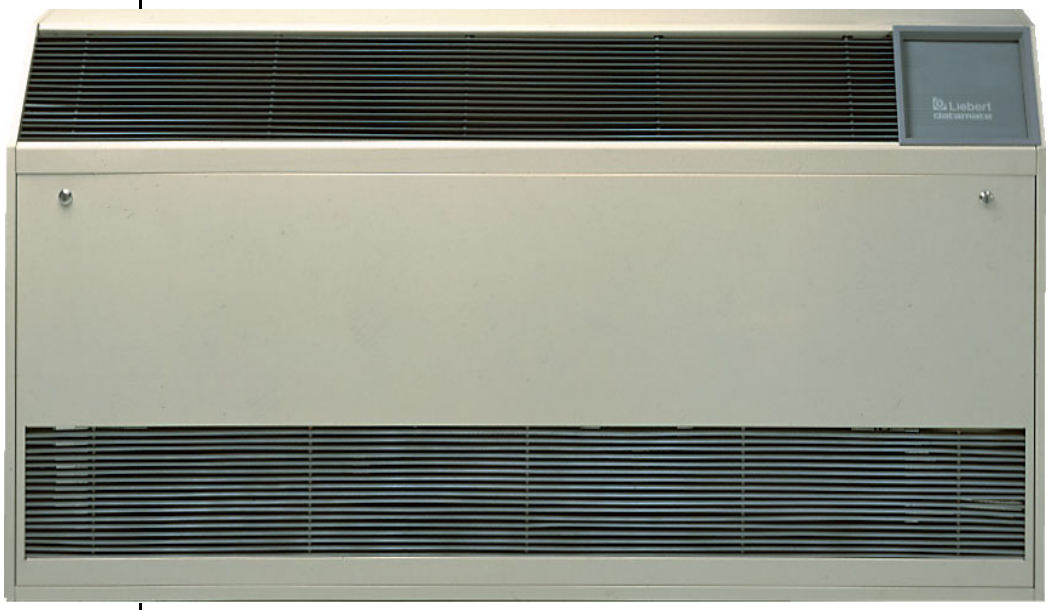
Liebert®
Keeping Business in Business®

HEAT REMOVAL/PRECISION AIR

DATAMATE

TECHNICAL DATA

Floor-Mounted Systems
Nominal 1.5, 2 & 3 Tons
Air-Cooled
Water/Glycol Cooled
Chilled Water
50 & 60 Hz



EMERSON™
Network Power

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THE LIEBERT DATAMATE ENVIRONMENTAL CONTROL SYSTEM

The Liebert DataMate provides complete control of temperature, humidity and air cleanliness on an around the clock basis.

Computer Matched—Liebert systems are designed to create the environment required for computers, telecom and other sensitive electronic equipment. DataMate provides complete control of temperature, humidity and air cleanliness on an around the clock basis, as well as the high sensible heat ratio required by sensitive electronic equipment.

Space Saving—Requires 5 square feet (.5m^2) or less.

Reliable—The Liebert reputation for quality and a nationwide service network ensures maximum uptime.

Designed to Fit—Models available to fit any room without disrupting work-station layout.

Steam Generating Humidifier—The optional humidifier is provided with an automatic flushing circuit strainer, inlet and drain, solenoid valves and necessary control hardware.

Air Distribution Fans—Direct drive centrifugal fans are located behind removable panels and are quiet in operation.

Easy Installation—All components of the DataMate are pre-charged and require no field brazing, evaluation or charging. Pre-charged refrigerant lines are available in 15-foot and 30-foot lengths (4.5 and 9m) to connect evaporator and condensing unit modules.

Serviceability—The DataMate is designed with front service access. Routine maintenance and service can be performed quickly and easily.

Agency Listed—Standard 60Hz units are ETL listed and CSA (NRTL-C) certified. NRTL-C meets both U.S. and Canadian government safety requirements, providing fast, hassle-free inspection and building code approvals.

The units are also MEA listed for applications in New York City.

The microprocessor control system, with its user-friendly, wall-mounted display, provides precise control of all unit functions.

1.0 FEATURES

1.1 Standard Features

The DataMate is a split system air, water or glycol cooled unit or self-contained chilled water unit.

The Evaporator Section includes the evaporator coil, 2-speed centrifugal blower assembly, tubular reheat, cleanable filters and microprocessor control. The unit construction is galvanized steel with powder-coated, removable exterior panels. A reversible discharge grille provides the ability to redirect airflow. The evaporator can be floor- or wall-mounted.

Air Cooled models include the evaporator section plus one of the following condensing units:

- Standard Prop Fan Condensing Unit: Includes scroll compressor, condenser coil, prop fan, high head pressure switch, Lee-Temp head pressure control, filter drier and hot gas bypass. Unit is rated at 95°F (35°C) ambient.
- Centrifugal Fan Condensing Unit: Includes compressor, condenser coil, centrifugal blower assembly, high pressure switch, electronic head pressure control, filter drier and sight glass. Unit must be mounted indoors. Duct flanges are provided. Unit is rated for 95°F (35°C) ambient.

Water/Glycol Cooled Models include the evaporator section plus one of the following:

- Close-coupled Condensing Unit: Include compressor, brazed plate condenser, 2-way water regulating valve and filter drier. Design pressure is 150 psi (1034 kPa).
- Remote Condensing Unit (2 & 3 ton): Includes compressor, coaxial condenser, 2-way water regulating valve and filter drier. Design pressure is 150 psi (1034 kPa).

Chilled Water Models include all the components described in the evaporator section in addition to:

- a 2-way slow-close motorized valve. Design pressure is 125 psi (862 kPa).

1.2 Optional Features

Reheat—Electric low watt tubular reheat element with non-corrosive metal sheath provides one stage of non-ionizing reheat to maintain room dry bulb temperature.

Humidity Control Package—Provides humidification and dehumidification control and consists of a steam generator, steam distribution tube, fill valve, drain valve and electronic controls, located within the evaporator module. Maximum humidifier water supply pressure is 150 PSIG (1034 kPa).

Pre-charged Line Sets—Consist of one pre-charged liquid line and one precharged insulated suction line of soft copper tubing. Each line has one male quick-connect coupling and one female quick-connect coupling with an access valve connection. Available in 15 ft. (4.5m) and 30 ft. (9m) lengths for interconnection of remote located condenser module. Maximum recommended distance between evaporator and condenser modules is 45 ft. (13.7m).

Condensate Pump—Has a capacity of 69 GPH (260 l/h) at 10 ft. (30kPa). Pump is complete with integral float switch, pump, motor assembly and reservoir. Assembly mounts on the right end of the evaporator (indoor) module.

Auxiliary pump float automatically shuts off unit if pump discharge line clogs or pump fails.

Refrigerant-Line Sweat Adapter Kit—contains two suction and two liquid line compatible fittings that allow field-supplied interconnecting refrigerant lines to be used.

277-Volt Transformer—Required where 277-volt power is supplied to the unit; one for evaporator module and one for condensing module (37.5 amps each). For self contained water/glycol system use one 37.5 amp transformer for 1-1/2, and 2 ton system and 50 amp for 3 ton system. Epoxy encapsulated, suitable for indoor/outdoor service.

Prop Fan Condensing Units—Are available in several optional configurations to satisfy various application issues. They are:

- 105°F (40°C) ambient for high ambient conditions.
- 95°F (35°C) ambient Quiet-Line for low noise level conditions below 56 dba.

Remote Water Cooled Condensing Units—Are available in several optional configurations to satisfy various application issues. They are:

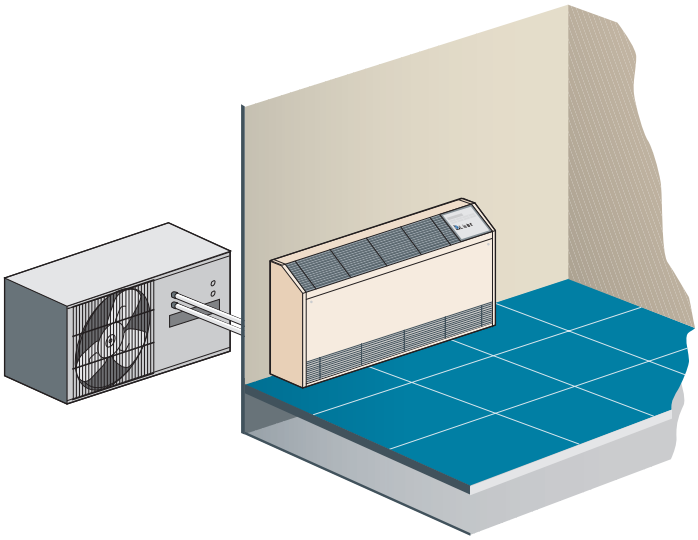
- 2-way wrv with 300 psi (2068 kPa) design pressure
- 3-way wrv with 150 psi (1034 kPa) design pressure
- 3-way wrv with 300 psi (2068 kPa) design pressure

Monitoring and Control Equipment—The following equipment is available for monitoring or control of the DataMate:

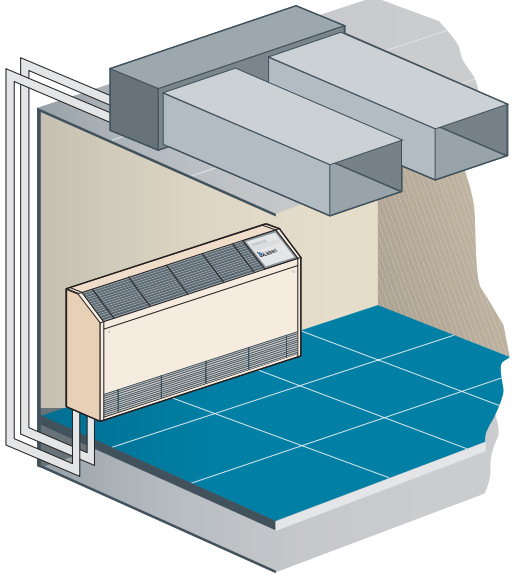
- Site Monitoring System
- Universal Monitor
- Water Detection Systems—Available in point, zone and zone measurements models.

2.0 AIR COOLED SYSTEMS

Figure 1 General arrangement, outdoor and indoor units



OUTDOOR, AIR COOLED
Suitable for installation on a roof or at ground level. The condensing unit is designed for operation as low as -30°F (-34°C).



INDOOR AIR COOLED
For high-rise and other applications where roof or ground level locations are impractical. May be located above the dropped ceiling ducted to the outside. Designed for operation down to -20°F (-29°C) ambient.

