



HAWK

Water Cooled Packaged Units
WCPSC 60Hz

Cooling Capacity: 100 to 1582 MBH (29 to 464 kW)
Heating Capacity: 125 to 2046 MBH (37 to 599 kW)



DUNHAM-BUSH[®]

Products that perform...By people who care

INTRODUCTION

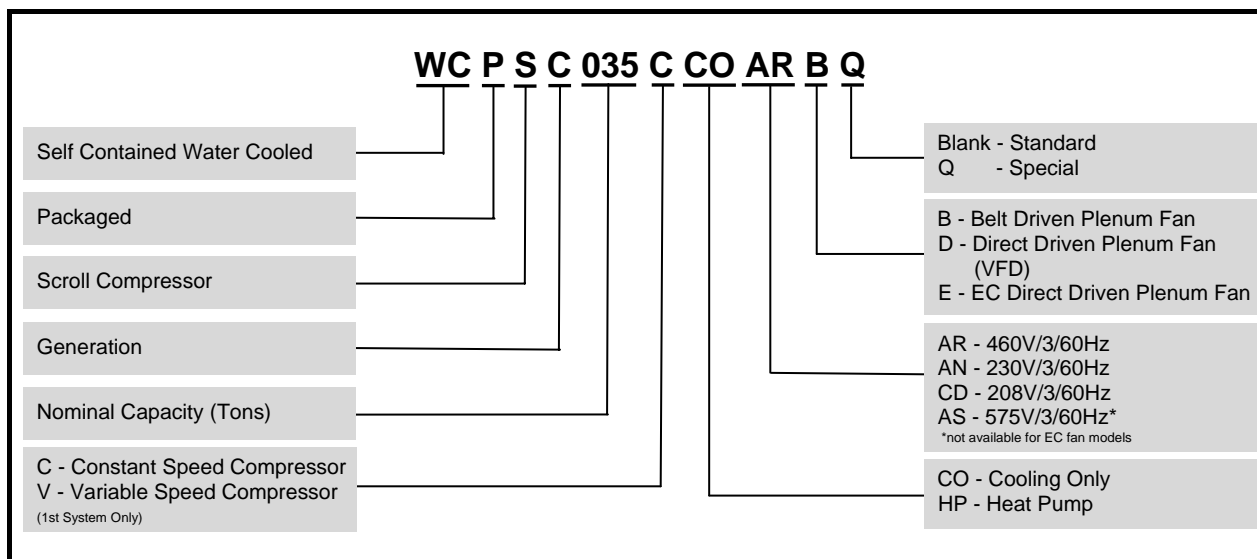
The WCPSC water self contained offers a complete line of options that are suitable for indoor installation of applications such as office buildings, hospitals, schools, industrial complexes and supermarkets. Each feature adapts high efficiency, superior engineering and dependable operation. This series is using R410A refrigerant with cooling capacity range of 100 to 1582 MBH [29 to 464 kW] and heating capacity range of 125 to 2046 MBH [37 to 599 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 up to 14.4 EER and low sound operation. All units are provided with DB Director microprocessor 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.

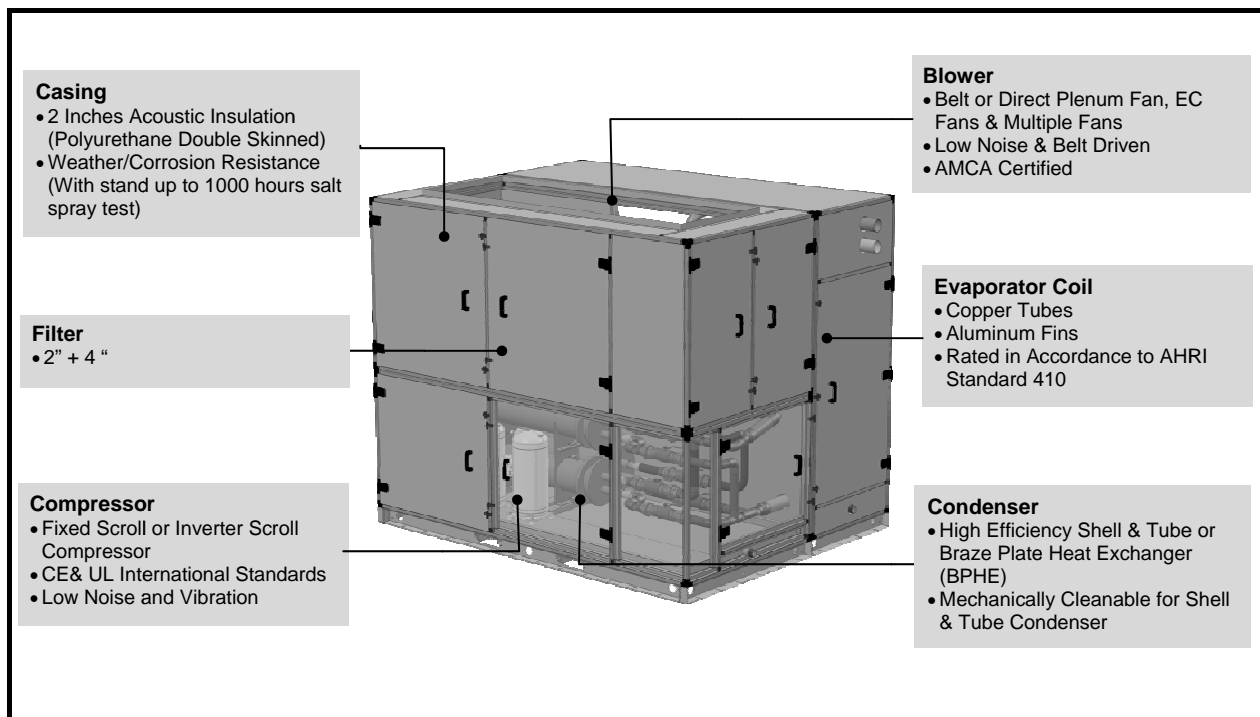
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NOMENCLATURE



COMPONENTS



STANDARD FEATURES

GENERAL

- 13 models from 100 to 1582 MBH (Cooling) and 125 to 2046 MBH (Heating) with nominal air flow up to 38000 CFM.
- Multiple compressors units provide redundancy and part load operation by cycling off compressor operation to match building load (except for model 008 to 015).
- No total shut down when servicing compressor for units with two or more refrigerant systems design.

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.



STANDARD FEATURES

EVAPORATOR SECTION

Efficient Evaporator Coil

- ✿ Evaporator coil is constructed with seamless inner-grooved copper tubes expanded into die-formed aluminum fins in staggered configuration.
- ✿ Factory leak and pressure tested at 650psig [45 bar].
- ✿ Independent thermal expansion valve with external equalizer for better refrigerant control and wider load condition.

Blowers and Drive Package

- ✿ All evaporator fans are single-inlet-single-width (SISW), plenum with backward curved blades to provide more efficient, quieter and experience less vibration.
- ✿ Blowers are belt driven as standard. Direct drive plenum fan and EC fan(s) as optional.

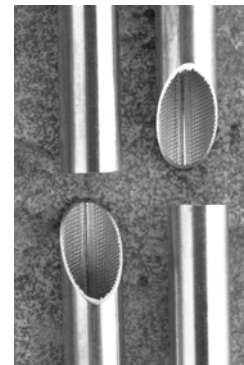


- ✿ All fans are statically and dynamically balanced to ensure smooth performance.
- ✿ Dedicated up flow configuration and horizontal as options (with discharge plenum).
- ✿ Direct driven blowers are driven by external rotor motor, IP55 enclosure rating with class F insulation motor.

CONDENSER SECTION

Efficient Condenser

- ✿ Multiple 3/4" O.D. copper finned tubes with 25% to 30% more surface area ensure better heat transfer.
- ✿ Provided with pressure relief valve for safety.
- ✿ Factory leak and pressure tested at 560psig [39 bar] refrigerant (shell) side and 300psig [21 bar] waterside (tube) working pressure.
- ✿ Brazed Plate Heat Exchanger (BPHE) as condenser is optional.



FILTER SECTION

- ✿ High efficiency disposable type MERV 8 filter.
- ✿ 2" thick filter with (more than 90%) average arrestance efficiency.

CASING

- ✿ Unit panels are constructed from heavy gauge galvanized steel.
- ✿ Epoxy painted finishing, offers excellent corrosion resistance, which withstand up to 1000 hours salt spray test in accordance to ASTM B-117.
- ✿ Wide ample access doors are provided for easy service and maintenance of unit internal parts.
- ✿ Double skinned 2" (50mm) thick in fill panel construction from pressure injected polyurethane foam (PU) insulation, heavy density 2.5lbs/ft³ for thermal insulation and sound attenuation.

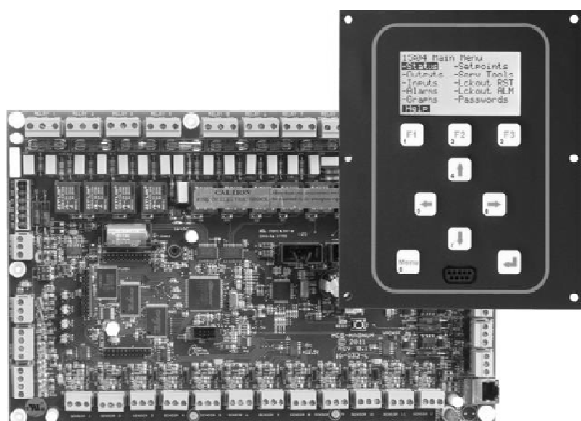
ELECTRICAL AND CONTROLS

- ✿ High pressure switch is provided to each of the refrigerant system as standard safety feature.
- ✿ These safety switches prevent compressors to operate beyond normal operating condition.
- ✿ Built-in IEC DOL starter package and control package.

STANDARD FEATURES

DB-DIRECTOR CONTROLLER

DB-Director is a rugged microprocessor based controller designed for the HVAC/R applications. DB-Director provides flexibility with setpoints and control options that can be selected prior to commissioning a system or when the unit is live and functioning. Displays, alarms and other interfaces are accomplished in a clear and simple language that informs the user as to the status of the controller.



DB-Director is equipped with 128 x 64 pixels monochrome graphics LCD display with 2.8" diagonal viewing area, and 9 dedicated keys that enable user to access information, based on security level of the password. The user terminal is allows displaying and easy access to the unit working conditions, compressor run times, alarm histories and modify the parameters. Multiple messages will be displayed by automatically scrolling from each message to the next. All of these messages are spelled out in English language on the display terminal.

The display also has an automatically self-test of the controller on system start-up. For more detail operation of the DB-Director keypad, please refer to the Unit Operation Manual.

Remote Monitoring

DB-Director is equipped with RS485 and Ethernet communication ports as standard. This user friendly design allows Building Management System (BMS) to interface directly with the chiller via either of Modbus RTU, Modbus IP, or BACnet IP communication protocol. LONworks or BACnet MSTP communication protocol can be established with installation of external adapter.

OPTIONAL ACCESSORIES

- ✿ Inverter Compressor
- ✿ Direct Driven Plenum Fan
- ✿ EC Evaporator Fan
- ✿ Belt Guard (for belt drive application)
- ✿ Discharge Plenum
- ✿ Discharge Plenum with Sound Attenuating Baffle
- ✿ Wrap-Around Heat Pipe
- ✿ Brazed Plate Heat Exchanger (only available to Cooling Only models)
- ✿ Condenser Head Pressure Control
- ✿ Water Regulating Valve
- ✿ Hot Gas Bypass
- ✿ Hot Water Heating Coil
- ✿ Steam Heating Coil
- ✿ Modulating Hot Gas Reheat
- ✿ Waterside Economizer
- ✿ Airside Economizer
- ✿ Exhaust Fan System (Airside economizer must be selected)
- ✿ Return Fan System (Airside economizer must be selected)
- ✿ Discharge / Suction / Liquid Line Service Valves
- ✿ Evaporator Coil Fin Materials
- ✿ Stainless Steel Drain Pan
- ✿ Replaceable Core Filter Drier
- ✿ Electronic Expansion Valve (EEV)
- ✿ Liquid Line Solenoid Valve (LLSV)
- ✿ High and Low Pressure Gauges
- ✿ 4-Inch Filters on top of standard 2-Inch Filters (2+4" Filter)
- ✿ Door Interlock Main Incoming Isolator
- ✿ Indicating Lights
- ✿ UVR/Phase Failure Protect
- ✿ Interface Module
- ✿ Lock Out Stop
- ✿ Differential Pressure Switch for Evaporator Blower
- ✿ Electric Heater (include starter)
- ✿ CO₂ Sensor
- ✿ VFD for Evaporator Blower Motor
- ✿ 24VAC Fire Relay with Transformer
- ✿ Supply Duct Static Pressure Sensor
- ✿ Building Pressurization Sensor
- ✿ Convenience Outlet

COOLING & HEATING PORTFOLIO

Model	Cooling		Heating	
	EER	Capacity MBH	COP	Capacity MBH
WCPSC008	13.9	99.7	4.3	125.3
WCPSC010	14.1	124.0	4.5	160.2
WCPSC015	14.3	192.4	4.4	238.2
WCPSC025	14.5	323.3	4.3	412.0
WCPSC035	14.4	441.9	4.4	560.2
WCPSC045	14.2	565.3	4.3	709.8
WCPSC055	13.6	678.4	4.3	882.8
WCPSC065	13.0	788.4	4.1	1022.0
WCPSC080	14.1	974.1	4.3	1252.5
WCPSC090	13.6	1092.6	4.2	1407.9
WCPSC100	13.9	1226.0	4.3	1574.7
WCPSC115	13.5	1385.4	4.2	1805.0
WCPSC130	13.6	1582.4	4.2	2046.2

- Notes: 1) Cooling capacity rating is based on nominal airflow with on evaporator dry/wet bulb temperatures of 80/67°F [27/19.4°C] and 85/95°F [29.4/35°C] condenser water.
 2) Heating capacity rating is based on nominal airflow with on evaporator dry bulb temperatures of 70°F [21.1°C] and water flow rate identical to cooling mode standard condition.
 3) Ratings are gross capacities. For net cooling capacity, deduct evaporator blower motor heat. Add evaporator blower motor heat for net heating capacity.
 4) EER & COP published as above is gross EER & COP.



PHYSICAL SPECIFICATIONS

Cooling Only

Model	Compressor		Condenser				Evaporator Blower & Motor						Evap. Coil		Air Filter	Ref. Charge	Approx. Unit Weight, lbs	Sound Pressure Level \pm 2 dB(A)	
	Qty	No. of Ref. Circuit	Qty	Min Flow Rate, GPM	Max Flow Rate, GPM	Common Water In/Out Connection (Victaulic)	Blower Diameter in mm (Qty) - Belt Driven	Blower Diameter in mm (Qty) - Direct Driven	Nominal Airflow, ft ³ /min	Airflow Range	Max Motor HP - Belt Driven	Max Motor HP - Direct Driven	Face Area, ft ²	Row/ FPI	Size (Qty), inches	Per System (Qty) lbs		Belt Driven Fan	Direct Driven Fan
WCPSC 008_CO	1	1	1	16.6	24.9	1-1/2"	315	315	2500	2100-3700	5	5	7.0	6/12	16x20x2 (4)	10.9	1990	50	50
WCPSC 010_CO	1	1	1	20.7	31.0	1-1/2"	355	355	3200	2400-4000	7.5	5	8.0	6/12	16x20x2 (4)	19.4	2139	52	52
WCPSC 015_CO	1	1	1	32.1	48.1	2"	400	400	4800	3700-5800	7.5	7.5	12.2	6/12	20x20x2 (2) 20x25x2 (2)	26.2	2558	56	56
WCPSC 025_CO	2	2	2	53.9	80.8	2-1/2"	500	500	7800	7000-8800	10	10	23.3	5/12	20x24x2 (2) 24x24x2 (4)	21.0 (2)	3910	55	55
WCPSC 035_CO	2	2	2	73.7	110.5	2-1/2"	630	630	11000	7000-12000	15	15	23.3	6/12	20x24x2 (2) 24x24x2 (4)	27.8 (2)	4412	55	57
WCPSC 045_CO	3	3	3	94.2	141.3	3"	630	630	14000	9000-16000	20	15	30.0	6/12	20x24x2 (9)	26.2 (3)	5618	59	61
WCPSC 055_CO	4	4	4	113.1	169.6	3"	710	560 (2)	17500	11000-19000	25	10	36.0	6/12	24x24x2 (9)	21.0 (2) 26.2 (2)	6641	61	63
WCPSC 065_CO	4	4	4	131.4	197.1	3"	710	630 (2)	20500	12000-21000	30	15	38.9	6/12	20x24x2 (12)	26.2 (2) 27.8 (2)	6879	59	61
WCPSC 080_CO	6	6	3	162.4	243.5	3-1/2"	630 (2)	630 (2)	25000	14500-26000	20	15	47.4	6/12	20x20x2 (8) 20x24x2 (8)	21.0 (6)	8808	60	62
WCPSC 090_CO	6	6	3	182.1	273.2	3-1/2"	630 (2)	630 (2)	27500	16500-29000	20	15	53.8	6/12	20x25x2 (16)	26.2 (6)	9000	62	64
WCPSC 100_CO	6	6	3	204.3	306.5	3-1/2"	710 (2)	630 (3)	31000	19500-34000	20	15	64.6	6/12	20x20x2 (4) 20x25x2 (16)	26.2 (2) 27.8 (4)	10001	59	66
WCPSC 115_CO	8	4	4	230.9	346.4	4"	710 (2)	630 (3)	35000	21000-38000	25	15	70.0	6/12	20x20x2 (16) 20x25x2 (8)	42.0 (1) 52.4 (3)	10913	60	68
WCPSC 130_CO	8	4	4	263.7	395.6	4"	710 (2)	630 (3)	36000	21000-38000	25	15	70.0	8/12	20x20x2 (16) 20x25x2 (8)	52.4 (2) 55.7 (2)	11404	60	68

- Notes: 1. Cooling capacity rating is based on nominal airflow with on evaporator dry/wet bulb temperatures of 80/67°F [27/19.4°C] and 85/95°F [29.4/35°C] condenser water.
 2. Ratings are gross capacities. For net capacity deduct evaporator blower motor heat.
 3. EER published as above is gross EER.
 4. Unit weight calculation does not include water weight which supposed to present during unit operation.
 5. Sound Pressure Level is calculated based on nominal airflow at external static pressure of 1" WG. Rated at 2m [6.6ft] distance away from unit free field. Unit supply is assumed to be entirely insulated. The actual sound at field could be affected by the supply duct break out noise.

