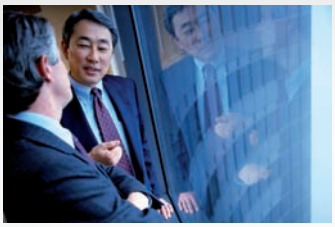
HAWK

WCPSE Series 50/60Hz

Water Cooled Packaged Units

Cooling Capacity: 84 to 1040 MBH (25 to 304 kW)



R410A

DUNHAM-BUSH®

Products that perform...By people who care

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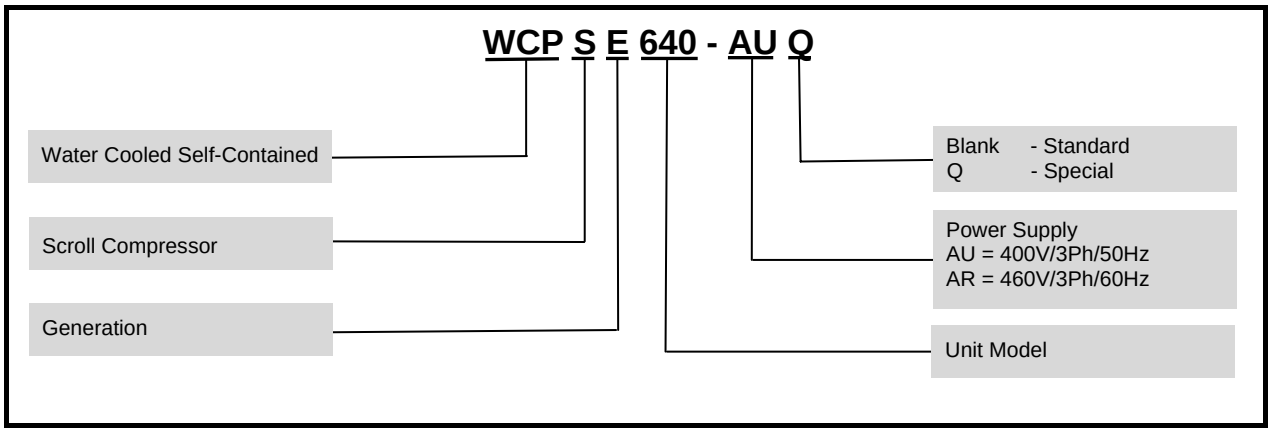
INTRODUCTION

The Hawk series offers a complete line of options that are suitable for indoor installation of applications such as office buildings, hospitals, schools, industrial complexes and supermarkets. Each feature adapts high efficiency, superior engineering and dependable operation. This series is using R410A refrigerant with cooling capacity range of 84 to 1040 MBH [25 to 304 kW]. The units are rated in accordance with AHRI standards 340/360.

The superior design of the water self contained unit allows for a compact footprint for easy installation, low power consumption for high efficiency performance and low sound operation. All units can be provided with microprocessor controller as option to allow flexibility in the operating modes and precise control of the unit operation. All units are pre-charged and factory test before delivered to the job site.

NOMENCLATURE



UNIT FEATURES

GENERAL

- 14 models from 84 to 1040 MBH [25 to 304 kW]. with nominal air flow up to 28000 CFM.
- Multiple compressors units provide redundancy and part load operation by cycling off compressor operation to match building load (except for model 95 & 125).
- No total shut down when servicing compressor for units with two or more refrigerant systems design.
- The product features an extruded aluminum frame profile that provides a high level of unit design and application flexibility necessary to meet the rising demands for improved Indoor Air Quality.
- The unit is constructed using rigid nylon corners and double skin polyurethane foam insulated panels.

COMPRESSOR(S)

- Most reliable hermetic compact scroll
- No contact scroll design that minimizes friction, increases volumetric efficiency and reduces vibration, thus longer service life.
- Suction gas cooled motor.
- Compact and light with minimum wear and tear.
- Unique ability to handle slight liquid refrigerant.
- Built-in thermal protectors to prevent motor overheating, loss of phase and low refrigerant or oil charge.
- High EER.

CONDENSER

- Compact and high efficiency brazed plate heat exchanger
- Constructed with stainless steel plates
- Design pressure of 650 psig [42 bar] on refrigerant circuit
- Design pressure of 400 psig [28 bar] on fluid circuit
- Environment friendly with reduced refrigerant charged by its compact design
- Lower pressure drop on water side

Fully Leak Tested Refrigerant Circuit

- Leak and pressure tested at 650 psig
- Pressure ports are provided on the discharge, liquid and suction line
- Evacuated, dehydrated and charged with refrigerant

Efficient Evaporator Coil

- Independent thermal expansion valve with external equalizer for better refrigerant control and wider load condition.
- Leak and pressure tested to 650 psig
- Evacuated, dehydrated and charged with refrigerant

Safety Components

- High-low pressure cutout for model to protect compressor from high discharge pressure and system leakage
- Liquid line sight glass and filter drier for refrigerant line components

Drive Package and Blowers

(WCPSE 125 and above)

- Belt driven drive package offers flexibility on various air flow rate and various static pressure applications
- Single large diameter double inlet double width blowers (AMCA certified) reduce the noise level and eliminates the need for common transition and eliminates air unbalance

Casing

- The unit casing is made up by 1” double skin polyurethane foam (PU) insulation panel with 0.5mm high strength powder coated steel as external skin and 0.5mm galvanized steel (GI) as internal skin. The sandwich panels are injected with PU foam of 40kg/m³ density with light weight, good rigidity and thermal conductivity.
- Aesthetically coated with powder paint to provide excellent finish, weatherability and corrosion resistance
- Removable panels on the left and right hand side of the unit to provide access to critical parts and components

FILTER SECTION

Side loading 1” thick filters - from both sides-thus eliminates unnecessary duct opening at site.