Table 1 Standard air cooled system configurations—air cooled applications

Nominal Capacity	Evaporator Unit	Condensing Unit	
		Indoor Air Cooled Centrifugal Fan	Outdoor Air Cooled Propeller Fan
1-1/2 Tons	DME020E	--	PFH020A PFH019A
2 Tons	DME027E	MC_24A MC_23A	PFH027A PFH026A
3 Tons	DME037E	MC_36A MC_35A	PFH037A PFH036A

2.1 Model Number Designations—Air Cooled Units

Figure 2 Model numbers—Evaporator units

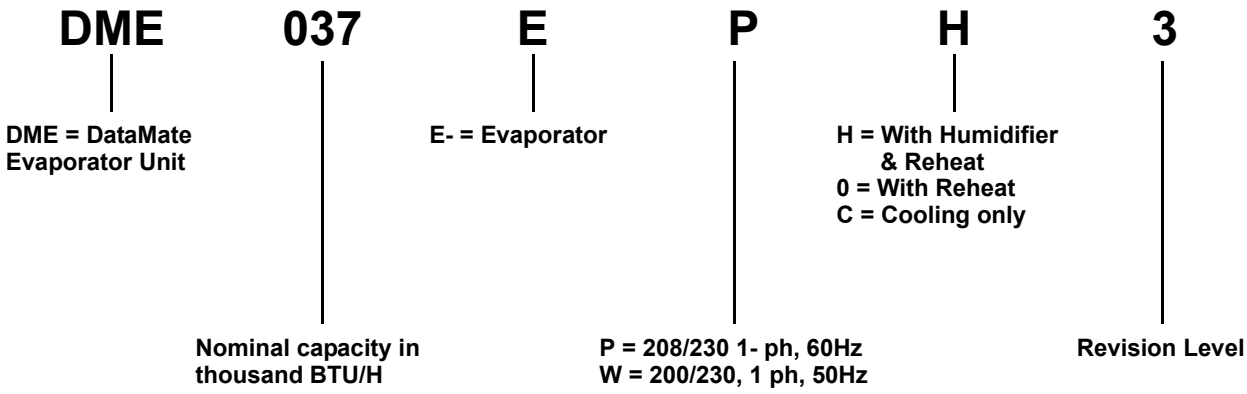
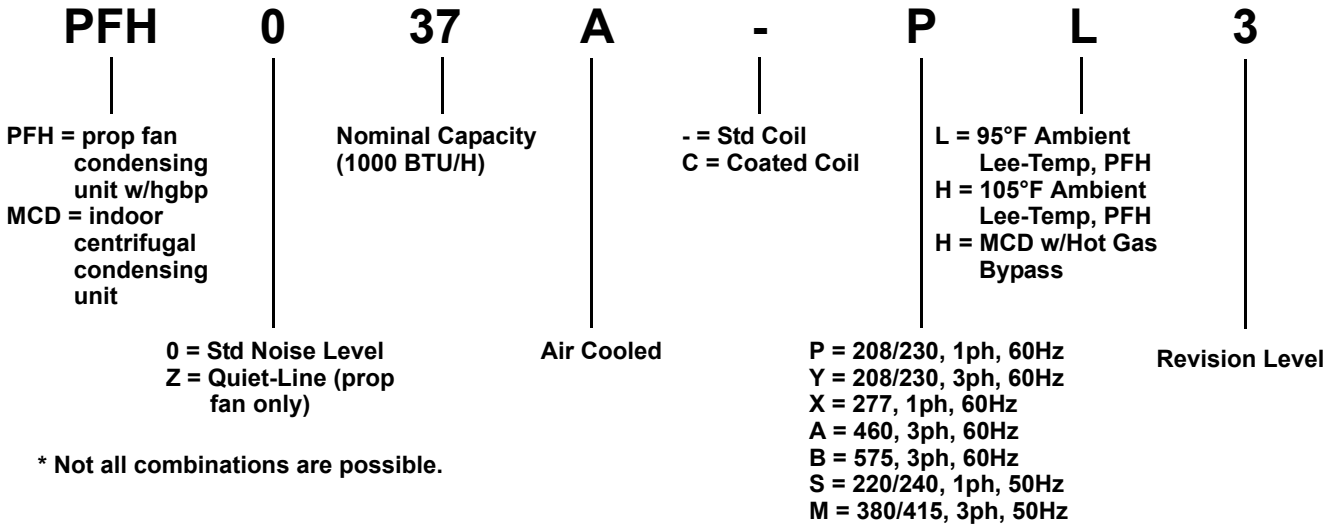


Figure 3 Model numbers—Condensing units*



*** Not all combinations are possible.**

Figure 4 Evaporator section—Air cooled applications

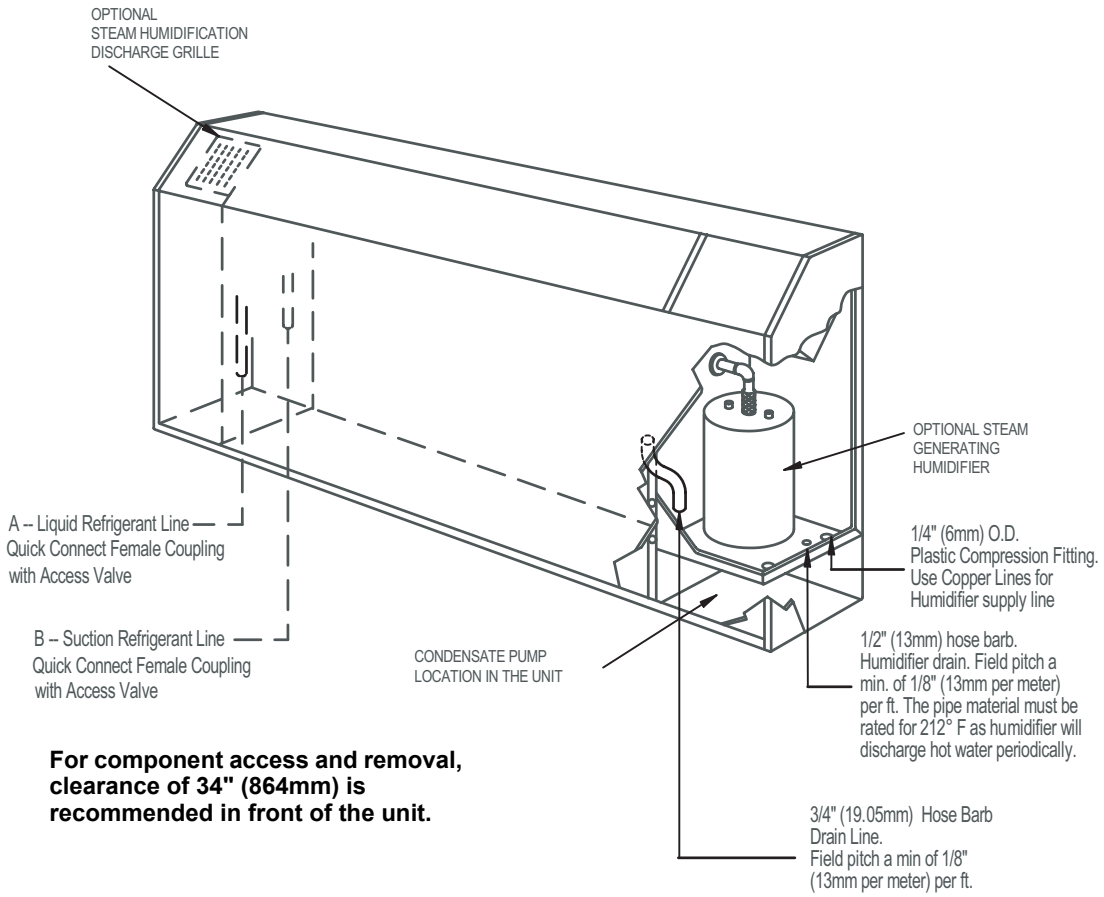


Table 2 Evaporator section dimensions—air cooled applications

Model	Weight lb (kg)	Width in. (mm)	Depth in. (mm)	Height in. (mm)
DME020E	230 (104)	46-1/2 (1181)	11-7/8 (302)	32 (813)
DME027E	330 (150)	64-1/8 (1628)	11-7/8 (302)	32 (813)
DME037E	365 (165)	64-1/8 (1628)	11-7/8 (302)	32 (813)

Table 3 Evaporator unit piping outlet connection sizes—pipe size/coupling number

Model	Liquid Line A	Suction Line B
DME020E	3/8" / #6	5/8" / #10
DME027E	3/8" / #6	7/8" / #11
DME037E	3/8" / #6	7/8" / #11

Figure 5 Condensate section, optional, field-installed

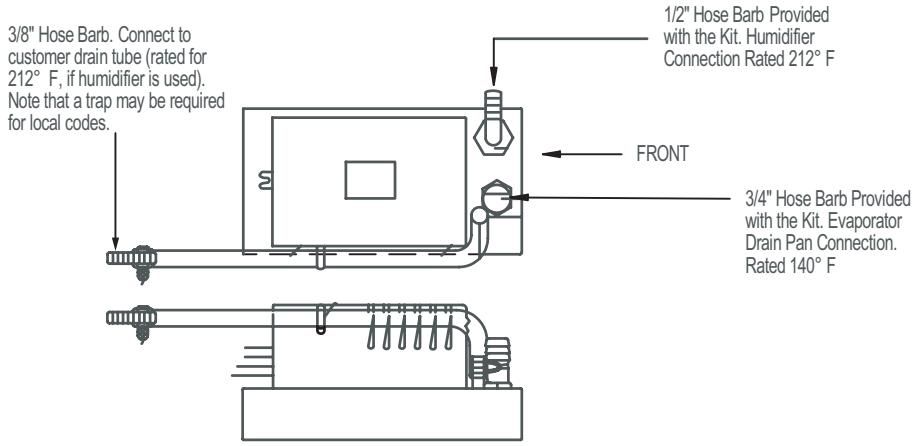


Figure 6 Cabinet and floor planning dimensional data, prop fan condensing modules with horizontal air discharge