PHYSICAL SPECIFICATIONS

Heat Pump

Model	Compressor		Condenser				Evaporator Blower & Motor						Evap. Coil		Air Filter	Ref. Charge	Approx. Unit Weight, lbs	Sound Pressure Level ± 2 dB(A)	
	Qty	No. of Ref. Circuit	Qty	Min Flow Rate, GPM	Max Flow Rate, GPM	Common Water In/Out Connection (Victaulic)	Blower Diameter in mm (Qty) - Belt Driven	Blower Diameter in mm (Qty) - Direct Driven	Nominal Airflow, ft ³ /min	Airflow Range	Max Motor HP - Belt Driven	Max Motor HP - Direct Driven	Face Area, ft ²	Row/ FPI	Size (Qty), inches	Per System (Qty) lbs		Belt Driven Fan	Direct Driven Fan
WCPSC 008_HP	1	1	1	16.6	24.9	1-1/2"	315	315	2500	2100 - 3700	5	5	7.0	6/12	16x20x2 (4)	7.1	2189	50	50
WCPSC 010_HP	1	1	1	20.7	31.0	1-1/2"	355	355	3200	2400 - 4000	7.5	5	8.0	6/12	16x20x2 (4)	12.6	2353	52	52
WCPSC 015_HP	1	1	1	32.1	48.1	2"	400	400	4800	3700 - 5800	7.5	7.5	12.2	6/12	20x20x2 (2) 20x25x2 (2)	17.0	2814	56	56
WCPSC 025_HP	2	2	2	53.9	80.8	2-1/2"	500	500	7800	7000 - 8800	10	10	23.3	5/12	20x24x2 (2) 24x24x2 (4)	13.7 (2)	4301	55	55
WCPSC 035_HP	2	2	2	73.7	110.5	2-1/2"	630	630	11000	7000 - 12000	15	15	23.3	6/12	20x24x2 (2) 24x24x2 (4)	18.1 (2)	4853	55	57
WCPSC 045_HP	3	3	3	94.2	141.3	3"	630	630	14000	9000 - 16000	20	15	30.0	6/12	20x24x2 (9)	17.0 (3)	6180	59	61
WCPSC 055_HP	4	4	2	113.1	169.6	3"	710	560 (2)	17500	11000 - 19000	25	10	36.0	6/12	24x24x2 (9)	13.7 (2) 17.0 (2)	7306	61	63
WCPSC 065_HP	4	4	2	131.4	197.1	3"	710	630 (2)	20500	12000 - 21000	30	15	38.9	6/12	20x24x2 (12)	17.0 (2) 18.1 (2)	7567	59	61
WCPSC 080_HP	6	6	3	162.4	243.5	3-1/2"	630 (2)	630 (2)	25000	14500 - 26000	20	15	47.4	6/12	20x20x2 (8) 20x24x2 (8)	13.7 (6)	9689	60	62
WCPSC 090_HP	6	6	3	182.1	273.2	3-1/2"	630 (2)	630 (2)	27500	16500 - 29000	20	15	53.8	6/12	20x25x2 (16)	17.0 (6)	9900	62	64
WCPSC 100_HP	6	6	3	204.3	306.5	3-1/2"	710 (2)	630 (3)	31000	19500 - 34000	20	15	64.6	6/12	20x20x2 (4) 20x25x2 (16)	17.0 (2) 18.1 (4)	11001	59	66
WCPSC 115_HP	8	4	4	230.9	346.4	4"	710 (2)	630 (3)	35000	21000 - 38000	25	15	70.0	6/12	20x20x2 (16) 20x25x2 (8)	27.3 (1) 34.1 (3)	12004	60	68
WCPSC 130_HP	8	4	4	263.7	395.6	4"	710 (2)	630 (3)	36000	21000 - 38000	25	15	70.0	8/12	20x20x2 (16) 20x25x2 (8)	34.1 (2) 36.2 (2)	12545	60	68

- Notes:
1. Heating capacity rating is based on nominal airflow with on evaporator dry bulb temperatures of 70°F [21.1°C] and water flow rate identical to cooling mode standard condition.
 2. Rating is gross capacity. For net capacity add evaporator blower motor heat.
 3. COP published as above is gross COP.
 4. Unit weight calculation does not include water weight which supposed to present during unit operation.
 5. Sound Pressure Level is calculated based on nominal airflow at external static pressure of 1" WG. Rated at 2m [6.6ft] distance away from unit free field. Unit supply is assumed to be entirely insulated. The actual sound at field could be affected by the supply duct break out noise.



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SYSTEM COOLING CAPACITY

PERFORMANCE DATA

Model	EER	Std. Capacity MBH	Air On Evap.		Cooling Capacity @ Entering / Leaving Condenser Water															
			CFM	WB Temp		75°F [24°C] / 85°F [29°C]					85°F [29°C] / 95°F [35°C]					95°F [35°C] / 105°F [41°C]				
				°F	°C	Total		Sensible		kW Input	Total		Sensible		kW Input	Total		Sensible		kW Input
						MBH	kW	MBH	kW		MBH	kW	MBH	kW		MBH	kW	MBH	kW	
WCPSC 008_CO	13.9	99.7	2500	72	22.2	114.8	33.6	56.9	16.7	5.3	109.9	32.2	55.1	16.1	5.9	105.0	30.7	53.4	15.6	6.6
				67	19.4	104.2	30.5	69.9	20.5	5.2	99.7	29.2	68.3	20.0	5.8	95.2	27.9	66.7	19.5	6.5
				62	16.7	96.1	28.1	84.2	24.7	5.1	92.4	27.1	82.7	24.2	5.7	88.7	26.0	81.2	23.8	6.4
WCPSC 010_CO	14.1	124.0	3200	72	22.2	142.7	41.8	70.4	20.6	6.5	136.6	40.0	68.2	20.0	7.2	130.4	38.2	66.0	19.3	8.1
				67	19.4	129.7	38.0	88.2	25.8	6.4	124.0	36.3	86.1	25.2	7.1	118.4	34.7	84.0	24.6	7.9
				62	16.7	120.1	35.2	106.4	31.2	6.3	115.4	33.8	103.5	30.3	7.0	110.8	32.4	101.5	29.7	7.8
WCPSC 015_CO	14.3	192.4	4800	72	22.2	210.3	61.6	105.6	30.9	10.0	200.6	58.7	102.3	30.0	11.1	190.7	55.8	97.3	28.5	12.3
				67	19.4	201.4	59.0	135.5	39.7	9.8	192.4	56.3	130.8	38.3	10.8	172.9	50.6	123.0	36.0	12.0
				62	16.7	184.6	54.1	161.2	47.2	9.5	177.4	51.9	158.2	46.3	10.6	161.2	47.2	150.9	44.2	11.8
WCPSC 025_CO	14.5	323.3	7800	72	22.2	370.2	108.4	178.3	52.2	16.9	354.1	103.7	172.9	50.6	18.9	337.9	98.9	167.5	49.0	21.0
				67	19.4	338.0	99.0	220.2	64.5	16.6	323.3	94.7	215.2	63.0	18.5	308.4	90.3	210.1	61.5	20.8
				62	16.7	306.8	89.8	260.9	76.4	16.3	293.6	86.0	256.1	75.0	18.2	281.2	82.3	249.0	72.9	20.4
WCPSC 035_CO	14.4	441.9	11000	72	22.2	488.0	142.9	241.0	70.6	24.0	465.5	136.3	233.4	68.3	26.4	442.7	129.6	225.8	66.1	29.0
				67	19.4	462.1	135.3	308.7	90.4	23.2	441.9	129.4	301.5	88.3	25.4	421.4	123.4	290.8	85.1	28.0
				62	16.7	407.9	119.4	360.2	105.5	22.6	387.6	113.5	350.2	102.5	24.8	371.8	108.9	343.5	100.6	27.4
WCPSC 045_CO	14.2	565.3	14000	72	22.2	624.1	182.7	306.9	89.9	30.0	594.8	174.2	297.2	87.0	33.3	565.0	165.4	287.5	84.2	36.9
				67	19.4	591.9	173.3	393.0	115.1	29.1	565.3	165.5	383.9	112.4	32.1	538.4	157.6	370.3	108.4	36.0
				62	16.7	543.0	159.0	467.2	136.8	28.5	519.3	152.1	458.7	134.3	31.5	473.4	138.6	437.4	128.1	35.4
WCPSC 055_CO	13.6	678.4	17500	72	22.2	774.0	226.6	388.5	113.8	36.8	742.9	217.5	376.4	110.2	40.9	711.8	208.4	364.3	106.7	45.4
				67	19.4	706.5	206.9	487.9	142.9	36.0	678.4	198.6	476.6	139.6	39.9	650.1	190.4	465.2	136.2	44.8
				62	16.7	664.4	194.5	589.7	172.7	35.3	640.6	187.6	579.1	169.6	39.2	617.1	180.7	573.8	168.0	43.8
WCPSC 065_CO	13.0	788.4	20500	72	22.2	900.4	263.6	454.6	133.1	43.7	863.3	252.8	440.4	129.0	48.0	826.1	241.9	426.2	124.8	53.2
				67	19.4	822.1	240.7	564.1	165.2	42.6	788.4	230.9	550.8	161.3	46.8	754.6	221.0	537.5	157.4	52.0
				62	16.7	771.6	225.9	689.7	202.0	41.4	743.1	217.6	677.2	198.3	45.8	714.9	209.3	664.8	194.7	50.8
WCPSC 080_CO	14.1	974.1	25000	72	22.2	1114.7	326.4	554.4	162.3	50.7	1067.6	312.6	537.1	157.3	56.7	1020.1	298.7	519.8	152.2	63.0
				67	19.4	1017.1	297.8	696.0	203.8	49.8	974.1	285.2	679.8	199.1	55.5	930.9	272.6	663.6	194.3	62.4
				62	16.7	949.7	278.1	841.1	246.3	48.9	913.1	267.4	825.9	241.8	54.6	837.1	245.1	795.5	232.9	61.2
WCPSC 090_CO	13.6	1092.6	27500	72	22.2	1253.3	367.0	619.6	181.4	59.7	1198.4	350.9	600.6	175.9	66.0	1143.0	334.7	581.5	170.3	73.2
				67	19.4	1143.0	334.7	775.0	226.9	58.2	1092.6	319.9	757.2	221.7	64.2	1042.0	305.1	739.3	216.5	72.0
				62	16.7	1062.2	311.0	934.2	273.5	57.0	1017.0	297.8	917.5	268.7	63.0	973.9	285.2	900.7	263.7	70.2
WCPSC 100_CO	13.9	1226.0	31000	72	22.2	1401.6	410.4	699.0	204.7	67.5	1344.5	393.7	677.6	198.4	74.0	1287.2	376.9	656.1	192.1	82.0
				67	19.4	1278.0	374.2	874.6	256.1	65.8	1226.0	359.0	854.5	250.2	72.2	1174.1	343.8	834.3	244.3	80.0
				62	16.7	1195.7	350.1	1054.4	308.7	63.8	1151.5	337.2	1035.5	303.2	70.6	1055.8	309.1	997.9	292.2	78.4
WCPSC 115_CO	13.5	1385.4	35000	72	22.2	1585.4	464.2	788.8	231.0	76.6	1519.4	444.9	764.6	223.9	84.9	1453.0	425.5	740.4	216.8	94.2
				67	19.4	1445.6	423.3	986.8	288.9	74.8	1385.4	405.7	964.0	282.3	82.7	1324.9	387.9	929.9	272.3	92.8
				62	16.7	1348.7	394.9	1189.4	348.3	73.3	1297.2	379.8	1168.2	342.1	81.2	1246.2	364.9	1146.9	335.8	90.6
WCPSC 130_CO	13.6	1582.4	36000	72	22.2	1811.3	530.4	880.5	257.8	87.4	1737.7	508.8	855.6	250.5	96.0	1663.6	487.1	830.7	243.2	106.4
				67	19.4	1649.2	482.9	1084.6	317.6	85.2	1582.4	463.3	1061.2	310.7	93.6	1515.2	443.7	1037.8	303.9	104.0
				62	16.7	1531.6	448.5	1304.5	382.0	82.8	1473.0	431.3	1282.6	375.6	91.6	1411.8	413.4	1249.8	366.0	101.6

- 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.
 4) EER calculation is based on gross capacity and ESP (external static pressure) 1.0inwg for all belt driven fan models

SYSTEM HEATING CAPACITY

PERFORMANCE DATA

Model	EER	Std. Capacity MBH	Air On Evap.	Heating Capacity @ Entering Condenser Water								
				50°F [10°C]			60°F [16°C]			70°F [21°C]		
				Total		kW Input	Total		kW Input	Total		kW Input
				CFM	MBH		kW	MBH		kW	MBH	
WCPSC 008_HP	4.3	125.3	2500	100.8	29.5	6.3	113.0	33.1	6.7	125.3	36.7	7.2
WCPSC 010_HP	4.5	160.2	3200	127.8	37.4	7.7	144.8	42.4	8.3	160.2	46.9	8.8
WCPSC 015_HP	4.4	238.2	4800	191.7	56.1	11.5	214.9	62.9	12.3	238.2	69.7	13.2
WCPSC 025_HP	4.3	412.0	7800	323.1	94.6	20.6	367.5	107.6	22.4	412.0	120.6	24.0
WCPSC 035_HP	4.4	560.2	11000	436.0	127.7	27.2	498.2	145.9	29.4	560.2	164.0	32.2
WCPSC 045_HP	4.3	709.8	14000	557.9	163.4	34.8	630.4	184.6	37.5	709.8	207.8	40.8
WCPSC 055_HP	4.3	882.8	17500	697.9	204.4	43.8	790.2	231.4	47.0	882.8	258.5	50.8
WCPSC 065_HP	4.1	1022.0	20500	807.7	236.5	50.8	914.7	267.8	54.6	1022.0	299.3	59.2
WCPSC 080_HP	4.3	1252.5	25000	990.6	290.1	61.2	1121.3	328.3	66.0	1252.5	366.7	70.8
WCPSC 090_HP	4.2	1407.9	27500	1118.2	327.4	70.8	1263.2	369.9	76.2	1407.9	412.2	81.6
WCPSC 100_HP	4.3	1574.7	31000	1245.7	364.8	78.2	1409.9	412.8	84.0	1574.7	461.1	91.2
WCPSC 115_HP	4.2	1805.0	35000	1434.9	420.2	92.0	1619.7	474.3	98.4	1805.0	528.5	106.0
WCPSC 130_HP	4.2	2046.2	36000	1606.8	470.5	103.2	1827.0	535.0	112.0	2046.2	599.1	121.2

- Notes: 1) Ratings are based on 70°F (21°C) air on evaporator dry bulb temperature.
 2) Ratings are gross capacities. For net capacity add evaporator blower motor heat.
 3) kW input shown in the table is total compressor(s) power input.
 4) EER calculation is based on gross capacity and ESP (external static pressure) 1.0inwg for all belt driven fan models.

