nu-air
Sustainability Through Innovation

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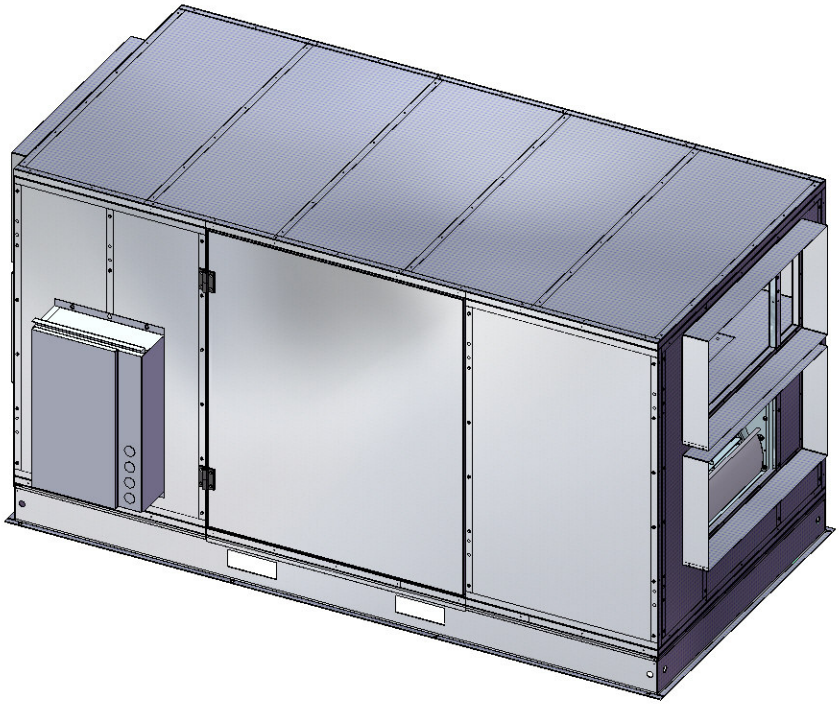
COMPLIANT SERIES



HRV/ERV PRODUCT MANUAL
NU0820/NU2035/NU2540/NU1030

* LEAVE THIS DOCUMENT WITH THE BUILDING OWNER

Specifications, dimensions and ratings may change without notice
as a result of ongoing product development and improvements.

TABLE OF CONTENTS

1 About the H/ERV

The heat recovery ventilator (HRV) provides fresh air to a conditioned space while exhausting an equal amount of stale air. Heat energy is transferred from one air stream to the other within a non-contact cross flow heat exchanger. ERV models transfer latent energy (moisture) from the higher to lower air stream.

A. Two fan motor sets deliver fresh air into the space and exhaust stale air from the space.

B. Incoming fresh air is filtered before flowing through the heat exchange core.

C. Stale air flows through the cross-flow heat exchanger and transfers the heat (HRV) (and moisture (ERV)) to the incoming fresh air.

D. Warm fresh air is distributed through an independent ductwork system or an existing air distribution system.

2 Product Selection

Unit Options

		NU0820	NU2035	NU1030	NU2540
Capacity (cfm range)		800-2000	2000-4000	1000-3000	2000-4000
Location	Indoor	O	S		
	Roof Top	O		S	S
Defrost	None	S	S	S	S
	Exhaust Only (temperature on/off)	$	$	$	$
	Timed Exhaust(temperature on/timed off)	$	$	$	$
	Recirculation	$			
	*Face and by Pass	$	$	$	$
Voltage and Speeds	240/1 1 speed	O	O	O	O
	240/1 2 speed		$**	$**	$**
	208/3 1 speed	O	O	O	O
	208/3 2 speed		$**	$**	$**
	460/3 1 speed	O	O	O	O
	460/3 2 speed		$**	$**	$**
	575/3 1 speed	O	O	O	O
	575/3 2 speed		$**	$**	$**
Core	Polypropylene	S	S	S	S
	Enthalpy	$	$	$	$
Cabinet Finish	Galvanized Steel	S	S	S	S
	Painted Aluminum (white)	$	$	$	$
Supply air Dampers	None	S	S	S	S
	Motorized	$	$	$	$
Exhaust Air Dampers	None	S	S	S	S
	Gravity	$	$	$	$
Supply Air discharge	Horizontal (end)	O	S	O	O
	Vertical (down)	O		S	S
Return air intake	Horizontal (end)	O	S	$	$
	Vertical (down)	O		S	S
VFD		$			
Premium efficiency motors 89.5% & VFD compatible		$	$	$	$

S - standard
O – optional for no additional charge
$ - optional for additional charge

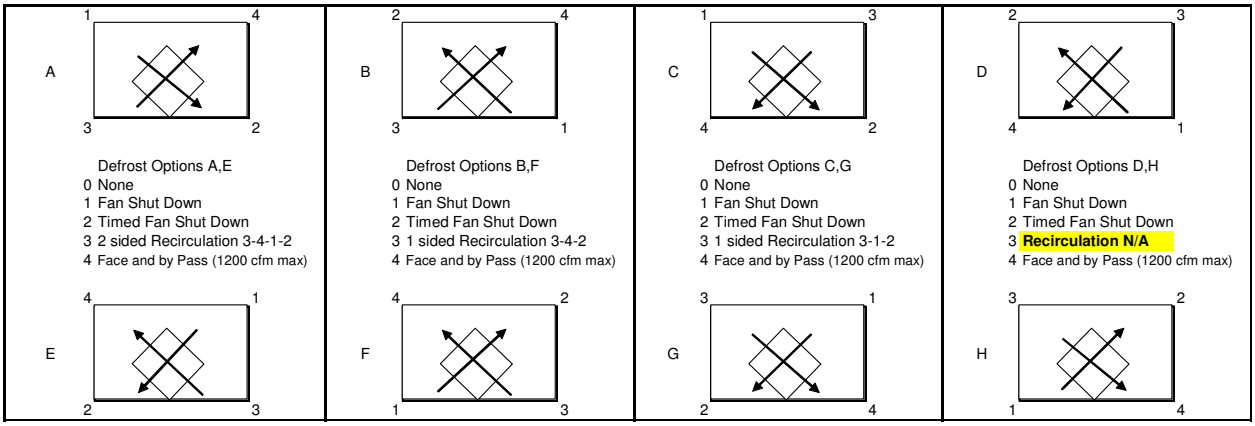
* refer to motor hp tables for cfm limitations

** not available with timed defrost or recirculation

2.1 Nomenclature

2.1.1 NU0820

NU0820 Port and Defrost Configurations 1 - Outside Air (OA) 2 - Supply Air (SA) 3 - Return Air (RA) 4 - Exhaust Air (EA)



Nomenclature Example

NU0820 Configuration	OA	SA	RA	EA	Defrost	Voltage	VFD	Sup mtr	Ex mtr	Core	Cabinet
A	1-vertical	1-vertical	1-vertical	1-vertical	0-none	1 - 240/1	0 - no	a - 1/2 hp	a - 1/2 hp	p - poly	g - 22 ga galv
B	2-horizontal	2-horizontal	2-horizontal	2-horizontal	1-fan	2 - 208/3	1 - yes	b - 3/4 hp	b - 3/4 hp	e - enthalpy	a - 0.050 aluminum
C	3-vertical mtr BD damper			3-vertical gravity BD damper	2-timed fan	4 - 460/3		c - 1 hp	c - 1 hp		
D	4-horizontal mtr BD damper			4-horizontal gravity BD damper	3-recirc	5 - 575/3		d - 1.5 hp	d - 1.5 hp		
E					4-face&by pass						
F											
G											
H											

Defrost Recommendations*

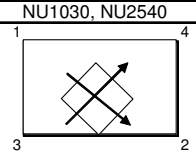
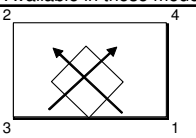
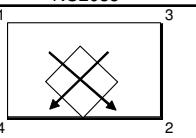
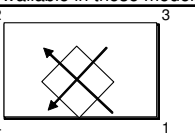
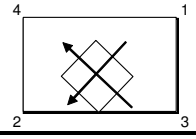
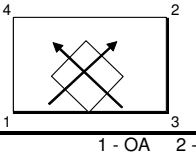
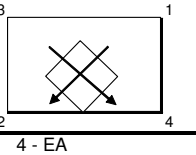
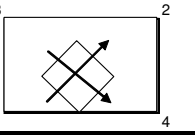
Type	Winter Design Temperature Celsius	Winter Design Temperature Fahrenheit
0 - none	> -5	> 23
1 - fan shut down	> -10	> 14
2 - timed fan shut down	> -15	> 5
3 - recirculation	<-15	<5
4 - face&by pass	uninterrupted ventilation and free cooling	

Factory default timing (field adjustable)

Run	Defrost
36 min	6 min
36 min	6 min

* not withstanding other design considerations such as building pressure, preheat, delivered air temperature, etc.

2.1.2 NU1030, NU2035, NU2540

NU1030, NU2540	Not Available in these models	NU2035	Not Available in these models
A 	B 	C 	D 
E 	F 	G 	H 

1 - OA 2 - SA 3 - RA 4 - EA

Nomenclature Example

NU2035	Configuration	OA	SA	RA	EA	Defrost	Voltage	Premium Mtr	Sup mtr	Ex mtr	Core	Cabinet
	C G	2-horizontal 4-horizontal mtr BD damper	2-horizontal	2-horizontal	2-horizontal 4-horizontal gravity BD damper	0-none 1-fan 2-timed fan 4-face&by pass	1 - 240/1 2 - 208/3 4 - 460/3 5 - 575/3	0 - no *1 - yes	a - 1/2 hp b - 3/4 hp c - 1 hp d - 1.5 hp e - 2 hp f - 3 hp	a - 1/2 hp b - 3/4 hp c - 1 hp d - 1.5 hp e - 2 hp f - 3 hp	p - poly e - enthalpy	g - 22 ga galv a - 0.050 aluminum white

*89.5% eff, VFD Compatible

NU1030 NU2540	Configuration	OA	SA	RA	EA	Defrost	Voltage	Premium Mtr	Sup mtr	Ex mtr	Core	Cabinet
	A E	1-vertical 2-horizontal 3-vertical mtr BD damper 4-horizontal mtr BD	1-vertical 2-horizontal	1-vertical 2-horizontal	1-vertical 2-horizontal 3-vertical gravity BD damper 4-horizontal gravity BD	0-none 1-fan 2-timed fan 4-face&by pass	1 - 240/1 2 - 208/3 4 - 460/3 5 - 575/3	0 - no *1 - yes	a - 1/2 hp b - 3/4 hp c - 1 hp d - 1.5 hp e - 2 hp f - 3 hp	a - 1/2 hp b - 3/4 hp c - 1 hp d - 1.5 hp e - 2 hp f - 3 hp	p - poly e - enthalpy	g - 22 ga galv a - 0.050 aluminum white

*89.5% eff, VFD Compatible

2.2 Sample Specification

GENERAL

System Description:

a) Packaged Heat (Energy) Recovery Ventilator
b) Capable of transferring sensible (sensible and latent) energy
c) Designed to be used as a stand alone ventilation system or as part of an engineered HVAC system
d) With flat plate, cross flow heat exchanger integral to the unit.

Quality Assurance

a) Unit shall be constructed to CSA C22.2 standards and carry the mark label of an approved certifying body.
b) Unit shall undergo 100% functionality testing at the factory prior to shipping
c) Heat exchangers shall be certified and currently listed AHRI and shall meet UL 94 flame spread and smoke generation requirements.

Storage and Handling

a) Unit shall not be used during construction. Unit shall be stored and handled according to the manufacturer's instructions.

Warranty

b) Unit shall have a 2 year warranty on all parts except the core which has a 15 year warranty (polypropylene) or 5 year warranty (enthalpy).

EQUIPMENT

Construction

a) The cabinet shall be double wall construction. 22 Ga galvanized steel inner wall and 22 Ga galvanized steel (0.050 painted white aluminum) outer wall.
b) The unit shall be insulated with 1" R4 expanded polystyrene.
c) All serviceable components shall be accessible through a hinged front access panel.
d) The heat exchanger core shall be easily removable for servicing.

BLOWERS

a) Blowers shall be FC DWDI, dynamically balanced and operate at not more than 1500 rpm. Internal vibration isolation is not required.
b) Blower housing shall be galvanized steel.

MOTORS

a) Motors shall be continuous duty, permanently lubricated with a service factor of 1.15, matched to the fan load and required voltage and phase.
b) Motors enclosure shall be Totally Enclosed.

ELECTRICAL REQUIREMENTS

a) The unit shall have a single point power connection within a NEMA4 enclosure with integral non-fused disconnect switch.
b) The unit shall come c/w 24 VAC control transformer with 200 VA for internal and remote controls.

FILTRATION

a) Unit shall come complete with 2" thick MERV 8 filters.

HEAT EXCHANGER

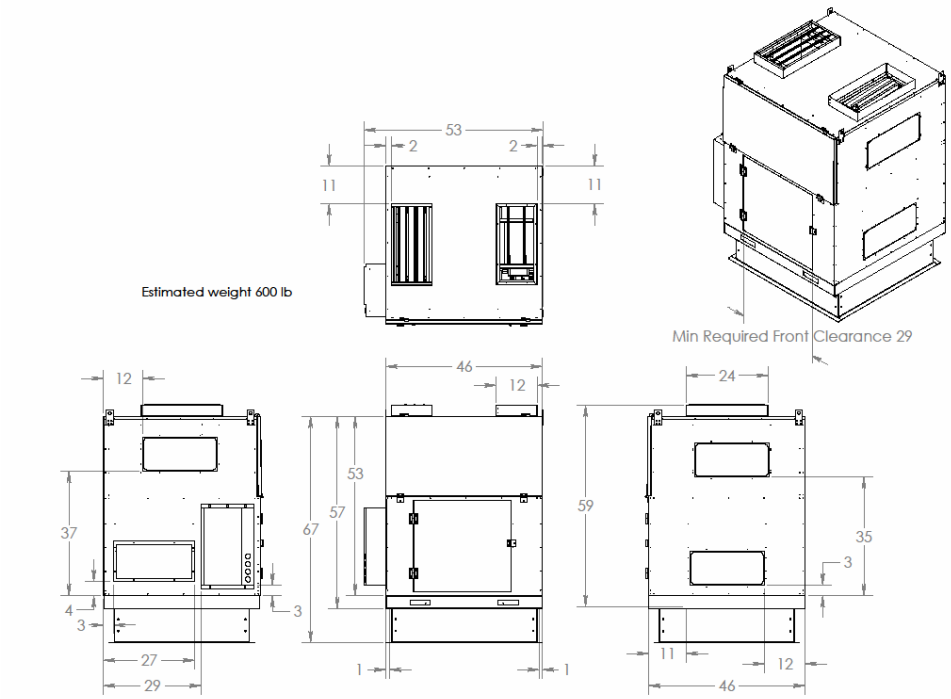
a) Polypropylene core constructed of flame retardant material and certified and currently listed with AHRI to Standard 1060.
b) Enthalpy core shall be constructed of a washable polymer membrane, treated with permanent Microban antimicrobial protection to resist mould and odour causing bacteria, have latent energy transfer properties, flame retardancy, certified and currently listed with AHRI to Standard 1060.