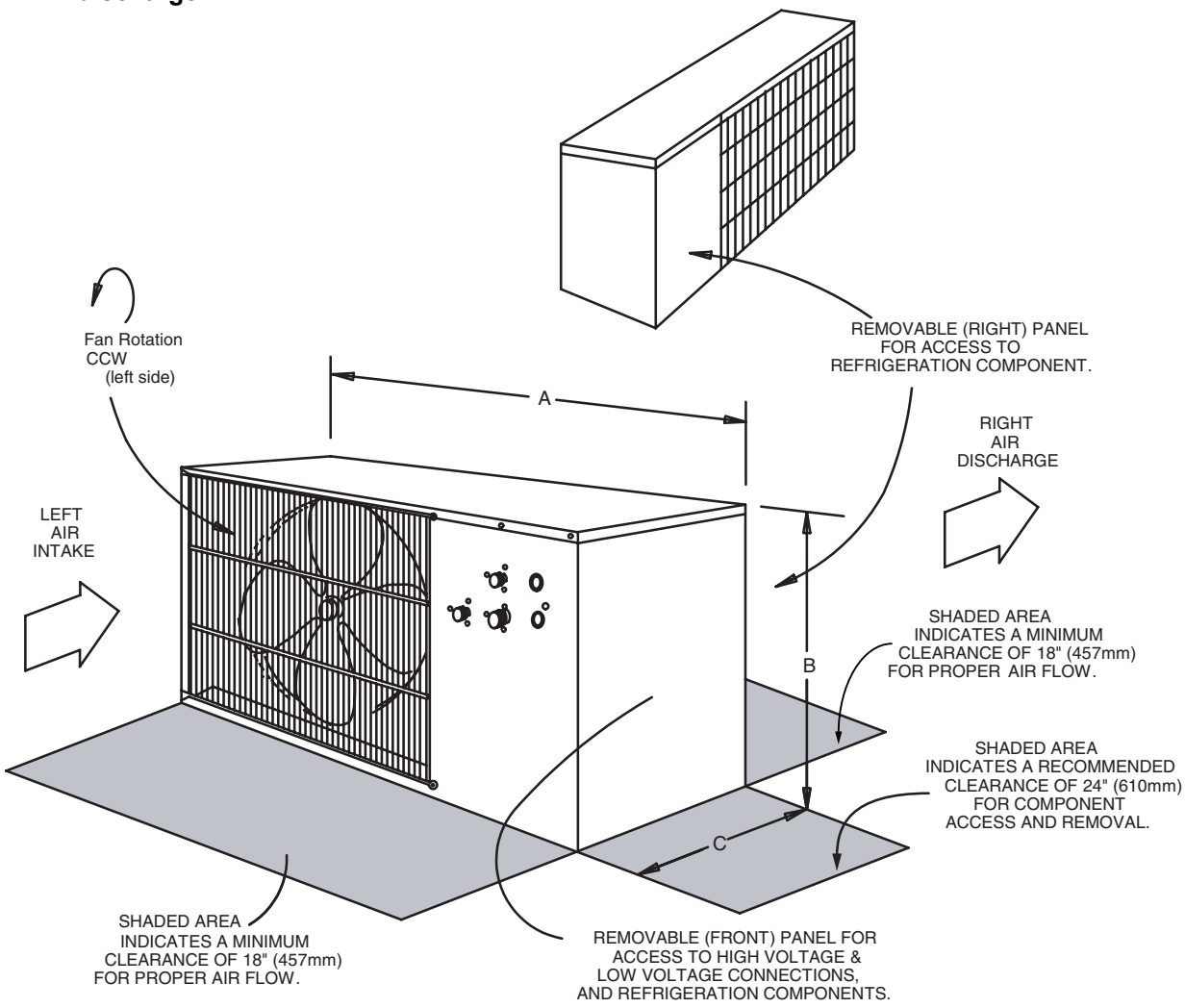


Table 4 Propeller fan, air cooled condensing unit dimensions, inches (mm)

Model Numbers		Dimensional Data, inches (mm)			Module Net Weight lb (kg)
60Hz	50Hz	A	B	C	
PFH020A-L	PFH019A-L	40 (1016)	23 1/2 (597)	18 (457)	200 (91)
PFH027A-L	PFH026A-L				
PFH027A-H	PFH026A-H	48 (1219)	31 (787)	18 (457)	241 (109)
PFHZ27A-L	PFHZ26A-L				
PFH037A-L	PFH036A-L				
PFH037A-H	PFH036A-H	53 (1343)	36 1/4 (918)	18 (457)	351 (159)
PFHZ37A-L	PFHZ36A-L				

Figure 7 Piping and electrical connections, remote propeller fan air cooled condensing unit, outdoor

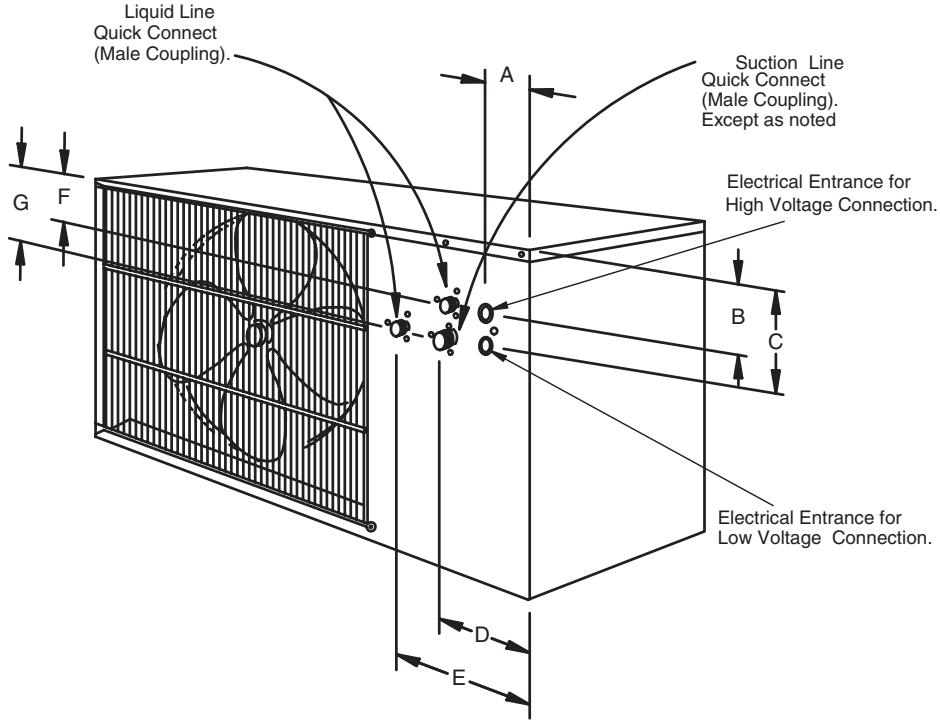


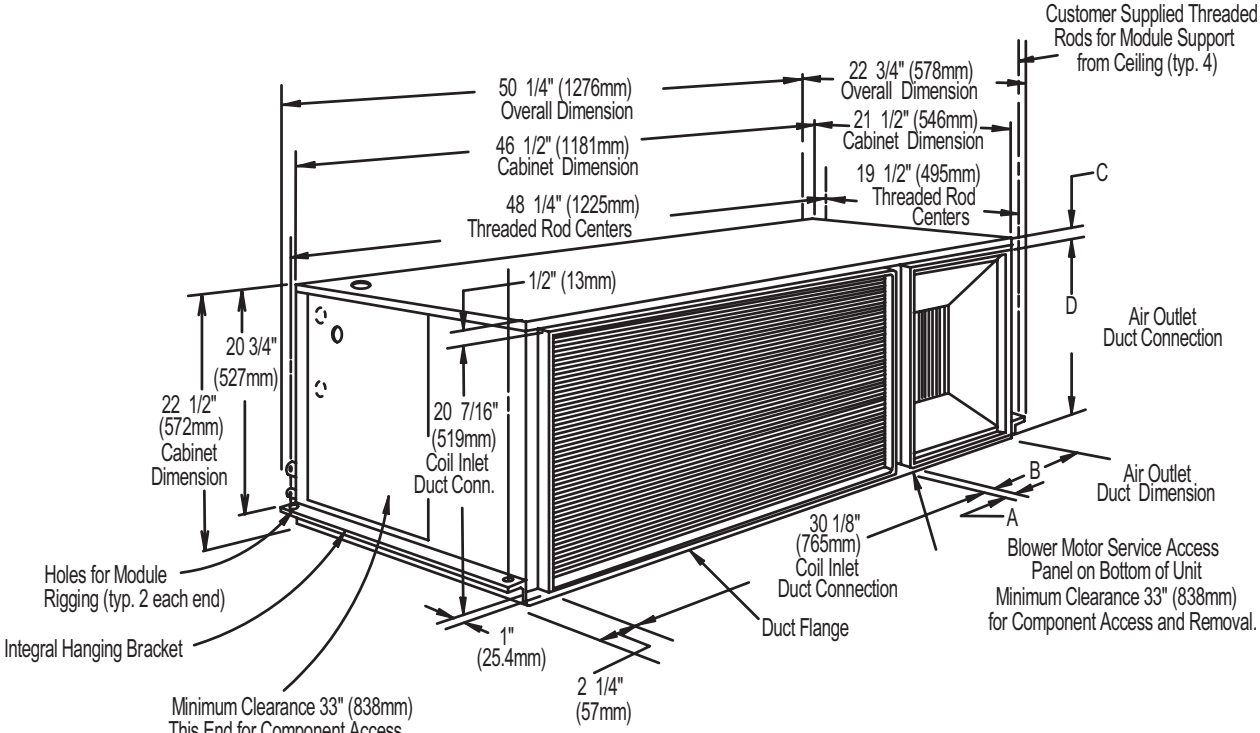
Table 5 Electrical and piping connections-remote propeller fan air cooled condensing units

High Voltage Connection	Low Voltage Connection
7/8" (22.2mm) and 1-1/8" (28.6mm) dia. knock outs electrical entrance for line voltage connection	7/8" (22.2mm) dia. electrical entrance for low voltage connection

Table 6 Horizontal air discharge piping and electrical connections, air cooled condensing units

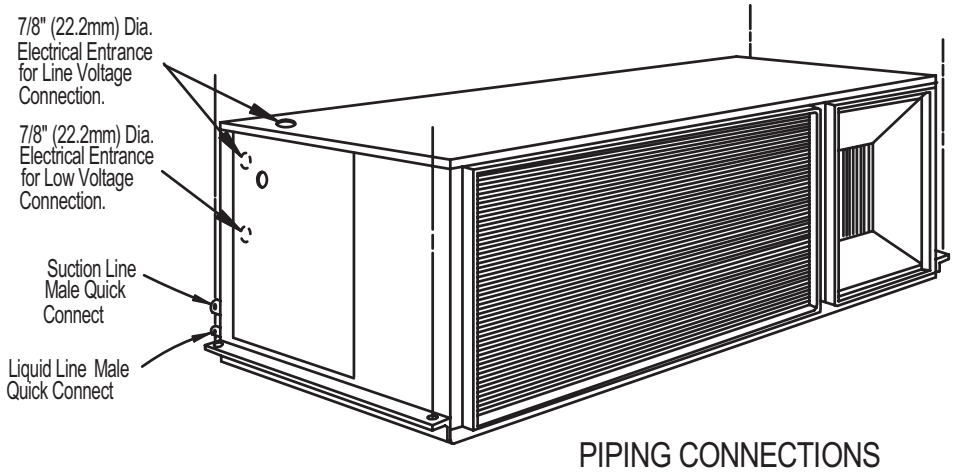
Model Numbers		Electrical Connections in. (mm)			Piping Connections in. (mm)			
60Hz	50Hz	A	B	C	D	E	F	G
PFH020A- L	PFH019A- L	2-1/4 (57)	5-1/4 (133)	7-3/4 (197)	8-3/4 (222)	-	5 (127)	7-1/4 (184)
PFH027A- L	PFH026A- L							
PFH027A- H	PFH026A- H	2 (51)	5-3/4 (146)	8-1/2 (216)	4-3/4 (121)	6-3/4 (171)	-	8-1/2 (216)
PFHZ27A- L	PFHZ26A- L							
PFH037A- L	PFH036A- L							
PFH037A- H	PFH036A- H	2 (51)	6 (152)	8-1/2 (216)	4-3/4 (121)	7-3/4 (197)	-	8-1/2 (216)
PFHZ37A- L	PFHZ36A- L							

Figure 8 Remote centrifugal fan, air cooled condensing unit, indoor



DIMENSIONAL DATA

Note: Unit is evenly spaced in reference to threaded rod centers.