BLOWER PERFORMANCE

EVAPORATOR

Plenum Fan - Belt Driven

Model	Airflow on Evap. Coil		Airflow Range, ft ³ /min	Blower Size	Internal Static Pressure (ISP)		External Static Pressure (ESP)														
	ft ³ /min	m ³ /hr			in WG	Pa	1.0					1.5					2.0				
							Total Stc. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor HP	Total Stc. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor HP	Total Stc. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor HP
WCPSC 008	2500	4248	2100 - 3700	315	0.99	246	1.99	2522	1.39	4300	2HP/4P	2.49	2646	1.64	4300	2HP/4P	2.99	2768	1.88	4300	3HP/4P
WCPSC 010	3200	5437	2400 - 4000	355	1.09	271	2.09	2259	1.80	3830	3HP/4P	2.59	2367	2.09	3830	3HP/4P	3.09	2474	2.39	3830	3HP/4P
WCPSC 015	4800	8155	3700 - 5800	400	1.07	266	2.07	2219	2.94	3360	5HP/4P	2.57	2304	3.37	3360	5HP/4P	3.07	2386	3.80	3360	5HP/4P
WCPSC 025	7800	13252	7000 - 8800	500	0.87	216	1.87	1830	4.39	2750	5HP/4P	2.37	1895	5.00	2750	7.5HP/4P	2.87	1963	5.63	2750	7.5HP/4P
WCPSC 035	11000	18689	7000 - 12000	630	1.26	314	2.26	1379	5.97	2200	7.5HP/4P	2.76	1441	6.93	2200	10HP/4P	3.26	1503	7.97	2200	10HP/4P
WCPSC 045	14000	23786	9000 - 16000	630	1.24	309	2.24	1616	9.01	2200	15HP/4P	2.74	1665	10.12	2200	15HP/4P	3.24	1714	11.29	2200	15HP/4P
WCPSC 055	17500	29733	11000 - 19000	710	1.45	361	2.45	1434	11.59	1940	15HP/4P	2.95	1478	13.01	1940	20HP/4P	3.45	1522	14.48	1940	20HP/4P
WCPSC 065	20500	34830	12000 - 21000	710	1.58	393	2.58	1622	16.09	1940	20HP/4P	3.08	1659	17.70	1940	25HP/4P	3.58	1697	19.31	1940	25HP/4P
WCPSC 080	25000	42475	14500 - 26000	630(2)	1.58	393	2.58	1530 (2)	8.03 (2)	2200	10HP/4P (2)	3.08	1584 (2)	9.11 (2)	2200	15HP/4P (2)	3.58	1639 (2)	10.22 (2)	2200	15HP/4P (2)
WCPSC 090	27500	46723	16500 - 29000	630(2)	1.52	378	2.52	1623 (2)	9.32 (2)	2200	15HP/4P (2)	3.02	1673 (2)	10.46 (2)	2200	15HP/4P (2)	3.52	1722 (2)	11.63 (2)	2200	15HP/4P (2)
WCPSC 100	31000	52669	19500 - 34000	710(2)	1.43	356	2.43	1321 (2)	9.33 (2)	1940	15HP/4P (2)	2.93	1370 (2)	10.66 (2)	1940	15HP/4P (2)	3.43	1419 (2)	12.03 (2)	1940	15HP/4P (2)
WCPSC 115	35000	59465	21000 - 38000	710(2)	1.49	371	2.49	1438 (2)	11.71 (2)	1940	15HP/4P (2)	2.99	1482 (2)	13.13 (2)	1940	20HP/4P (2)	3.49	1525 (2)	14.62 (2)	1940	20HP/4P (2)
WCPSC 130	36000	61164	21000 - 38000	710(2)	1.88	468	2.88	1500 (2)	13.41 (2)	1940	20HP/4P (2)	3.38	1543 (2)	14.89 (2)	1940	20HP/4P (2)	3.88	1585 (2)	16.49 (2)	1940	20HP/4P (2)

Notes: 1) Internal static pressure (ISP) includes pressure drop through evaporator coil, standard filter and unit casing.
2) Please consult factory for ESP exceeds what has been specified in the above table.

Plenum Fan - Direct Driven

Model	Airflow on Evaporator Coil		Airflow Range, ft ³ /min	Blower Size	Internal Static Pressure (ISP)		External Static Pressure (ESP)														
	ft ³ /min	m ³ /hr			in WG	Pa	1.0					1.5					2.0				
							Total Stc. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor HP	Total Stc. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor HP	Total Stc. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor HP
WCPSC 008	2500	4248	2100 - 3700	315	0.99	246	1.99	2522	1.39	4300	2HP/4P	2.49	2646	1.64	4300	2HP/4P	2.99	2768	1.88	4300	3HP/4P
WCPSC 010	3200	5437	2400 - 4000	355	1.09	271	2.09	2259	1.80	3830	3HP/4P	2.59	2367	2.09	3830	3HP/4P	3.09	2474	2.39	3830	3HP/4P
WCPSC 015	4800	8155	3700 - 5800	400	1.07	266	2.07	2219	2.94	3360	5HP/4P	2.57	2304	3.37	3360	5HP/4P	3.07	2386	3.80	3360	5HP/4P
WCPSC 025	7800	13252	7000 - 8800	500	0.87	216	1.87	1830	4.39	2750	5HP/4P	2.37	1895	5.00	2750	7.5HP/4P	2.87	1963	5.63	2750	7.5HP/4P
WCPSC 035	11000	18689	7000 - 12000	630	1.26	314	2.26	1379	5.97	2200	10HP/4P	2.76	1441	6.93	2200	10HP/4P	3.26	1503	7.97	2200	15HP/4P
WCPSC 045	14000	23786	9000 - 16000	630	1.24	309	2.24	1616	9.01	2200	15HP/4P	2.74	1665	10.12	2200	15HP/4P	3.24	1714	11.29	2200	15HP/4P
WCPSC 055	17500	29733	11000 - 19000	560(2)	1.45	361	2.45	1560 (2)	5.14 (2)	2430	7.5HP/4P (2)	2.95	1626 (2)	5.90 (2)	2430	7.5HP/4P (2)	3.45	1694 (2)	6.75 (2)	2430	10HP/4P (2)
WCPSC 065	20500	34830	12000 - 21000	630(2)	1.58	393	2.58	1367 (2)	5.95 (2)	2200	10HP/4P (2)	3.08	1434 (2)	6.93 (2)	2200	10HP/4P (2)	3.58	1500 (2)	7.94 (2)	2200	15HP/4P (2)
WCPSC 080	25000	42475	14500 - 26000	630(2)	1.58	393	2.58	1530 (2)	8.03 (2)	2200	15HP/4P (2)	3.08	1584 (2)	9.11 (2)	2200	15HP/4P (2)	3.58	1639 (2)	10.22 (2)	2200	15HP/4P (2)
WCPSC 090	27500	46723	16500 - 29000	630(2)	1.52	378	2.52	1623 (2)	9.32 (2)	2200	15HP/4P (2)	3.02	1673 (2)	10.46 (2)	2200	15HP/4P (2)	3.52	1722 (2)	11.63 (2)	2200	15HP/4P (2)
WCPSC 100	31000	52669	19500 - 34000	630(3)	1.43	356	2.43	1352 (3)	5.74 (3)	2200	10HP/4P (3)	2.93	1419 (3)	6.71 (3)	2200	10HP/4P (3)	3.43	1485 (3)	7.71 (3)	2200	15HP/4P (3)
WCPSC 115	35000	59465	21000 - 38000	630(3)	1.49	371	2.49	1456 (3)	7.01 (3)	2200	10HP/4P (3)	2.99	1515 (3)	8.03 (3)	2200	15HP/4P (3)	3.49	1573 (3)	9.11 (3)	2200	15HP/4P (3)
WCPSC 130	36000	61164	21000 - 38000	630(3)	1.88	468	2.88	1526 (3)	8.14 (3)	2200	15HP/4P (3)	3.38	1582 (3)	9.21 (3)	2200	15HP/4P (3)	3.88	1640 (3)	10.34 (3)	2200	15HP/4P (3)

Notes: 1) Internal static pressure (ISP) includes pressure drop through evaporator coil, standard filter and unit casing.
2) Please consult factory for ESP exceeds what has been specified in the above table.



LIMITS AND CORRECTION FACTORS

OPERATING LIMITS

	MINIMUM	MAXIMUM
Condenser Water Flow	2.0 GPM/Ton	3.0 GPM/Ton
Entering Cond. Water Temp. with Economizer	40°F	95°F
Entering Cond. Water Temp. with Head Pressure Control	40°F	95°F
Entering Cond. Water Temp. w/o Head Pressure Control	65°F	95°F
Steam Heat- Steam Pressure	5 PSIG	15 PSIG
Hot Water Heat Entering Water Temp.	140°F	160°F
Entering Cond. Water Temp for Heat Pump Application	45°F	70°F

Notes: 1) Note: For heat pump application; if water temp. is beyond the minimum specified above, please use glycol instead of water.

CORRECTION FACTORS

TO CORRECT FOR VARIATION IN AIR FLOW, USE THIS MULTIPLIER

Airflow Variation	Total Capacity	Sensible Capacity
0.8	0.960	0.900
0.9	0.980	0.950
1	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	Capacity
0	1.000
2000	0.980
3000	0.970
4000	0.960
5000	0.950
6000	0.930
7000	0.920

TO CORRECT SENSIBLE CAPACITY FOR VARYING DRY BULB

Dry Bulb	Wet Bulb			
	57°F	62°F	67°F	72°F
75°F	0.840	0.81	0.78	0.74
80°F	1.000	1	1	1
85°F	1.160	1.18	1.21	1.26

Notes: 1) If the capacity after multiplying the sensible with the correction factor exceed the total capacity. The sensible capacity must be equal to the total.



ELECTRICAL DATA

208V/3Ph/60Hz

Model	Sys		Compressor		Compressor Rating			Evaporator Blower (Std.)			Unit Rating (Std.)		
	Qty	Power Supply	MRA (Each)	NRA (Each)	LRA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	LRA (Each)	FLA	MCA	MFS	
WCPSC008C	1	1	200-230V/3PH/60Hz	1x39.1	1x23.0	1x164.0	1	5.0	13.7	101.7	36.7	43	70
WCPSC010C	1	1	200-230V/3PH/60Hz	1x44.1	1x28.3	1x239.0	1	7.5	19.9	140.4	48.2	55	80
WCPSC015C	1	1	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0	1	7.5	19.9	140.4	60.8	71	110
WCPSC025C	1	1	200-230V/3PH/60Hz	1x75.0	1x34.7	1x245.0	1	10.0	26.1	179.1	95.5	104	150
	2	1	200-230V/3PH/60Hz										
WCPSC035C	1	1	200-230V/3PH/60Hz	1x86.9	1x52.0	1x340.0	1	15.0	38.3	256.5	142.2	155	200
	2	1	200-230V/3PH/60Hz										
WCPSC045C	1	1	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0	1	20.0	50.4	320.7	173.2	183	225
	2	1	200-230V/3PH/60Hz										
	3	1	200-230V/3PH/60Hz										
WCPSC055C	1	1	200-230V/3PH/60Hz	1x75.0	1x34.7	1x245.0	1	25.0	64.1	403.6	215.4	226	300
	2	1	200-230V/3PH/60Hz										
	3	1	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0							
	4	1	200-230V/3PH/60Hz										
WCPSC065C	1	1	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0	1	30.0	76.3	481.0	262.1	275	350
	2	1	200-230V/3PH/60Hz										
	3	1	200-230V/3PH/60Hz	1x86.9	1x52.0	1x340.0							
	4	1	200-230V/3PH/60Hz										
WCPSC080C	1	1	200-230V/3PH/60Hz	1x75.0	1x34.7	1x245.0	1	20.0	50.4	320.7	309.2	318	350
	2	1	200-230V/3PH/60Hz										
	3	1	200-230V/3PH/60Hz										
	4	1	200-230V/3PH/60Hz										
	5	1	200-230V/3PH/60Hz										
	6	1	200-230V/3PH/60Hz										
WCPSC090C	1	1	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0	1	20.0	50.4	320.7	346.3	357	400
	2	1	200-230V/3PH/60Hz										
	3	1	200-230V/3PH/60Hz										
	4	1	200-230V/3PH/60Hz										
	5	1	200-230V/3PH/60Hz										
	6	1	200-230V/3PH/60Hz										
WCPSC100C	1	1	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0	1	20.0	50.4	320.7	390.6	404	450
	2	1	200-230V/3PH/60Hz										
	3	1	200-230V/3PH/60Hz	1x86.9	1x52.0	1x340.0							
	4	1	200-230V/3PH/60Hz										
	5	1	200-230V/3PH/60Hz										
	6	1	200-230V/3PH/60Hz										
WCPSC115C	1	2	200-230V/3PH/60Hz	1x75.0	1x34.7	1x245.0	1	25.0	64.1	403.6	443.2	453	500
	2	2	200-230V/3PH/60Hz										
	3	2	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0							
	4	2	200-230V/3PH/60Hz										
WCPSC130C	1	2	200-230V/3PH/60Hz	1x79.9	1x40.9	1x300.0	1	25.0	64.1	403.6	499.8	513	600
	2	2	200-230V/3PH/60Hz										
	3	2	200-230V/3PH/60Hz	1x86.9	1x52.0	1x340.0							
	4	2	200-230V/3PH/60Hz										



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ELECTRICAL DATA

460V/3PH/60Hz

Model	Sys		Compressor		Compressor Rating			Evaporator Blower (Std.)			Unit Rating (Std.)		
	Qty	Power Supply	MRA (Each)	NRA (Each)	LRA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	LRA (Each)	FLA	MCA	MFS	
WCPSC008C	1	1	460V/3PH/60Hz	1x19.0	1x10.4	1x100.0	1	5.0	6.2	46.0	16.6	19	30
WCPSC010C	1	1	460V/3PH/60Hz	1x23.0	1x12.8	1x130.0	1	7.5	9.0	63.5	21.8	25	40
WCPSC015C	1	1	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0	1	7.5	9.0	63.5	27.5	32	50
WCPSC025C	1	1	460V/3PH/60Hz	1x29.0	1x15.7	1x125.0	1	10.0	11.8	81.0	43.2	47	60
	2	1	460V/3PH/60Hz										
WCPSC035C	1	1	460V/3PH/60Hz	1x41.0	1x23.5	1x179.0	1	15.0	17.3	116.0	64.3	70	90
	2	1	460V/3PH/60Hz										
WCPSC045C	1	1	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0	1	20.0	22.8	145.0	78.3	83	100
	2	1	460V/3PH/60Hz										
	3	1	460V/3PH/60Hz										
WCPSC055C	1	1	460V/3PH/60Hz	1x29.0	1x15.7	1x125.0	1	25.0	29.0	182.5	97.4	102	125
	2	1	460V/3PH/60Hz										
	3	1	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0							
	4	1	460V/3PH/60Hz										
WCPSC065C	1	1	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0	1	30.0	34.5	217.5	118.5	124	150
	2	1	460V/3PH/60Hz										
	3	1	460V/3PH/60Hz	1x41.0	1x23.5	1x179.0							
	4	1	460V/3PH/60Hz										
WCPSC080C	1	1	460V/3PH/60Hz	1x29.0	1x15.7	1x125.0	1	20.0	22.8	145.0	139.8	144	175
	2	1	460V/3PH/60Hz										
	3	1	460V/3PH/60Hz										
	4	1	460V/3PH/60Hz										
	5	1	460V/3PH/60Hz										
	6	1	460V/3PH/60Hz										
WCPSC090C	1	1	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0	1	20.0	22.8	145.0	156.6	161	175
	2	1	460V/3PH/60Hz										
	3	1	460V/3PH/60Hz										
	4	1	460V/3PH/60Hz										
	5	1	460V/3PH/60Hz										
	6	1	460V/3PH/60Hz										
WCPSC100C	1	1	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0	1	20.0	22.8	145.0	176.6	183	200
	2	1	460V/3PH/60Hz										
	3	1	460V/3PH/60Hz	1x41.0	1x23.5	1x179.0							
	4	1	460V/3PH/60Hz										
	5	1	460V/3PH/60Hz										
	6	1	460V/3PH/60Hz										
WCPSC115C	1	2	460V/3PH/60Hz	1x29.0	1x15.7	1x125.0	1	25.0	29.0	182.5	200.4	205	225
	2	2	460V/3PH/60Hz										
	3	2	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0							
	4	2	460V/3PH/60Hz										
WCPSC130C	1	2	460V/3PH/60Hz	1x35.0	1x18.5	1x150.0	1	25.0	29.0	182.5	226.0	232	250
	2	2	460V/3PH/60Hz										
	3	2	460V/3PH/60Hz	1x41.0	1x23.5	1x179.0							
	4	2	460V/3PH/60Hz										