DEFROST

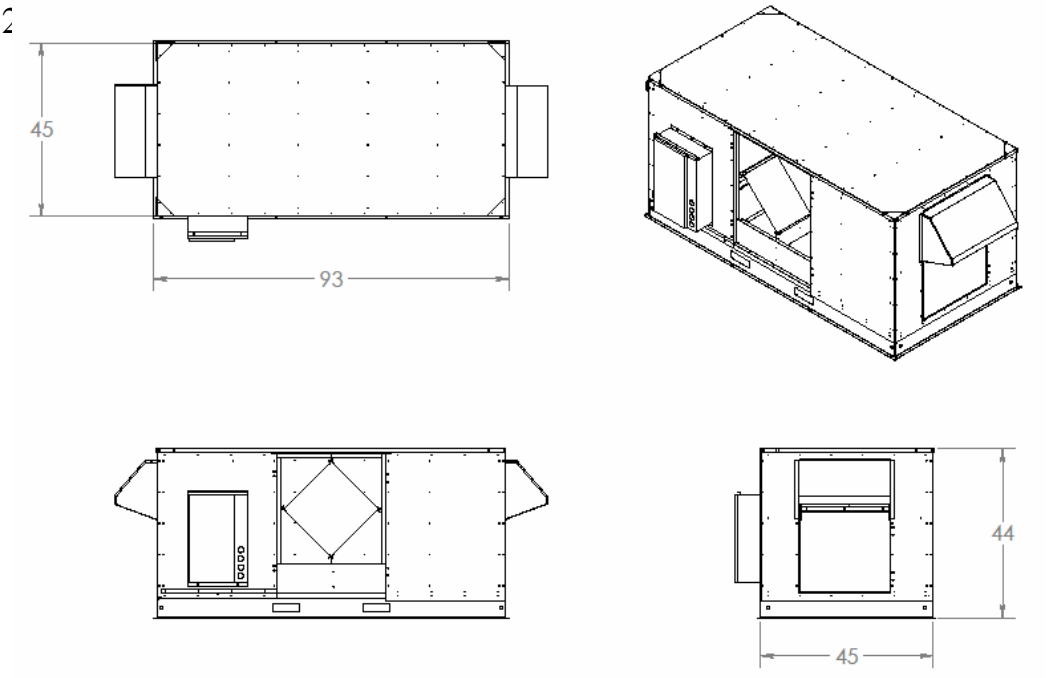
a) None - the unit may be ordered without defrost ability
b) Exhaust only defrost – a temperature sensor shuts down the supply fan when the leaving exhaust air is cold enough to freeze condensate. The supply fan remains off until the leaving exhaust air has reached +8C (47 F). The defrost sensor will allow some field adjustment of the initiation temperature.
c) Timed fan defrost – a temperature sensor shuts down the supply fan when the outside air is cold enough to freeze condensate. The supply fan remains off for a set length of time. The supply fan resumes normal operation for a set length of time and the cycle repeats as long as the outside air temperature is below the set point. Both defrost and run cycles shall be field adjustable via the unit's control.
d) Recirculation Defrost (NU0820) – a temperature sensor initiates defrost when outside air is cold enough to freeze condensate. The exhaust fan shuts down, the recirculation damper opens, the gravity and motorized back draft dampers close. The defrost cycle occurs for a field selectable length of time followed by a field selectable time of normal operation. The cycle repeats as long as the outside air temperature warrants.
e) Face and by Pass – a temperature sensor initiates by pass mode when the leaving exhaust temperature is cold enough to freeze condensate. Heat recovery is interrupted and both fans continue to run. Heat recovery mode resumes when the leaving exhaust temperature is above +8C (47 F).