OPTIONAL ACCESSORIES

Optional Accessories Features

- Hot Gas Bypass
- Discharge/Suction/Liquid Line Service Valves
- Evaporator Coil Fins Material
- Stainless Steel Drain Pan
- Replaceable Core Filter Drier
- Liquid Live Soleniod Valves
- High & Low Pressure Gauges
- IEC DOL (Non UL)
- UVR/Phase Failure Protect
- Start/Stop Button for Evaporator Blower Fan
- Door Interlock Main Incoming Isolator
- Indicating Lights
- Lock Out Stop
- Differential Pressure Switch for Evaporator Blower
- Voltmeter
- Ammeter
- Electric Heater Stater
- Micro Vision Controller
- VFD for Evaporator Motor Nominal HP
- VFD for Evaporator Motor Max HP
- VFD Box
- 24AC Fire Relay with Transformer
- Dirty Filter Relay & Indicating Light

COOLING PORTFOLIO

Reference	Hz	Capacity	
		MBH	kW
WCPSE 95	50 / 60	87.8	25.7
WCPSE 125	50 / 60	117.8	34.5
WCPSE 160	50 / 60	152.9	44.8
WCPSE 220	50 / 60	213.4	62.5
WCPSE 250	50 / 60	240.5	70.5
WCPSE 290	50 / 60	275.9	80.9
WCPSE 320	50 / 60	305.8	89.6
WCPSE 380	50 / 60	363.5	106.5
WCPSE 480	50 / 60	453.8	133.0
WCPSE 570	50 / 60	551.9	161.7
WCPSE 640	50 / 60	611.5	179.2
WCPSE 760	50 / 60	713.2	209.0
WCPSE 950	50 / 60	917.3	268.8
WCPSE 1140	50 / 60	1090.5	319.6

Notes: 1) Ratings Are Gross Capacities - For Net Capacities, Deduct Evaporator Blower Motor Heat.
2) Cooling Mode: At 80 °F (DB), 67 °F (WB) Air on Evaporator And 95°F Ambient Condenser Water Leaving Temperature.

PHYSICAL SPECIFICATIONS

50Hz

Model	Compressor					Cond.	Blower Section						Evaporator Coil		Approx. Refrigerant Charge	Approx. Operating Weight (lbs)
	Qty	Nominal Power Supply	MRA	LRA	NRA	Min-Max USgpm	Blower		Motor			Fan Air Flow	Rows	Total Face Area ft²	Comp. Qty x lbs	
							Qty	Dia x Width inches	Max HP	FLA	LRA	Min-Max CFM				
WCPSE 95	1	400V-3-50Hz	1x22.0	1x98	1x14.30	9 33	1	12x12	1	-	-	-	3	6.1	1x12.3	840
WCPSE 125	1	400V-3-50Hz	1x29.0	1x142	1x20.70	13 44	1	12x12	4	6.4	42	2250 4125	3	7.6	1x17.6	1350
WCPSE 160	1	400V-3-50Hz	1x35.0	1x158	1x23.60	16 56	1	12x12	4	6.4	42	2380 4355	3	11.3	1x23.8	1397
WCPSE 220	2	400V-3-50Hz	2x25.0	2x142	2x17.90	22 76	1	15x15	7.5	11.3	78	4600 8440	3	14.9	1x13.3 1x17.6	1880
WCPSE 250	2	400V-3-50Hz	2x29.0	2x142	2x20.70	25 88	1	15x15	7.5	11.3	78	4960 9090	3	15.8	2x17.6	1980
WCPSE 290	2	400V-3-50Hz	2x30.0	2x147	2x21.40	29 100	1	18x13	15	21.5	145	6020 11040	3	19.5	1x17.6 1x23.8	2375
WCPSE 320	2	400V-3-50Hz	2x35.0	2x158	2x23.60	32 112	1	18x13	15	21.5	145	6375 11690	3	20.5	2x23.8	2700
WCPSE 380	2	400V-3-50Hz	2x38.6	2x197	2x27.60	38 133	1	18x18	15	21.5	145	6375 11690	4	20.5	2x25.3	3150
WCPSE 480	3	400V-3-50Hz	3x35.0	3x158	3x23.60	48 168	1	20x20	20	29.2	200	9000 16500	3	30.0	3x23.8	4264
WCPSE 570	3	400V-3-50Hz	3x38.6	3x197	3x27.60	57 200	1	22x22	20	29.2	200	9000 16500	4	30.0	3x25.3	4640
WCPSE 640	4	400V-3-50Hz	4x35.0	4x158	4x23.60	64 224	1	22x22	30	41.2	275	10800 19800	4	28.8	4x23.8	6260
WCPSE 760	4	400V-3-50Hz	4x38.6	4x197	4x27.60	76 266	1	25x25	30	41.2	275	12200 32340	4	32.5	4x25.3	6521
WCPSE 950	6	400V-3-50Hz	6x35.0	6x158	6x23.60	96 336	1	28x28	40	55.6	375	16150 29620	4	40.5	5x25.3	7750
WCPSE 1140	6	400V-3-50Hz	6x38.6	6x197	6x27.60	114 399	2	22x22	50	67.4	465	20000 36770	4	56.7	6x25.3	8790

Notes:
1) LRA = Locked rotor ampere.
2) NRA = Nominal running ampere.
3) FLA = Full load ampere.
4) MRA = Maximum running ampere.
5) Minimum-maximum voltage is 400V ± 10%.
6) Filter is 1 inch thick.
7) Blower for model WCPSE 95 as direct driven.
8) For other power supply requirements, please contact the Dunham-Bush sales office.