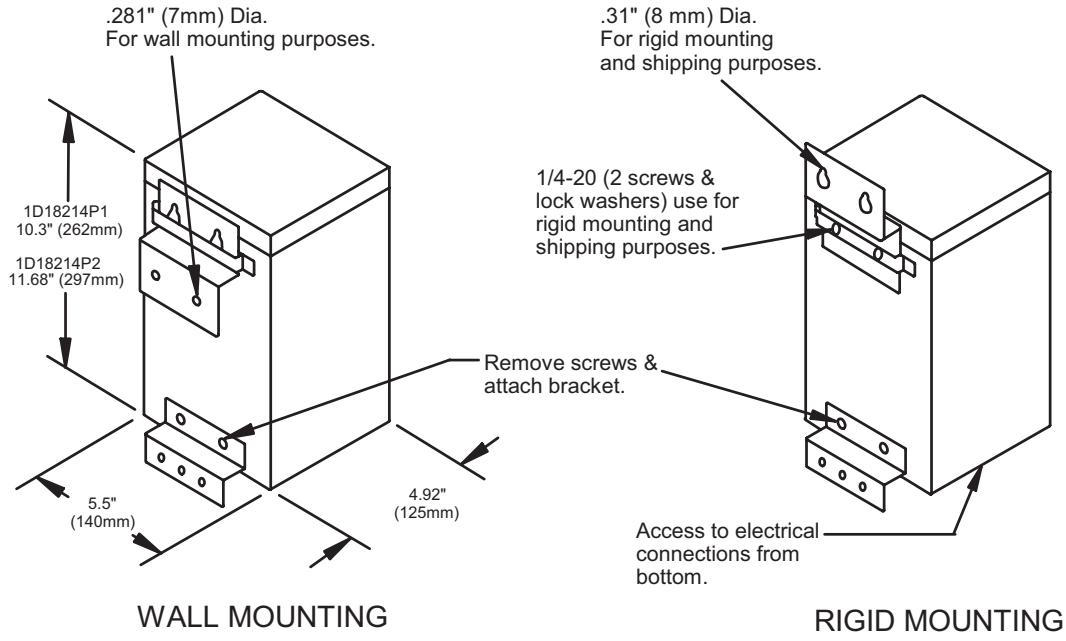


PIPING CONNECTIONS

Table 7 Remote centrifugal fan, air cooled condensing, weight and dimensions

Model	Weight lb (kg)	Dimensions, in (mm)			
		A	B	C	D
MC_23A MC_24A	230 (104)	1-7/16 (37)	11-7/16 (290)	1/2 (13)	20-7/16 (519)
MC_35A MC_36A	240 (109)				

Figure 9 Autotransformer for 277-230V applications



Notes:
1. 1D18214P1 = Acme catalog no. T-1-37921 for all small systems except 3-ton DataMate with integral condenser.
2. 1D18214P2 = Acme catalog no. T-1-37922 for 3-ton DataMate with integral condenser.
3. Epoxy encapsulated. Suitable for indoor/outdoor service. Horizontal or vertical mount. Totally enclosed, non-ventilated.
4. Both brackets are shipped loose with transformer.

Table 8 60 Hz capacities & typical specifications, air cooled applications

		AIR COOLED		
Nominal Tons		**1-1/2**	**2**	**3**
Evaporator Section		**DME020E**	**DME027E**	**DME037E**
Net Capacity Data - BTU/H (kW) High Fan Speed (1)				
80°F (26.7°C) DB	Total	19000 (5.6)	24600 (7.2)	36100 (10.6)
50% RH	Sensible	16500 (4.8)	21700 (6.4)	28100 (8.2)
75°F (23.9°C) DB	Total	17600 (5.2)	22800 (6.7)	33500 (9.8)
50% RH	Sensible	15800 (4.6)	20700 (6.1)	27000 (7.9)
72°F (22.2°C) DB	Total	16900 (5.0)	21900 (6.4)	32100 (9.4)
50% RH	Sensible	15400 (4.5)	20200 (5.9)	26400 (7.7)
Net Capacity Data - BTU/H (kW) Low Fan Speed (1)				
80°F (26.7°C) DB	Total	18800 (5.5)	24300 (7.1)	35800 (10.5)
50% RH	Sensible	15200 (4.5)	20000 (5.9)	26600 (7.8)
75°F (23.9°C) DB	Total	17600 (5.2)	22600 (6.6)	33300 (9.8)
50% RH	Sensible	14700 (4.3)	19200 (5.6)	25700 (7.5)
72°F (22.2°C) DB	Total	16800 (4.9)	21600 (6.3)	31800 (9.3)
50% RH	Sensible	14300 (4.2)	18700 (5.5)	25100 (7.4)
Fan Data - Direct Drive				
Air Volume - CFM (CMH)	High	870 (1478)	1230 (2090)	1320 (2243)
Air Volume - CFM (CMH)	Low	750 (1274)	1050 (1784)	1175 (1996)
Fan Motor hp (W)		0.16 (120)	*.20 (150)	*.27 (200)
Compressor Data - Scroll				
Refrigerant		R-22	R-22	R-22
Evaporator Coil - Copper Tube/Aluminum Fin				
Face Area ft.^{2} (m^2)		2.4 (0.22)	3.9 (0.36)	3.9 (0.36)
Rows of Coil		4	3	4
Reheat Data - Electric (Includes Fan Motor)				
Capacity - BTU/H (kW) @ 230V		9215 (2.7)	18082 (5.3)	18765 (5.5)
Humidifier Data - Steam Generator Type				
Capacity - lbs/hr (kg/h)		3 (1.4)	3 (1.4)	3 (1.4)
Connection Sizes				
Liquid Line - in.		1/4	3/8	3/8
Suction Line - in.		5/8	7/8	7/8
Humidifier Supply - Comp Ftg, in.		1/4	1/4	1/4
Humidifier Drain - Barb Ftg, in.		1/2	1/2	1/2
Evaporator Drain - OD, in.		3/4	3/4	3/4

Air Cooled Condensing Unit Options			
Outdoor Propeller Condenser Coil and Fan 95°F (35°C) Ambient			
Condensing Module	**PFH020A**	**PFH027A**	**PFH037A**
Face Area ft.^{2} (m^2)	4.1 (0.38)	4.1 (0.38)	7.7 (0.72)
Rows of Coil	2	2	2
Motor hp (W)	1/5 (149)	1/5 (149)	1/5 (149)
Indoor Centrifugal Condenser Coil and Fan 95°F (35°C) Ambient			
Condensing Module		**MC_24A**	**MC_36A**
Air Volume - CFM (CMH)		1000 (1699)	1430 (2430)
Face Area ft.^{2} (m^2)		4.6 (0.43)	4.6 (0.43)
Rows of Coil		2	3
Motor hp (W)		1/3 (249)	1/2 (373)
External Static Pressure, in. (Pa)		0.5 (124)	0.5 (124)

* The 2 & 3 ton units each have 2 motors
2 ton - .08 & .12 hp
3 ton - .11 & .16 hp

(1) All capacities are nominal values, actual performance will be ±5%.

Table 9 50 Hz capacities & typical specifications, air cooled applications

		AIR COOLED		
Nominal Tons		**1-1/2**	**2**	**3**
Evaporator Section		**DME020E**	**DME027E**	**DME037E**
Net Capacity Data - BTU/H (kW) High Fan Speed (1)				
80°F (26.7°C) DB	Total	19800 (5.8)	22400 (6.6)	32500 (9.5)
50% RH	Sensible	15200 (4.5)	18900 (5.5)	24400 (7.1)
75°F (23.9°C) DB	Total	18400 (5.4)	20800 (6.1)	30100 (8.8)
50% RH	Sensible	14700 (4.3)	18100 (5.3)	23500 (6.9)
72°F (22.2°C) DB	Total	17600 (5.2)	19900 (5.8)	28900 (8.5)
50% RH	Sensible	14300 (4.2)	17700 (5.2)	23000 (6.7)
Net Capacity Data - BTU/H (kW) Low Fan Speed (1)				
80°F (26.7°C) DB	Total	19500 (5.7)	22100 (6.5)	32200 (9.4)
50% RH	Sensible	14200 (4.2)	17400 (5.1)	23200 (6.8)
75°F (23.9°C) DB	Total	18100 (5.3)	20500 (6.0)	30000 (8.8)
50% RH	Sensible	13700 (4.0)	16800 (4.9)	22500 (6.6)
72°F (22.2°C) DB	Total	17300 (5.1)	19600 (5.7)	28600 (8.4)
50% RH	Sensible	13400 (3.9)	16400 (4.8)	22000 (6.4)
Fan Data - Direct Drive				
Air Volume - CFM (CMH)	High	725 (1232)	1025 (1741)	1100 (1869)
Air Volume - CFM (CMH)	Low	625 (1062)	875 (1487)	980 (1665)
Fan Motor hp (W)		0.16 (120)	*.20 (150)	*.27 (200)
Compressor Data - Scroll				
Refrigerant		R-22	R-22	R-22
Evaporator Coil - Copper Tube/Aluminum Fin				
Face Area ft.^{2} (m^2)		2.4 (0.22)	3.9 (0.36)	3.9 (0.36)
Rows of Coil		4	3	4
Reheat Data - Electric (Includes Fan Motor)				
Capacity - BTU/H (kW) @ 230V		9215 (2.7)	18082 (5.3)	18765 (5.5)
Humidifier Data - Steam Generator Type				
Capacity - lbs/hr (kg/h)		3 (1.4)	3 (1.4)	3 (1.4)
Connection Sizes				
Liquid Line - in.		1/4	3/8	3/8
Suction Line - in.		5/8	7/8	7/8
Humidifier Supply - Comp Ftg, in.		1/4	1/4	1/4
Humidifier Drain - Barb Ftg, in.		1/2	1/2	1/2
Evaporator Drain - OD, in.		3/4	3/4	3/4

Air Cooled Condensing Unit Options			
Outdoor Propeller Condenser Coil and Fan -95°F 35°C Ambient			
Condensing Module	**PFH019A**	**PFH026A**	**PFH036A**
Face Area ft.^{2} (m^2)	4.1 (0.38)	4.1 (0.38)	7.7 (0.72)
Rows of Coil	2	2	2
Motor hp (W)	1/5 (149)	1/5 (149)	1/5 (149)
Indoor Centrifugal Condenser Coil and Fan -95°F 35°C Ambient			
Condensing Module		**MC_23A**	**MC_35A**
Air Volume - CFM (CMH)		1000 (1699)	1430 (2430)
Face Area ft.^{2} (m^2)		4.6 (0.43)	4.6 (0.43)
Rows of Coil		2	3
Motor hp (W)		1/3 (249)	1/2 (373)
External Static Pressure, in. (Pa)		0.5 (124)	0.5 (124)

* The 2 & 3 ton units each have 2 motors
2 ton - .08 & .12 hp
3 ton - .11 & .16 hp

(1) All capacities are nominal values, actual performance will be ±5%.