2.3 Dimensional Data

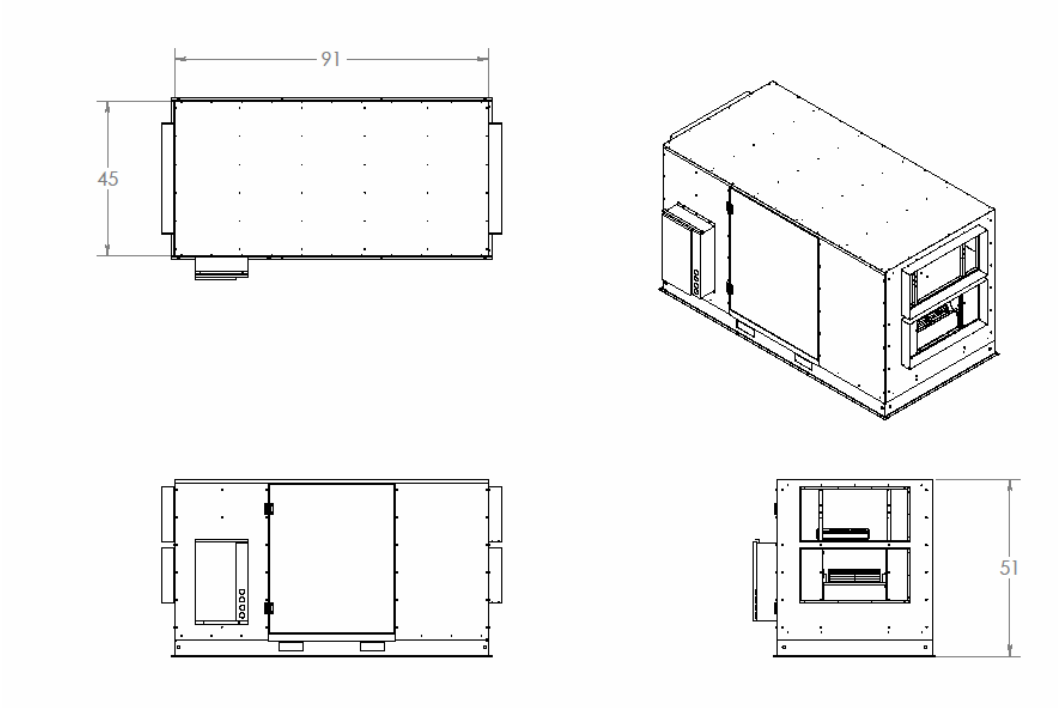
2.3.1 NU0820



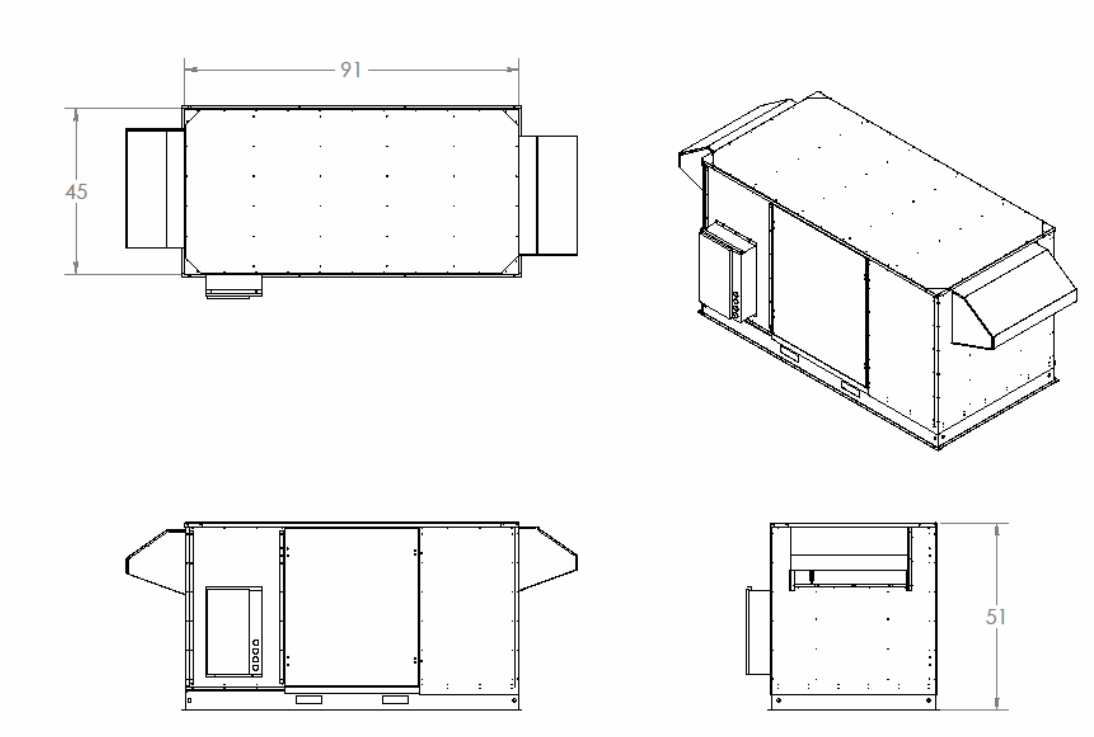
2.3.2 NU1030



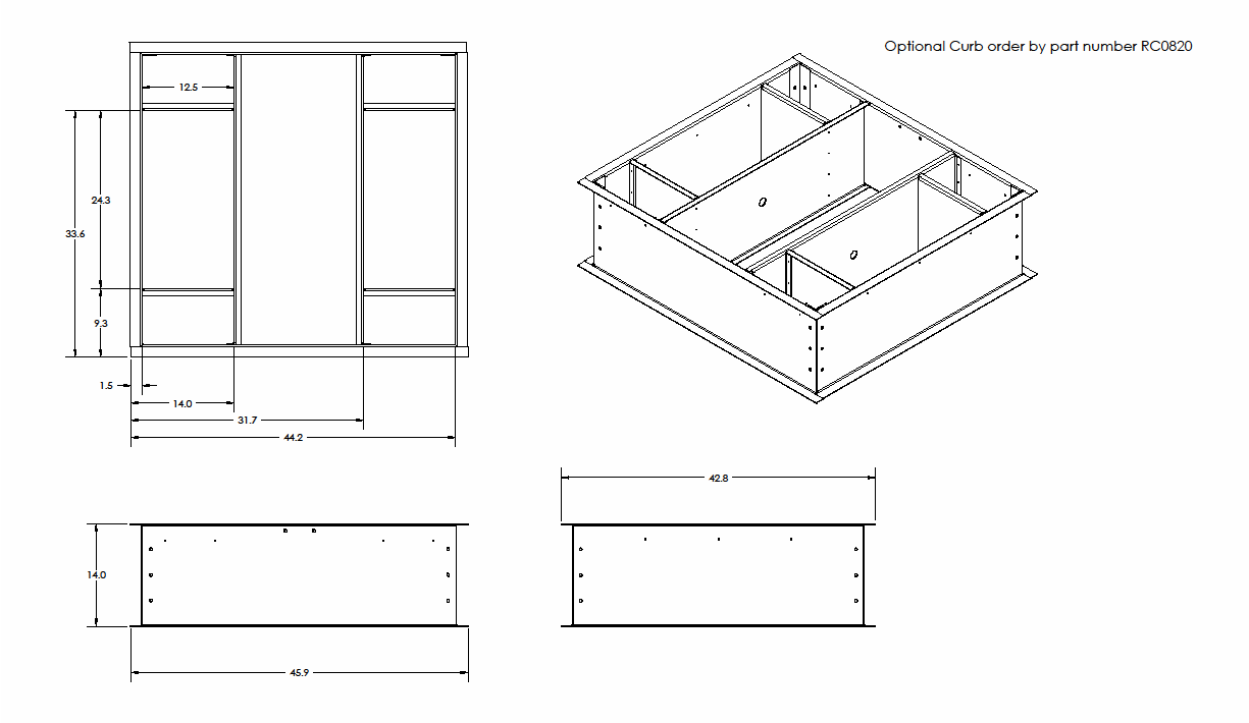
NU2035



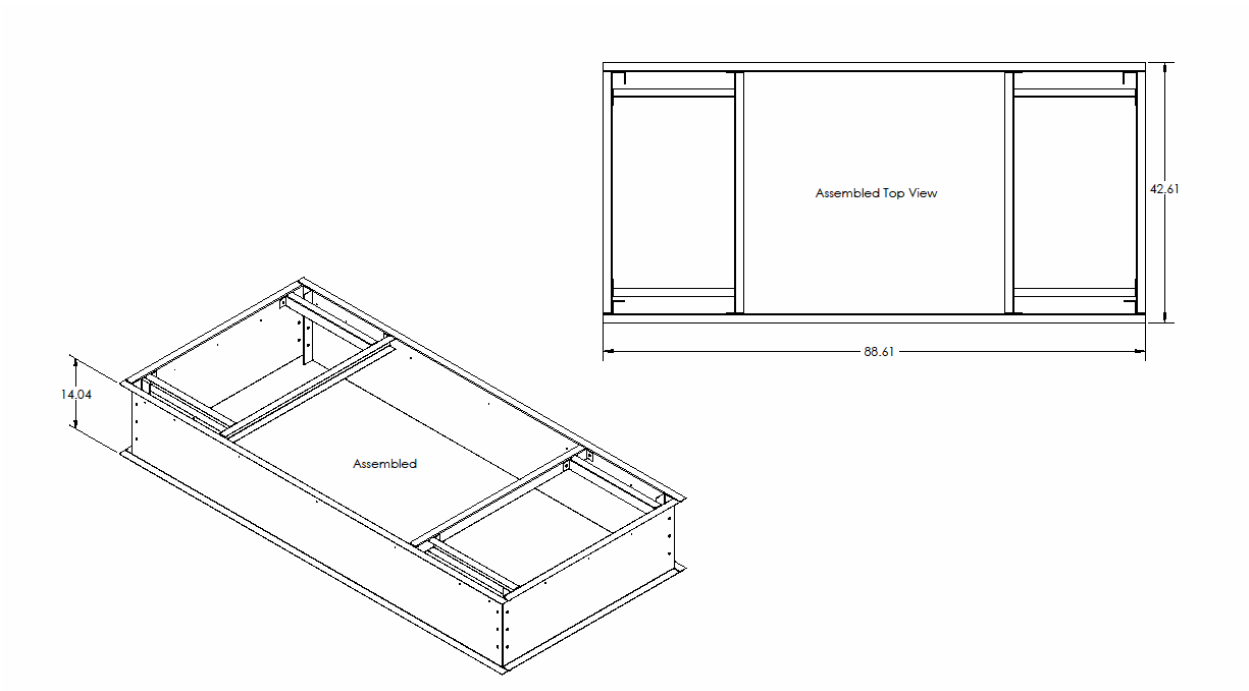
2.4 NU2540



2.5 NU0820 Curb



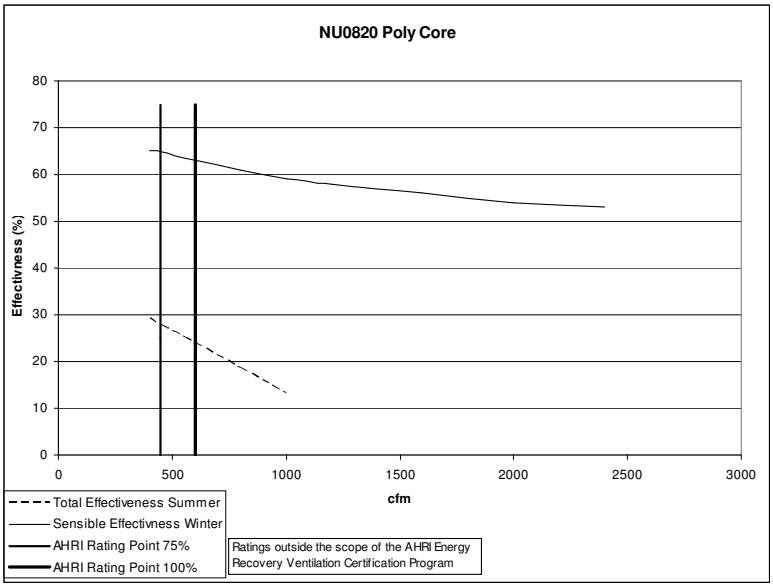
2.6 NU1030 and NU2540 Curb



3 Performance Data – Effectiveness

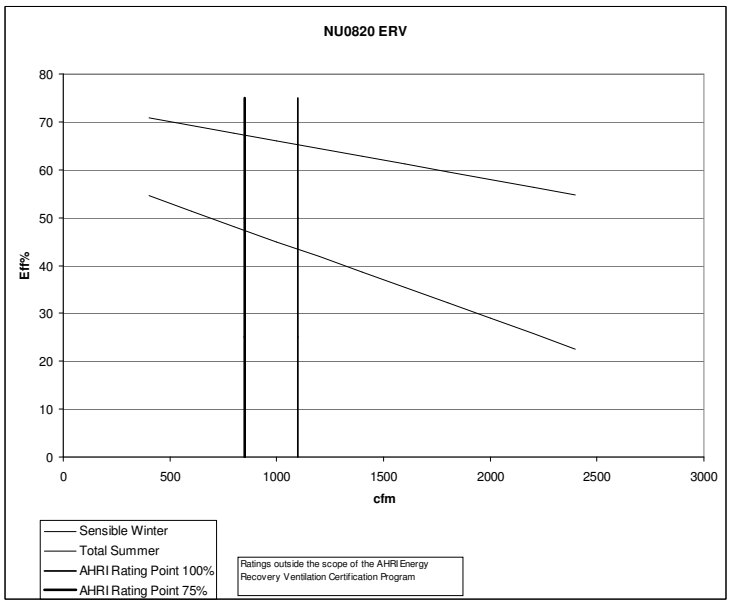
3.1 NU0820 & NU1030

3.1.1 HRV



Model no.	PC 18		
Type	Plate		
Nominal Air Flow (scfm)	300		
Pressure drop (inches)	0.07		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00
Thermal Effectiveness Ratings at 0" Pressure Differential			
	Sensible	Latent	Total
100% air Flow Heating	63	0	39
75% air Flow Heating	65	0	43
100% air Flow cooling	67	0	24
75% air Flow Cooling	71	0	28
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	63	0	39
75% air Flow Heating	65	0	43
100% air Flow cooling	67	0	24
75% air Flow Cooling	71	0	28

3.1.2 ERV



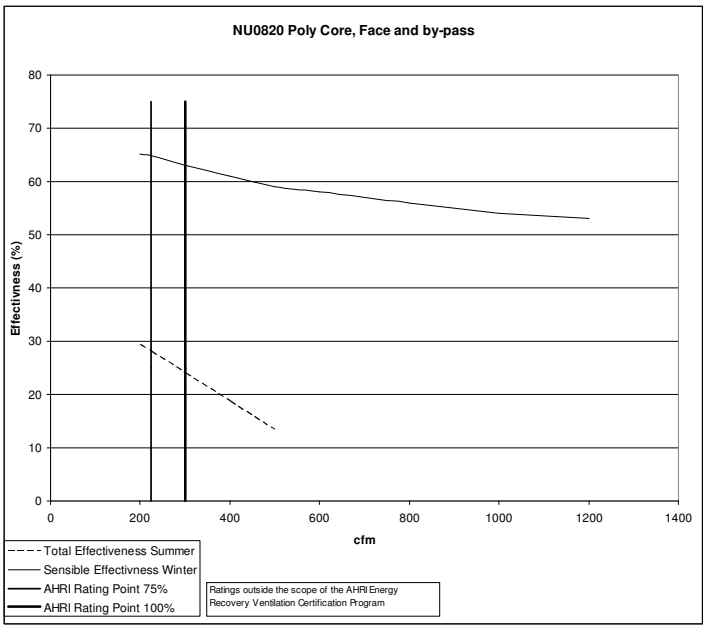
Model no.	EXC-17S-20H-250		
Type	Plate		
Nominal Air Flow (scfm)	550		
Pressure drop (inches)	0.35		
Leakage Ratings	Diff. Pressu	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00

Thermal Effectiveness Ratings at 0" Pressure Differential

	Sensible	Latent	Total
100% air Flow Heating	66	30	54
75% air Flow Heating	68	32	56
100% air Flow cooling	80	24	45
75% air Flow Cooling	82	28	49
	Net Sensib	Net Latent	Net Total
100% air Flow Heating	66	30	54
75% air Flow Heating	68	32	56
100% air Flow cooling	80	24	45
75% air Flow Cooling	82	28	49

3.2 NU0820 Face and By Pass

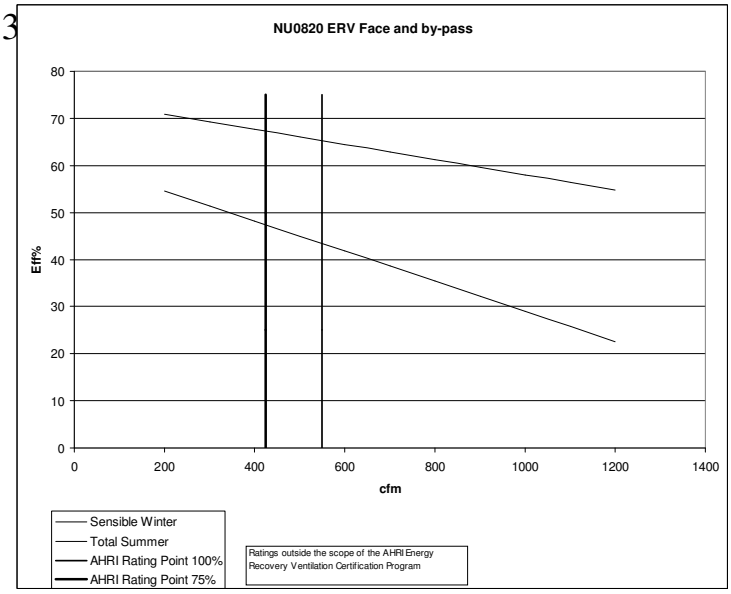
3.2.1 HRV



Model no.	PC 18		
Type	Plate		
Nominal Air Flow (scfm)	300		
Pressure drop (inches)	0.07		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00
Thermal Effectiveness Ratings at 0" Pressure Differential			
	Sensible	Latent	Total
100% air Flow Heating	63	0	39
75% air Flow Heating	65	0	43
100% air Flow cooling	67	0	24
75% air Flow Cooling	71	0	28
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	63	0	39
75% air Flow Heating	65	0	43
100% air Flow cooling	67	0	24
75% air Flow Cooling	71	0	28

3.2.2 ERV

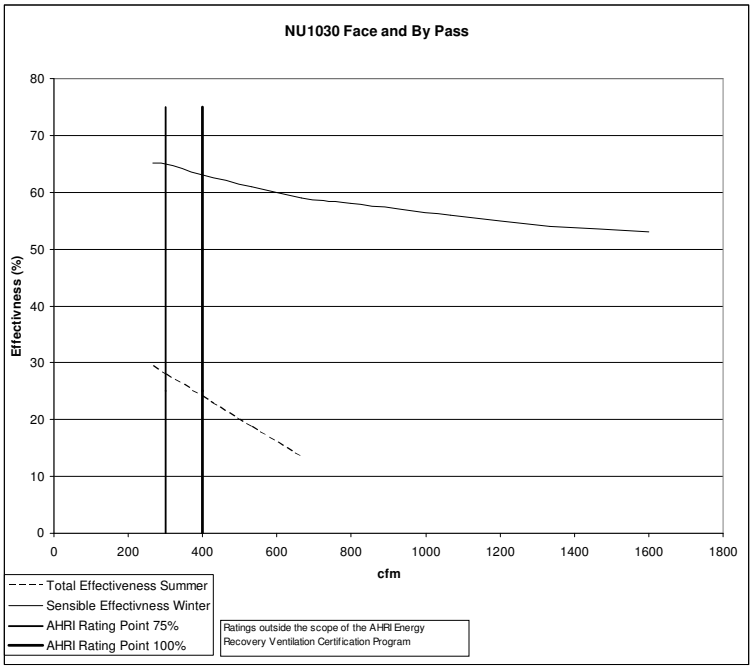
3



Model no.	EXC-17S-20H-250		
Type	Plate		
Nominal Air Flow (scfm)	550		
Pressure drop (inches)	0.35		
Leakage Ratings	Diff. Pressu	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00
Thermal Effectiveness Ratings at 0" Pressure Differential			
	Sensible	Latent	Total
100% air Flow Heating	66	30	54
75% air Flow Heating	68	32	56
100% air Flow cooling	80	24	45
75% air Flow Cooling	82	28	49
	Net Sensib	Net Latent	Net Total
100% air Flow Heating	66	30	54
75% air Flow Heating	68	32	56
100% air Flow cooling	80	24	45
75% air Flow Cooling	82	28	49

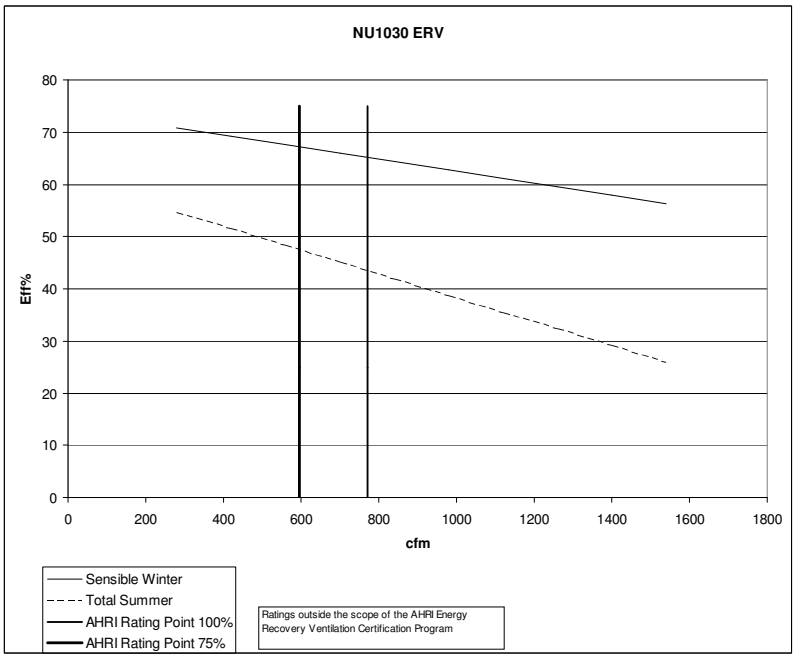
3.3 NU1030 face and by Pass

3.3.1 HRV



Model no.	PC 18		
Type	Plate		
Nominal Air Flow (scfm)	300		
Pressure drop (inches)	0.07		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00
Thermal Effectiveness Ratings at 0" Pressure Differential			
	Sensible	Latent	Total
100% air Flow Heating	63	0	39
75% air Flow Heating	65	0	43
100% air Flow cooling	67	0	24
75% air Flow Cooling	71	0	28
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	63	0	39
75% air Flow Heating	65	0	43
100% air Flow cooling	67	0	24
75% air Flow Cooling	71	0	28

3.3.2 ERV



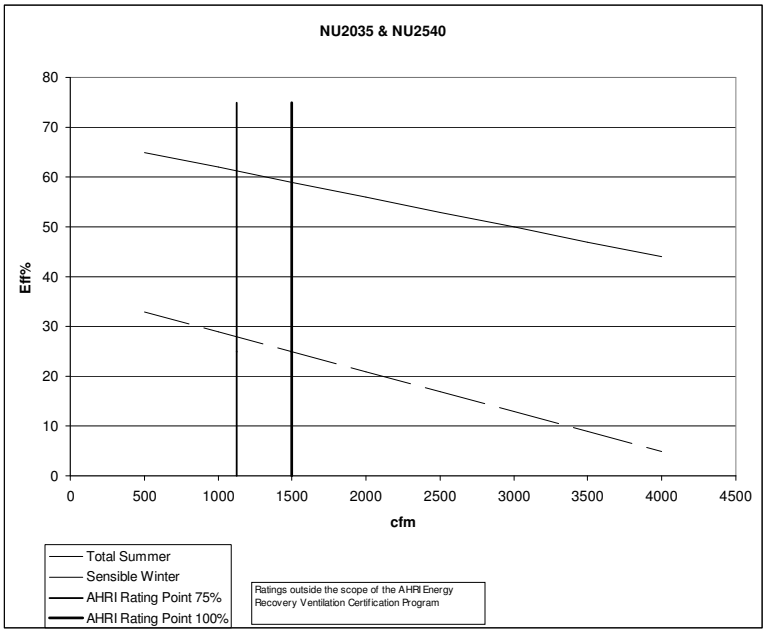
Model no.	EXC-17S-20H-250		
Type	Plate		
Nominal Air Flow (scfm)	550		
Pressure drop (inches)	0.35		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00