60Hz

Model	Compressor					Cond.	Blower Section						Evaporator Coil		Approx. Refrigerant Charge	Approx. Operating Weight (lbs)
	Qty	Nominal Power Supply	MRA	LRA	NRA	Min-Max Usgpm	Blower		Motor			Fan Air Flow	Rows	Total Face Area ft²	Comp. Qty x lbs	
							Qty	Dia x Width inches	Max HP	FLA	LRA	Min-Max CFM				
WCPSE 95	1	460-3-60Hz	1x19.0	1x100	1x13.0	9 33	1	12x12	1	-	-	-	3	6.1	1x9.9	840
WCPSE 125	1	460-3-60Hz	1x25.0	1x142	1x17.9	13 44	1	12x12	4	5.4	29	2250 4125	3	7.6	1x13.2	1350
WCPSE 160	1	460-3-60Hz	1x30.0	1x147	1x21.4	16 56	1	12x12	4	5.4	29	2380 4355	3	11.3	1x16	1397
WCPSE 220	1	460-3-60Hz	1x38.6	1x197	1x27.6	22 76	1	15x15	7.5	9.3	60	4600 8440	3	14.9	1x25.3	1880
WCPSE 250	2	460-3-60Hz	2x25.0	2x142	2x17.9	25 88	1	15x15	7.5	9.3	60	4960 9090	3	15.8	1x12.3 1x17.6	1980
WCPSE 290	2	460-3-60Hz	2x29.0	2x142	2x20.7	29 100	1	18x13	15	17.8	111	6020 11040	3	19.5	2x17.6	2375
WCPSE 320	2	460-3-60Hz	2x30.0	2x147	2x21.4	32 112	1	18x13	15	17.8	111	6375 11690	3	20.5	2x16.0	2700
WCPSE 380	2	460-3-60Hz	2x35.0	2x158	2x23.6	38 133	1	18x18	15	17.8	111	6375 11690	4	20.5	2x23.8	3150
WCPSE 480	3	460-3-60Hz	3x30.0	3x147	3x21.4	48 168	1	20x20	20	23.7	144	9000 16500	3	30.0	1x23.8 2x17.6	4264
WCPSE 570	3	460-3-60Hz	2x35.0 1x38.6	2x158 1x197	2x23.6 1x27.6	57 200	1	22x22	20	23.7	144	9000 16500	4	30.0	3x23.8	4640
WCPSE 640	4	460-3-60Hz	4x30.0	4x147	4x21.4	64 224	1	22x22	30	34.8	211	10800 19800	4	28.8	2x25.3 1x23.8	6260
WCPSE 760	4	460-3-60Hz	2x35.0 2x38.6	2x158 2x197	2x23.6 2x27.6	76 266	1	22x22	30	34.8	211	12200 32340	4	32.5	4x23.8	6521
WCPSE 950	6	460-3-60Hz	6x30.0	6x147	6x21.4	96 336	1	28x28	40	47.1	291	16150 29620	4	40.5	2x23.8 2x25.3 1x12.3	7750
WCPSE 1140	6	460-3-60Hz	4x35.0 2x38.6	4x158 2x197	4x23.6 2x27.6	114 399	2	22x22	50	58.5	363	20000 36770	4	56.7	5x25.3	8790

Notes:
1) LRA = Locked rotor ampere.
2) NRA = Nominal running ampere.
3) FLA = Full load ampere.
4) MRA = Maximum running ampere.
5) Minimum-maximum voltage is 400V ± 10%.
6) Filter is 1 inch thick.
7) Blower for model WCPSE95 as direct driven.
8) For other power supply requirements, please contact the Dunham-Bush sales office.

PERFORMANCE DATA

Model	Standard Capacity MBH	Air On Evap.		Leaving Condenser Water Temperature - °F								
		CFM	WB Temp. °F	80			95			110		
				Total MBH[1]	Sens MBH[2]	kW[3]	Total MBH[1]	Sens MBH[2]	kW[3]	Total MBH[1]	Sens MBH[2]	kW[3]
WCPSE 95	87.8	2800	72	102.7	50.1	4.6	96.7	48.1	5.5	89.3	45.2	6.5
			67	93.1	62.5	4.6	87.8	59.7	5.5	81.0	57.8	6.4
			62	84.4	75.4	4.6	79.4	72.8	5.4	74.8	69.4	6.4
WCPSE 125	117.8	3800	72	137.8	66.2	6.1	129.9	62.2	7.2	119.9	59.5	8.5
			67	125.1	82.8	6.1	117.8	79.1	7.2	108.8	76.6	8.5
			62	113.3	99.0	6.0	106.7	96.7	7.1	98.4	99.9	8.4
WCPSE 160	152.9	4200	72	177.7	82.8	7.7	165.2	82.8	9.1	155.4	75.4	10.8
			67	161.5	103.5	7.7	152.9	99.3	9.1	141.1	95.3	10.8
			62	146.5	123.6	7.6	138.7	138.2	9.0	127.9	115.8	10.8
WCPSE 220	213.4	6400	72	248.2	117.2	11.3	230.6	114.9	13.2	217.8	105.9	15.4
			67	224.7	147.7	11.1	213.4	141.4	13.0	197.9	135.0	15.3
			62	202.8	175.2	11.0	193.0	169.3	12.9	179.4	163.3	15.1
WCPSE 250	240.5	6800	72	281.0	134.3	12.2	264.8	127.1	14.4	243.8	120.0	17.0
			67	255.2	168.0	12.2	240.5	159.0	14.3	221.8	154.4	16.9
			62	231.0	200.5	12.1	217.8	192.1	14.3	200.9	185.7	16.9
WCPSE 290	275.9	7800	72	319.0	153.2	13.6	303.2	144.9	16.1	276.4	142.2	19.0
			67	290.6	191.4	13.6	275.9	181.1	16.0	256.0	173.3	18.9
			62	264.2	225.7	13.5	250.7	218.5	15.9	232.3	208.8	18.8
WCPSE 320	305.8	8400	72	355.3	172.2	15.5	336.6	163.3	18.2	310.8	154.4	21.6
			67	329.3	208.2	15.4	305.8	205.4	18.1	282.2	197.1	21.6
			62	261.0	248.6	15.3	277.4	246.0	18.0	255.8	235.6	21.5
WCPSE 380	363.5	10500	72	422.3	210.0	18.3	399.2	198.9	21.4	369.4	187.8	25.0
			67	384.5	260.3	18.1	363.5	249.8	21.2	336.2	239.4	24.8
			62	356.4	309.2	18.0	330.3	302.6	21.0	305.3	292.8	24.6
WCPSE 480	453.8	13500	72	529.2	254.0	23.5	500.0	244.5	27.6	462.2	230.1	32.4
			67	479.9	319.5	23.3	453.8	306.1	27.4	419.7	292.6	32.2
			62	433.8	382.7	23.1	410.8	366.0	27.2	380.2	353.4	32.0
WCPSE 570	551.9	15500	72	650.2	310.0	27.2	606.5	304.5	32.1	563.2	288.0	38.0
			67	592.2	389.1	271.3	551.9	378.9	32.0	512.0	363.5	37.8
			62	538.4	465.7	27.1	511.1	446.5	31.9	473.8	432.1	37.7
WCPSE 640	611.5	17000	72	710.6	356.9	30.9	673.3	338.9	36.4	621.6	326.9	43.2
			67	646.0	450.3	30.7	611.5	613.6	36.2	564.5	416.5	43.1
			62	597.7	535.5	30.5	565.7	519.7	36.1	521.6	503.9	43.0
WCPSE 760	713.2	20000	72	829.1	405.2	36.5	783.7	384.1	42.8	724.9	370.0	50.0
			67	754.7	515.7	36.2	713.2	495.8	42.4	659.8	475.9	49.5
			62	685.4	628.8	35.8	647.6	610.2	42.0	610.7	579.3	49.2
WCPSE 950	917.3	26000	72	1066.0	525.1	46.4	1009.9	497.7	54.6	932.4	479.3	64.8
			67	968.9	661.2	46.0	917.3	626.8	54.3	846.7	609.6	64.7
			62	896.5	776.7	45.7	832.2	768.7	54.1	782.5	728.5	64.6
WCPSE 1140	1090.5	28000	72	1266.9	630.4	54.8	1197.6	600.8	64.3	1108.2	561.2	75.1
			67	1175.6	765.1	54.4	1090.5	755.8	63.7	1008.6	718.7	74.4
			62	1069.1	923.4	54.0	1009.9	888.7	63.2	934.3	853.9	73.9

Notes: 1) Ratings are based on 80°F [27°C] air on evaporator dry bulb temperature.
2) Ratings are gross capacities. For net capacity deduct evaporator blower motor heat.
3) kW input shown in the table is total compressor(s) power input.