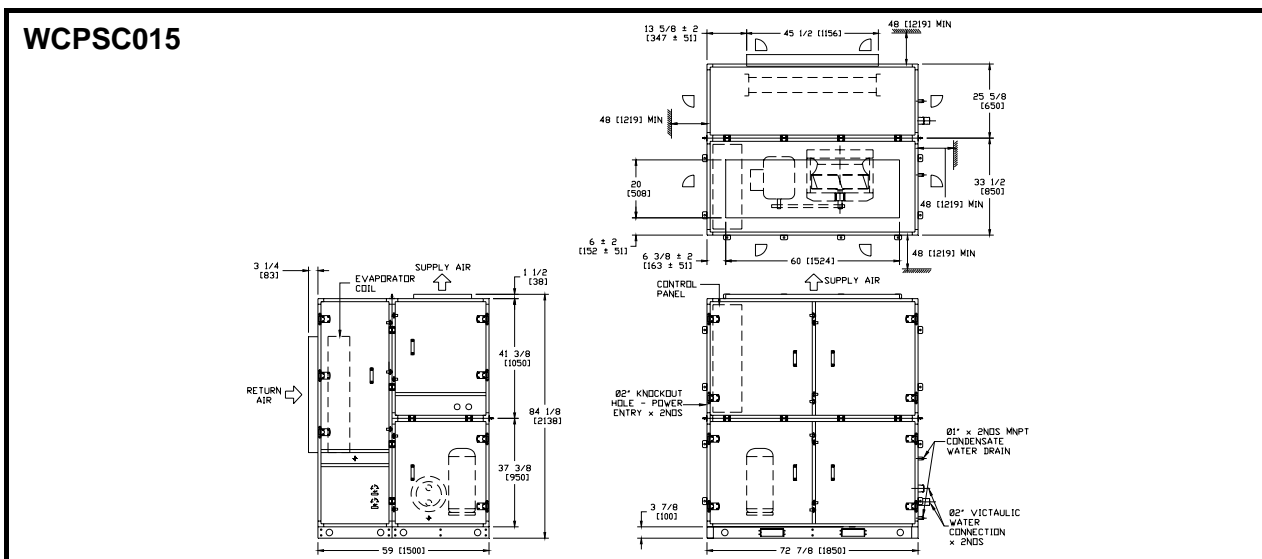
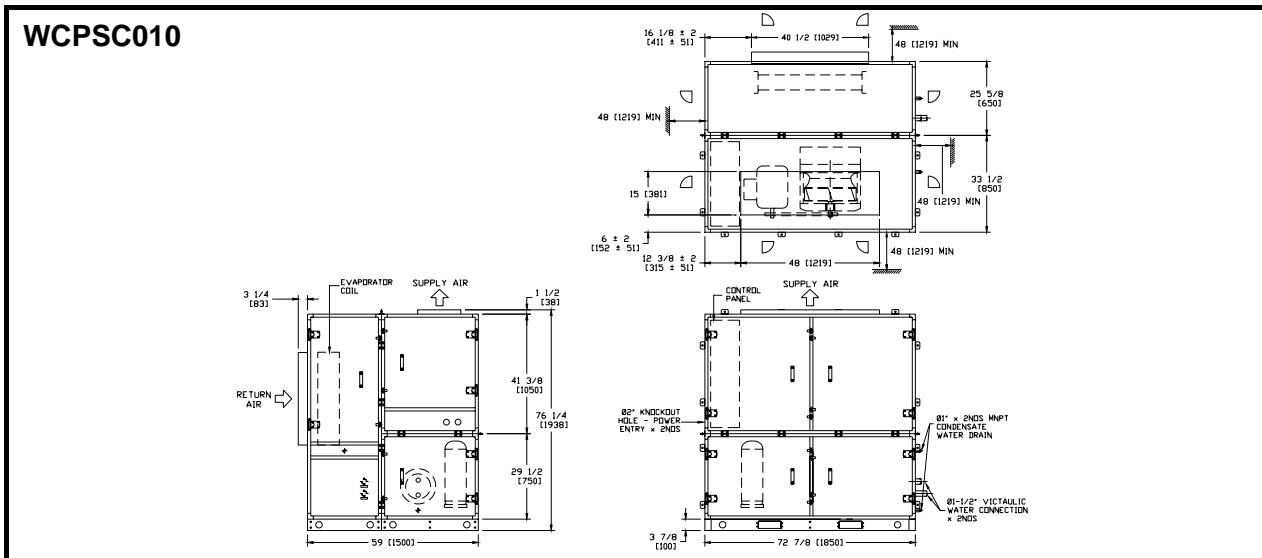
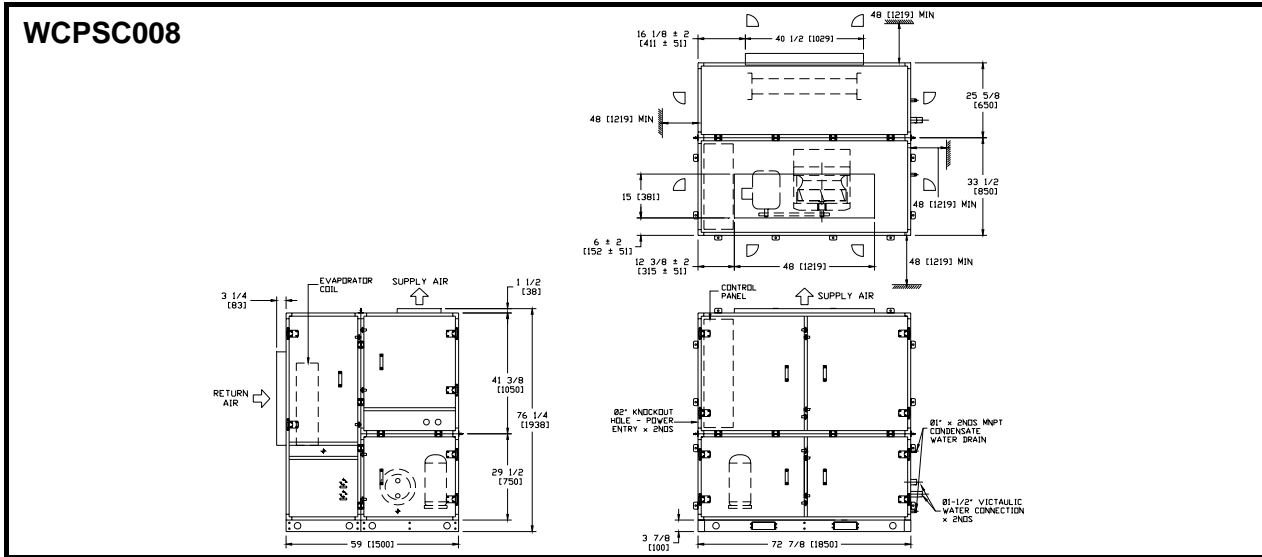
Product that perform...By people who care

ELECTRICAL DATA

575V/3PH/60Hz

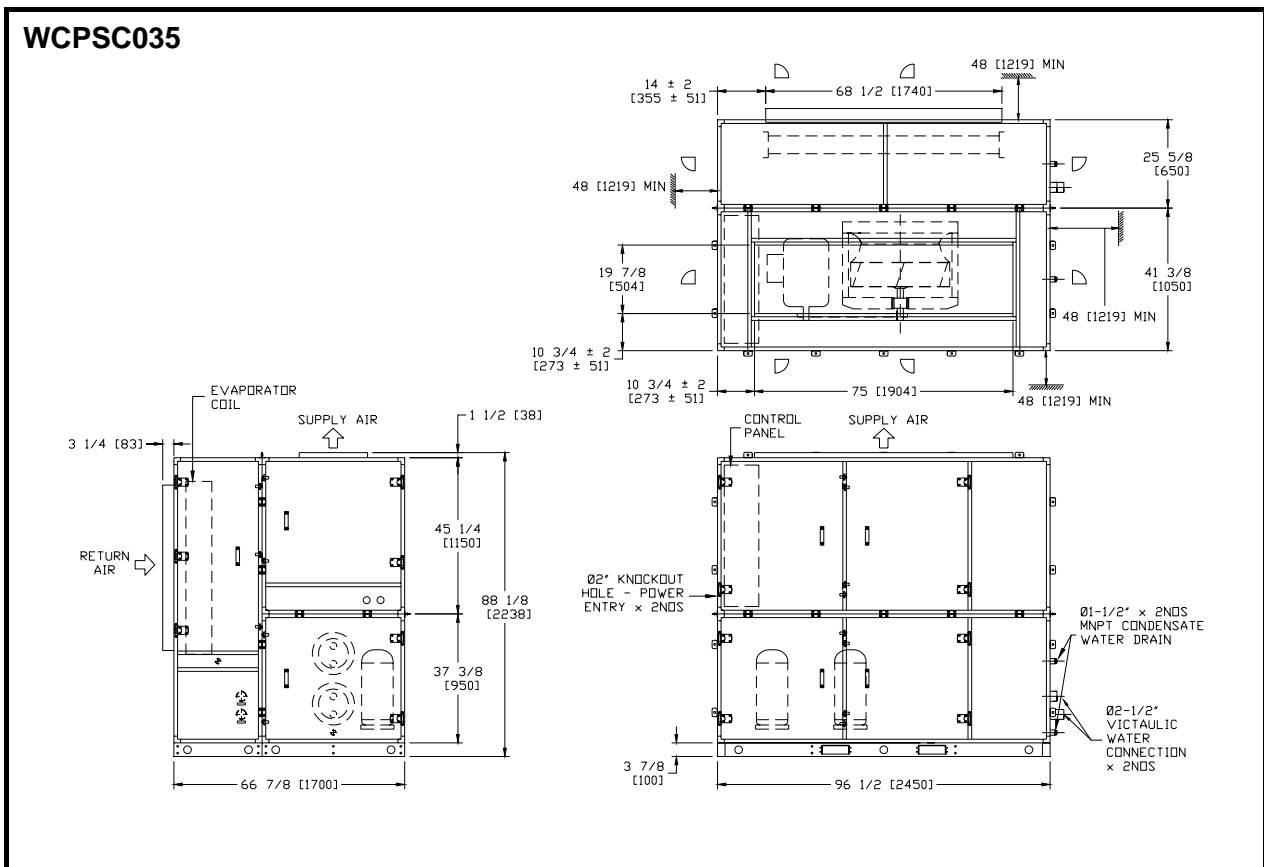
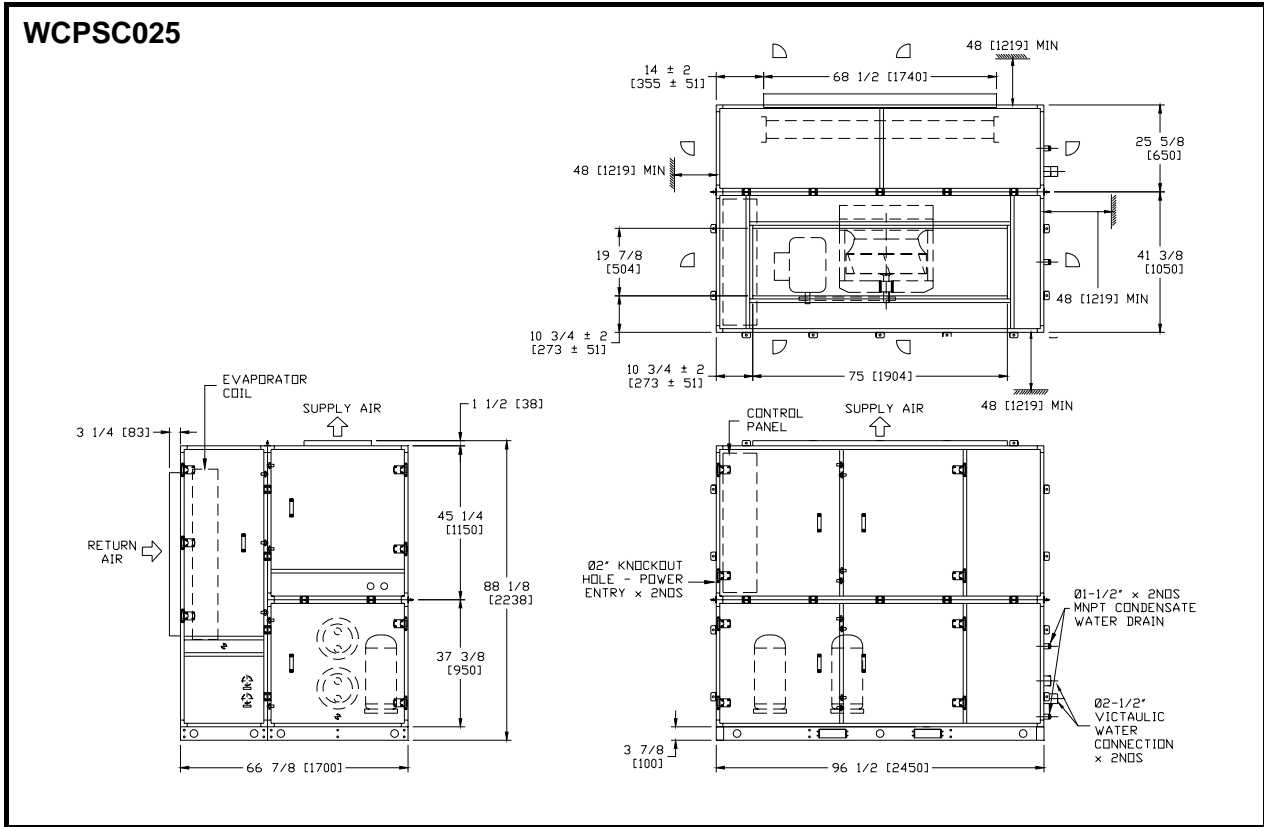
Model	Sys		Compressor		Compressor Rating			Evaporator Blower (Std.)			Unit Rating (Std.)		
	Qty	Power Supply	MRA (Each)	NRA (Each)	LRA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	LRA (Each)	FLA	MCA	MFS	
WCPSC008C	1	1	575V/3PH/60Hz	1x14.0	1x8.3	1x78.0	1	5.0	5.0	36.8	13.3	15	30
WCPSC010C	1	1	575V/3PH/60Hz	1x17.6	1x10.2	1x93.7	1	7.5	7.2	50.8	17.4	20	30
WCPSC015C	1	1	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0	1	7.5	7.2	50.8	22.0	26	40
WCPSC025C	1	1	575V/3PH/60Hz	1x23.0	1x12.6	1x100.0	1	10.0	9.4	64.8	34.6	38	50
	2	1	575V/3PH/60Hz										
WCPSC035C	1	1	575V/3PH/60Hz	1x37.0	1x18.8	1x132.0	1	15.0	13.8	92.8	51.4	56	80
	2	1	575V/3PH/60Hz										
WCPSC045C	1	1	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0	1	20.0	18.2	116.0	62.6	66	80
	2	1	575V/3PH/60Hz										
	3	1	575V/3PH/60Hz										
WCPSC055C	1	1	575V/3PH/60Hz	1x23.0	1x12.6	1x100.0	1	25.0	23.2	146.0	77.9	82	100
	2	1	575V/3PH/60Hz										
	3	1	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0							
	4	1	575V/3PH/60Hz										
WCPSC065C	1	1	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0	1	30.0	27.6	174.0	94.8	100	125
	2	1	575V/3PH/60Hz										
	3	1	575V/3PH/60Hz	1x37.0	1x18.8	1x132.0							
	4	1	575V/3PH/60Hz										
WCPSC080C	1	1	575V/3PH/60Hz	1x23.0	1x12.6	1x100.0	1	20.0	18.2	116.0	111.8	115	125
	2	1	575V/3PH/60Hz										
	3	1	575V/3PH/60Hz										
	4	1	575V/3PH/60Hz										
	5	1	575V/3PH/60Hz										
	6	1	575V/3PH/60Hz										
WCPSC090C	1	1	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0	1	20.0	18.2	116.0	125.3	129	150
	2	1	575V/3PH/60Hz										
	3	1	575V/3PH/60Hz										
	4	1	575V/3PH/60Hz										
	5	1	575V/3PH/60Hz										
	6	1	575V/3PH/60Hz										
WCPSC100C	1	1	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0	1	20.0	18.2	116.0	141.3	146	175
	2	1	575V/3PH/60Hz										
	3	1	575V/3PH/60Hz	1x37.0	1x18.8	1x132.0							
	4	1	575V/3PH/60Hz										
	5	1	575V/3PH/60Hz										
	6	1	575V/3PH/60Hz										
WCPSC115C	1	2	575V/3PH/60Hz	1x23.0	1x12.6	1x100.0	1	25.0	23.2	146.0	160.3	164	175
	2	2	575V/3PH/60Hz										
	3	2	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0							
	4	2	575V/3PH/60Hz										
WCPSC130C	1	2	575V/3PH/60Hz	1x31.0	1x14.8	1x109.0	1	25.0	23.2	146.0	180.8	186	200
	2	2	575V/3PH/60Hz										
	3	2	575V/3PH/60Hz	1x37.0	1x18.8	1x132.0							
	4	2	575V/3PH/60Hz										