Thermal Effectiveness Ratings at 0" Pressure Differential

	Sensible	Latent	Total
100% air Flow Heating	66	30	54
75% air Flow Heating	68	32	56
100% air Flow cooling	80	24	45
75% air Flow Cooling	82	28	49
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	66	30	54
75% air Flow Heating	68	32	56
100% air Flow cooling	80	24	45
75% air Flow Cooling	82	28	49

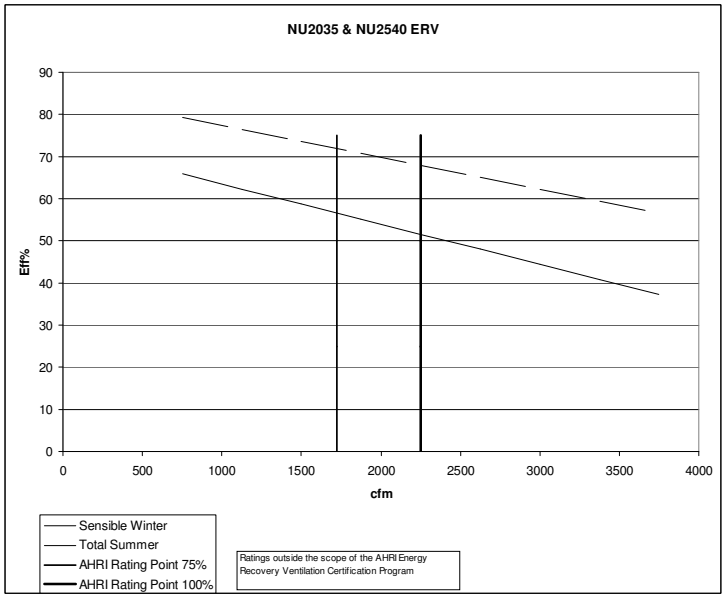
3.4 NU2035 & NU2540

3.4.1 HRV



Model no.	PC 24		
Type	Plate		
Nominal Air Flow (scfm)	500		
Pressure drop (inches)	0.18		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00
Thermal Effectiveness Ratings at 0" Pressure Differential			
	Sensible	Latent	Total
100% air Flow Heating	59	0	38
75% air Flow Heating	62	0	42
100% air Flow cooling	60	0	25
75% air Flow Cooling	65	0	28
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	59	0	38
75% air Flow Heating	62	0	42
100% air Flow cooling	60	0	25
75% air Flow Cooling	65	0	28

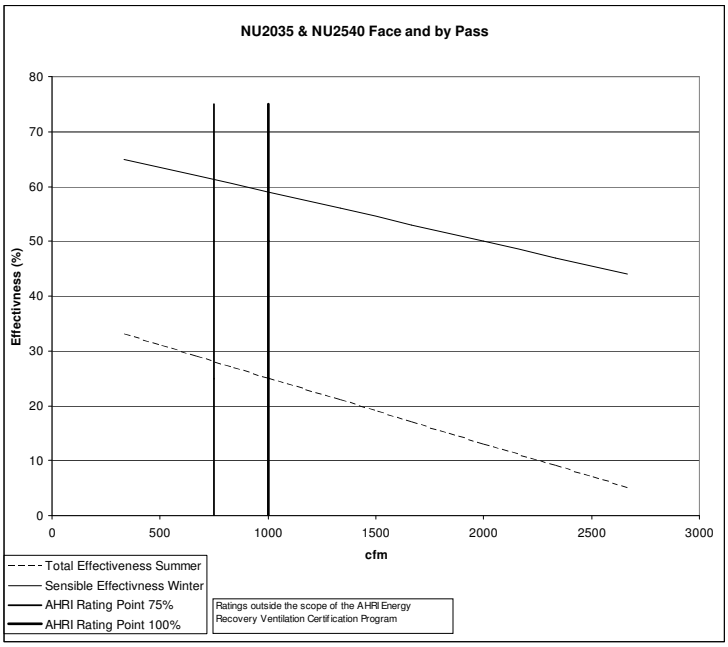
3.4.2 ERV



Model no.	EXC-24S-15H-250		
Type	Plate		
Nominal Air Flow (scfm)	750		
Pressure drop (inches)	0.63		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00
Thermal Effectiveness Ratings at 0" Pressure Differential			
	Sensible	Latent	Total
100% air Flow Heating	68	38	58
75% air Flow Heating	72	40	61
100% air Flow cooling	81	34	52
75% air Flow Cooling	87	38	57
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	68	38	58
75% air Flow Heating	72	40	61
100% air Flow cooling	81	34	52
75% air Flow Cooling	87	38	57

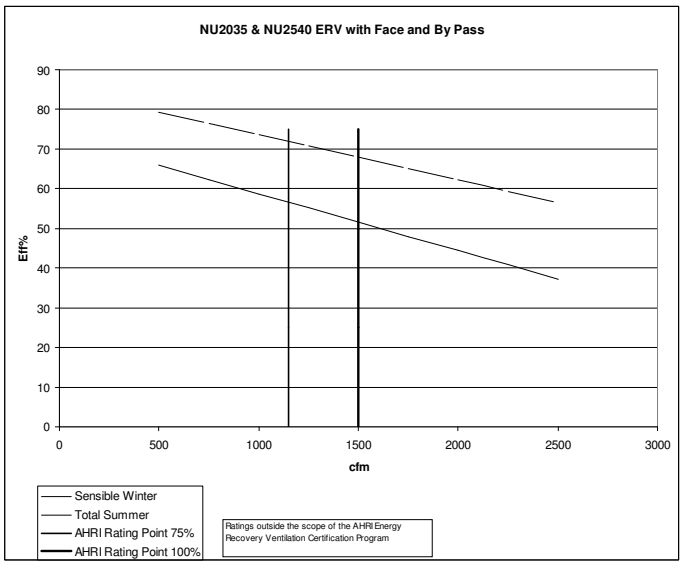
3.5 NU2035 & NU2540 Face and By Pass

3.5.1 HRV



Model no.	PC 24		
Type	Plate		
Nominal Air Flow (scfm)	500		
Pressure drop (inches)	0.18		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00
Thermal Effectiveness Ratings at 0" Pressure Differential			
	Sensible	Latent	Total
100% air Flow Heating	59	0	38
75% air Flow Heating	62	0	42
100% air Flow cooling	60	0	25
75% air Flow Cooling	65	0	28
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	59	0	38
75% air Flow Heating	62	0	42
100% air Flow cooling	60	0	25
75% air Flow Cooling	65	0	28

3.5.2 ERV



Model no.	EXC-24S-15H-250		
Type	Plate		
Nominal Air Flow (scfm)	750		
Pressure drop (inches)	0.63		
Leakage Ratings	Diff. Pressure	EATR %	OACF
Test 1	-0.5	0.00	1.00
Test 2	0	0.00	1.00
Test 3	0.5	0.00	1.00

Thermal Effectiveness Ratings at 0" Pressure Differential

	Sensible	Latent	Total
100% air Flow Heating	68	38	58
75% air Flow Heating	72	40	61
100% air Flow cooling	81	34	52
75% air Flow Cooling	87	38	57
	Net Sensible	Net Latent	Net Total
100% air Flow Heating	68	38	58
75% air Flow Heating	72	40	61
100% air Flow cooling	81	34	52
75% air Flow Cooling	87	38	57

4 Performance Data – Fans

Data in this section relates to polypropylene cores. Enthalpy cores will vary and may require one size larger motor. Consult factory for application specific data.

4.1 NU0820 HRV

Motor Blower Data - all defrost except Face and by-pass													
	ESP		ESP		ESP		ESP		ESP		ESP		
	0.25		0.50		0.75		1.00		1.25		1.50		
CFM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	
800	0.10	586	0.18	773	0.26	919	0.34	1040	0.43	1143	0.52	1235	3/4 hp
900	0.12	605	0.20	789	0.29	935	0.39	1057	0.48	1164	0.58	1258	
1000	0.15	628	0.23	899	0.33	950	0.43	1073	0.54	1181	0.65	1278	
1100	0.17	652	0.27	823	0.37	966	0.48	1089	0.59	1197	0.71	1295	
1200	0.21	682	0.31	841	0.42	982	0.53	1104	0.65	1213	0.78	1310	1 hp
1300	0.25	714	0.35	862	0.47	999	0.59	1120	0.72	1228	0.85	1326	
1400	0.29	746	0.40	884	0.52	1018	0.65	1137	0.79	1244	0.92	1342	
1500	0.34	781	0.45	909	0.58	1037	0.72	1154	0.86	1260	1.01	1357	1.5 hp
1600	0.40	816	0.51	936	0.65	1058	0.79	1172	0.94	1277	1.09	1374	
1700	0.46	851	0.58	966	0.72	1080	0.87	1191	1.02	1294	1.18	1390	
1800	0.54	887	0.66	997	0.80	1103	0.95	1211	1.12	1312	1.28	1407	
1900	0.62	924	0.75	1030	0.89	1129	1.05	1233	1.12	1332	1.39	1424	
2000	0.70	961	0.84	1063	0.99	1158	1.15	1256	1.32	1352	1.50	1443	

4.2 NU0820 HRV Face and By Pass

Motor Blower Data for Face and by-pass													
	ESP		ESP		ESP		ESP		ESP		ESP		
	0.25		0.50		0.75		1.00		1.25		1.50		
CFM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	
800	0.22	849	0.30	982	0.39	1094	0.48	1190	0.57	1277	0.67	1358	3/4 hp
900	0.28	920	0.38	1044	0.47	1153	0.57	1248	0.67	1333	0.78	1412	
1000	0.36	993	0.47	1110	0.57	1214	0.68	1308	0.79	1392	0.90	1469	1 hp
1100	0.46	1068	0.57	1179	0.69	1278	0.81	1368	0.93	1452			
1200	0.58	1145	0.70	1249	0.82	1344	0.95	1431					

NU0820										
RPM	Pulley Set		Turns							
Range	Motor	Blower	5	4.5	4	3.5	3	2.5	2	1.5
600-800	MVL34	MBL67	600	625	650	700	725	750	775	800
750-900	MVL34	MBL57	725	750	775	800	825	875	900	925
900-1150	MVL34	MBL47	900	950	975	1000	1075	1125	1150	1175
1150-1450	MVL34	MBL37	1100	1150	1200	1250	1450			

4.3 NU2035 & NU2540 HRV

	NU2035 and NU2540																	
		ESP = 0		ESP = 0.2		ESP = 0.6		ESP = 1.0		ESP = 1.2		ESP = 1.4		ESP = 1.75		ESP = 2.0		
CFM		BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	
2400		0.32	440	0.46	535	0.76	695	0.97	840	1.12	898	1.27	951	1.54	1035	1.74	1090	
2500	1/2 hp	0.37	461	0.51	552	0.82	707	1.04	851	1.19	908	1.35	962	1.59	1044	1.83	1101	2.0 hp
2600		0.42	481	0.56	568	0.88	719	1.11	862	1.27	919	1.43	972	1.71	1056	1.92	1111	
2700		0.47	500	0.61	584	0.95	731	1.18	872	1.34	930	1.51	982	1.8	1066	2.02	1121	
2800		0.52	517	0.67	599	1.01	743	1.25	883	1.42	939	1.59	992	1.89	1076	2.11	1131	
2900	3/4 hp	0.58	535	0.73	614	1.08	755	1.33	893	1.50	949	1.67	1002	1.99	1086	2.25	1149	
3000		0.63	552	0.80	629	1.16	766	1.40	902	1.58	959	1.76	1011	2.08	1095	2.31	1150	
3100		0.70	572	0.87	647	1.24	781	1.49	914	1.67	970	1.86	1022	2.19	1106	2.43	1160	3.0 hp
3200		0.77	589	0.94	661	1.32	792	1.57	923	1.76	979	1.95	1031	2.29	1115	2.53	1170	
3300	1 hp	0.85	608	1.02	678	1.41	806	1.66	934	1.86	990	2.05	1042	2.40	1125	2.65	1180	
3400		0.93	627	1.11	695	1.51	820	1.76	946	1.96	1001	2.16	1052	2.51	1135	2.70	1190	
3500		1.01	645	1.20	711	1.60	834	1.85	956	2.06	1011	2.27	1063	2.63	1146	2.90	1200	
3600		1.10	662	1.29	727	1.70	847	1.95	967	2.17	1022	2.38	1073	2.75	1155			
3700	1.5 hp	1.20	683	1.39	746	1.82	863	2.07	980	2.28	1034	2.50	1085	2.89	1167			
3800		1.29	700	1.49	761	1.93	876	2.17	990	2.39	1043	2.62	1095					
3900		1.40	719	1.61	779	2.05	892	2.29	1003	2.52	1055	2.75	1106					
4000		1.51	738	1.72	797	2.18	906	2.42	1015	2.65	1067	2.88	1117					

4.4 NU2035 & NU2540 Face and By Pass HRV

NU2035 and NU2540 Face and by Pass

		ESP = 0		ESP = 0.2		ESP = 0.6		ESP = 1.0		ESP = 1.2		ESP = 1.4		ESP = 1.75		ESP = 2.0		
CFM		BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	
1600		0.18	489	0.26	591	0.42	745	0.56	868	0.63	921	0.71	971	0.83	1052	0.92	1106	1.0 hp
1700		0.22	520	0.30	617	0.47	767	0.63	887	0.70	941	0.78	990	0.91	1070	1.01	1123	
1800		0.26	549	0.35	641	0.52	788	0.69	907	0.77	959	0.85	1008	0.99	1087	1.10	1140	
1900		0.31	581	0.40	670	0.59	812	0.77	928	0.85	980	0.97	1044	1.09	1107	1.16	1144	1.5 hp
2000		0.36	612	0.46	697	0.65	835	0.84	949	0.94	1000	1.06	1064	1.18	1126	1.30	1177	
2100		0.42	641	0.52	722	0.72	857	0.92	969	1.02	1020	1.12	1067	1.28	1144	1.40	1195	
2200		0.48	673	0.59	751	0.80	881	1.01	992	1.12	1041	1.22	1088	1.39	1164			
2300		0.55	703	0.66	778	0.88	905	1.10	1013	1.21	1062	1.32	1109	1.51	1184			
2400		0.63	735	0.74	808	0.97	931	1.20	1037	1.32	1085	1.49	1151					
2500	3/4 hp	0.71	766	0.83	836	1.07	956	1.31	1060	1.43	1107	1.66	1191					
2600		0.80	797	0.92	864	1.17	981	1.42	1083	1.55	1129	1.67	1174					2.0 hp
2700		0.89	825	1.02	890	1.28	1004	1.54	1104	1.67	1150	1.80	1195					
2800		0.99	856	1.13	919	1.40	1030	1.67	1128	1.80	1174							
2900		1.10	886	1.24	947	1.52	1056	1.80	1152	1.94	1196							
3000		1.22	918	1.37	977	1.65	1083	1.94	1177									

