RELAY

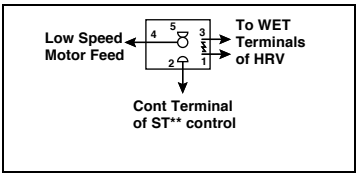
USE EMERSON SPDT RELAY #94-293Q OR EQUIVALENT

LOW SPEED FAN INTERLOCK

PROCEDURE I

HVAC equipment using Honeywell Fan timer control with part # prefix ST9120, ST9160, ST9162

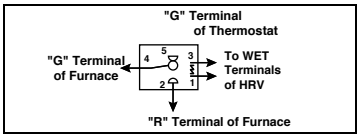
This procedure is not applicable to units with DC motor controls.



LOW VOLTAGE ISOLATION

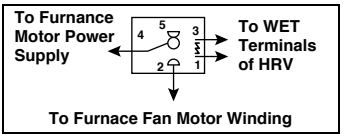
PROCEDURE II

With Air Conditioning Thermostat

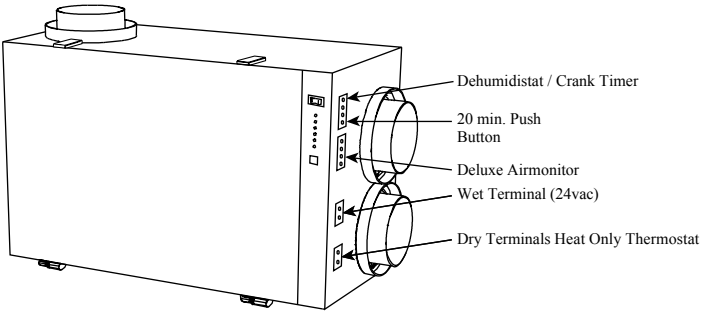


PROCEDURE III

With Single Speed Furnace Fan



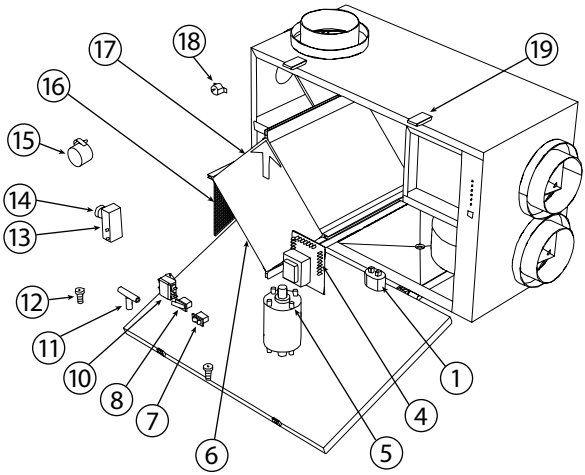
SD SERIES



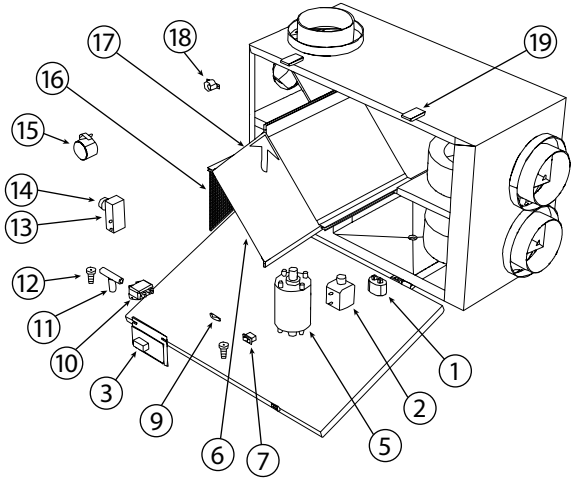
CAUTION: MAX. RELAY COIL AMPACITY .80 AMP. RELAY CONTACT RATING MUST BE SUITABLE TO SUPPORT MOTOR APPLICATION.