DIMENSIONAL DATA



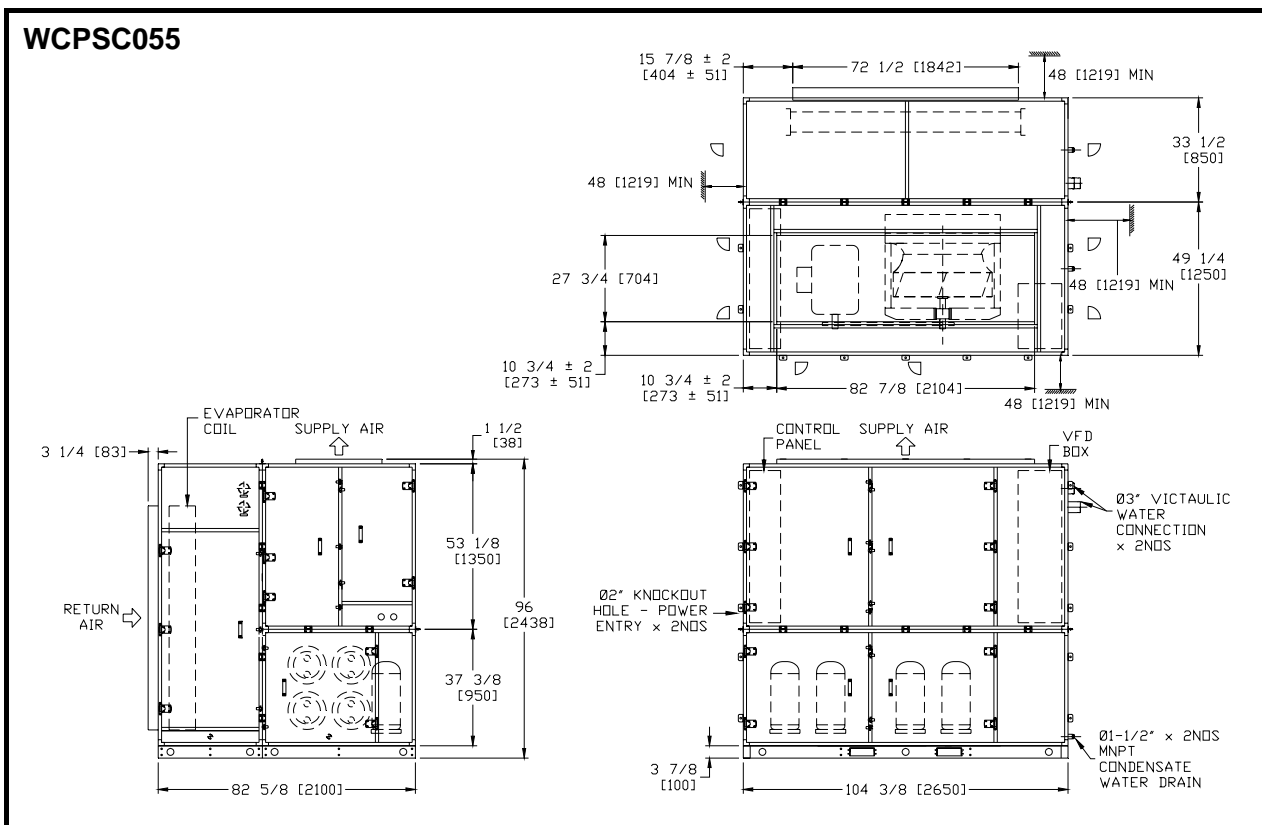
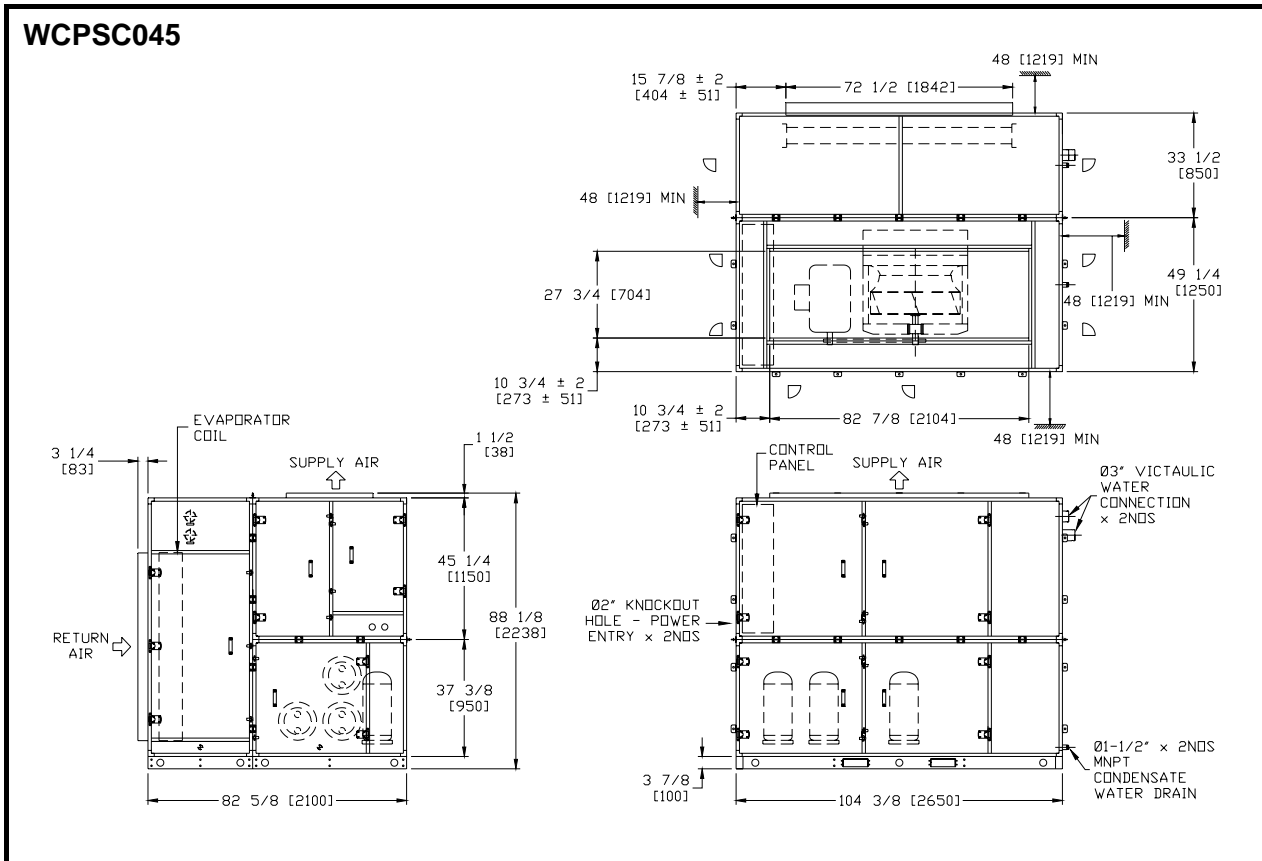
Notes: 1.) For heat pump, condenser shall be BPHE.
 2.) All dimensions are in inches [mm].

DIMENSIONAL DATA



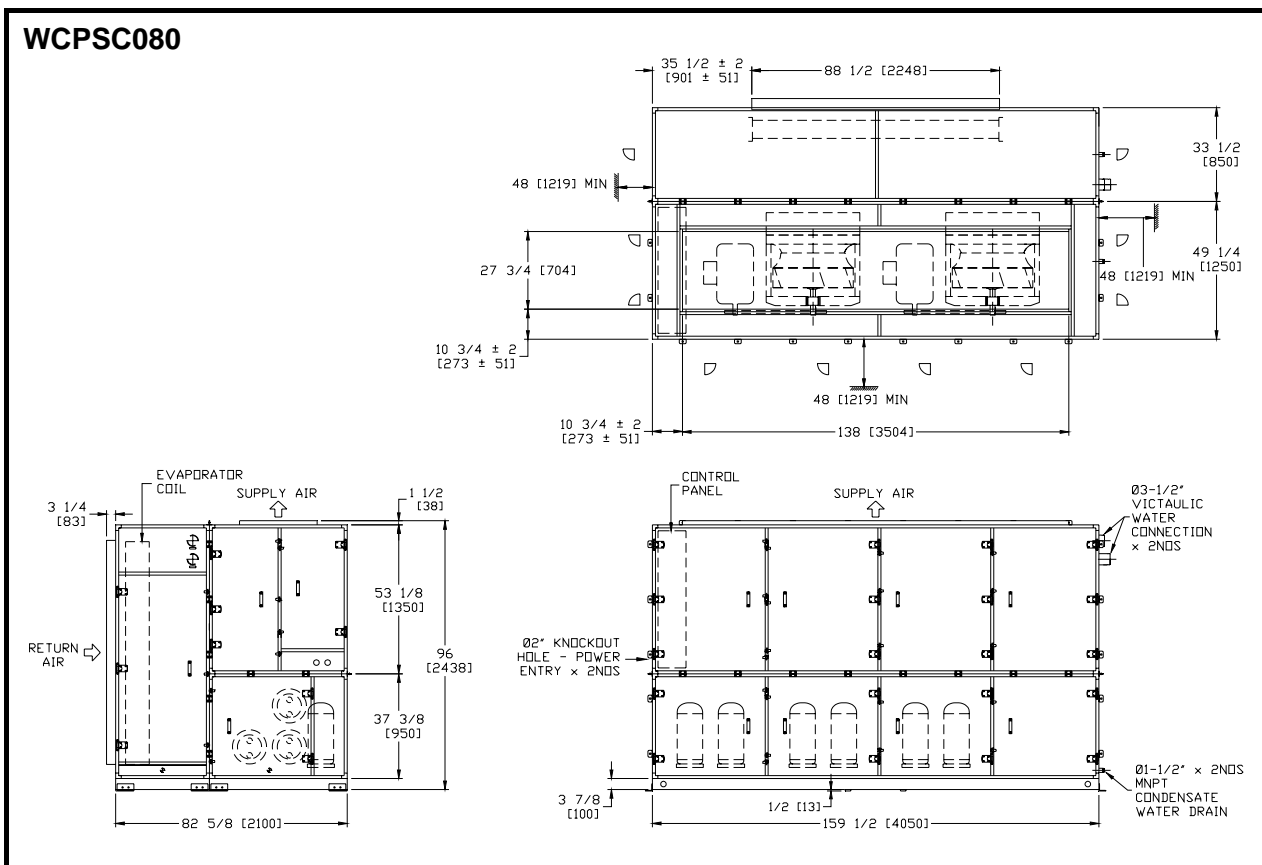
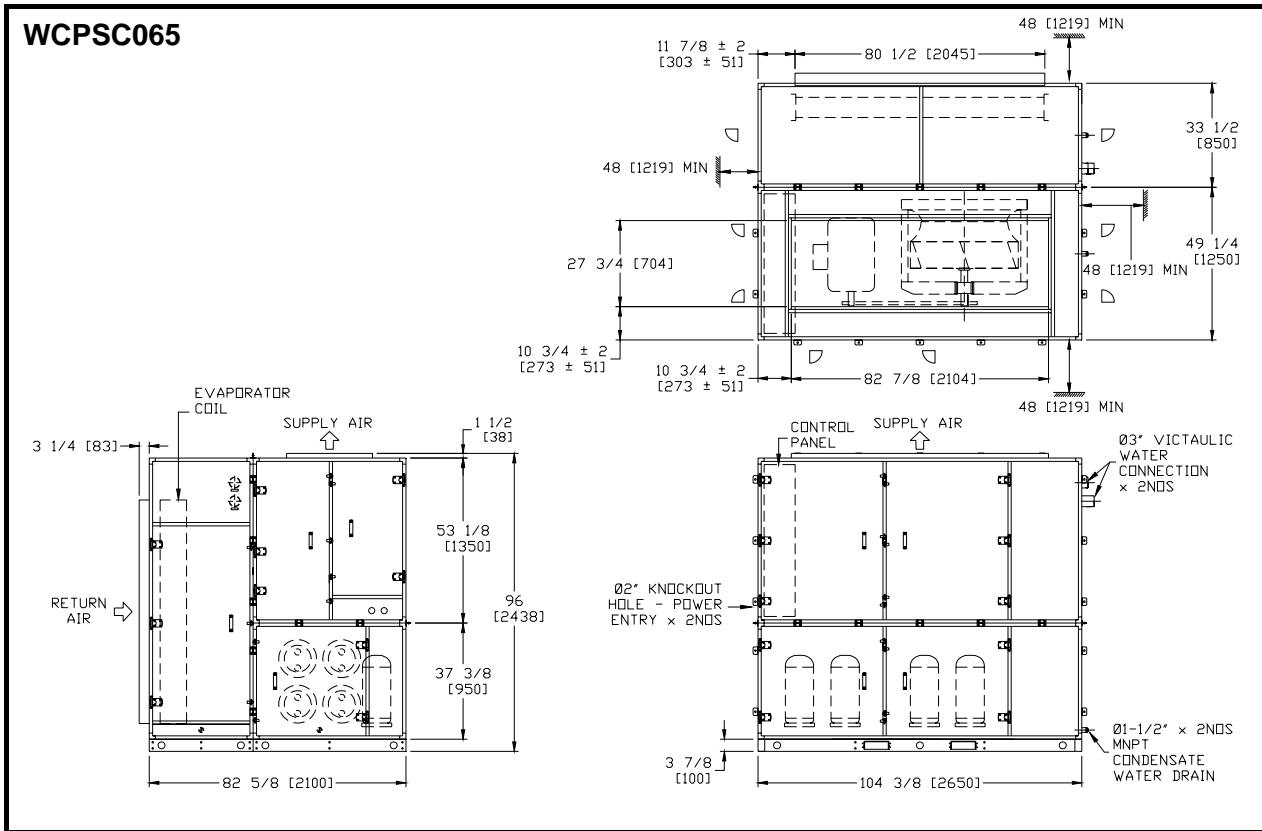
Notes: 1.) For heat pump, condenser shall be BPHE.
2.) All dimensions are in inches [mm].

DIMENSIONAL DATA



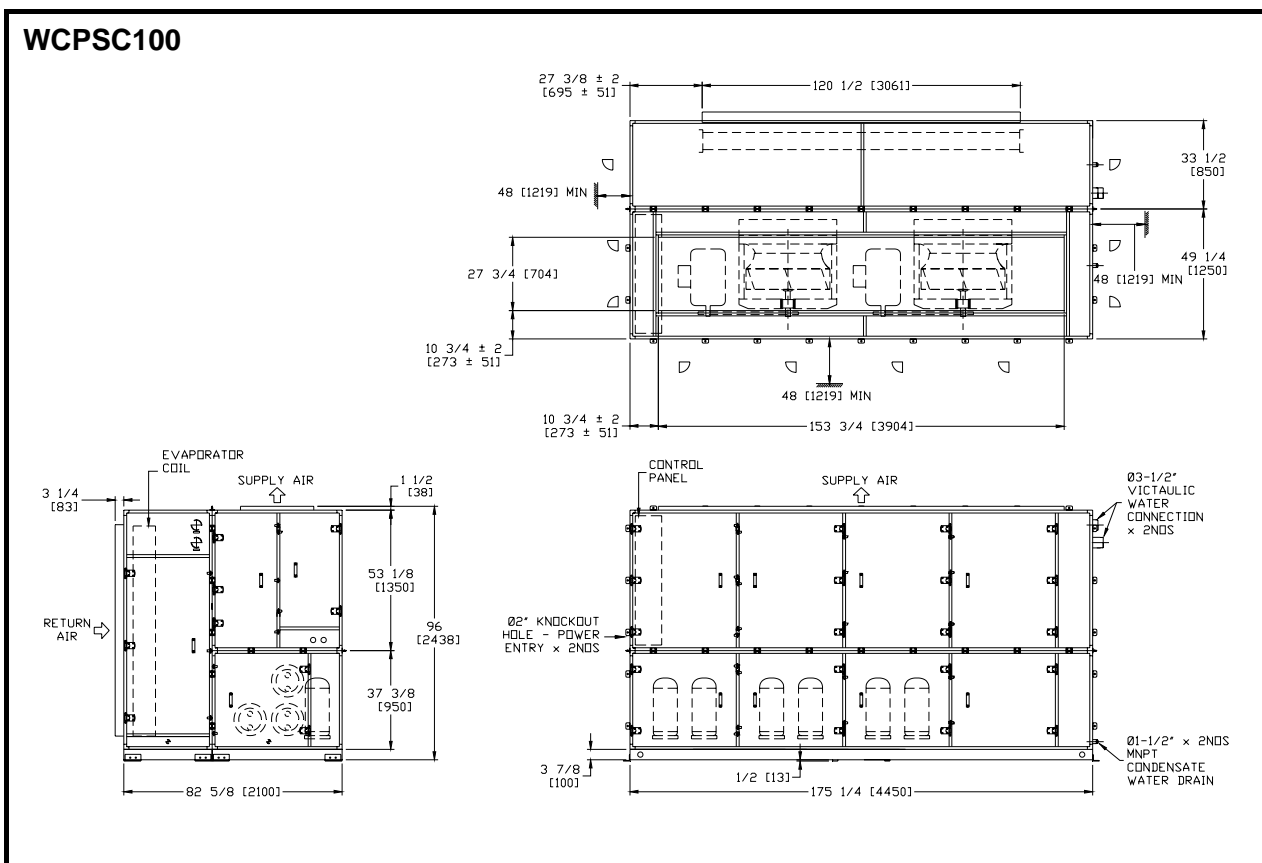
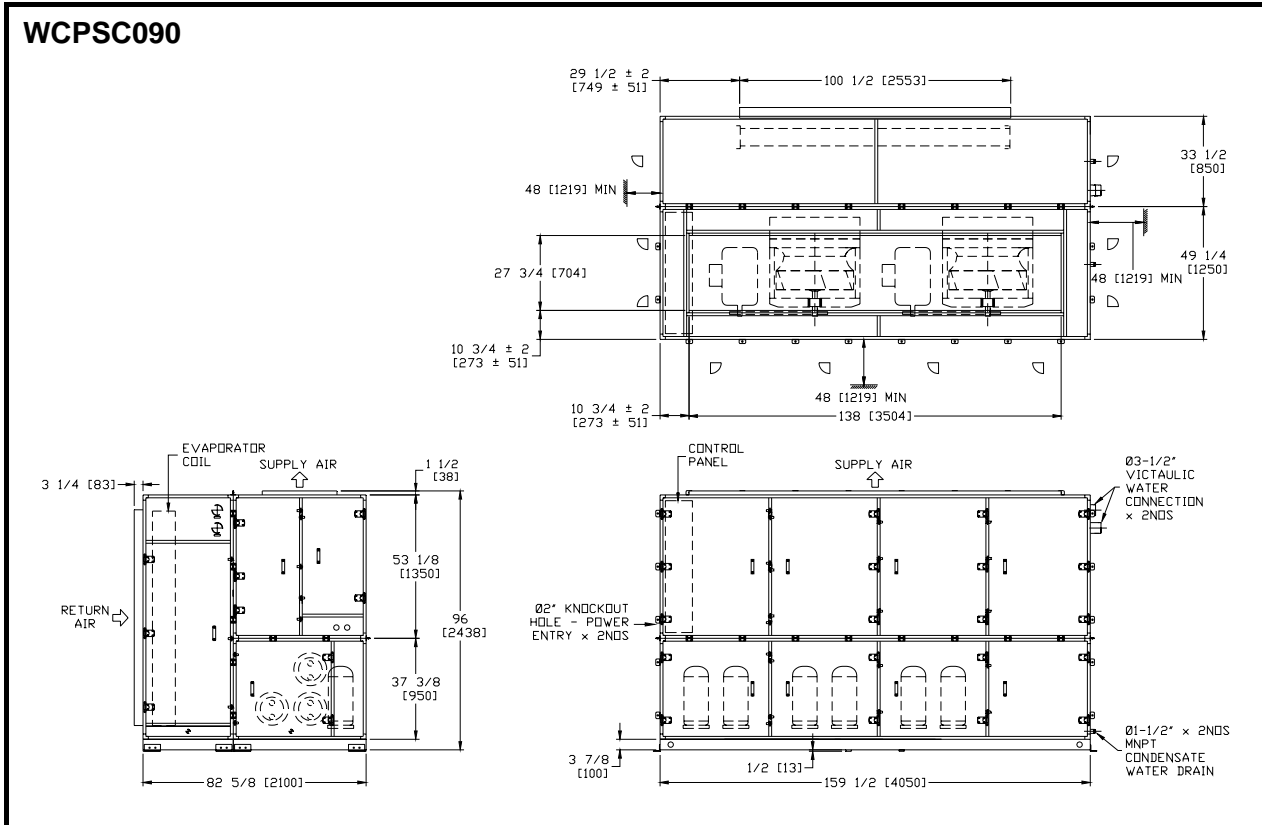
Notes: 1.) For heat pump, condenser shall be BPHE.
2.) All dimensions are in inches [mm].