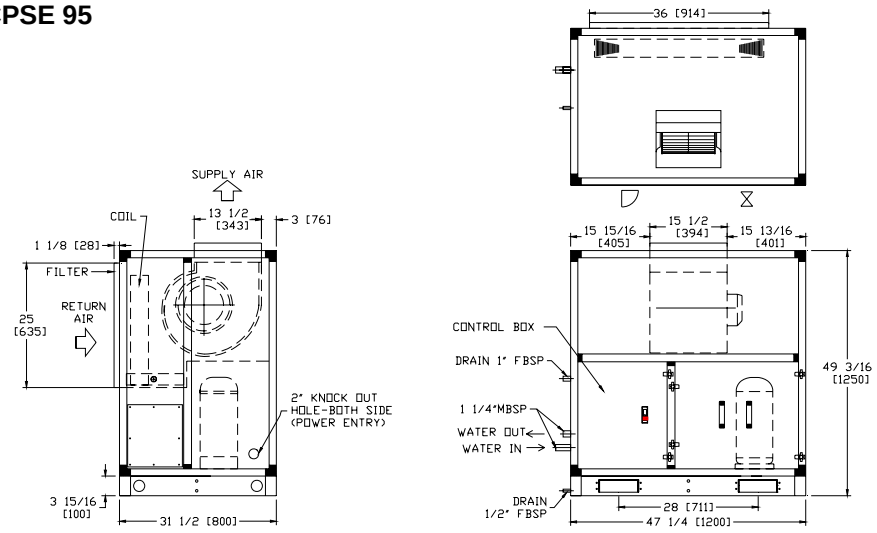
BLOWER PERFORMANCE

RPM	CFM										
	ESP	BHP	ESP	BHP	ESP	BHP	ESP	BHP	ESP	BHP	Fan Model
WCPSE 125											
	3000		3300		3600		3900		4200		
850	0.65	1.10	0.58	1.26	0.53	1.45	0.45	1.63	0.35	1.85	12 / 12
950	0.96	1.33	0.89	1.50	0.84	1.70	0.78	1.93	0.70	2.16	
1050	1.27	1.57	1.24	1.78	1.18	2.00	1.13	2.24	1.06	2.51	
1150	1.54	1.84	1.58	2.08	1.56	2.32	1.50	2.59	1.43	2.87	
WCPSE 160											
	3300		3600		3900		4200		4500		
900	0.87	1.38	0.83	1.57	0.77	1.77	0.71	2.01	0.63	2.24	12 / 12
1000	1.20	1.63	1.16	1.85	1.11	2.08	1.05	2.32	1.01	2.59	
1100	1.55	1.93	1.52	2.16	1.47	2.41	1.42	2.68	1.38	2.97	
1200	1.87	2.22	1.90	2.49	1.86	2.77	1.81	3.07	1.78	3.38	
WCPSE 220											
	5600		6000		6400		6800		7200		
850	0.99	2.84	0.94	3.16	0.80	3.50	0.38	3.94	-	-	15 /15
900	1.18	3.07	1.14	3.44	1.09	3.79	0.94	4.18	0.48	4.69	
1000	1.62	3.60	1.56	3.99	1.52	4.41	1.47	4.86	1.42	5.29	
1100	2.08	4.17	2.05	4.61	1.99	5.07	1.94	5.56	1.90	6.10	
WCPSE 250											
	5600		6000		6400		6800		7200		
850	1.02	2.84	0.97	3.16	0.83	3.50	0.43	3.94	-	-	15 / 15
900	1.21	3.07	1.17	3.44	1.12	3.79	0.99	4.18	0.51	4.69	
1000	1.65	3.60	1.59	3.99	1.55	4.41	1.52	4.86	1.45	5.29	
1100	2.11	4.17	2.08	4.61	2.02	5.07	1.99	5.56	1.93	6.10	
WCPSE 290											
	6200		6800		7400		8000		8600		
800	1.55	3.60	1.44	4.10	1.33	4.64	1.23	5.15	0.84	5.78	18 / 13
900	2.12	4.40	2.08	5.00	1.97	5.56	1.83	6.26	1.72	6.86	
1000	2.76	5.25	2.71	5.92	2.67	6.69	2.55	7.33	2.41	8.16	
1100	3.42	6.15	3.41	6.97	3.35	7.76	3.30	8.67	3.21	9.49	
WCPSE 320											
	6600		7200		7800		8400		8800		
850	1.81	4.34	1.69	4.89	1.58	5.51	1.48	6.06	1.32	6.51	18 / 13
900	2.12	4.81	2.04	5.36	1.90	6.02	1.77	6.66	1.72	7.09	
1000	2.74	5.68	2.70	6.43	2.62	7.10	2.48	7.87	2.39	8.46	
1100	3.43	6.69	3.39	7.49	3.35	8.38	3.27	9.23	3.19	9.77	
WCPSE 380											
	7600		8400		9200		10000		10800		
700	0.86	3.52	0.75	4.11	0.53	4.77	0.21	5.45	-	-	18 / 18
750	1.10	3.89	1.00	4.54	0.87	5.24	0.61	6.00	0.26	6.81	
800	1.36	4.33	1.27	4.98	1.15	5.76	1.00	6.55	0.69	7.45	
850	1.63	4.77	1.55	5.48	1.44	6.27	1.31	7.14	1.10	8.05	
WCPSE 480											
	8000		9500		11000		12500		14000		
550	0.68	2.64	0.56	3.34	0.39	4.17	0.19	5.11	-	-	20 / 20
650	1.16	3.54	1.07	4.38	0.93	5.36	0.77	6.49	0.53	7.69	
750	1.68	4.64	1.63	5.64	1.51	6.75	1.38	8.03	1.19	9.50	
850	2.21	5.98	2.24	7.09	2.16	8.42	2.05	9.86	1.89	11.50	
WCPSE 570											
	11000		13500		15000		15800		16500		
550	0.85	4.48	0.62	5.90	0.45	6.89	0.32	7.41	0.23	7.91	22 / 22
650	1.45	6.01	1.29	7.73	1.13	8.86	1.03	9.58	0.95	10.17	
700	1.75	6.92	1.64	8.77	1.49	10.00	1.39	10.75	1.32	11.35	
800	2.40	9.03	2.39	11.17	2.31	12.57	2.22	13.55	2.16	14.30	
WCPSE 640											
	14600		15400		16200		17000		17800		
550	0.65	6.61	0.52	7.10	0.44	7.75	0.37	8.32	0.22	8.96	22 / 22
650	1.32	8.58	1.22	9.18	1.13	9.89	1.08	10.61	0.94	11.90	
700	1.69	9.66	1.58	10.39	1.51	11.08	1.46	11.91	1.33	12.65	
750	2.08	10.94	1.98	11.67	1.91	12.46	1.87	13.33	1.75	14.15	
WCPSE 760											
	13000		15000		17000		19000		21000		
500	0.95	5.50	0.83	6.54	0.77	7.87	0.37	9.44	-	-	25 / 25
550	1.29	6.59	1.18	7.72	1.06	9.11	0.87	10.68	0.48	12.64	
600	1.64	7.74	1.55	9.09	1.44	10.56	1.27	12.15	1.06	14.20	
650	1.94	8.99	1.94	10.55	1.84	12.15	1.69	13.92	1.52	15.95	
WCPSE 950											
	19000		21000		23000		25000		27000		
450	0.95	8.31	0.85	9.56	0.70	10.98	0.48	12.63	-	-	28 / 28
500	1.35	9.92	1.27	11.29	1.14	12.86	1.00	14.59	0.81	16.47	
600	2.20	13.62	2.18	15.43	2.09	17.30	1.99	19.32	1.84	21.53	
650	2.66	15.94	2.66	17.66	2.60	19.87	2.52	22.11	2.39	24.46	
WCPSE 1140											
	20000		22000		24000		26000		28000		
500	0.60	6.71	0.55	7.58	0.45	8.55	0.36	9.69	0.26	10.83	2 x 22 / 22
600	1.12	9.19	1.10	10.33	1.02	11.58	0.93	12.81	0.86	14.26	
700	1.65	12.35	1.69	13.71	1.64	15.06	1.59	16.70	1.52	18.37	
800	2.24	16.25	2.29	17.86	2.29	19.47	2.27	21.13	2.25	23.13	