RPM	Pulley Set		Turns							
Range	Motor	Blower	5	4.5	4	3.5	3	2.5	2	1.5
	5/8 motor shaft 56H									
600-800	MVL34	MBL67	600	625	650	700	725	750	775	800
750-900	MVL34	MBL57	725	750	775	800	825	875	900	925
900-1150	MVL34	MBL47	900	950	975	1000	1075	1125	1150	1175
1150-1450	MVL34	MBL37	1100	1150	1200	1250	1450			
	7/8 motor shaft 145T									
1300-1500	8325x7/8	MBL37		1300	1350	1390	1425	1500		

4.5 NU1030 HRV

	ESP 0.25		ESP 0.50		ESP 0.75		ESP 1.00		ESP 1.25		ESP 1.50		
CFM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	
1000	0.15	628	0.23	899	0.33	950	0.43	1073	0.54	1181	0.65	1278	3/4 hp
1100	0.17	652	0.27	823	0.37	966	0.48	1089	0.59	1197	0.71	1295	
1200	0.21	682	0.31	841	0.42	982	0.53	1104	0.65	1213	0.78	1310	1 hp
1300	0.25	714	0.35	862	0.47	999	0.59	1120	0.72	1228	0.85	1326	
1400	0.29	746	0.40	884	0.52	1018	0.65	1137	0.79	1244	0.92	1342	
1500	0.34	781	0.45	909	0.58	1037	0.72	1154	0.86	1260	1.01	1357	1.5 hp
1600	0.40	816	0.51	936	0.65	1058	0.79	1172	0.94	1277	1.09	1374	
1700	0.46	851	0.58	966	0.72	1080	0.87	1191	1.02	1294	1.18	1390	
1800	0.54	887	0.66	997	0.80	1103	0.95	1211	1.12	1312	1.28	1407	
1900	0.62	924	0.75	1030	0.89	1129	1.05	1233	1.12	1332	1.39	1424	
2000	0.70	961	0.84	1063	0.99	1158	1.15	1256	1.32	1352	1.50	1443	
2100	0.80	1001	0.94	1098	1.10	1190	1.26	1281	1.44	1374	1.62	1463	2 hp
2200	0.91	1037	1.05	1131	1.21	1220	1.37	1305	1.56	1395	1.75	1482	
2300	1.02	1076	1.18	1167	1.34	1253	1.51	1335	1.69	1419			
2400	1.15	1115	1.31	1202	1.47	1286	1.65	1365	1.83	1444			
2500	1.28	1156	1.45	1240	1.62	1321	1.80	1398	1.99	1472			
2600	1.42	1192	1.60	1273	1.77	1352	1.96	1427					
2700	1.59	1234	1.76	1313	1.95	1389							
2800	1.75	1271	1.93	1348									
2900	1.94	1314											

4.6 NU1030 HRV Face and By Pass

Face and by pass core													
	NU1030 Face and by Pass												
	ESP 0.25		ESP 0.50		ESP 0.75		ESP 1.00		ESP 1.25		ESP 1.50		
CFM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	
800	0.10	582	0.17	771	0.26	917	0.34	1039	0.43	1142	0.52	1234	
900	0.12	607	0.20	791	0.29	936	0.39	1058	0.49	1165	0.58	1259	
1000	0.15	624	0.23	802	0.33	948	0.43	1071	0.54	1179	0.64	1276	3/4 hp
1100	0.17	656	0.27	826	0.37	969	0.48	1091	0.60	1199	0.71	1296	
1200	0.21	682	0.31	841	0.42	982	0.53	1104	0.65	1213			
1300	0.25	714	0.35	863	0.47	1000	0.59	1121	0.72	1229			
1400	0.29	746	0.40	884	0.52	1017	0.65	1136	0.79	1243			
1500	0.34	782	0.45	910	0.58	1038	0.72	1155	0.86	1261			
1600	0.40	817	0.52	937	0.65	1059	0.79	1173	0.94	1278			1 hp
1700	0.46	850	0.58	965	0.72	1079	0.87	1190	1.02	1293			
1800	0.54	887	0.66	997	0.80	1103	0.95	1211					
1900	0.61	923	0.75	1029	0.89	1128	1.05	1232					
2000	0.70	962	0.84	1064	0.99	1159	1.15	1256					1.5 hp

RPM	Pulley Set		Turns							
Range	Motor	Blower	5	4.5	4	3.5	3	2.5	2	1.5
	5/8 motor shaft 56H									
600-800	MVL34	MBL67	600	625	650	700	725	750	775	800
750-900	MVL34	MBL57	725	750	775	800	825	875	900	925
900-1150	MVL34	MBL47	900	950	975	1000	1075	1125	1150	1175
1150-1450	MVL34	MBL37	1100	1150	1200	1250	1450			
	7/8 motor shaft 145T									
1300-1500	8325x7/8	MBL37		1300	1350	1390	1425	1500		

5 Electrical Data

5.1 Motors – all units

Mtr Data

	Voltage																			
hp	240/1										208/3									
	Stock #	Type	Frame	RPM	Shaft dia	S.F.	Eff.	FLA	MCA	MOP	Stock #	Type	Frame	RPM	Shaft dia	S.F.	Eff.	FLA	MCA	MOP
1/2	C612	TEFC	56	1725	5/8	1.15	67.1	3.6	9.1	15	H868	TEFC	56	1800	5/8	1.15	80.4	1.6	4.6	15
3/4	C669	TEFC	56	1725	5/8	1.15	69.3	5.2	12.7	20.0	H869	TEFC	56	1800	5/8	1.15	79.3	2.4	6.4	15
1	C683	TEFC	56	1725	5/8	1.15	71.0	7.5	17.9	25.0	H524	TEFC	56	1800	5/8	1.15	79.0	3.3	8.4	15
1.5	C693	TEFC	56	1725	5/8	1.15	72.0	7.5	17.9	25.0	H535	TEFC	56	1800	5/8	1.15	82.9	4.5	11.1	15.0
2	K200	TEFC	182T	1750	7/8	1.15		12.0	28.0	40.0	E116	TEFC	145T	1745	7/8	1.15	86.5	5.6	13.6	20.0
3	K203	TEFC	184T	1725	7/8	1.15		16.0	37.0	55.0	E292	TEFC	182T	1750	1 1/8	1.15	89.5	7.6	18.1	25.0

	Voltage																			
hp	460/3										575/3									
	Stock #	Type	Frame	RPM	Shaft dia	S.F.	Eff.	FLA	MCA	MOP	Stock #	Type	RPM	Frame	Shaft dia	S.F.	Eff.	FLA	MCA	MOP
1/2	H868	TEFC	56C	1800	5/8	1.15	80.4	0.9	3.0	15	H276	TENV	1800	56	5/8	1.15	77.0	0.7	2.6	15
3/4	H869	TEFC	56C	1800	5/8	1.15	79.3	1.2	3.7	15	H461	TENV	1800	56	5/8	1.15	82.0	0.8	2.8	15
1	H524	TEFC	56C	1800	5/8	1.15	79.0	1.7	4.8	15	H525	TEFC	1800	56	5/8	1.15	81.0	1.4	4.2	15
1.5	H535	TEFC	56HC	1800	5/8	1.15	82.9	2.2	6.0	15	T59027	TEFC	1800	145T	7/8	1.15	86.5	1.7	4.8	15
2	E116	TEFC	145T	1745	7/8	1.15	86.5	2.8	7.3	15	T59028	TECF	1730	145T	7/8	1.15	86.5	2.2	6.0	15
3	E292	TEFC	182T	1750	1 1/8	1.15	89.5	3.8	9.6	15	T59029	TEFC	1745	182T	1 1/8	1.15	89.5	3.1	8.0	15

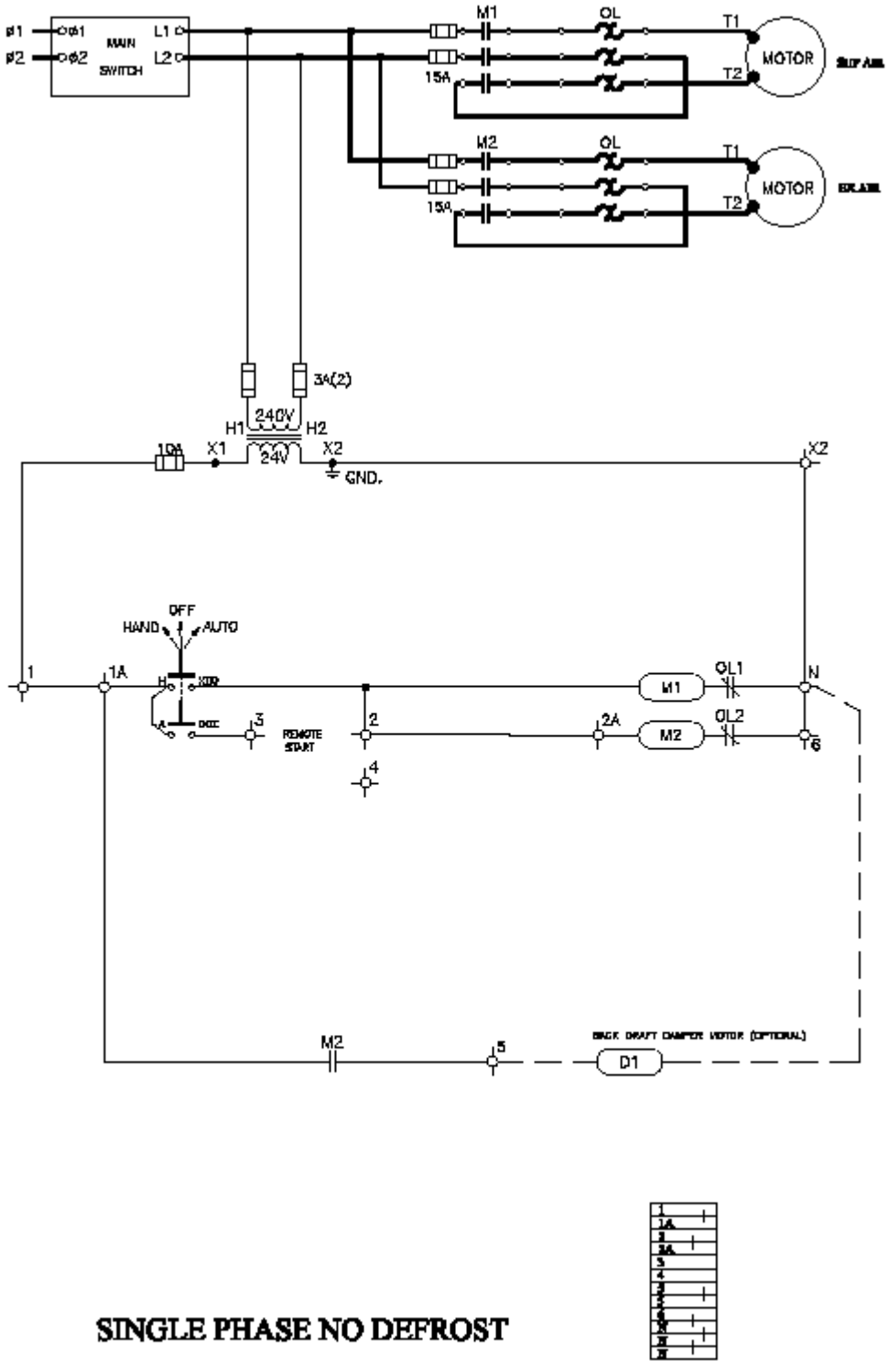
MCA = **Minimum** circuit amps MOP = **Maximum** over-current protection Chose a standard sized overcurrent device equal or less than the MOP

MCA = **Minimum** circuit amps MOP = **Maximum** over-current protection Chose a standard sized overcurrent device equal or less than the MOP

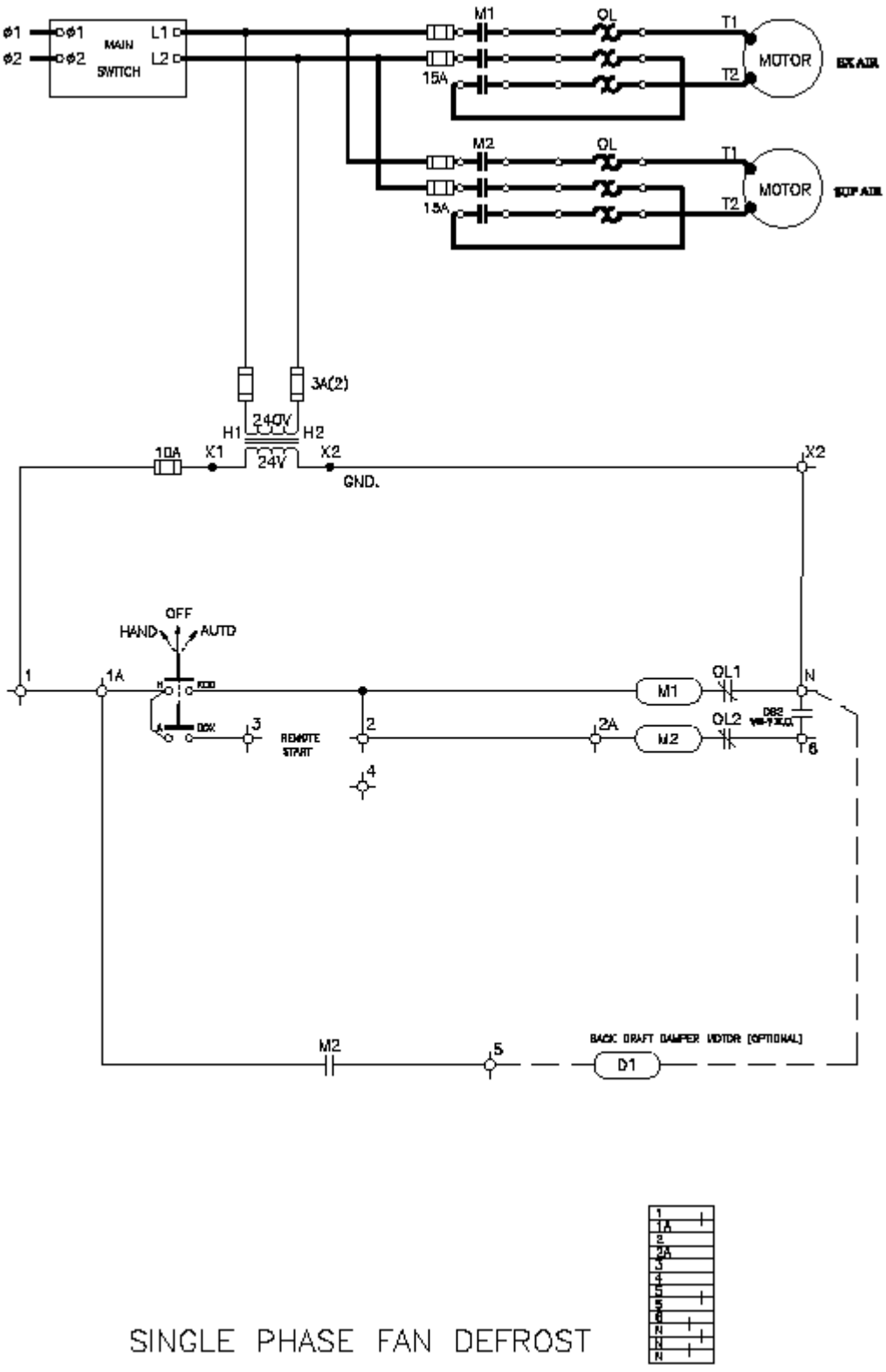
MCA & MOP are the HRV unit total based on both motors (supply and exhaust) being equal hp