Replacement parts listing

Models SHRV40SD, SHRV125SD, SHRV185SD, SHRV240S



Models SHRV120ED, SHRV180ED



PIC# REPLACEMENT PARTS FOR SD AND ED

1	8.CAP370V5MF	CAPACITOR	125, 185, 120, 180
1	8.CAP370V75MF	CAPACITOR	240
2	8.TRANS2	TRANSFORMER	120, 180
3	8.BOARD1T	CONTROL BOARD	120, 180
4	8.BOARD2	CONTROL BOARD	40, 125, 185, 240
4	8.BOARD5T	CONTROL BOARD	40, 125, 185, 240
5	8.MTR1186	FAN MOTOR	125, 185, 120, 180
5	8.MTR1832	FAN MOTOR	240
5	8.MTR71730803	FAN MOTOR	40
6	8.CORE1	CORE	40
6	8.CORE100	CORE	185, 180
6	8.CORE2	CORE	125, 240, 120
6	8.CORE4	CORE	185, 180
6	8.CORE6	CORE	125, 240, 120
7	8.SWRCKR	ROCKER SWITCH	40, 125, 185, 240, 120, 180
8	8.SWPADDLE	DOOR SWITCH	40, 125, 185, 240
9	8.SWTOPPER	3 POSITION SLIDE SWITCH	120, 180
10	8.FILTERLINE	FILTER LINE	40, 125, 185, 240, 120, 180
11	8.DRAINTEE12	1/2" DRAIN TEE	40, 125, 185, 240, 120, 180
12	8.DRAINKITSHRV	SPIGOT ASSY	40, 125, 185, 240, 120, 180
13	8.INTERNALDEH	INTERNAL DEHUMIDISTAT	40, 125, 185, 240, 120, 180
14	8.KNOBDEH	DEHUMIDISTAT KNOB	40, 125, 185, 240, 120, 180
15	8.MTRDMPRUNI24V	DAMPER MOTOR	40, 125, 185, 240, 120, 180
16	8.FILT111314	AIR FILTER 11" X 13 1/4"	125
16	8.FILT111414	AIR FILTER 11" X 14 1/4"	40
16	8.FILT12141814	AIR FILTER 12 1/4" X 18 1/4"	185
16	8.FILT16121314	AIR FILTER16 1/2" X 13 1/4"	240
16&17	8.FILTSET120ED	AIR FILTER	120
16&17	8.FILTSET180ED	AIR FILTER	180
17	8.FILT1214314	AIR FILTER 12" X 13 1/4"	240
17	8.FILT8141314	AIR FILTER 8 1/4" X 13 1/4"	125
17	8.FILT8141414	AIR FILTER 8 1/4" X 14 1/4"	40
17	8.FILT9581814	AIR FILTER 9 5/8" X 18 1/4"	185

PIC# REPLACEMENT PARTS FOR SD AND ED - (Continued)

19	8.LATCH200	DOOR LATCH	40, 125, 185, 120, 180
19	8.LATCH300	DOOR LATCH	240
	8.COUPLINGDMPR	DAMPER COUPLING	40, 125, 185, 240, 120, 180
	8.HGDR1	DOOR HINGE	40, 125, 185, 240, 120, 180
	8.HSG1061CCW	HOUSING	125, 185, 2540, 120, 180
	8.HSG1061CW	HOUSING	125, 120
	8.HSG1061CW3	HOUSING	185, 180
	8.HSG759	HOUSING	40
	8.STRAP24	1”X24” HANGAR	40, 125, 185, 240, 120, 180
	8.TEMPSENS1	TEMPERATURE SENSOR	40, 125, 185, 240, 120, 180
	8.WHEEL125L	WHEEL	125, 120
	8.WHEEL125T	WHEEL	125, 120
	8.WHEEL130B	WHEEL	185, 180
	8.WHEEL130T	WHEEL	185, 180
	8.WHEEL185L	WHEEL	185, 180
	8.WHEEL185T	WHEEL	185, 180
	8.WHEEL240L	WHEEL	240
	8.WHEEL240T	WHEEL	240
	8.WHEEL40L	WHEEL	40
	8.WHEEL40T	WHEEL	40
	X-CONN-DUCT-6-BLUE-B	COLLAR	40, 125, 185, 240, 120, 180
	X-CONN-DUCT-6-RED	COLLAR	40, 125, 185, 240, 120, 180
	X-CONN-DUCT-6-RED-A	COLLAR	40, 125, 185, 240, 120, 180
	X-CONN-DUCT-6-RED-B	COLLAR	40, 125, 185, 240, 120, 180
	X-PANCOND185	DRAIN PAN	125, 185

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