Table 10 60 Hz electrical data, evaporator section, air cooled applications

Nominal Capacity, Tons	1.5	2	3
Cooling Only			
Model	DME020E-PC	DME027E-PC	DME037E-PC
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	1.4	1.5	2.2
WSA	1.8	1.9	2.8
OPD	15	15	15
With Reheat			
Model	DME020E-P0	DME027E-P0	DME037E-P0
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	11.8	22.3	23.0
WSA	14.8	27.9	28.8
OPD	15	30	30
With Reheat & Humidifier			
Model	DME020E-PH	DME027E-PH	DME037E-PH
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	18.8	29.3	30.0
WSA	23.5	36.6	37.5
OPD	25	40	40

Table 11 50 Hz electrical data, evaporator section, air cooled applications

Nominal Capacity, Tons	1.5	2	3
Cooling Only			
Model	DME020E-WC	DME027E-WC	DME037E-WC
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	1.4	1.5	2.2
WSA	1.8	1.9	2.8
With Reheat			
Model	DME020E-W0	DME027E-W0	DME037E-W0
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	11.8	22.3	23.0
OPD	14.8	27.9	28.8
With Reheat & Humidifier			
Model	DME020E-WH	DME027E-WH	DME037E-WH
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	18.8	29.3	30.0
WSA	23.5	36.6	37.5

Table 12 60 Hz electrical data, standard propeller fan condensing unit

Nominal Capacity, Tons	1.5	2	3	3	3	3
Model	PFH020A-PL	PFH027A-PL	PFH037A-PL	PFH037A-YL	PFH037A-AL	PFH037A-BL
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60	208/230-3-60	460-3-60	575-3-60
FLA	12.1	12.8	19.3	12.8	6.4	5.9
WSA	14.8	15.7	23.8	15.7	7.8	7.1
OPD	25	25	40	25	15	15
High Ambient Propeller Fan Condensing Unit						
Nominal Capacity, Tons	1.5	2	3	3	3	3
Model	N/A	PFH027A-PH	PFH037A-PH	PFH037A-YH	PFH037A-AH	PFH037A-BH
Volt-Ph-Hz		208/230-1-60	208/230-1-60	208/230-3-60	460-3-60	575-3-60
FLA		14.8	21.3	14.8	7.4	5.9
WSA		17.7	25.8	17.7	8.8	7.1
OPD		25	40	25	15	15
Quiet-Line Propeller Fan Condensing Unit						
Nominal Capacity, Tons	1.5	2	3	3	3	3
Model	N/A	PFHZ27A-PL	PFHZ37A-PL	PFHZ37A-YL	PFHZ37A-AL	PFHZ37A-BL
Volt-Ph-Hz		208/230-1-60	208/230-1-60	208/230-3-60	460-3-60	575-3-60
FLA		12.3	18.8	12.3	6.4	5.2
WSA		15.2	23.3	15.2	7.8	6.4
OPD		25	40	25	15	15

Table 13 50 Hz electrical data, standard propeller fan condensing unit

Nominal Capacity, Tons	1.5	2	2	3	3
Model	PFH019A-SL	PFH026A-SL	PFH026A-ML	PFH036A-SL	PFH036A-ML
Volt-Ph-Hz	220/240-1-50	220/240-1-50	380/415-3-50	220/240-1-50	380/415-3-50
FLA	10.9	12.7	4.9	18.4	7.0
WSA	13.3	15.6	6.0	22.7	8.6
High Ambient Propeller Fan Condensing Unit					
Nominal Capacity, Tons	1.5	2	2	3	3
Model	N/A	PFH026A-SH	PFH026A-MH	PFH036A-SH	PFH036A-MH
Volt-Ph-Hz		220/240-1-50	380/415-3-50	220/240-1-50	380/415-3-50
FLA		14.8	6.0	20.5	8.1
WSA		17.7	7.1	24.8	9.7
Quiet-Line Propeller Fan Condensing Unit					
Nominal Capacity, Tons	1.5	2	2	3	3
Model	N/A	PFHZ26A-SL	PFHZ26A-ML	PFHZ36A-SL	PFHZ36A-ML
Volt-Ph-Hz		220/240-1-50	380/415-3-50	220/240-1-50	380/415-3-50
FLA		12.3	4.8	18.0	6.9
WSA		15.2	5.9	22.3	8.5

Table 14 60 Hz electrical data, centrifugal fan condensing unit

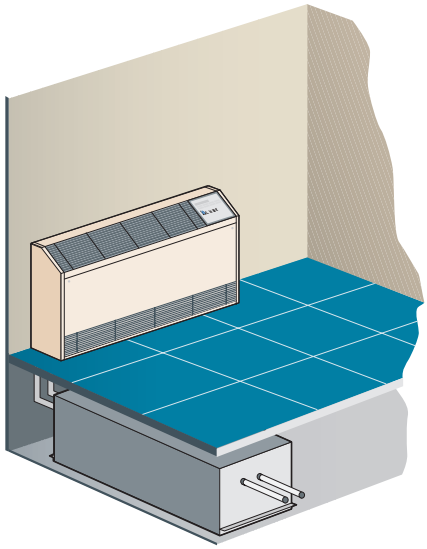
Nominal Capacity, Tons	1.5	2	2	3	3	3	3
Model	**N/A**	**MC_24A-P**	**MC_24A-X**	**MC_36A-P**	**MC_36A-X**	**MC_36A-Y**	**MC_36A-A**
Volt-Ph-Hz		208/230-1-60	277-1-60	208/230-1-60	277-1-60	208/230-3-60	460-3-60
FLA		13.7	11.9	19.4	16.6	15.1	7.1
WSA		16.6	14.3	23.3	20.2	18.0	8.5
OPD		25	20	35	30	25	15

Table 15 50 Hz electrical data, centrifugal fan condensing unit

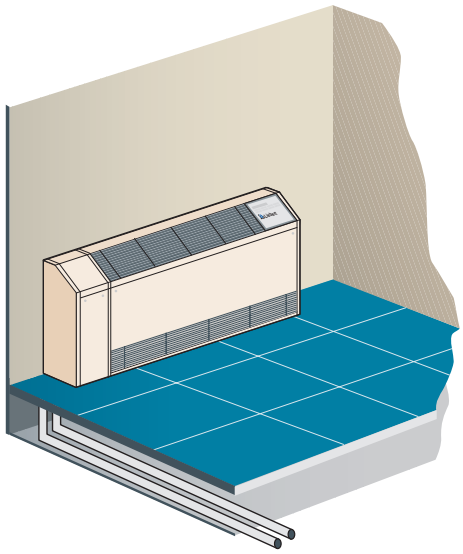
Nominal Capacity, Tons	1.5	2	2	3	3
Model	**N/A**	**MC_23A-S**	**MC_23A-M**	**MC_35A-S**	**MC_35A-M**
Volt-Ph-Hz		220/240-1-50	380/415-3-50	220/240-1-50	380/415-3-50
FLA		13.2	5.7	20.1	7.8
WSA		16.1	6.8	24.4	9.4

3.0 WATER COOLED AND GLYCOL COOLED SYSTEMS

Figure 10 General arrangement, water/glycol cooled remote and integral



WATER/GLYCOL COOLED REMOTE
Utilizes an existing water or glycol loop. Condensing unit is located under the raised floor or above the dropped ceiling.



WATER/GLYCOL COOLED INTEGRAL
Totally packaged—A single power and water supply connection puts the unit in operation.

Table 16 Water cooled and glycol cooled system configurations

Nominal Capacity, Tons	Evaporator Unit	Condensing Unit		
		Remote Water Cooled	Remote Glycol Cooled	Integral/ Water Glycol Cooled
1-1/2	DME020E	---	---	DMC022WG
2	DME027E	MC_26W MC_25W	MC_26W MC_25W	DMC029WG
3	DME037E	MC_38W MC_37W	MC_38W MC_37W	DMC040WG

3.1 Model Number Designations—Water Cooled and Glycol Cooled Units

Figure 11 Water cooled and glycol cooled unit model numbers*

DME 037 E- P H 3

DME = DataMate Evaporator Unit
MCD = Remote Condensing Unit
DMC = Integral Condensing Unit

Nominal Capacity (1000 BTU/H)

WG = Water/Glycol
W = Water/Glycol
E- = Evaporator

P = 208/230, 1ph, 60Hz
Y = 208/230, 3ph, 60Hz
X = 277, 1ph, 60Hz
A = 460, 3ph, 60Hz
S = 220/240, 1ph, 50Hz
M = 380/415, 3ph, 50Hz
W = 200/220, 1ph, 50Hz

H = With Humidifier & Reheat (Evaporator)
0 = With Reheat (Evaporator)
C = Cooling Only (Evaporator)
Water or Glycol (Condensing Units)
0 = 2-way 150psi
H = 2-way 300psi
3 = 3-way 150psi
T = 3-way 300psi