DIMENSIONAL DATA



Notes: 1.) For heat pump, condenser shall be BPHE.
2.) All dimensions are in inches [mm].

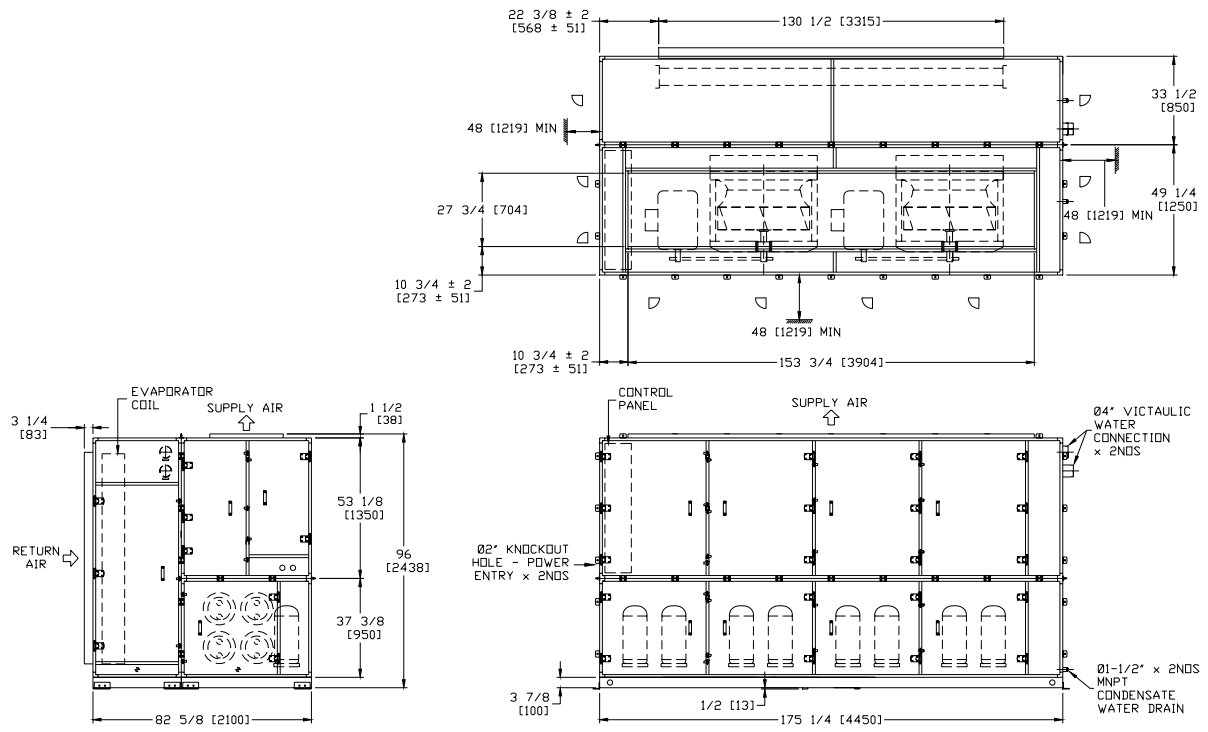
DIMENSIONAL DATA



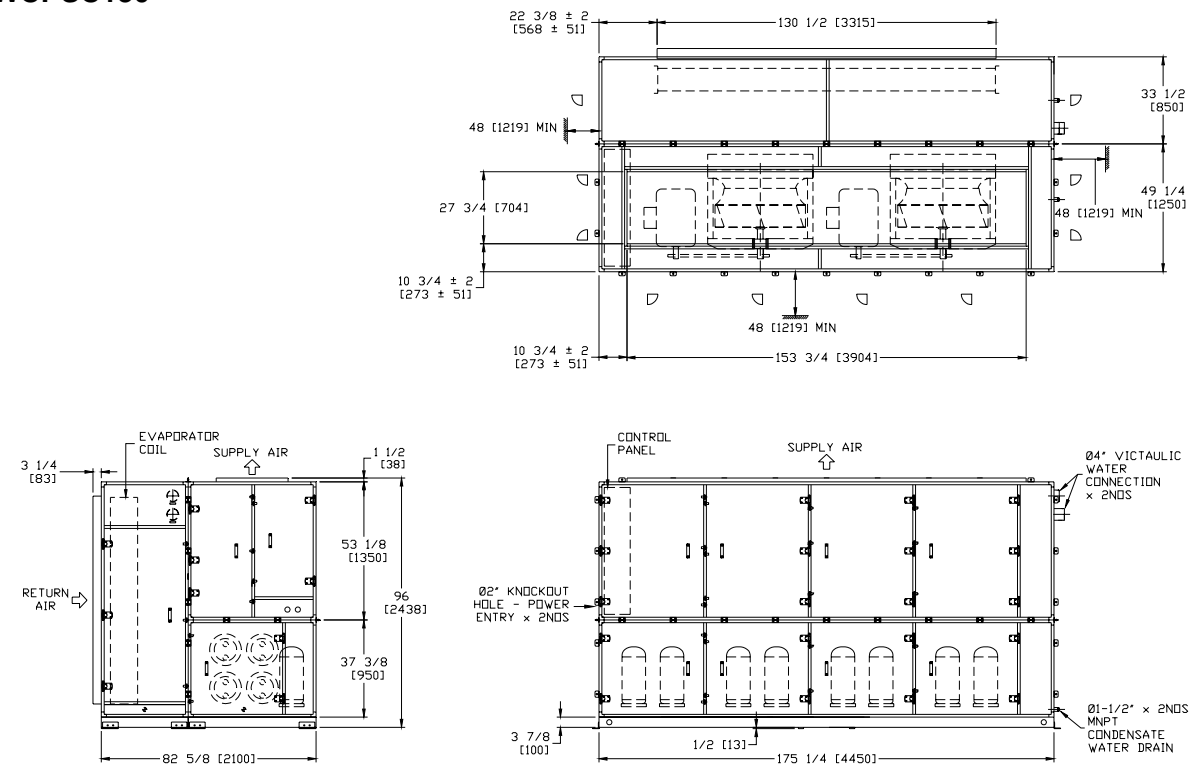
Notes: 1.) For heat pump, condenser shall be BPHE.
 2.) All dimensions are in inches [mm].

DIMENSIONAL DATA

WCPSC115

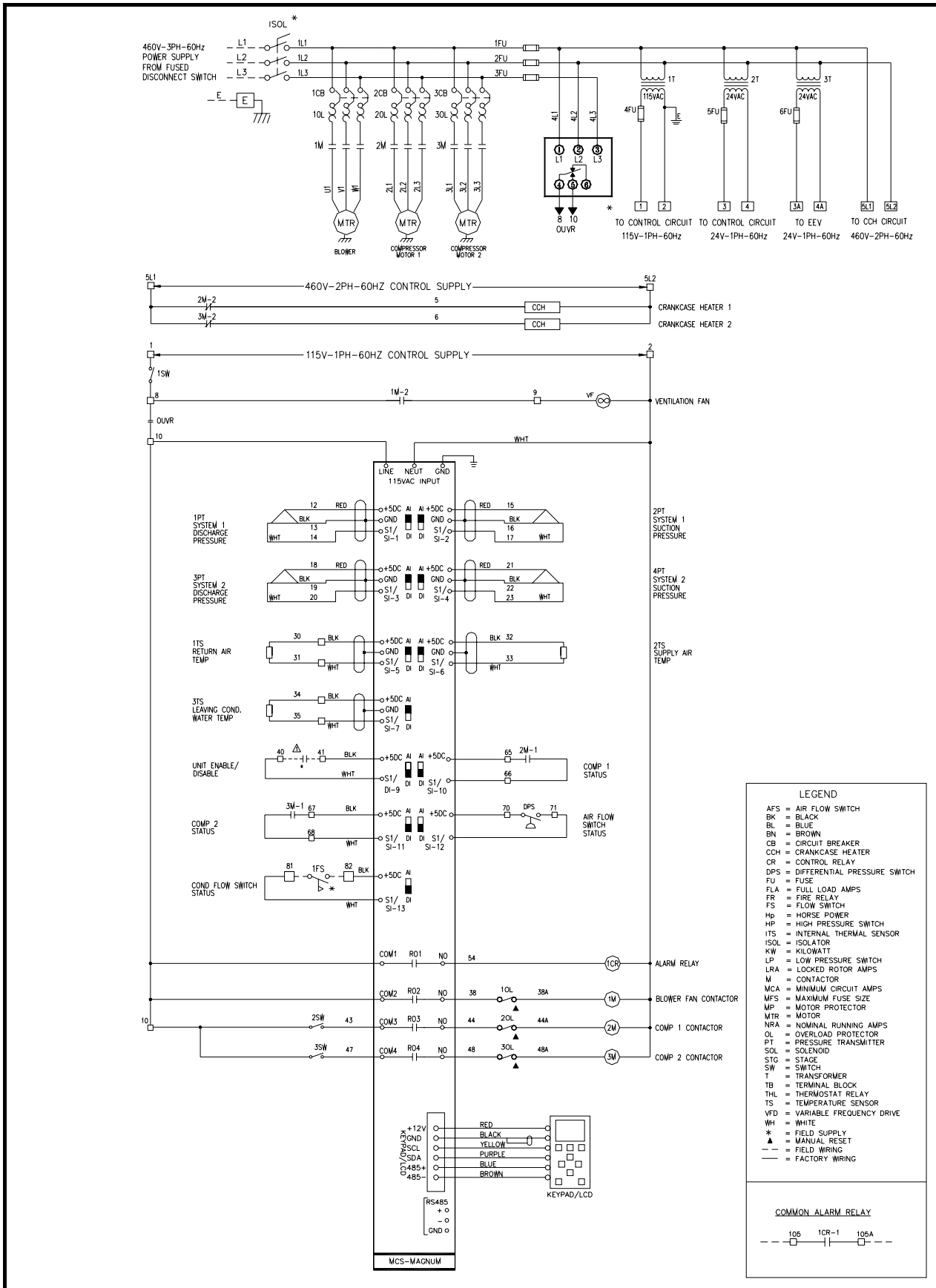


WCPSC130



Notes: 1.) For heat pump, condenser shall be BPHE.
2.) All dimensions are in inches [mm].

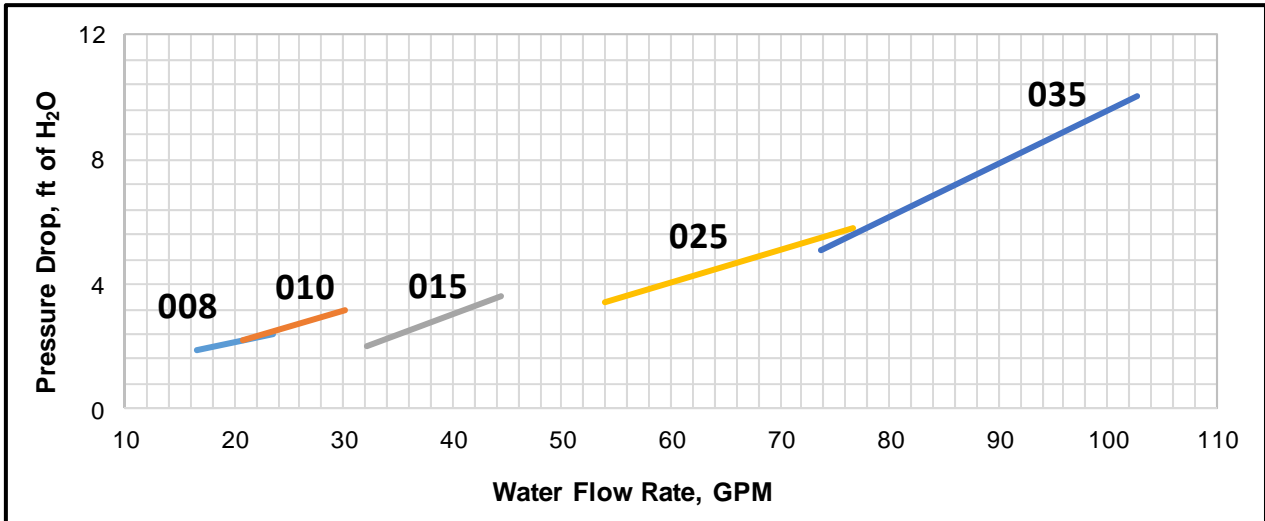
TYPICAL WIRING SCHEMATIC



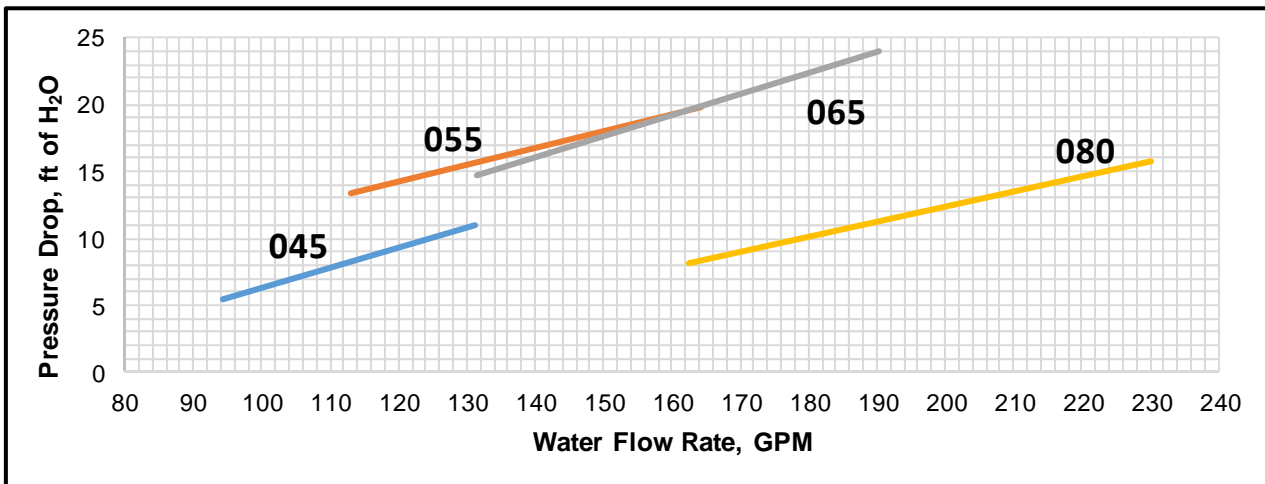
WATER PRESSURE DROP

STANDARD COOLING

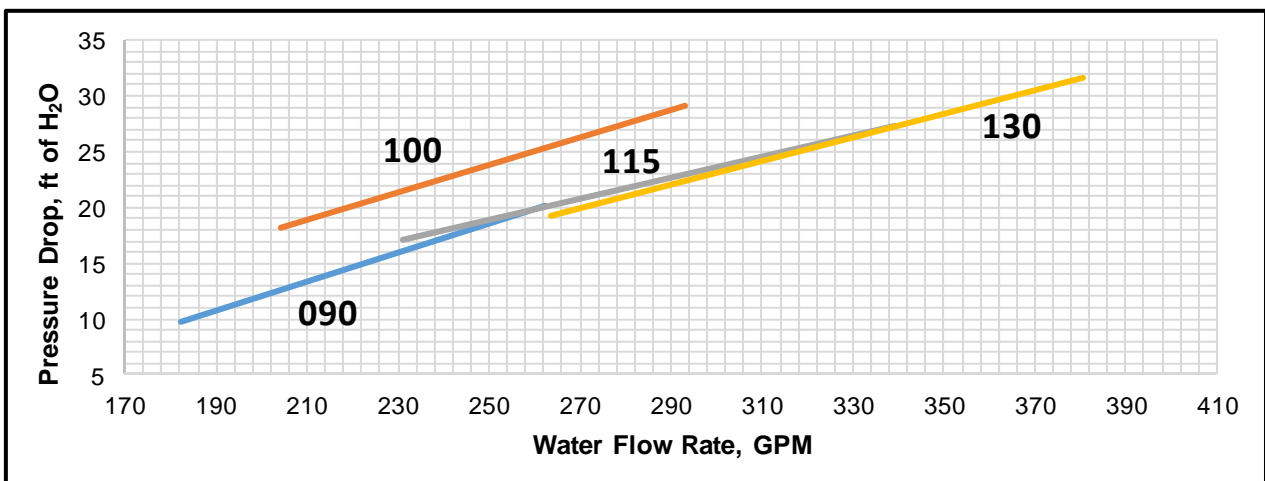
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WCPSC045, 055, 065, 080