For unequal motors: MCA = FLA(larger mtr)*1.25 + FLA(smaller mtr) + 1 MOP = FLA(larger mtr)*2.25 + FLA(smaller mtr) + 1 rounded down to

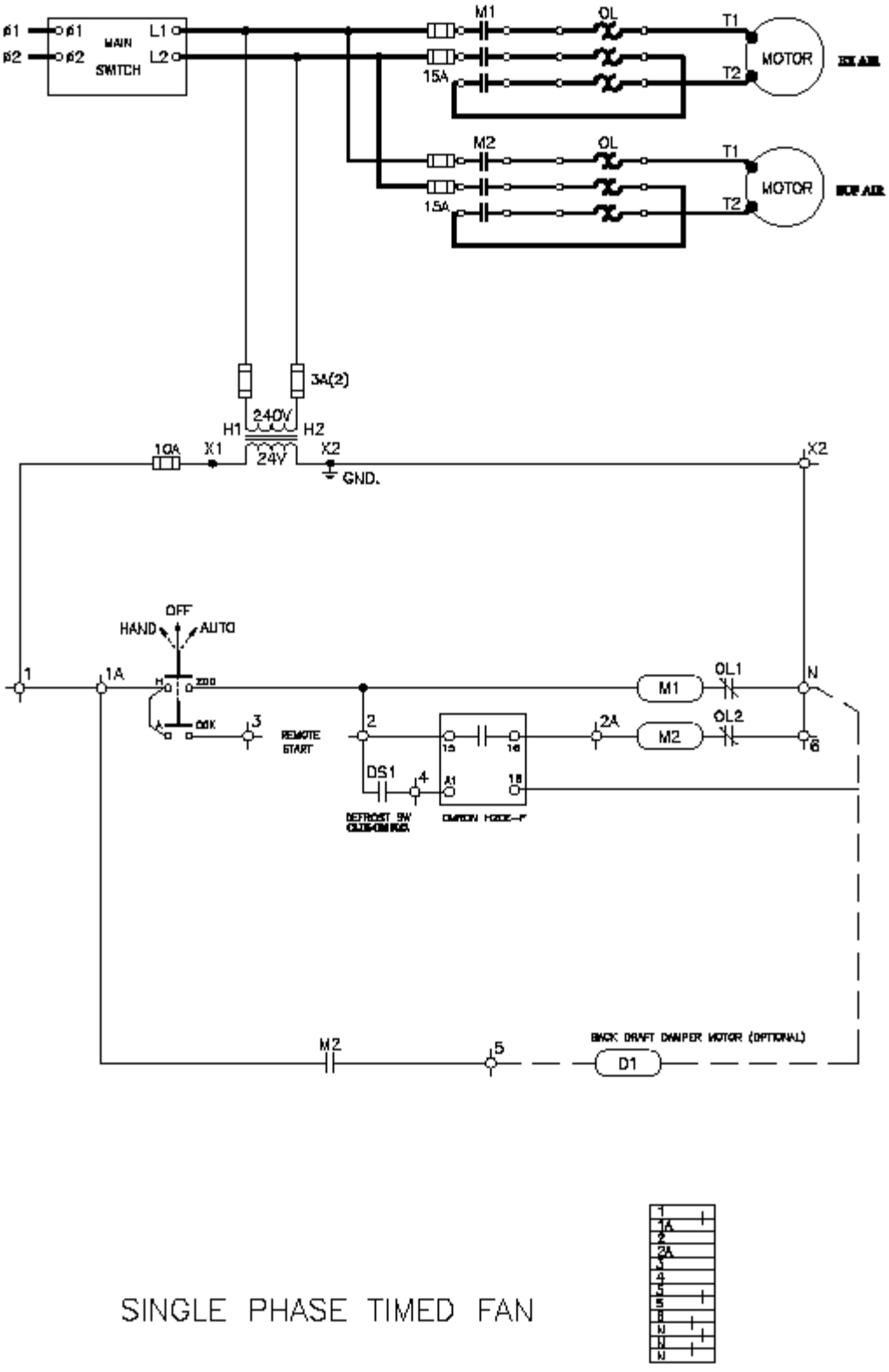
5.2 Electrical Schematics



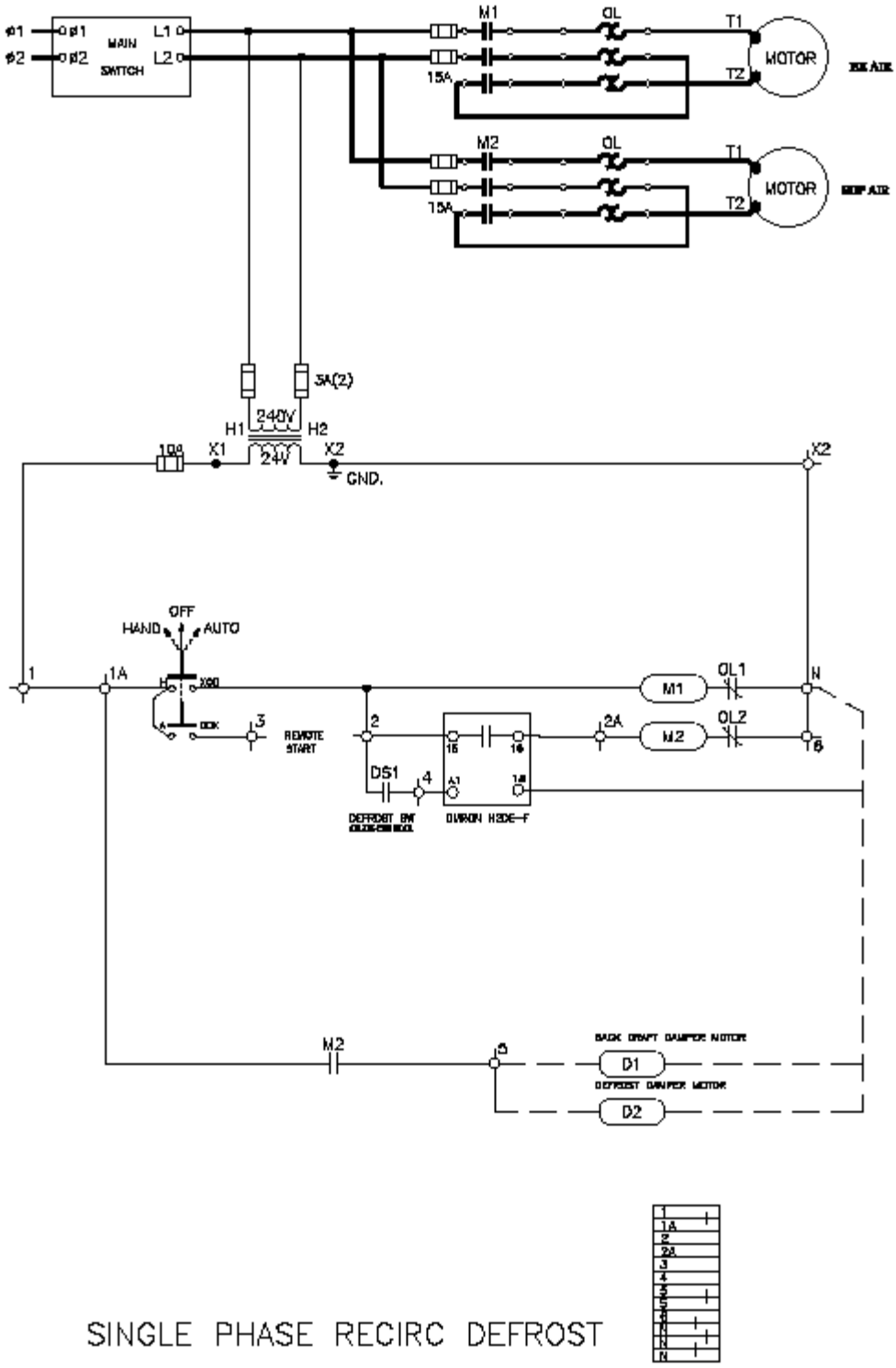
SINGLE PHASE NO DEFROST



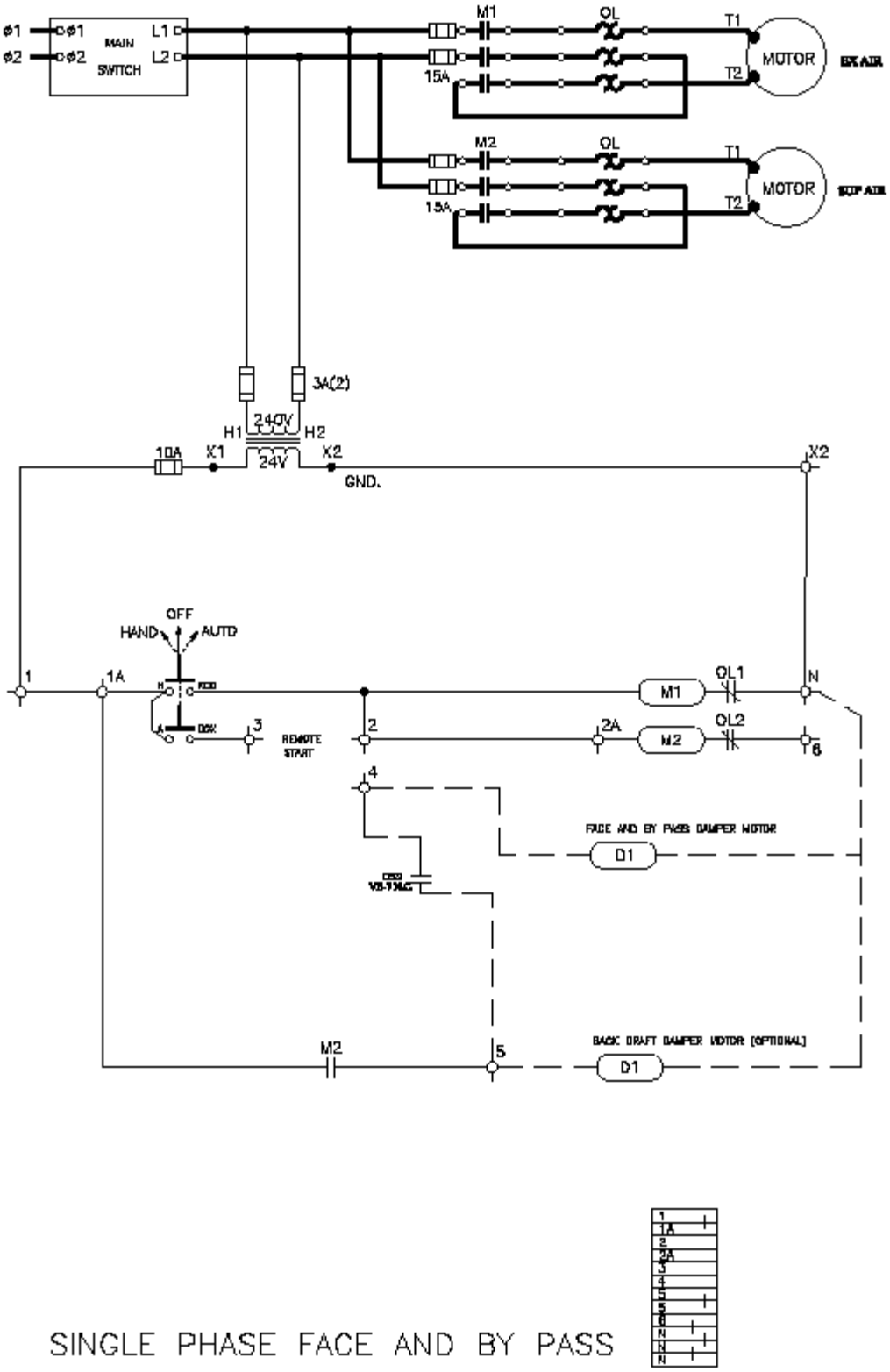
SINGLE PHASE FAN DEFROST



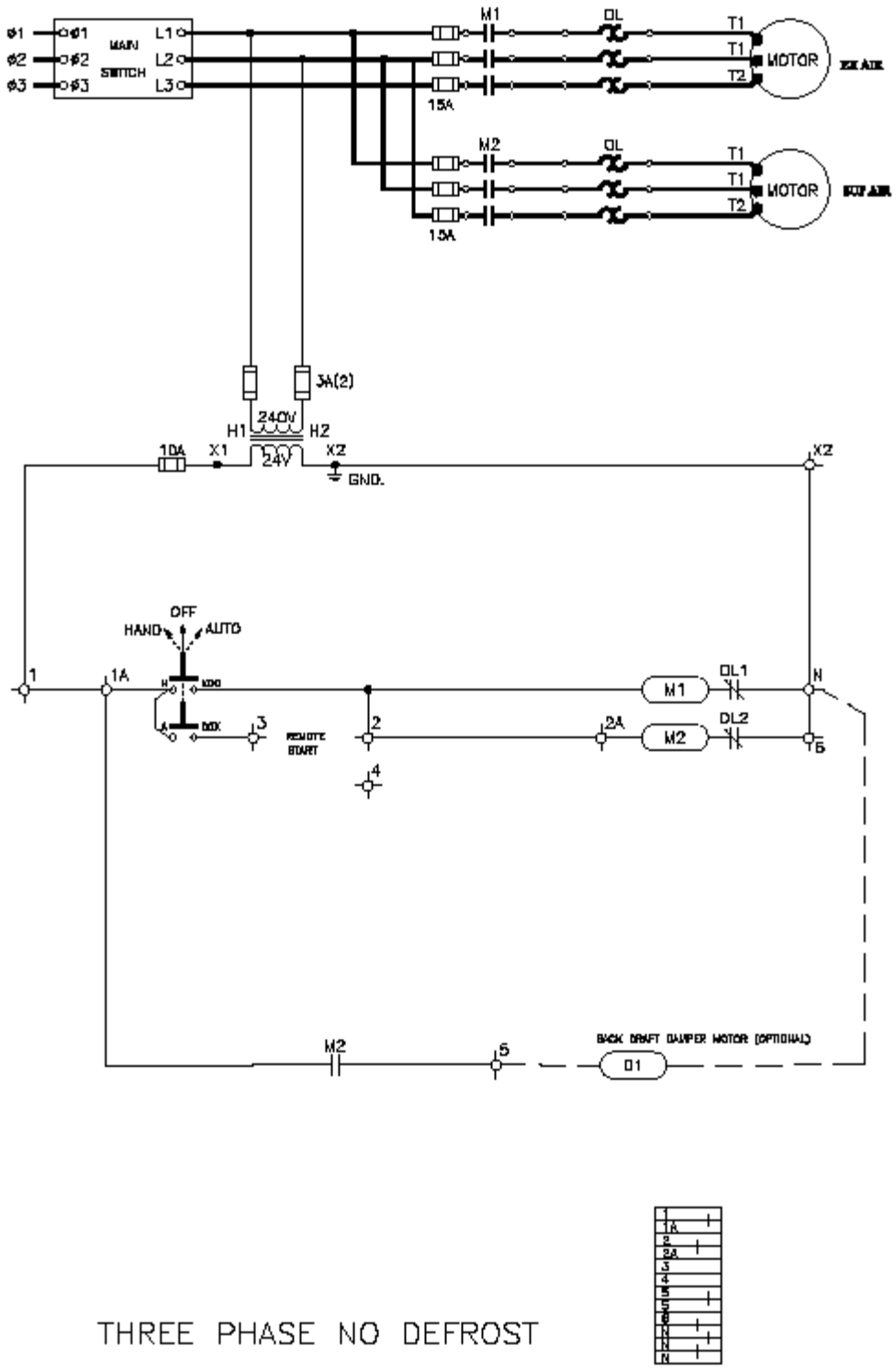
SINGLE PHASE TIMED FAN



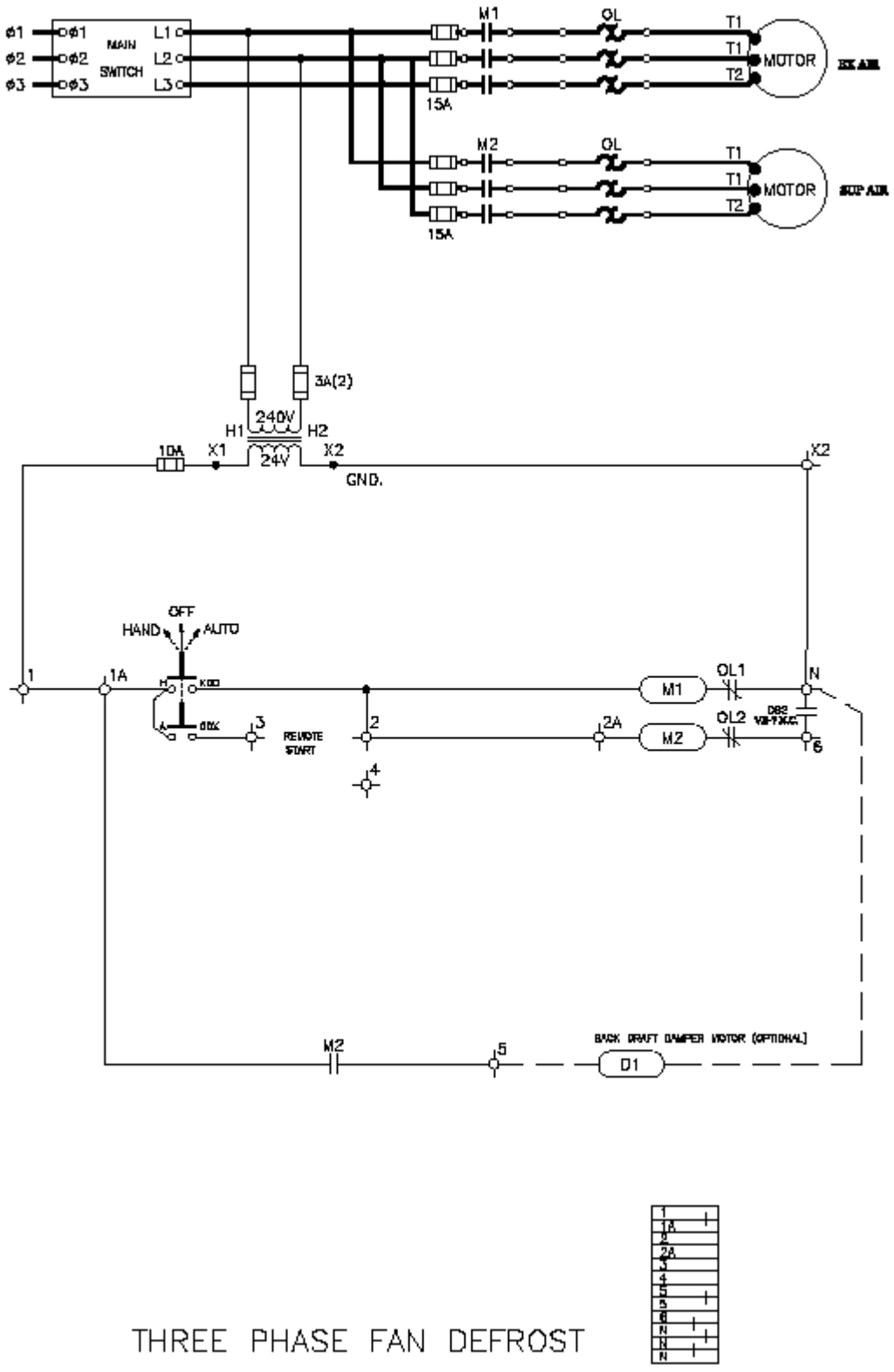
SINGLE PHASE RECIRC DEFROST



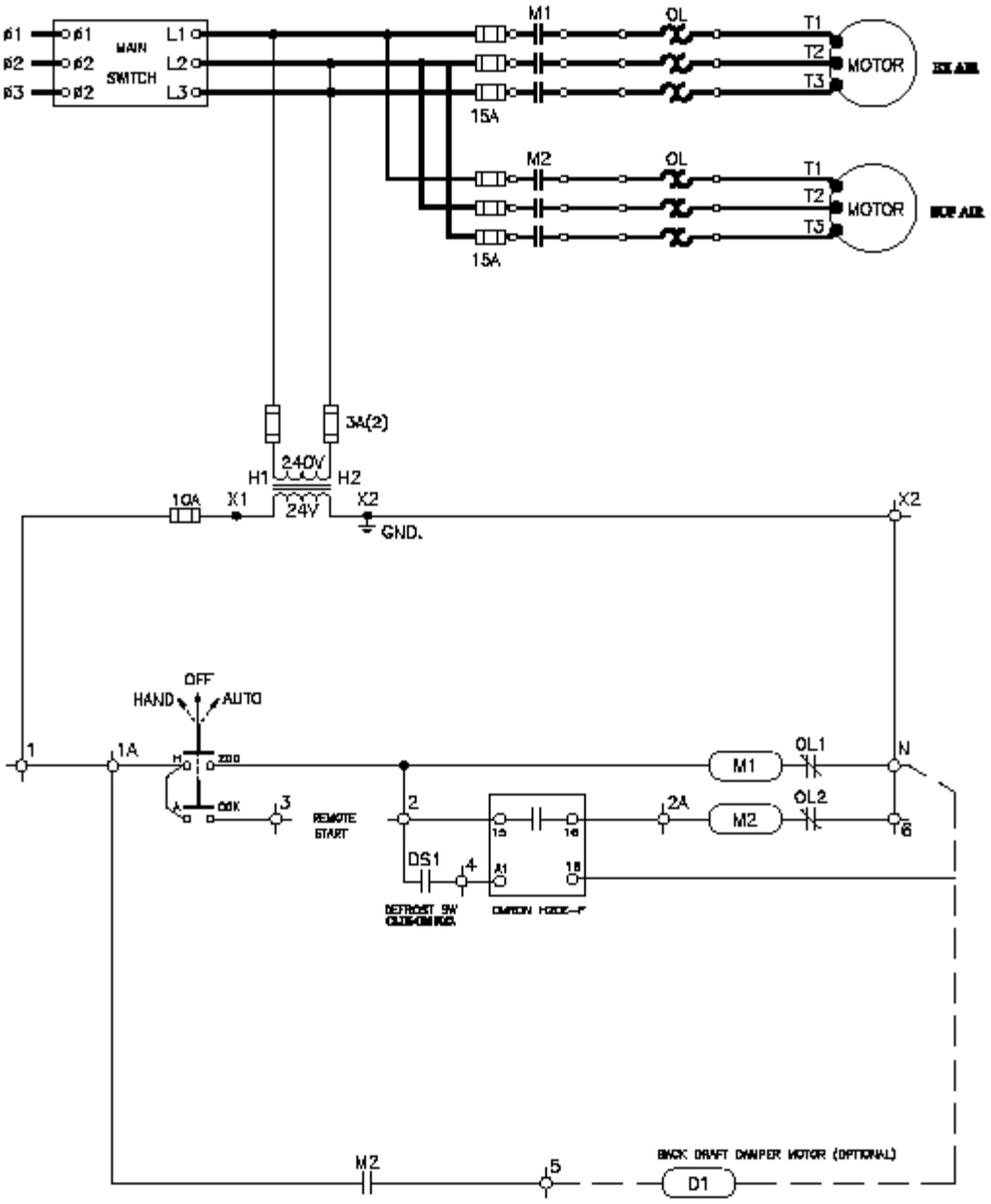
SINGLE PHASE FACE AND BY PASS



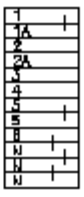
THREE PHASE NO DEFROST

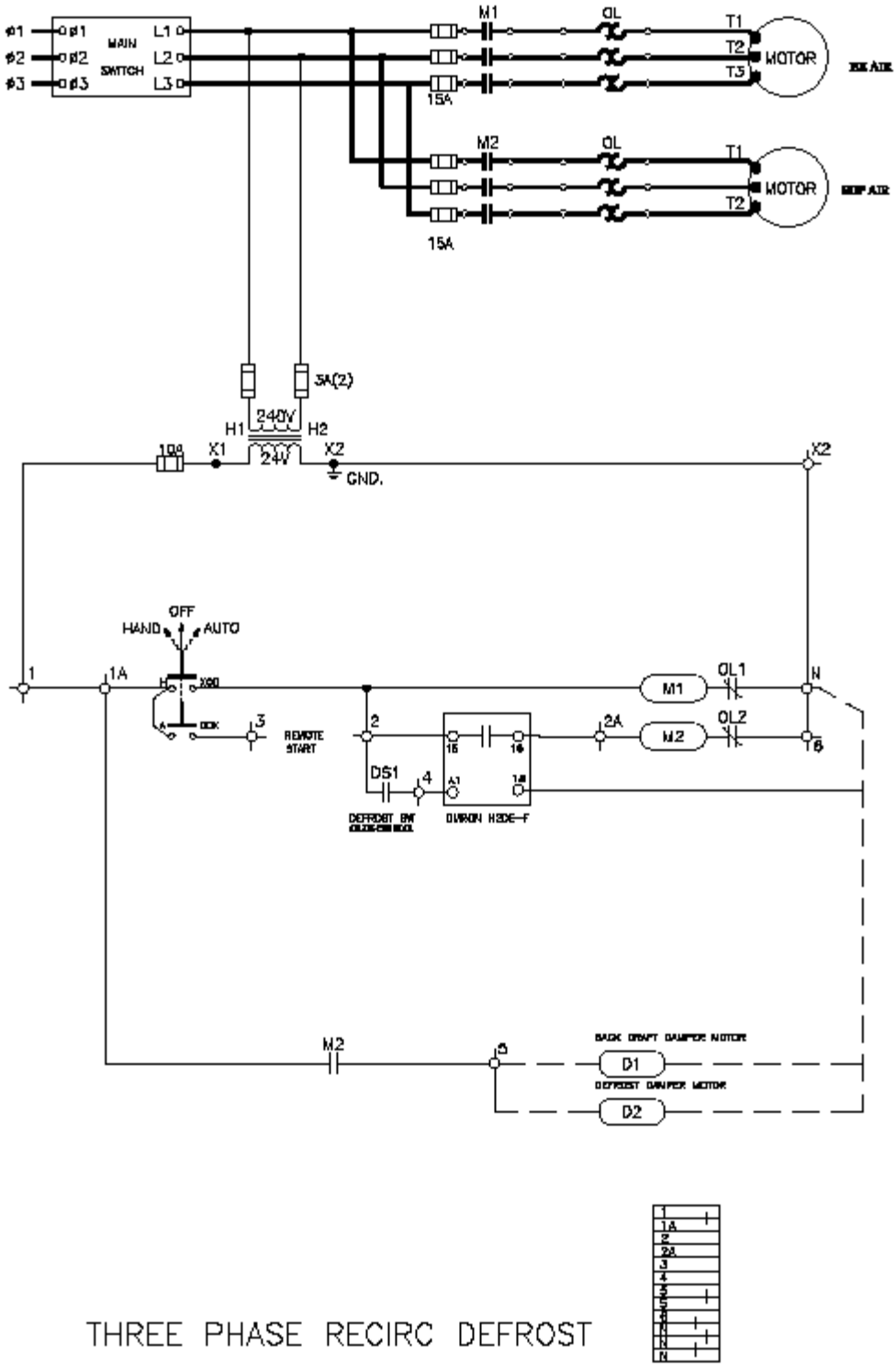


THREE PHASE FAN DEFROST

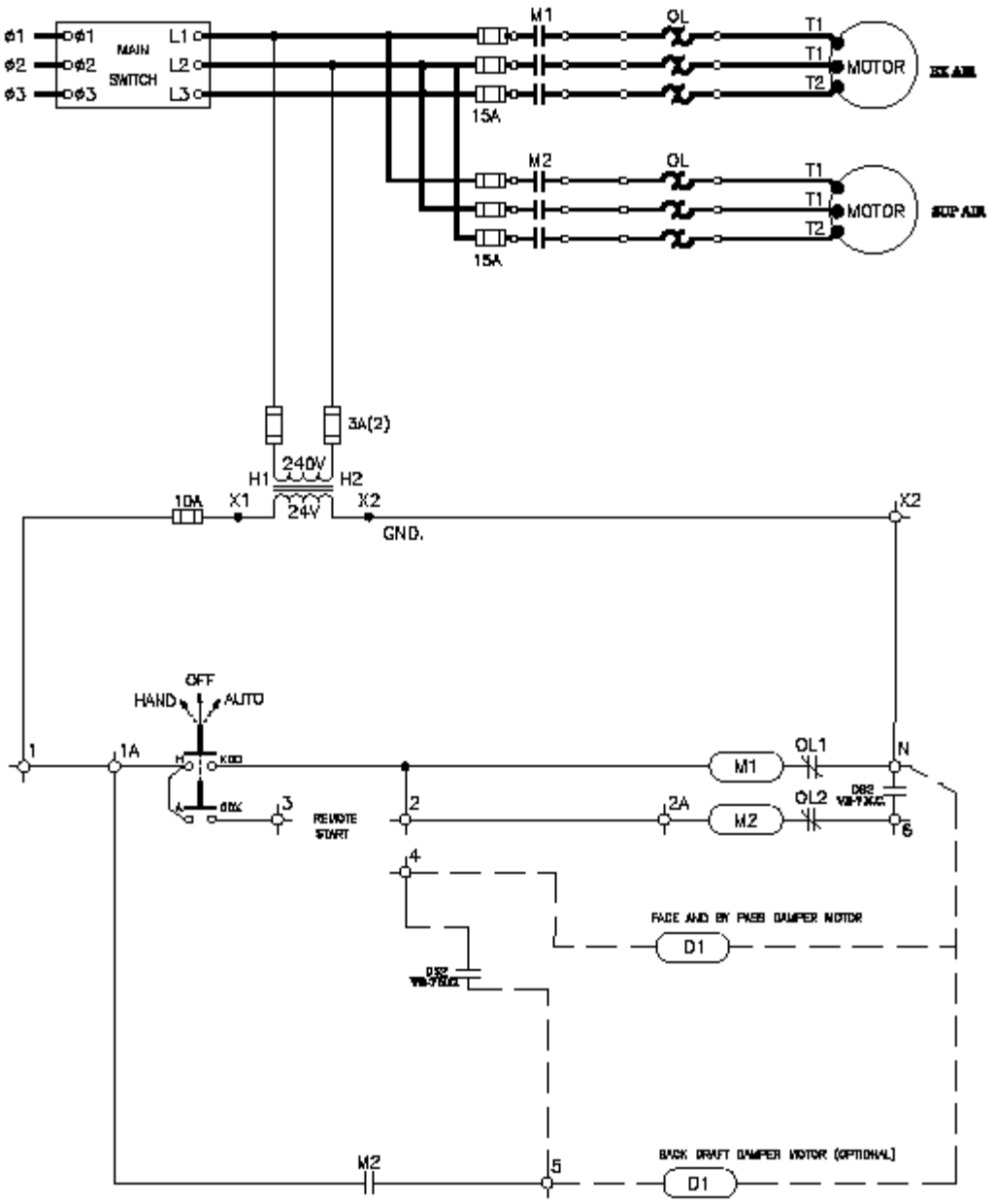


THREE PHASE TIMED FAN





THREE PHASE RECIRC DEFROST



THREE PHASE FACE AND BY PASS

6 Operating Instructions

The HRV motors are controlled and protected by a multi-starter which includes a disconnect switch. A Hand/Off/Auto selector is located on the starter for local or remote switching.

6.1 Remote Control

Any dry contact switch closure may be used. Control voltage is 24 VAC.

7 INSTALLATION INSTRUCTIONS

7.1 INSTALLER'S RESPONSIBILITIES

Installers are responsible for the performance of the ventilation system and for ensuring that all codes and standards are met.

- Do not mount the fresh air supply near a source of contaminated air such as automotive exhaust, gas or propane exhaust or oil tanks.
- Combustion appliances such as furnaces and hot water heaters must not draw combustion air directly from an HRV.

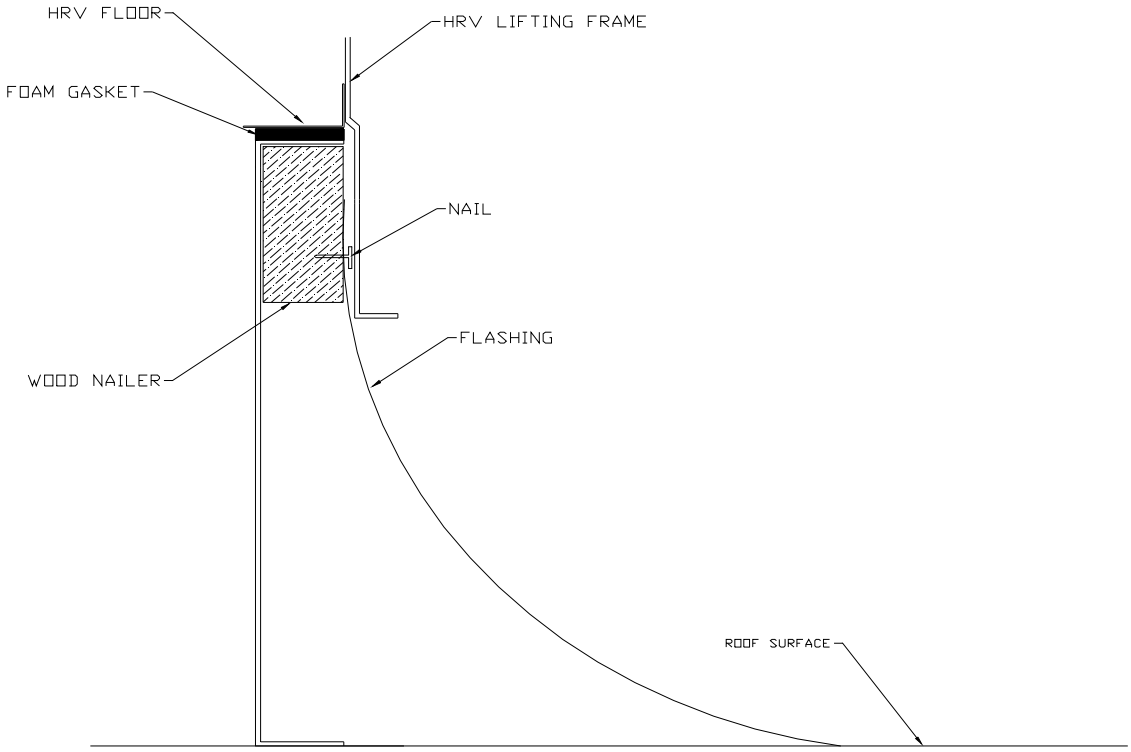
7.2 INSTALLATION BASICS

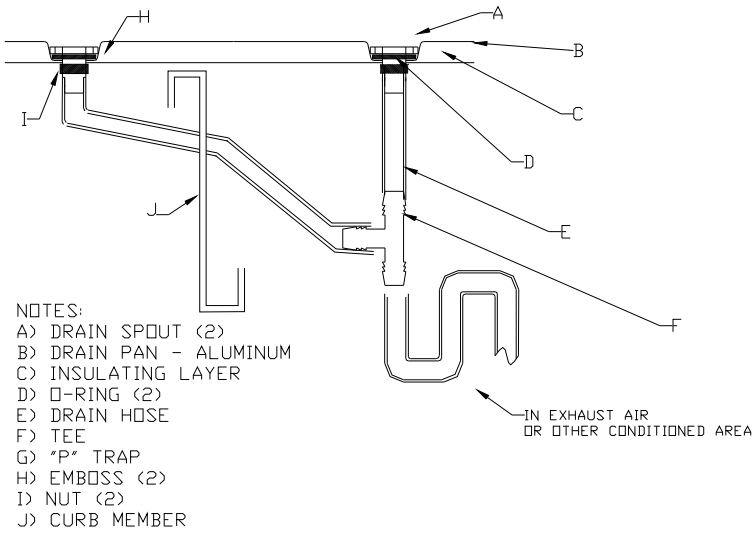
ASHRAE Standard 62-99 recommends the following. Ventilation systems should be designed to prevent re-entrainment of exhaust contaminants, condensation or freeze-ups and growth of microorganisms. Make-up air inlets and exhaust air outlets shall be located to avoid contamination of the makeup air. Contaminants from sources such as cooling towers, sanitary vents, vehicular exhaust, and street traffic should be avoided.

7.3 MOUNTING THE UNIT (Roof Top units)

1. Determine where the unit is to be located on the roof
2. Refer to the unit detail drawing for roof openings and cut accordingly
3. Place the curb on the roof and ensure it is level
4. Flash the curb with roofing membrane tying in to the wood nailer. Do not attach flashing to the HRV.
5. Apply the foam gasket to all top flanges of the curb forming a continuous, watertight seal.

6. With the HRV lifted, connect the drain hose to the spouts from underneath, feed the fresh air hose through the center curb member and tee into the exhaust drain.
7. Lift the unit onto the curb. Do not drag on the roof.
8. Tie in the supply and return ducts, electrical wiring and run condensate drain into the conditioned space through the exhaust air duct.
9. Do not drain to the roof.





7.4 CONNECTING TO OTHER EQUIPMENT