Revision Level

*** Not all combinations are possible.**

Figure 12 Evaporator section—water cooled and glycol cooled applications

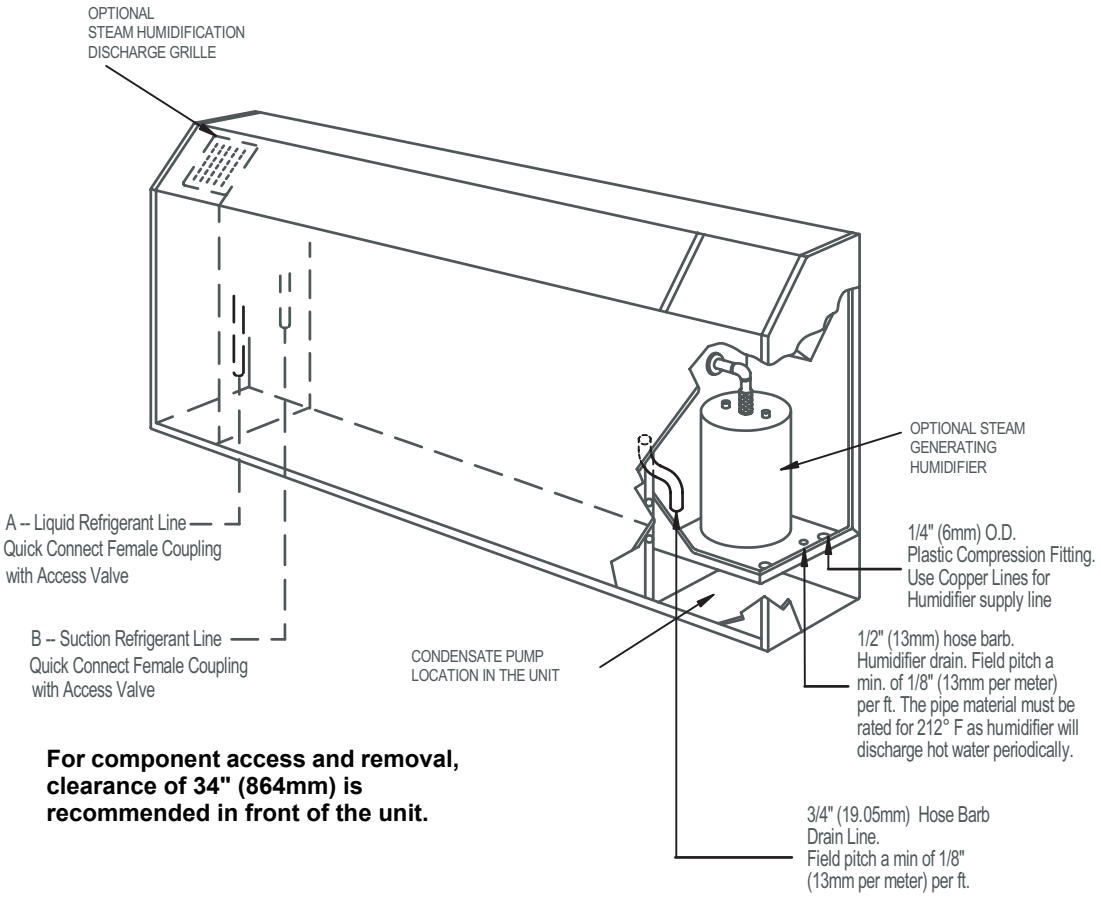


Table 17 Water cooled and glycol cooled system dimensions

Model	Weight	Width	Depth	Height
DME020E	230 lb (104 kg)	46-1/2" (1181mm)	11-7/8" (302mm)	32" (813mm)
DME027E	330 lb (150 kg)	64-1/8" (1628mm)	11-7/8" (302mm)	32" (813mm)
DME037E	365 lb (165 kg)	64-1/8" (1628mm)	11-7/8" (302mm)	32" (813mm)

Figure 13 Condensate section, optional, field-installed, water cooled and glycol cooled

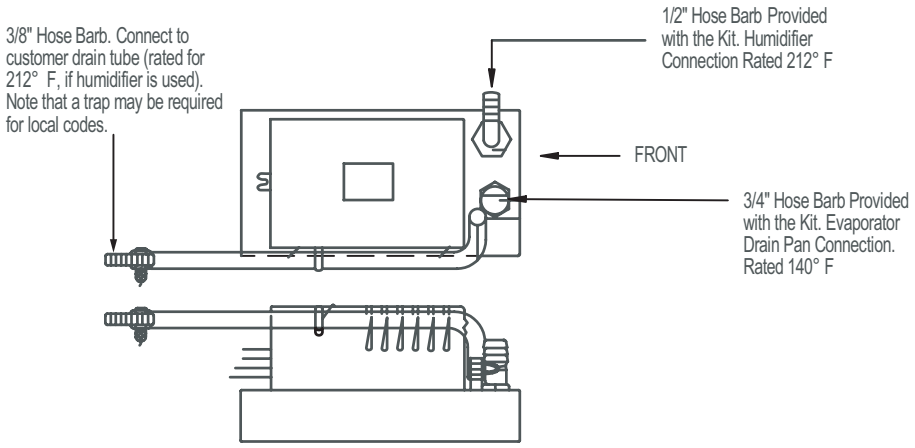
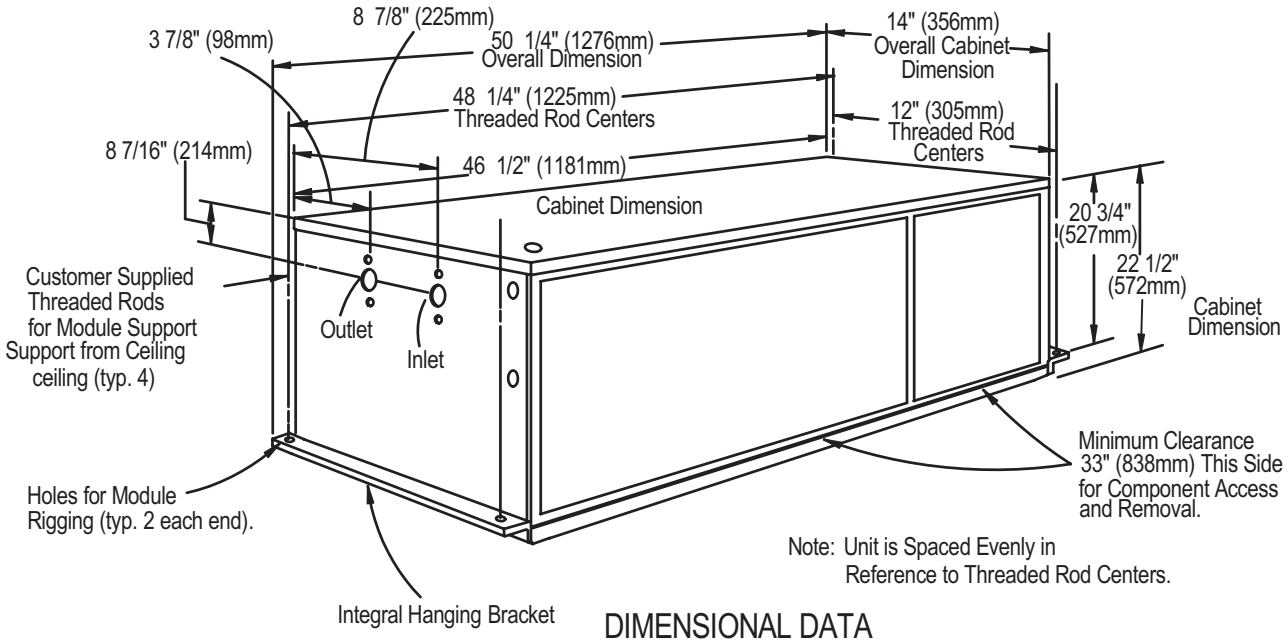
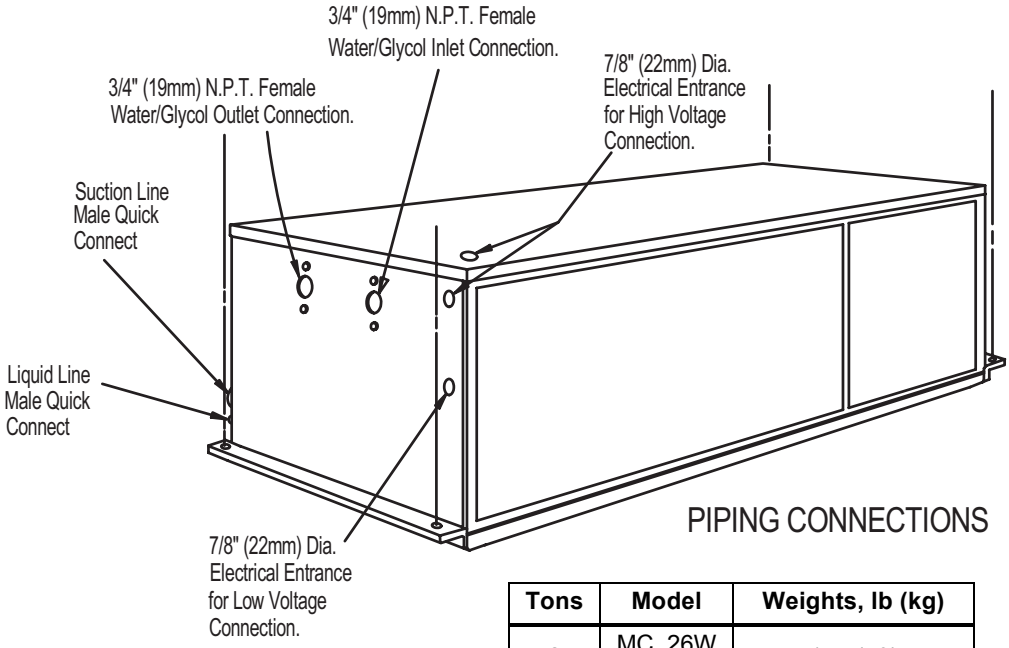


Figure 14 Remote water cooled and glycol cooled condensing unit



DIMENSIONAL DATA



PIPING CONNECTIONS

Tons	Model	Weights, lb (kg)
2	MC_26W MC_25W	175 (79)
3	MC_38W MC_37W	190 (86)