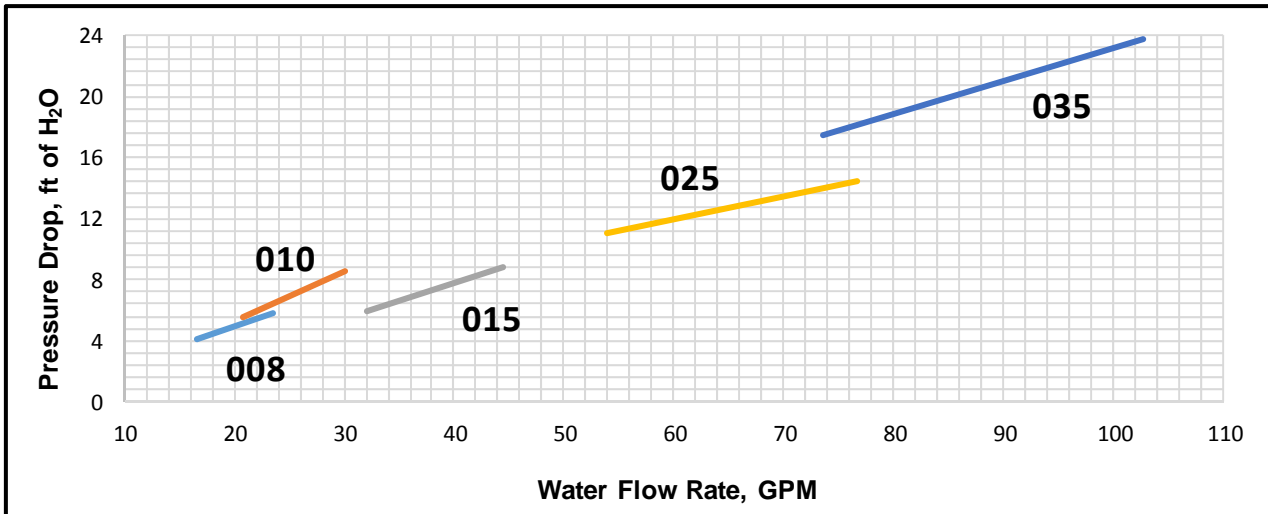
WCPSC090, 100, 115, 130



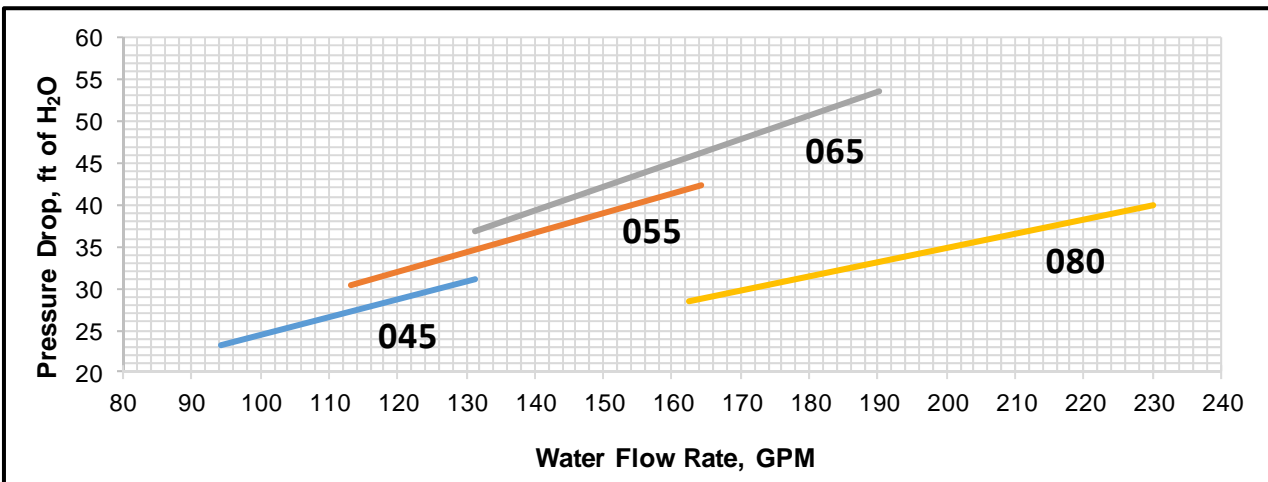
WATER PRESSURE DROP

STANDARD COOLING WITH WATERSIDE ECONOMIZER

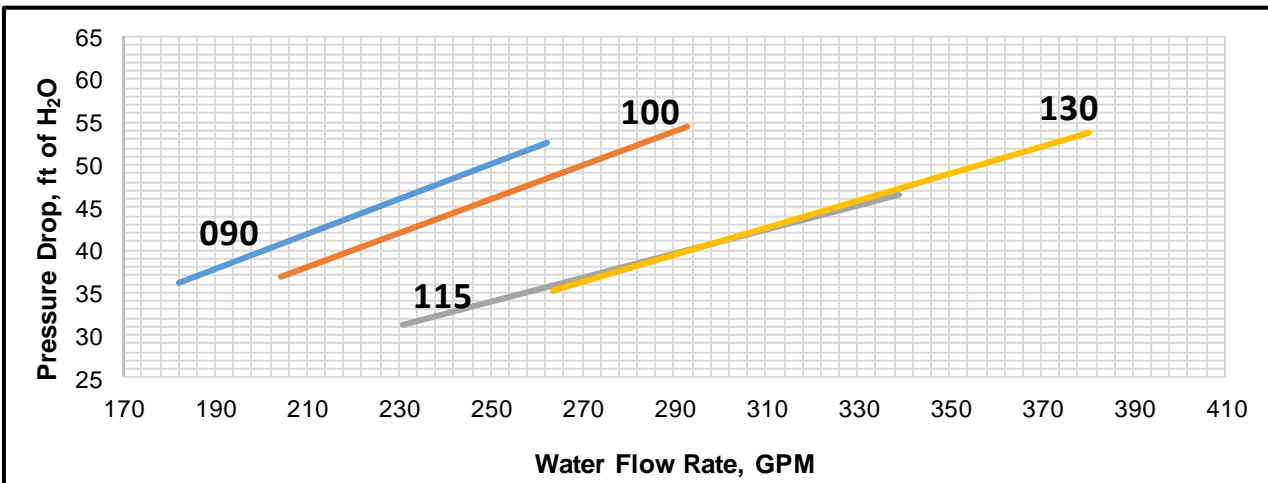
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WCPSC045, 055, 065, 080



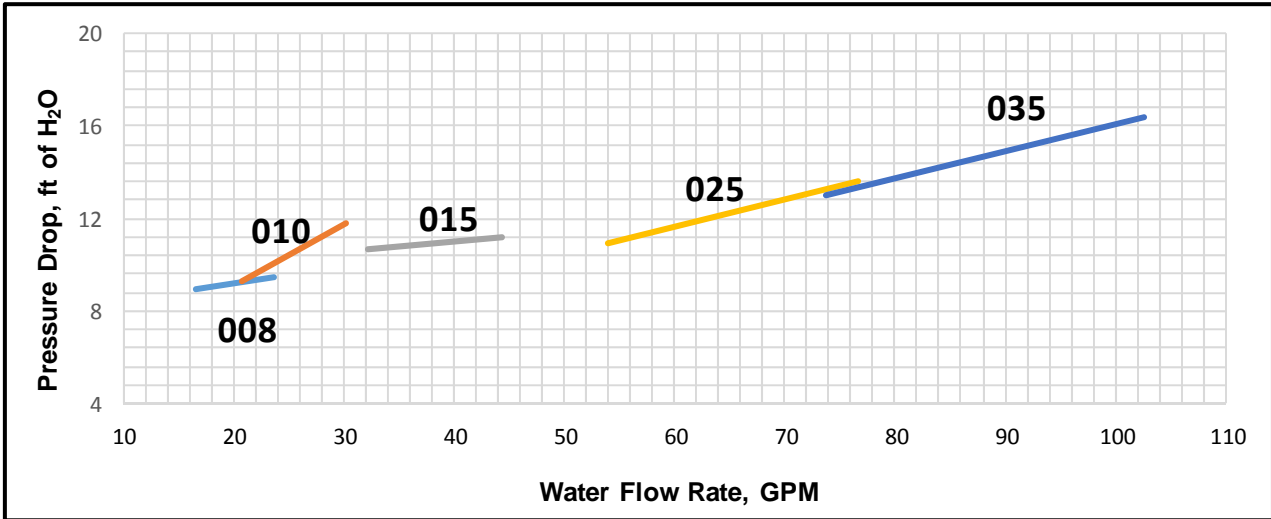
WCPSC090, 100, 115, 130



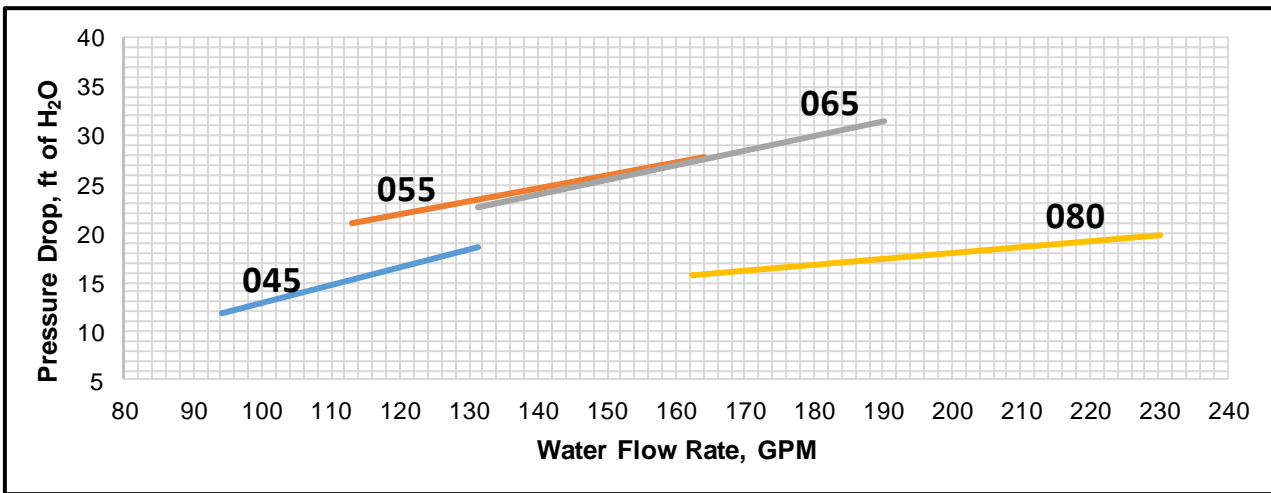
WATER PRESSURE DROP

HEAT PUMP OR COOLING WITH PHE CONDENSER

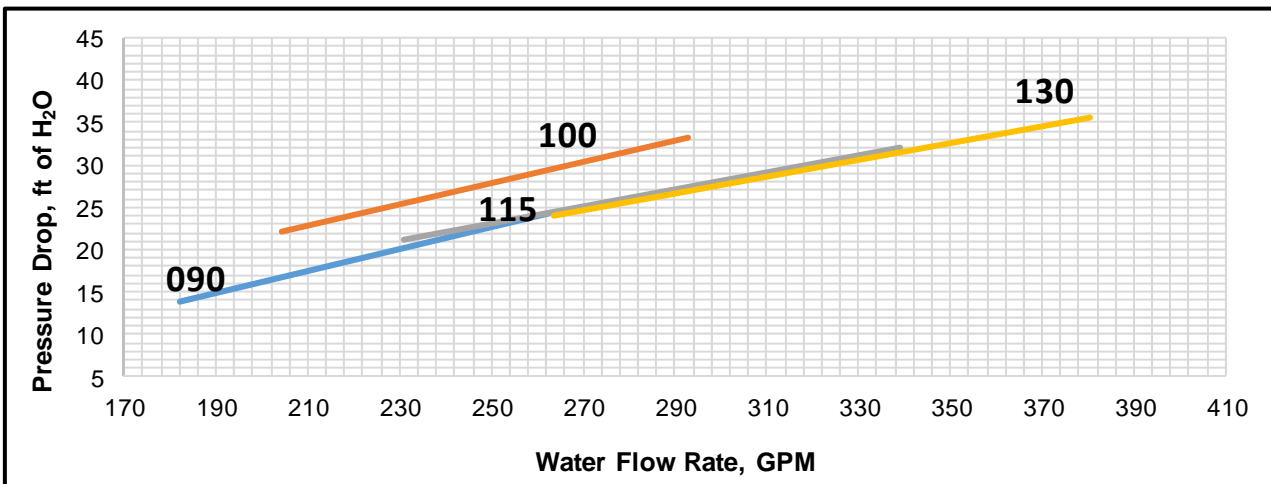
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WCPSC045, 055, 065, 080



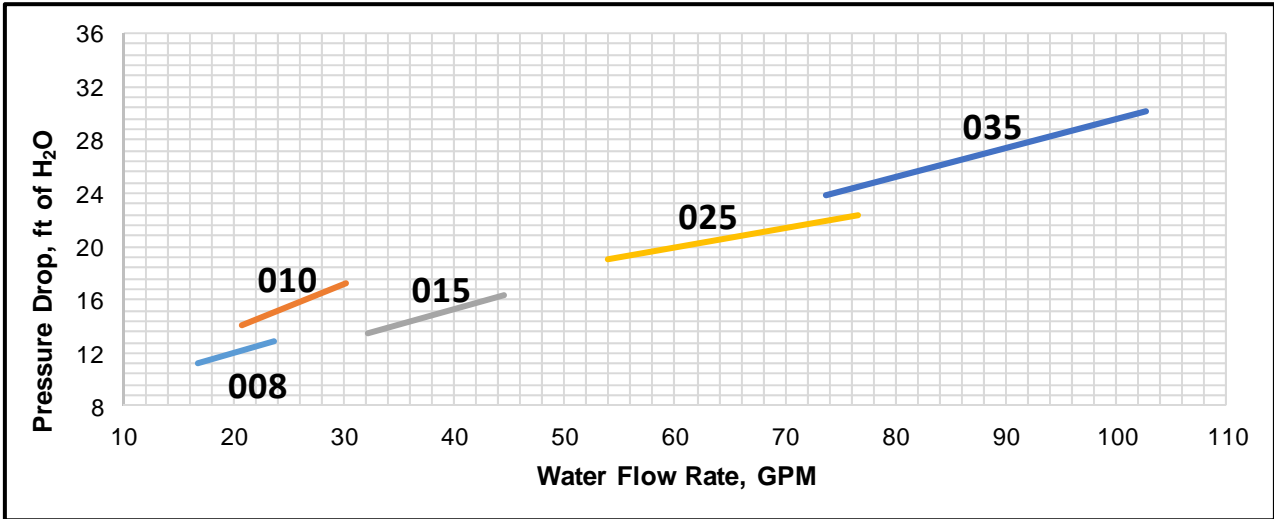
WCPSC090, 100, 115, 130



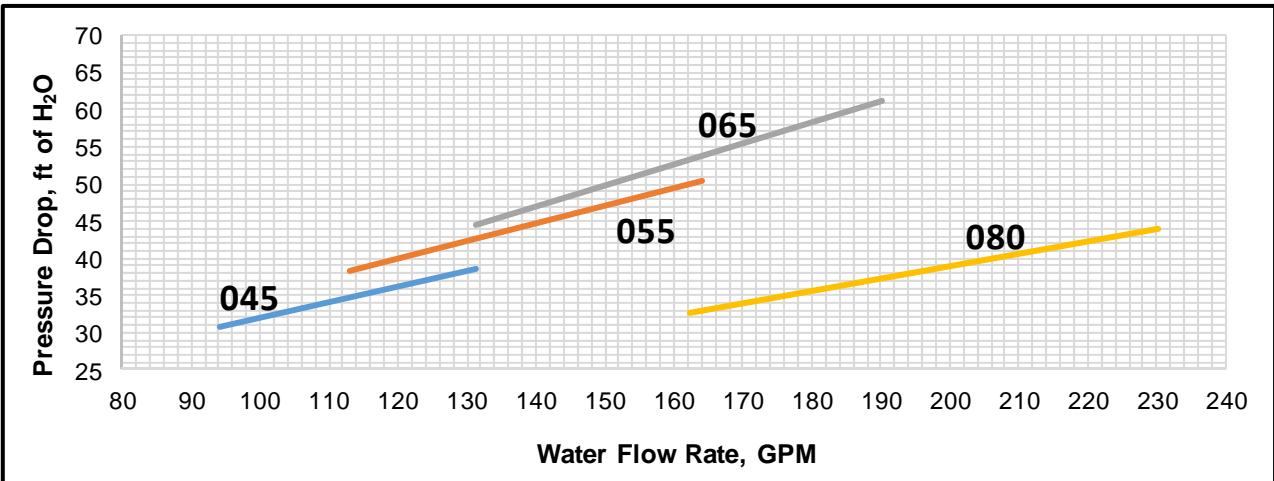
WATER PRESSURE DROP

HEAT PUMP WITH WATERSIDE ECONOMIZER

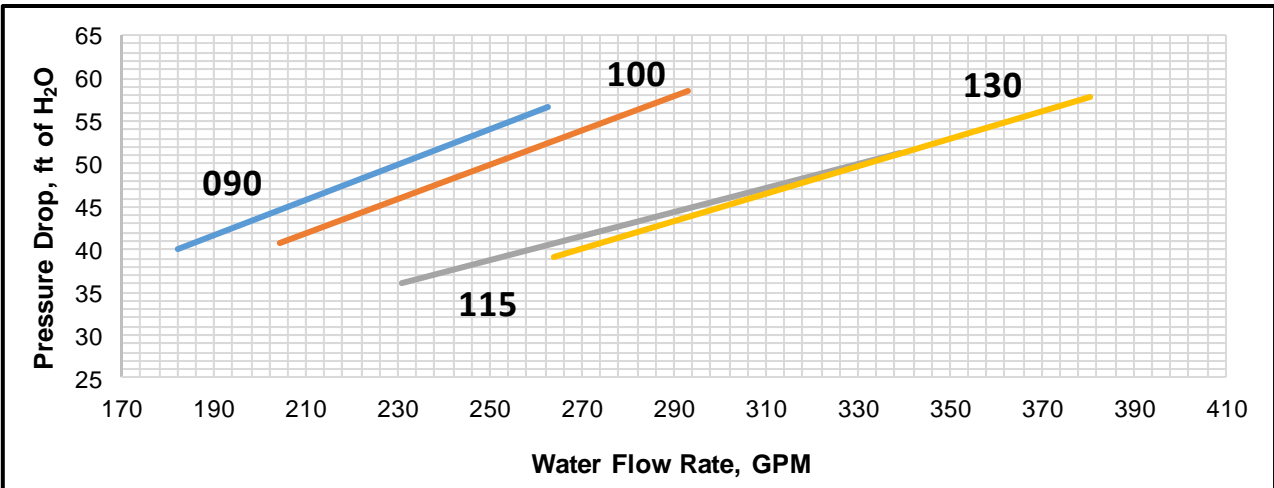
WCPSC008, 010, 015, 025, 035



WCPSC045, 055, 065, 080



WCPSC090, 100, 115, 130



GUIDE SPECIFICATIONS

1. GENERAL

Self contained water cooled packaged unit shall include compressor(s), evaporator coil with fan(s), shell and tube condenser or brazed plate heat exchanger (for heat pump application), refrigeration piping, electrical components and enclosing cabinet. The unit shall be factory assembled, internally wired, fully refrigerant charged with R410A (except for unit which shipped out in multiple sections - wiring and refrigerant charge need to be taken care by unit's installer). 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 2 inch thick double skin panels with injected polyurethane foam insulation with density 2.5lbs/ft³, sandwiched between galvanized steel. Hinged access doors shall be provided for easy service and maintenance of unit's internal parts. Unit base shall be constructed with heavy gauge formed sheet metal. Unit base's lifting holes shall be able to accept chains or cables for rigging.