Note: Data shown for Class 1 fan construction.

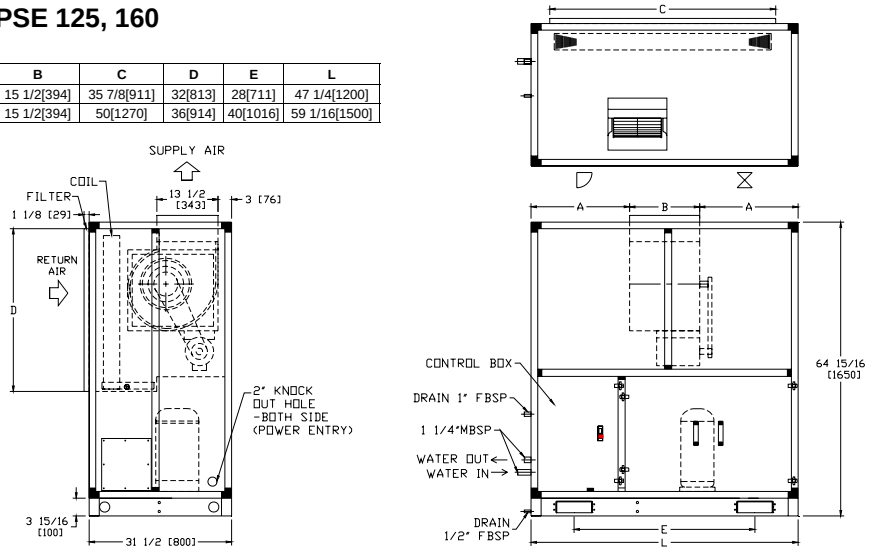
DIMENSIONAL DATA

50/60Hz : WCPSE 95

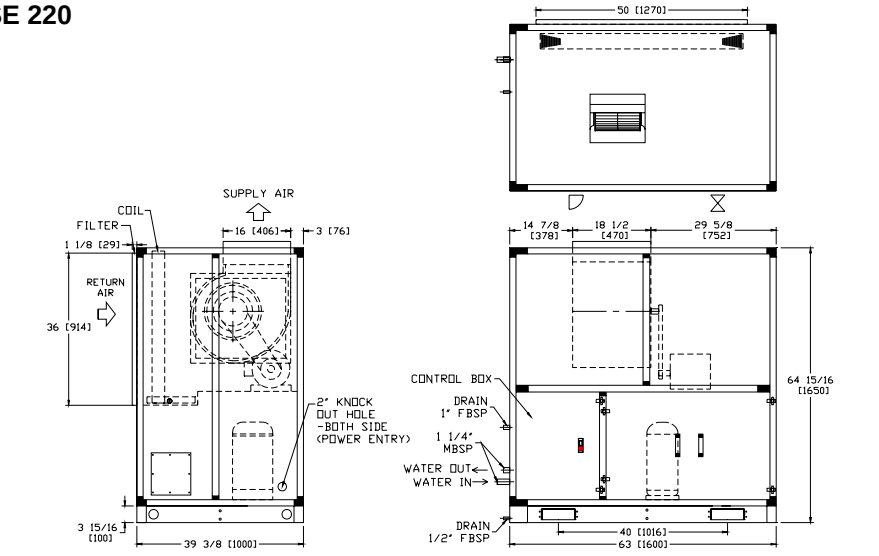


50/60Hz : WCPSE 125, 160

Model	A	B	C	D	E	L
WCPSE 125	15 7/8[403]	15 1/2[394]	35 7/8[911]	32[813]	28[711]	47 1/4[1200]
WCPSE 160	21 3/4[553]	15 1/2[394]	50[1270]	36[914]	40[1016]	59 1/16[1500]