Figure 15 Integral water cooled and glycol cooled condensing unit, indoor

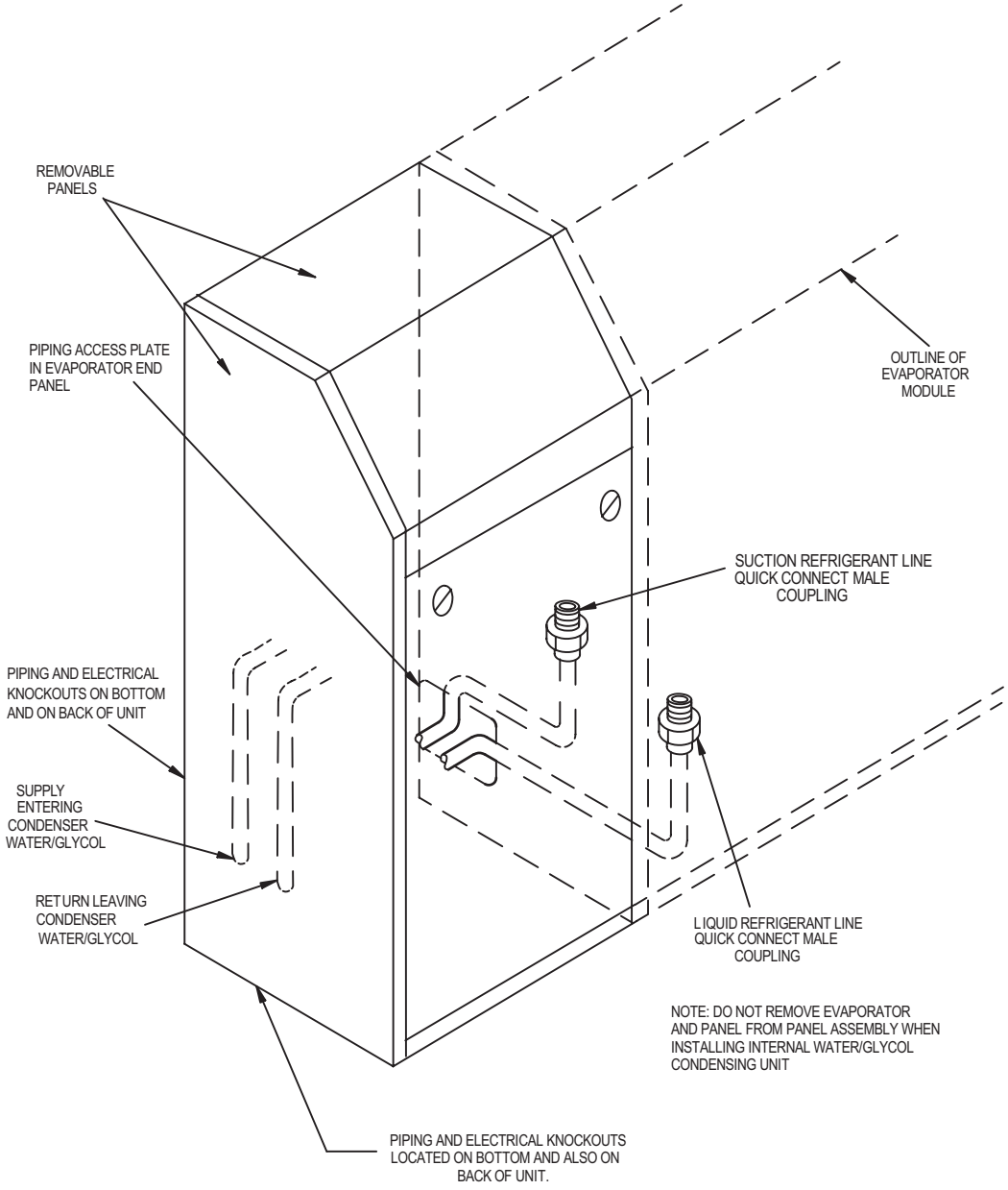


Table 18 Unit dimensions, water cooled and glycol cooled applications

Model	Tons	Weight	Width	Depth	Height
DMC022WG	1-1/2	170 lb (77kg)	14" (356mm)	12" (305mm)	32" (813mm)
DMC029WG	2	170 lb (77kg)			
DMC040WG	3	170 lb (78 kg)			

For refrigerant and water/glycol piping connection sizes, see **Tables 20 and 21**

Table 19 Multiple Liebert systems with single loop drycooler(s)*

DataMate Condensing Unit Model	Qty	GPM Flow (l/m)	95° (35°C) Ambient		100° (38°C) Ambient		105° (41°C) Ambient	
			Drycooler Model	Press Drop ft. (kPa)	Drycooler Model	Press Drop ft. (kPa)	Drycooler Model	Press Drop ft. (kPa)
DMC022WG	1	6 (23)	DSF033	4 (13)	DSF033	4 (13)	DSF069_4	7 (22)
	2	12 (45)	DSF069	4 (12)	DSF092_6	12 (35)	DS0139_8	6 (19)
	3	18 (68)	DSF092	4 (11)	DSF109_8	14 (42)	DS0197	4 (11)
	4	24 (91)	DSF112	5 (14)	DS0174	5 (14)	DS0225_16	8 (22)
	6	36 (136)	DS0174	9 (27)	DS0197	12 (36)	DS0350	4 (11)
DMC029WG	1	7 (26)	DSF033	6 (16)	DSF069_4	10 (29)	DSF092_6	5 (14)
	2	14 (53)	DSF092_6	15 (44)	DSF092_6	15 (44)	DS0174_8	11 (34)
	3	21 (79)	DSF109_8	18 (55)	DS0139_8	16 (48)	DS0225_16	6 (18)
	4	28 (106)	DS0174	6 (18)	DS0197	8 (23)	DS0310_16	8 (24)
	6	42 (159)	DS0197	15 (45)	DS0260_16	16 (48)	DS0419	4 (12)
DMC040WG	1	9 (34)	DSF069_4	14 (42)	DSF069_4	14 (42)	DSF109_8	4 (13)
	2	18 (68)	DSF109_8	14 (42)	DS0139_8	12 (36)	DS0197	4 (11)
	3	27 (102)	DS0174	6 (16)	DS0174	6 (16)	DS0310_16	10 (30)
	4	36 (136)	DS0174	9 (27)	DS0225_16	15 (44)	DS0350	4 (11)
	6	54 (204)	DS0260	8 (25)	DS0350	7 (22)	DS0620_32	10 (29)

* Design data: 40% ethylene glycol; 75°F (23.9°C)/50% room design

Table 20 60 Hz capacities & typical specifications, water cooled and glycol cooled applications

		WATER COOLED			GLYCOL COOLED		
Nominal, Capacity, Tons		**1-1/2**	**2**	**3**	**1-1/2**	**2**	**3**
Evaporator Section		**DME020E**	**DME027E**	**DME037E**	**DME020E**	**DME027E**	**DME037E**
Net Capacity Data - BTU/H (kW) High Fan Speed (1)							
80°F (26.7°C) DB	Total	21000 (6.2)	27400 (8.0)	38800 (11.4)	18000 (5.3)	23300 (6.8)	34000 (10.0)
50% RH	Sensible	17200 (5.0)	22700 (6.7)	29100 (8.5)	16100 (4.7)	21200 (6.2)	27300 (8.0)
75°F (23.9°C) DB	Total	19100 (5.6)	25100 (7.4)	35300 (10.3)	16500 (4.8)	21600 (6.3)	31200 (9.1)
50% RH	Sensible	16400 (4.8)	21600 (6.3)	27700 (8.1)	15300 (4.5)	20200 (5.9)	26100 (7.6)
72°F (22.2°C) DB	Total	18000 (5.3)	23800 (7.0)	33300 (9.8)	15700 (4.6)	22100 (6.5)	29600 (8.7)
50% RH	Sensible	15900 (4.7)	21000 (6.2)	26900 (7.9)	15700 (4.6)	22100 (6.5)	25400 (7.4)
Net Capacity Data - BTU/H (kW) Low Fan Speed (1)							
80°F (26.7°C) DB	Total	20700 (6.1)	26900 (7.9)	38200 (11.2)	17800 (5.2)	23000 (6.7)	33700 (9.9)
50% RH	Sensible	15900 (4.7)	20900 (6.1)	27500 (8.1)	14900 (4.4)	19500 (5.7)	25800 (7.6)
75°F (23.9°C) DB	Total	18800 (5.5)	24600 (7.2)	34800 (10.2)	16400 (4.8)	21300 (6.2)	31000 (9.1)
50% RH	Sensible	15200 (4.5)	20000 (5.9)	26300 (7.7)	14200 (4.2)	18700 (5.5)	24700 (7.2)
72°F (22.2°C) DB	Total	17800 (5.2)	23400 (6.9)	32900 (9.6)	15600 (4.6)	20300 (5.9)	29500 (8.6)
50% RH	Sensible	14800 (4.3)	19400 (5.7)	25600 (7.5)	13800 (4.0)	18200 (5.3)	24100 (7.1)
Fan Data - Direct Drive							
Air Volume - CFM (CMH)	High	870 (1478)	1230 (2090)	1320 (2243)	870 (1478)	1230 (2090)	1320 (2243)
Air Volume - CFM (CMH)	Low	750 (1274)	1050 (1784)	1175 (1996)	750 (1274)	1050 (1784)	1175 (1996)
Fan Motor hp (W)		0.16 (120)	*.20 (150)	*.27 (200)	0.16 (120)	*.20 (150)	*.27 (200)
Compressor Data - Scroll							
Refrigerant		R-22	R-22	R-22	R-22	R-22	R-22
Evaporator Coil - Copper Tube/Aluminum Fin							
Face Area ft.^{2} (m^2)		2.4 (0.22)	3.9 (0.36)	3.9 (0.36)	2.4 (0.22)	3.9 (0.36)	3.9 (0.36)
Rows of Coil		4	3	4	4	3	4
Reheat Data - Electric (Includes Fan Motor Heat)							
Capacity - BTU/H (kW) @ 230V		9215 (2.7)	18082 (5.3)	18765 (5.5)	9215 (2.7)	18082 (5.3)	18765 (5.5)
Humidifier Data - Steam Generator Type							
Capacity - lbs/hr (kg/h) @ 230V		3 (1.4)	3 (1.4)	3 (1.4)	3 (1.4)	3 (1.4)	3 (1.4)
Connection Sizes							
Liquid Line - in.		1/4	3/8	3/8	1/4	3/8	3/8
Suction Line - in.		5/8	7/8	7/8	5/8	7/8	7/8
Humidifier Supply - Comp Ftg, in.		1/4	1/4	1/4	1/4	1/4	1/4
Humidifier Drain - Barb Ftg, in.		1/2	1/2	1/2	3/8	3/8	3/8
Evaporator Drain - OD, in.		3/4	3/4	3/4	3/4	3/4	3/4