If the HRV is used upstream of an air handler or similar equipment (e.g. fresh air into economizer section), the start up sequence must be HRV first followed by the air handler. If the air handler is started first, the HRV's fresh air fan will rotate backward and the motor may not be able to overcome the extra load causing the motor to over amp and potentially damage the blower wheel.

7.5 CONTROLS AND ELECTRICAL CONNECTION

A single point connection of mains power in the starter box powers the HRV. HRV must be connected to a power source of voltage and phase indicated on the starter box and according to applicable local electrical codes.

7.6 BALANCING THE SYSTEM

Unless otherwise specified by the system designer, set up the HRV with balanced supply and exhaust air flows.

The pulleys used on the supply and exhaust motors are a split type that allows some field adjustment of the fan rpm and corresponding air flow. Adjust the pulley in ½ turn increments. **Close to increase rpm, open to decrease rpm.**

Once the HRV system is installed, do the following:

- Close all windows and doors.
- Turn off any exhaust only systems.
- To balance the HRV, set the machine on high speed.
- Make a small hole in the supply duct at least 10 feet downstream of the fan. Insert a Pitot tube in the cross sectional center of the duct.
- Measure the pressure with a digital manometer or magnehelic gauge.
- Record the value and repeat the procedure for the exhaust air stream.
- Install a balancing damper in the air stream with the greater flow and damper back until the pressure equals that of the opposite air stream.

8 START UP AND COMMISSIONING

1. Turn the unit on and verify motor operation and proper rotation for both fans in all speeds. Test controls both locally (hand) and with any remote controls (auto).
2. Engage defrost by opening (capilliary switch, VB-7) or jumpering (snap disc) the defrost temperature sensor. Verify fan and damper operation is in accordance with the type of defrost supplied (see P8).
3. Check belt tension (1" movement when squeezed firmly by hand) and alignment – motor and blower pulley in same plane.
4. Individually measure supply and exhaust air motor amps with all covers on. If a motor is over amping, lower the fan speed using the split motor pulley or add resistance (damper) to the duct. Loose or misaligned belts will cause over amping (see #3)
5. Check that overload protection is set 20% greater than motor FLA.
6. Check that filters are present, clean and properly orientated.
7. Verify core orientation and that guides are in tracks.
8. Check condensate drain installation is tight and a trap is formed in the tubing.
9. Verify the ducting is in accordance with the design specifications. It is good practice to use flexible duct connectors between the unit and the duct system, seal all duct joints, separate intake and exhaust hoods by at least 3 m (10 ft), insulate and vapour barrier cold side ducting.