60Hz : WCPSE 220

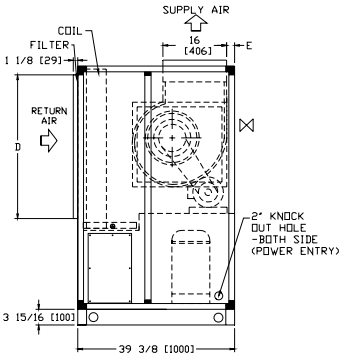


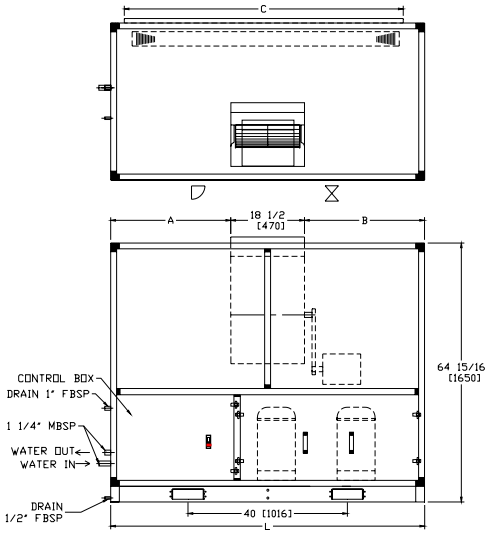
Note: All dimensions are in inches[mm].

DIMENSIONAL DATA

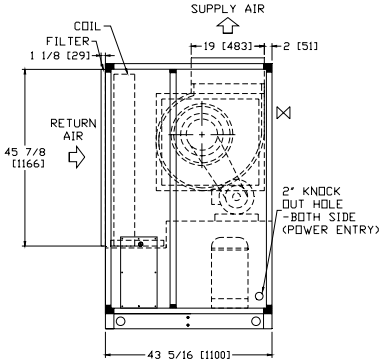
50Hz: WCPSE 220, 250
60Hz: WCPSE 250

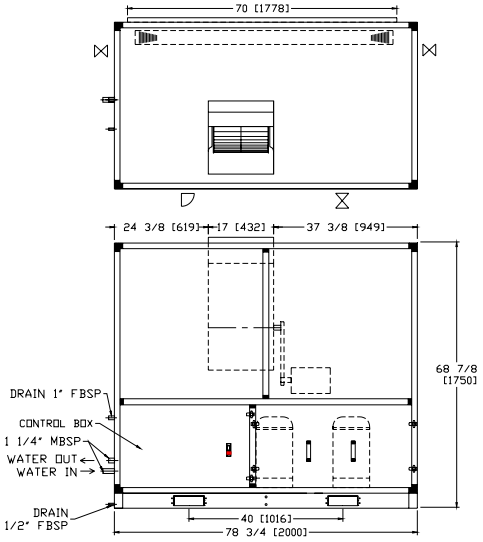
Model	A	B	C	D	E	L
50Hz: WCPSE 220	14 7/8[378]	29 5/8[752]	50[1270]	36[914]	3[76]	63[1600]
50/60Hz: WCPSE 250	30 1/8[756]	30 1/8[765]	70[1778]	36 1/16[916]	2[51]	78 3/4[2000]





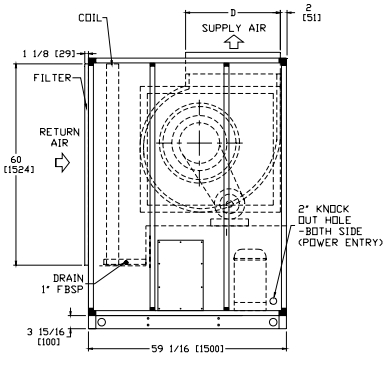
50/60Hz : WCPSE 290, 320, 380

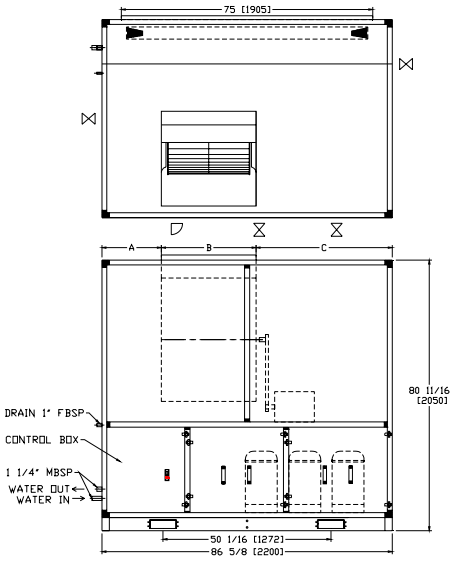




50/60Hz : WCPSE 480, 570

Model	A	B	C	D
WCPSE 480	22 1/16[560]	25 1/4[641]	39 5/16[998]	25 1/4[641]
WCPSE 570	17 3/4[451]	28 1/4[717]	40 5/8[1032]	28 1/4[718]



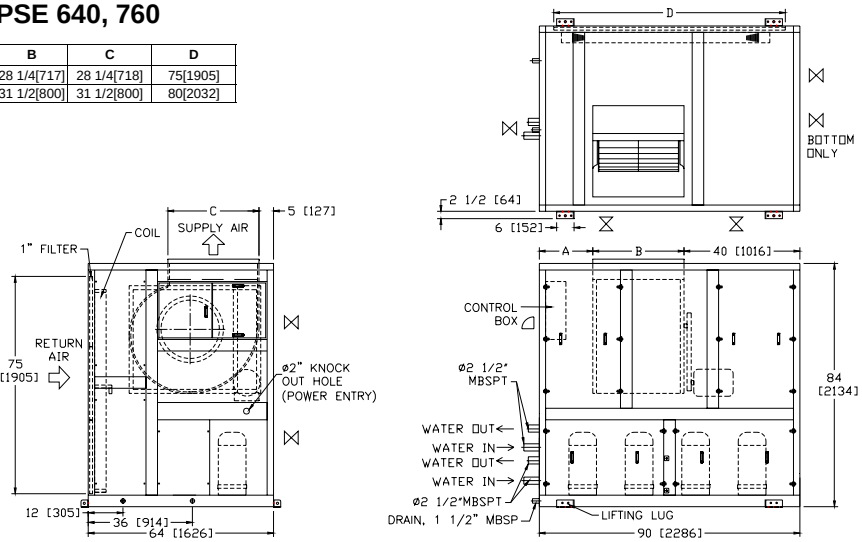


Note: All dimensions are in inches[mm].