Each unit will be comprised of three main sections:

- a) Evaporator Coil Section
- b) Compressor/Condenser Section
- c) Supply Fan Section

Special arrangement can be requested to allow unit to be disassembled into sections for access to the mechanical equipment room. To complete the sections assembly, electrical wiring and brazing (for refrigerant and water pipe) between sections is required.

3. COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isolators. 1, 2, 3, 4, 5 or 6 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, filter dryer, sight glass, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control as well as charging/access ports in each circuit. Capacity of each compressors shall not be greater than 15 horsepower. The compressors shall comply with the internationally recognized standards CE and UL.

4. CRANKCASE HEATERS

Each compressor shall have a crankcase heater

installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

5. 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 5 rows with 12 fins/inch spacing. Evaporator coil shall have interlaced or row split circuiting to keep full evaporator coil face active. 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. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

6. EVAPORATOR FAN

Supply fan(s) shall be belt driven backward curved plenum type fan. All fans shall be statically and dynamically balanced to ensure quiet operation and smooth performance. Supply fan's shaft shall be made from C45 carbon steel material and coated with anti-corrosion varnish. Supply fan's bearing shall use either deep groove ball bearings with an adapter sleeve, or spherical roller bearings sealed at both sides for different duty application. Bearings shall be permanently lubricated and maintenance free. Entire fan assembly shall be completely isolated from unit via spring isolation. Supply fan motor shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating with class F insulation.

7. CONDENSER

Condenser shall be ASME shell and tube type and mechanically cleanable. Condenser shall have removable water heads to clean tubes. Condenser shall be constructed with 3/4" copper finned tubes with integral subcooling circuit to maximize the system efficiency. Condensers shall be factory manifolded so that installer just require to provide single supply and return cooling tower water connections for low cost field hook up. Condenser shall be designed for 560 psig refrigerant (shell) side and 300 psig waterside (tube) working pressure. Each condenser shall be equipped with a hi pressure relief valve with a 3/4" female NPT connection (to facilitate connection to the vent piping and run it outside the building). Condenser(s) shall have ball valve(s) or manual balancing valve(s) at before or after the condenser's supply or return water connection. A galvanized and painted drain pan shall be provided underneath the condensers.

GUIDE SPECIFICATIONS

8. BRAZED PLATE HEAT EXCHANGER (HEAT PUMP APPLICATION)

Brazed plate heat exchanger (BPHE) shall consist of a package of copper brazed corrugated metal plates with port holes allowing the two fluid to form a counter current parallel flow. The plates are constructed from AISI 316 stainless steel with copper as brazing material. Each plate has herringbone corrugations to optimize heat transfer with nominal pressure losses and provide support to adjacent plates through brazing points. The construction complies with ASME Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels", Division 1. All BPHEs are factory tested in accordance with Pressure Equipment Directive (PED) standards. All BPHEs are PED certified and UL listed. ASME approval is optional and available on request. BPHE must be installed in accordance with manufacturer's recommendations, drawings and installation manual. A strainer with 16 to 20 meshes shall be field installed prior to the inlet of the heat exchanger.

9. FILTERS, HIGH EFFICIENCY MERV 8

Unit shall be provided with 2" thick disposable high efficiency pleated filters having average dust spot efficiency of 25-35% in accordance with ASHRAE52-76. Filter(s) shall be either front loading or side loading.

10. ELECTRICAL CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge steel with epoxy painted for excellent finished, weatherability and corrosion resistance. Hinged and lock type access door shall be provided for easy access and security.

The control panel shall be completely factory wired and shall include standard IEC DOL with fixed speed compressor and evaporator fan motor circuit breaker and contactors, compressor and evaporator fan motor thermal overload relays, anti-recycling time delay, fuse, power and control circuit terminal blocks and features 115V or 24V controls with 460V/3Ph/60Hz, 208V/3Ph/60Hz, 230V/3Ph/60Hz or 575V/3Ph/60Hz power supply with earth. The units control panel is fully wired ready to accept the main power supply (except for unit whereby sections are intended to disassemble, simple wiring connection shall be fulfilled at field).

11. DB Director Controller

The unit shall be provided with DB Director control system with the following features,

- The control algorithm and parameters shall be stored in flash memory and EPROM of the

controller and shall retain even in the event of power failures, without requiring external backup battery

- User Interface with Display
- Temperature controlled
- Configurable by user
- Alarm status/display
- Analog input/output display
- Digital input/output status
- Remote start/stop input
- General alarm output
- Self-diagnostics
- Security password access with multiple access level for advanced settings
- Unit status display

Built-in BMS Communication

Modbus RTU / Bacnet MSTP communication protocol is built-in to the main controller and comes as a standard feature for DB Director. For DB Director controller, Bacnet IP, Modbus IP or Modbus RTU comes as a standard in built feature.

Pressure Transducers on Suction & Discharge line

Pressure transducers are provided as standard in suction and discharge lines of each system. The operating pressure reading will be displayed on the controller user interface.

12. OPTIONS

12.1 Inverter Compressor

Unit's 1st system shall be equipped with the high efficiency inverter compressor whilst fixed speed compressor(s) for the rest of the system(s). All compressors shall be scroll, hermetically sealed, refrigerant gas cooled, quiet running and supported on rubber mounts to minimize vibration.

The inverter compressor motor shall be a permanent magnet type and matched with a specially designed, variable frequency drive which modulates the speed of the compressor motor and provides several compressor protection functions.

The inverter compressor shall include electronic expansion valve (EEV) while thermal expansion valve with external equalizer for other fixed speed compressor(s). The compressors shall comply with the internationally recognized standards CE and UL.

The variable speed compressor shall be capable of speed modulation from 25Hz to a maximum of 100Hz. The unit minimum capacity shall be 25% of full load. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures.

GUIDE SPECIFICATIONS

The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized control shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

12.2 Direct Driven Plenum Fan

Direct driven backward curved plenum fan shall be provided as the supply fan in lieu of belt driven plenum fan. Direct driven plenum fan's shaft shall be made from C45 carbon steel material and coated with anti-corrosion varnish. Direct driven plenum fan's bearing shall use either deep groove ball bearings with an adapter sleeve, or spherical roller bearings sealed at both sides for different duty application. Bearings shall be permanently lubricated and maintenance free. Fan wheel shall be statically and dynamically balanced to ISO1940 and AMCA 204 – G2.5 standard. Entire fan assembly shall be completely isolated from unit via spring isolation. Fan motor shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating with class F insulation. The fan motor speed modulation shall be provided via factory installed variable frequency drive (VFD).

12.3 EC Evaporator Fan

In lieu of standard belt driven plenum supply fan, high efficiency direct driven backward curved plenum fan(s) shall be provided. The backward curved plenum fan shall be driven with electronically commutated (EC) motor. Fan speed can be stepped to requirements or continuously variable using a 0–10V DC control signal.

12.4 Belt Guard (for belt drive application)

Belt guard for supply fan shall be provided to protect personnel from the moving drive parts (pulley and belt).

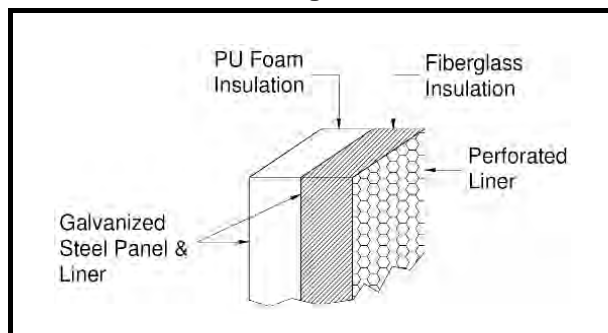
12.5 Discharge Plenum

Discharge plenum shall be provided to route vertical discharge air to horizontal. Discharge plenum shall be constructed from 2 inch double skin panels with injected polyurethane foam insulation with density 2.5lbs/ft³, sandwiched between galvanized steel. Discharge plenum's framework shall be constructed from extruded aluminum post with nylon corners/joints.

12.6 Discharge Plenum with Sound Attenuating Baffle

Discharge plenum stated in 12.5 shall be provided with additional sound attenuating baffle consisting of 2" fiberglass insulation suppressed by perforated liner. See figure 12.6

Figure 12.6: Foam Panel with Sound Attenuating Baffle



12.7 Wrap-Around Heat Pipe

Wrap around heat pipe shall be provided to pre-cool incoming hot air and re-heat air that passed through the cooling coil (which located at the middle of the wrap-around heat pipe). Heat pipe pre-cool and re-heat coil shall be 2 rows with fins/inch spacing not more than 12.

12.8 Brazed Plate Heat Exchanger (only available to Cooling Only models)

Brazed plate heat exchanger (BPHE) shall consist of a package of copper brazed corrugated metal plates with port holes allowing the two fluid to form a counter current parallel flow. The plates are constructed from AISI 316 stainless steel with copper as brazing material. Each plate has herringbone corrugations to optimize heat transfer with nominal pressure losses and provide support to adjacent plates through brazing points. The construction complies with ASME Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels", Division 1. All BPHEs are factory tested in accordance with Pressure Equipment Directive (PED) standards. All BPHEs are PED certified and UL listed. ASME approval is optional and available on request. BPHE must be installed in accordance with manufacturer's recommendations, drawings and installation manual. A strainer with 16 to 20 meshes shall be field installed prior to the inlet of the heat exchanger.

12.9 Condenser Head Pressure Control

Head pressure control shall be provided when entering condenser water is below 55°F and waterside economizer is not available. Head pressure control shall consist of a two way modulating valve with spring return actuator. Valve actuator shall be controlled through the unit control system to maintain refrigerant head pressure by reducing water flow when necessary to allow proper functioning of the thermostatic expansion valves. A bypass valve must be added if the system is intended for constant pumping (please consult factory for this design if required).

GUIDE SPECIFICATIONS

12.10 Water Regulating Valve

A two way water regulating valve(s) with spring return actuator(s) shall be provided at the water outlet(s) of each condenser(s). Valve actuator shall be controlled through the unit control system to maintain the designated refrigerant head pressure. A bypass valve must be added if the system is intended for constant pumping. (please consult factory for this design if required).

12.11 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.

12.12 Hot Water Heating Coil

Hot water coil shall be located at the upstream of cooling or waterside economizer coil. Hot water coil shall be constructed from 1/2" copper tubing. Hot water coil shall be 1 row with fins/inch spacing not more than 14. Coil tubes are mechanically bonded to aluminum fins with galvanized coil plates. Hot water coil shall provide vent and drain connection. Hot water coil shall be factory leak and pressure tested to 300psig (21bar) under water.

12.13 Steam Heating Coil

Steam coil shall be located at the upstream of cooling or waterside economizer coil. Steam coil shall be of the extended surface type, constructed from 5/8" copper tubing and having plate fins of aluminum extending at right angles to the tubes. Steam coil shall be double tube coils having internal steam distributing tubes not less than 3/8" in outside diameter with directional kinetic orifices paced at suitable intervals to provide positive condensate removal and uniform steam distribution over the entire face of the coil. Coil tubes are mechanically bonded to aluminium fins with galvanized coil plates. Steam coil shall be maximum of 2 rows with fins/inch spacing not more than 14. Steam coil shall be factory leak and pressure tested to 400psig (28bar) under water.

12.14 Modulating Hot Gas Reheat

Hot gas reheat coil (aluminum fin copper tuber) shall be provided downstream of evaporator cooling coil for dehumidification purpose

12.15 Waterside Economizer

Waterside economizer shall include a 4 row 1/2" tube coil with fins/inch spacing not more than 12 FPI, control valves, water temperature sensor,

shut off valve(s) (at economizer coil outlet), and water piping. Economizer coil shall provide vent and drain connection. Economizer coil shall be factory leak and pressure tested to 300psig (21bar) under water.

12.16 Airside Economizer

Airside economizer shall include a mixing box which comprised of low leak opposed blade type outdoor air and return air damper, 0 to 100% fully modulating damper actuator (spring return type) on outside air and return air damper and dry bulb sensors.

12.17 Exhaust Fan System (Airside economizer must be selected)

Exhaust fan option shall include belt driven DIDW (Double Inlet Double Width) forward curved fan as the exhaust fan. The exhaust fan shall be supplied together with TEFC exhaust fan motor, belts and pulleys and VFD. Low leak opposed blade type return air damper and its corresponding 0 to 100% fully modulating damper actuator (spring return type) shall be supplied. The exhaust shall include a backdraft damper. A building pressurization sensor shall be used to sense the pressure difference between indoor and outdoor ambient atmospheric pressure. The exhaust fan will automatically turn on and regulate the VFD fan speed to reduce the indoor pressure whenever necessary.

12.18 Return Fan System (Airside economizer must be selected)

Return fan option shall include direct driven backward curved plenum fan as the return fan. The return fan shall be supplied together with TEFC return fan motor and VFD. Low leak opposed blade type exhaust and return air damper and their corresponding 0 to 100% fully modulating damper actuator (spring return type) shall be supplied. Return fan shall operate whenever supply fan is in operation. A building pressurization sensor shall be used to sense the pressure difference between indoor and atmospheric pressure. The unit exhaust damper shall modulate to reduce the indoor pressure whenever necessary. When economizer option is selected, the return air damper shall modulate based on the economizer cooling demand. Return fan speed shall modulate accordance to duct static pressure.

12.19 Discharge / Suction / Liquid Line Service Valves

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

GUIDE SPECIFICATIONS

12.20 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

12.21 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.

12.22 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.

12.23 Electronic Expansion Valve (EEV)

In lieu of standard thermal expansion valve equipped on fixed speed compressor's system, electronic expansion valve (EEV) shall be provided for precise superheat control.

12.24 Liquid Line Solenoid Valve (LLSV)

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

12.25 High and Low Pressure Gauges

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

12.26 4-Inch Filters on top of standard 2-Inch Filters (2+4" Filter)

Optional 4 inches thick MERV14 disposable pleated filters shall be supplied on top of the standard 2 inches MERV8 filter.

12.27 Door Interlock Main Incoming Isolator

Incoming Isolator shall be provided to isolate the main incoming power supply to the unit.

12.28 Indicating Lights

Indication shall be provided for Supply fan run, overload trip, compressor run high pressure trip and overload trip.

12.29 UVR/Phase Failure Protect

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

12.30 Interface Module

Bacnet IP, Bacnet MSTP / Lonworks communication protocol comes as an add on

option apart from the standard available features shall be provided.

12.31 Lock Out Stop

Emergency stop switch shall be provided for Blower Fan.

12.32 Differential Pressure Switch for Evaporator Blower

Differential pressure switch shall be provided to interlock with the control circuit. It is used to sense air flow and feedback to the controller.

12.33 Electric Heater (include starter)

Electric heater shall be provided for heating purpose. Electric heater is interlock with supply fan and will turn off if supply fan fails. Heater high temperature limit switch acts as a safety switch to cut off the heater in case of sensing high temperature. Contactor and circuit breaker shall be provided for electric heater.

12.34 CO₂ Sensor

The CO₂ sensor shall have the ability to monitor the concentration (parts per million, ppm) of CO₂ (Carbon Dioxide) in the air. As the CO₂ concentration changes, the outside air damper modulates. The sensor shall be duct mounted and field wired back to the unit.

12.35 VFD for Evaporator Blower Motor

Variable Frequency Drive (VFD) on evaporator blower motor shall be provided (for belt driven plenum fan application only).

12.36 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.

12.37 Supply Duct Static Pressure Sensor

Duct static pressure sensor shall be supplied to be installed in the supply duct to monitor the static pressure. This sensor shall be supplied to control the supply fan vfd speed.

12.38 Building Pressurization Sensor

Building pressurization sensor shall be supplied to be installed in cooling space to monitor the room pressurization level. This sensor shall be used to on / off the exhaust fan and modulate the speed when necessary to maintain standard room pressurization level.

12.39 Convenience Outlet



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