10. A qualified air balancer should make the final adjustments to pulley, damper, and VFD settings to meet the specified air flow.

9 MAINTENANCE

CAUTION: ***Disconnect power before servicing***.

a. FILTERS

Dirty filters can reduce ventilation efficiency, resulting in unbalanced airflow and damage or shorten the life of the motors. Check at least every three months and replace yearly or when necessary depending on indoor and outside air conditions.

Filters	NU0820	NU2035	NU1030	NU2540
Size	17x13.5x2	23.5x13.5x2	17x13.5x2	23.5x14.5x2
Quantity	6	6	6	6

Nu-Air recommends a spare set of filters be ordered with the HRV for maintenance stores.

b. FANS

When cleaning the filters, take the opportunity to vacuum any interior surfaces including the fan blades.

c. MOTORS

The motors are equipped with permanently sealed and lubricated bearings

d. Belts

Inspect belts for wear and cracks. Replace as required. Inspect belts for mis-alignment and proper tension during maintenance.

e. CONDENSATE DRAIN

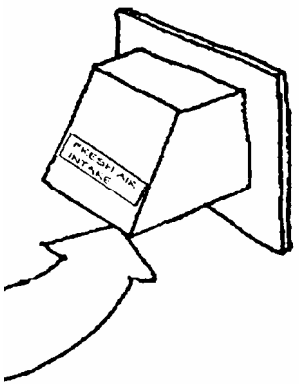
Twice per year wipe clean the condensate drain pan. Check the condensate drain and tubing to ensure they are free flowing. The tubing must have an "S" or loop that traps a quantity of water to prevent air from entering the HRV via this tubing.

f. CORE

The core (heat exchanger) should be removed and cleaned at least once a year using a non-corrosive enzyme detergent in cold water. The core can be removed from the HRV by sliding it forward on the guides. Observe proper orientation when replacing the core in the HRV.

g. EXTERIOR HOODS

Regularly check the outside vents and clean any obstructions such as grass, leaves or other debris. Do not replace the screen with mesh smaller than 1/4" as this will restrict airflow. During winter operation, ensure snow and frost does not build up and restrict or block openings.



10 WARRANTY:

NU-AIR COMPLIANT SERIES HRV's

WARRANTY

Nu-Air warrants its Compliant Series HRV's to be free from defects on all components including motors, circuit boards, transformers, and switches when subject to normal and proper use for a period of two (2) years from the date of purchase. Nu-Air warrants its Compliant Series HRV core to be free from defects for a period of 15 years. Nu-Air warrants its Compliant Series ERV core to be free from defects for a period of 5 years.

Should a manufacturing defect occur during the warranty period, Nu-Air will supply replacement parts FOB our plant at no charge. Labour costs to remove and reinstall these parts are not covered under this warranty.

This warranty is expressly in lieu of all other warranties or obligations and in no event shall Nu-Air be liable for consequential or incidental damages of any kind, including damage to the building, its contents or any person therein.

Earl Caldwell
President

nu-air
Sustainability Through Innovation

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