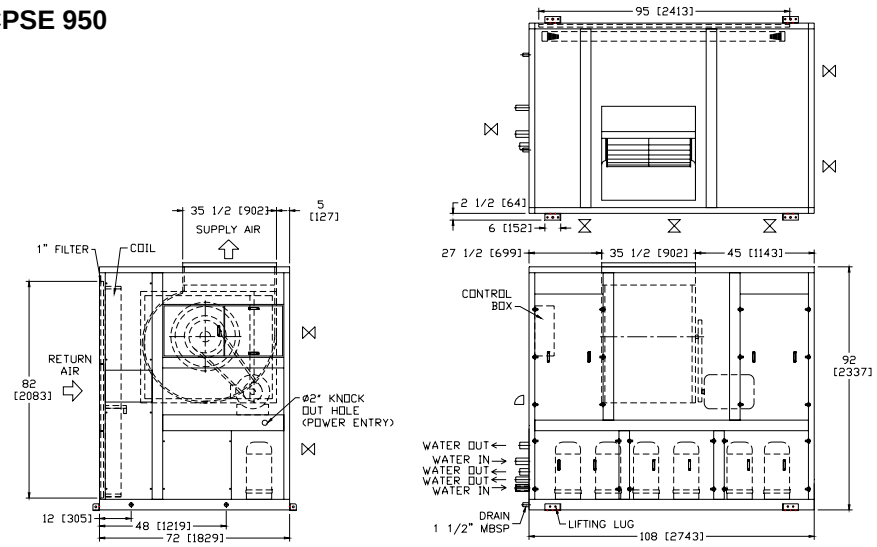
DIMENSIONAL DATA

50/60Hz : WCPSE 640, 760

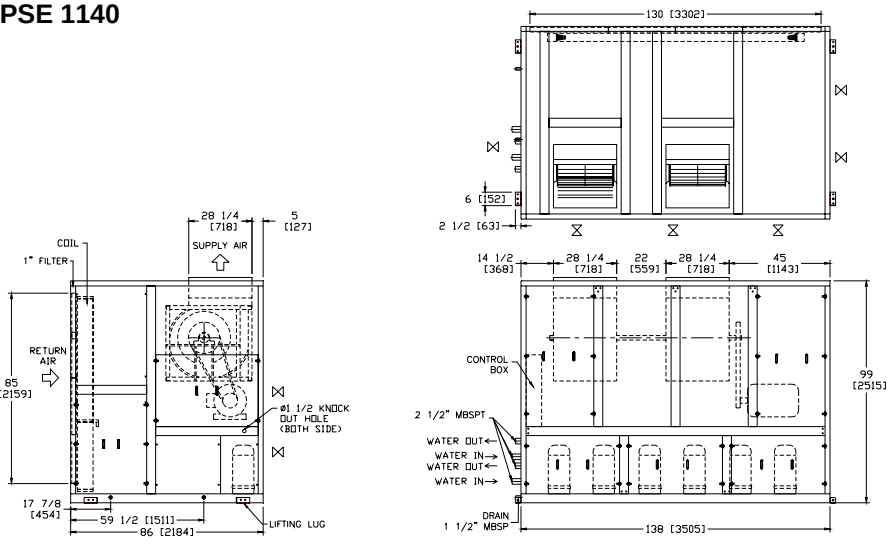
Model	A	B	C	D
WCPSE 640	21 3/4[552]	28 1/4[717]	28 1/4[718]	75[1905]
WCPSE 760	18 1/2[470]	31 1/2[800]	31 1/2[800]	80[2032]



50/60Hz : WCPSE 950

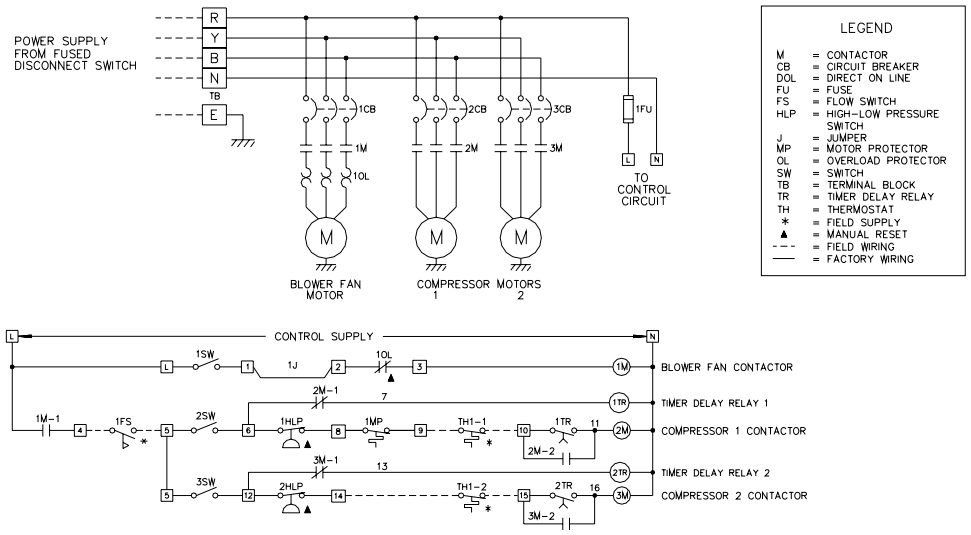


50/60Hz : WCPSE 1140



Note: All dimensions are in inches[mm].

TYPICAL WIRING DIAGRAM



CORRECTION FACTORS

To correct for variation in air flow, use this multiplier

Air Flow Variation	Total Capacity	Sensible Capacity
0.8	0.960	0.900
0.9	0.980	0.950
1.0	1.000	1.000
1.1	1.015	1.045
1.2	1.025	1.090

To correct for altitude, use this multiplier

Altitude Above Sea Level - Ft	Cooling Capacity
0	1.00
2000	0.98
3000	0.97
4000	0.96
5000	0.95
6000	0.93
7000	0.92

To correct sensible capacity for varying dry bulb

Dry Bulb	Wet Bulb			
	57	**62**	**67**	**72**
75	0.84	0.81	0.78	0.74
80	1.00	1.00	1.00	1.00
85	1.16	1.18	1.21	1.26

Note: If The Capacity After Multiplying The Sensible With The Correction Factor Exceed The Total Capacity, Then The Sensible Must Be Equal To The Total.

GUIDE SPECIFICATIONS

1. GENERAL

Water cooled packaged unit shall include compressor(s), evaporator coil with fan(s), brazed plate heat exchanger, refrigeration piping, electrical components and enclosing cabinet. The unit shall be factory assembled, internally wired, and fully refrigerant charged with R410A. The unit shall be capable to operate up to 110°F (43°C) leaving condenser water temperature without failure.

2. CABINET

The unit panels shall be constructed from galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Unit framework shall be constructed from extruded aluminum post and nylon corners/joint. Evaporator section shall be of 1 inch thick double skin panels with injected polyurethane foam insulation with density 40kg/m³, sandwiched between galvanized steel.

3. COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isolators. Refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, filter dryer, sight glass, pressure fittings of manual reset high pressure control and auto reset low pressure safety cutouts as well as charging/access ports in each circuit.

4. EVAPORATOR COIL

Evaporator coil shall be of draw through air design for uniform air distribution. The evaporator coil shall be quality construction of staggered row of 3/8" (inner grooved) or 1/2" OD seamless copper tube, mechanically bonded to aluminium fins with galvanized coil plates. Evaporator coil shall be minimum of 3 rows. The coil shall be factory leak and pressure tested to 650psig (45 bar) under water. A galvanized and painted drain pan shall be provided to cover the entire coil area.

5. EVAPORATOR FAN & MOTOR

Evaporator blower shall be direct-driven (model WCPSE 95) and belt driven (model WCPSE 125 and above), double-inlet-double-width (DIDW) forward curved. All blowers are statically and dynamically balanced to ensure quiet operation and smooth performance. Heavy-duty V-belt fan drive with cast iron pulleys keyed and secured to the blower shaft shall be provided (model WCPSE 125 and above).

Motors shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating, 4-poles with class F insulation (model WCPSE 125 and above). Motor pulleys shall be cast iron, keyed and secured to the motor shaft (model WCPSE 125 and above).

6. CONDENSER

Condenser shall be brazed plate heat exchanger for compact foot print. Fluid side design working pressure shall be minimum 400psig [28bar] and refrigerant side design working pressure shall be minimum 450psig [31bar].

7. FILTERS

Units shall be provided with 1" thick washable pleated filters having average arrestance efficiency of 70% as per ASHRAE Standard 52.1 (or equivalent).

8. ELECTRICAL CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54. Hinged and lock type access door shall be provided for easy access and security. The control panel shall be wired without starter and control.

9. OPTIONS

9.1 Hot Gas Bypass

The refrigerant circuit (applicable to 'first in last out' refrigeration system only) shall be provided with a hot gas bypass system for low room/building load application and evaporator coil freeze prevention.

9.2 Discharge/Suction/Liquid Line Service Valves

Service valves shall be provided at each refrigerant lines for service convenience.

9.3 Evaporator Coil Fin Materials

In lieu of standard aluminium fin, alternative fin material and/or protective coating include,

- Hydrophilic coated aluminium fin
- Copper Fin
- Aluminium fin with DB-Coat

9.4 Stainless Steel Drain Pan

A stainless steel (SS304) condensate drain pan shall be provided underneath evaporator coil in lieu of standard galvanized and painted drain pan.

9.5 Replaceable Core Filter Drier

Replaceable filter core drier shall be provided in lieu of standard filter drier for the convenience of filter drier's core replacement (for model 125 and above).

GUIDE SPECIFICATIONS

9.6 Liquid Line Solenoid Valve (LLSV)

Factory fitted liquid line solenoid valve shall be provided for each refrigeration circuit.

9.7 High and Low Pressure Gauges

Each compressor shall be provided with unit mounted pressure gauges to monitor discharge and suction line pressure.

9.8 IEC DOL (Non UL)

The control panel shall be factory wired and shall include compressor, evaporator fan motor and condenser fan motor circuit breaker and contactors, compressor and evaporator fan motor thermal overload relays, anti-recycling time delay relay, control circuit fuse, power and control circuit terminal blocks and features.

Standard control voltage for all 50Hz power supply (380-415V) will be 220-240Vac-1Ph-50Hz. 24Vac-1Ph-50Hz control voltage will be optional for 50Hz power supply.

Standard control voltage for all 60Hz power supply (460V) will be 24Vac-1Ph-60Hz.

9.9 UVR/Phase Failure Protect (IEC DOL must be selected)

Phase Failure Relay is provided for over voltage, under voltage and phase loss protection.

9.10 Start/Stop Button for Evaporator Blower Fan (IEC DOL must be selected)

Panel mounted start and stop buttons allows local control of evaporator blower fan shall be provided.

9.11 Door Interlock Main Incoming Isolator

Incoming Isolator is provided for isolate the main incoming power supply to the unit.

9.12 Indicating Lights

Indication provided for high-pressure trip and compressor run.

9.13 Lock Out Stop

Emergency stop switch provided for Blower Fan.

9.14 Differential Pressure Switch for Evaporator Blower

Differential pressure switch provided to interlock with the control circuit.

9.15 Voltmeter

Voltmeter and selector switch provided for voltage display

9.16 Ammeter

Ammeter and selector switch provided for current display.

9.17 Electric Heater Starter

Contactor and circuit breaker provided for electric heater.

9.18 Micro Vision Controller

Micro Vision a flexible and advance programmable microprocessor controller designed specifically for the applications and precise control of Dunham-Bush packaged units. The controller is provided with a set of terminals that connected to various devices such as temperature sensors, refrigerant pressure safety switches, solenoid valves, control relays and etc. The unit algorithm program and operating parameters are stored in flash-memory that does not require a back-up battery.

9.19 VFD for Evaporator Motor Nominal HP

Variable Frequency Drive (VFD) on Nominal Evaporator motor with pressure transducer.

9.20 VFD for Evaporator Motor Max HP

Variable Frequency Drive (VFD) on Maximum Evaporator motor with pressure transducer.

9.21 VFD Box

Control panel to mount Variable Frequency Drive (VFD).

9.22 24VAC Fire Relay with Transformer

A 24VAC fire relay shall be installed together with an isolation transformer to lock out the unit when this signal is activated.

9.23 Dirty Filter Relay & Indicating Light

Indication on filter status shall be provided as maintenance reminder.

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