Water Cooled Condensing Unit Options			
Condenser Water Requirements 85°F (29.4°C) EWT, 105°F (40.6°C) Cond. Temp			
Condensing Module	**DMC022WG**	**DMC029WG**	**DMC040WG**
THR - BTU/H (kW) @ 75°F (23.9°C)/50%	24,900 (7.3)	32,500 (9.5)	46,200 (13.5)
Flow Rate - GPM (l/s)	4.1 (0.3)	4.5 (0.3)	7.4 (0.5)
Pressure Drop - ft. (kPa)	7.2 (21.5)	4.2 (12.5)	7.5 (22.4)
Condenser Connection - in.	5/8	7/8	7/8
Condenser Water Requirements 85°F (29.4°C) EWT, 105°F (40.6°C) Cond. Temp			
Condensing Module	**N/A**	**MC_26W**	**MC_38W**
THR - BTU/H (kW) @ 75°F (23.9°C)/50%	N/A	29,900 (8.8)	43,100 (12.6)
Flow Rate - GPM (l/s)	N/A	7.5 (0.5)	6.1 (0.4)
Pressure Drop - ft. (kPa)	N/A	15.7 (46.8)	10.3 (30.7)
Condenser Connection - in.	N/A	3/4 FPT	3/4 FPT

* The 2 & 3 Ton units each have 2 motors
2 ton - .08 & .12 hp
3 ton - .11 & .16 hp

Glycol Cooled Condensing Unit Options			
Condenser Ethylene Glycol Requirements 110°F (43.3°C) EGT			
Condensing Module	**DMC022WG**	**DMC029WG**	**DMC040WG**
Flow Rate - GPM (l/s)	6 (0.4)	7 (0.4)	9 (0.6)
Pressure Drop - ft. (kPa)	16.9 (50.4)	10.4 (31.0)	13 (38.8)
Condenser Connection - in.	5/8	7/8	7/8
Condenser Ethylene Glycol Requirements 110°F (43.3°C) EGT			
Condenser Module	**N/A**	**MC_26W**	**MC_38W**
Flow Rate - GPM (l/s)	N/A	9 (0.6)	12 (0.8)
Pressure Drop - ft. (kPa)	N/A	26 (77.6)	42.8 (127.7)
Condenser Connection - in.	N/A	3/4 FPT	3/4 FPT

(1) All capacities are nominal values, actual performance will be ±5%.

Table 21 50 Hz capacities & typical specifications, water cooled and glycol cooled applications

		WATER COOLED			GLYCOL COOLED		
Nominal Tons		**1-1/2**	**2**	**3**	**1-1/2**	**2**	**3**
Evaporator Section		**DME020E**	**DME027E**	**DME037E**	**DME020E**	**DME027E**	**DME037E**
Net Capacity Data - BTU/H (kW) High Fan Speed (1)							
80°F (26.7°C) DB	Total	17800 (5.2)	23200 (6.8)	33100 (9.7)	15600 (4.6)	19600 (5.7)	29500 (8.6)
50% RH	Sensible	14500 (4.2)	19200 (5.6)	24600 (7.2)	13700 (4.0)	17900 (5.2)	23300 (6.8)
75°F (23.9°C) DB	Total	16200 (4.7)	21300 (6.2)	30000 (8.8)	14300 (4.2)	19400 (5.7)	27100 (7.9)
50% RH	Sensible	13800 (4.0)	18300 (5.4)	23500 (6.9)	13000 (3.8)	19400 (5.7)	22300 (6.5)
72°F (22.2°C) DB	Total	15300 (4.5)	20200 (5.9)	28400 (8.3)	13600 (4.0)	18600 (5.4)	25700 (7.5)
50% RH	Sensible	13400 (3.9)	17800 (5.2)	22800 (6.7)	12600 (3.7)	18600 (5.4)	21700 (6.4)
Net Capacity Data - BTU/H (kW) Low Fan Speed (1)							
80°F (26.7°C) DB	Total	17500 (5.1)	22800 (6.7)	32600 (9.6)	15500 (4.5)	19400 (5.7)	29300 (8.6)
50% RH	Sensible	13400 (3.9)	17700 (5.2)	23300 (6.8)	12600 (3.7)	16500 (4.8)	22100 (6.5)
75°F (23.9°C) DB	Total	16000 (4.7)	20800 (6.1)	29600 (8.7)	14200 (4.2)	17900 (5.2)	26900 (7.9)
50% RH	Sensible	12800 (3.8)	16900 (5.0)	22300 (6.5)	12100 (3.5)	15800 (4.6)	21100 (6.2)
72°F (22.2°C) DB	Total	15100 (4.4)	19800 (5.8)	28000 (8.2)	13500 (4.0)	17100 (5.0)	25500 (7.5)
50% RH	Sensible	12400 (3.6)	16500 (4.8)	21700 (6.4)	11800 (3.5)	15300 (4.5)	20600 (6.0)
Fan Data - Direct Drive							
Air Volume - CFM (CMH)	High	725 (1232)	1025 (1741)	1100 (1869)	725 (1232)	1025 (1741)	1100 (1869)
Air Volume - CFM (CMH)	Low	625 (1062)	875 (1487)	980 (1665)	625 (1062)	875 (1487)	980 (1665)
Fan Motor hp (W)		0.16 (120)	*.20 (150)	*.27 (200)	0.16 (120)	*.20 (150)	*.27 (200)
Compressor Data							
Refrigerant		R-22	R-22	R-22	R-22	R-22	R-22
Evaporator Coil - Copper Tube/Aluminum Fin							
Face Area $ft.^2$ (m^2)		2.4 (0.22)	3.9 (0.36)	3.9 (0.36)	2.4 (0.22)	3.9 (0.36)	3.9 (0.36)
Rows of Coil		4	3	4	4	3	4
Reheat Data - Electric (Includes Fan Motor Heat)							
Capacity - BTU/H (kW) @ 230V		9215 (2.7)	18082 (5.3)	18765 (5.5)	9215 (2.7)	18082 (5.3)	18765 (5.5)
Humidifier Data - Steam Generator Type							
Capacity - lbs/hr (kg/h) @ 230V		3 (1.4)	3 (1.4)	3 (1.4)	3 (1.4)	3 (1.4)	3 (1.4)
Connection Sizes							
Liquid Line - in.		1/4	3/8	3/8	1/4	3/8	3/8
Suction Line - in.		5/8	7/8	7/8	5/8	7/8	7/8
Humidifier Supply - Comp Ftg, in.		1/4	1/4	1/4	1/4	1/4	1/4
Humidifier Drain - Barb Ftg, in.		1/2	1/2	1/2	3/8	3/8	3/8
Evaporator Drain - OD, in.		3/4	3/4	3/4	3/4	3/4	3/4

Water Cooled Condensing Unit Options			
Condenser Water Requirements 85°F (29.4°C) EWT, 105°F (40.6°C) Cond. Temp			
Condensing Module	**DMC022WG**	**DMC029WG**	**DMC040WG**
THR - BTU/H (kW) @ 75°/50%	21,100 (6.2)	27,600 (8.1)	39,400 (13.6)
Flow Rate - GPM (l/m)	3.1 (11.7)	3.6 (13.6)	5.8 (21.9)
Pressure Drop - ft. (kPa)	4.2 (12.5)	2.7 (8.0)	4.7 (14.0)
Condenser Connection - in.	5/8	7/8	7/8
Condenser Water Requirements 85°F (29.4°C) EWT, 105°F (40.6°C) Cond. Temp			
Condensing Module	**N/A**	**MC_25W**	**MC_37W**
THR - BTU/H (kW) @ 75°F (23.9°C)/50%	N/A	27,700 (8.1)	39,700 (11.6)
Flow Rate - GPM (l/s)	N/A	6.8 (0.4)	5.1 (0.3)
Pressure Drop - ft. (kPa)	N/A	13 (38.8)	7.5 (22.4)
Condenser Connection - in.	N/A	3/4	3/4

* The 2 & 3 Ton units each have 2 motors
2 ton - .08 & .12 hp
3 ton - .11 & .16 hp

Glycol Cooled Condensing Unit Options			
Condenser Ethylene Glycol Requirements 110°F (43.3°C) EGT			
Condensing Module	**DMC022WG**	**DMC029WG**	**DMC040WG**
Flow Rate - GPM (l/s)	6 (0.4)	7 (0.4)	9 (0.6)
Pressure Drop - ft. (kPa)	16.9 (50.4)	10.4 (31.0)	13 (38.8)
Condenser Connection - in.	5/8	7/8	7/8
Condenser Ethylene Glycol Requirements 110°F (43.3°C) EGT			
Condenser Module	**N/A**	**MC_25W**	**MC_37W**
Flow Rate - GPM (l/s)	N/A	9 (0.6)	12 (0.8)
Pressure Drop - ft. (kPa)	N/A	26 (77.6)	42.8 (127.7)
Condenser Connection - in.	N/A	3/4 FPT	3/4 FPT

(1) All capacities are nominal values, actual performance will be ±5%.

Table 22 60 Hz electrical data, evaporator section, water cooled and glycol cooled applications

Nominal Capacity, Tons	1.5	2	3
Cooling Only			
Model	DME020E-PC	DME027E-PC	DME037E-PC
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	1.4	1.5	2.2
WSA	1.8	1.9	2.8
OPD	15	15	15
With Reheat			
Model	DME020E-P0	DME027E-P0	DME037E-P0
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	11.8	22.3	23.0
WSA	14.8	27.9	28.8
OPD	15	30	30
With Reheat & Humidifier			
Model	DME020E-PH	DME027E-PH	DME037E-PH
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	18.8	29.3	30.0
WSA	23.5	36.6	37.5
OPD	25	40	40

Table 23 50 Hz electrical data, evaporator section, water cooled and glycol cooled applications

Nominal Capacity, Tons	1.5	2	3
Cooling Only			
Model	DME020E-WC	DME027E-WC	DME037E-WC
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	1.4	1.5	2.2
WSA	1.8	1.9	2.8
With Reheat			
Model	DME020E-W0	DME027E-W0	DME037E-W0
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	11.8	22.3	23.0
OPD	14.8	27.9	28.8
With Reheat & Humidifier			
Model	DME020E-WH	DME027E-WH	DME037E-WH
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	18.8	29.3	30.0
WSA	23.5	36.6	37.5

Table 24 60 Hz electrical data, evaporator with integral water/glycol condensing unit with one main power feed

Nominal Capacity, Tons	1.5	2	3
Cooling Only			
Evaporator Model	DME020E-PC	DME027E-PC	DME037E-PC
Condensing Model	DMC022WGP	DMC029WGP	DMC040WGP
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	11.8	12.4	18.2
WSA	14.4	15.1	22.2
OPD	20	30	35
With Reheat			
Evaporator Model	DME020E-P0	DME027E-P0	DME037E-P0
Condensing Model	DMC022WGP	DMC029WGP	DMC040WGP
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	22.2	33.2	39.0
WSA	27.4	41.1	48.2
OPD	35	45	50
With Reheat & Humidifier			
Evaporator Model	DME020E-PH	DME027E-PH	DME037E-PH
Condensing Model	DMC022WGP	DMC029WGP	DMC040WGP
Volt-Ph-Hz	208/230-1-60	208/230-1-60	208/230-1-60
FLA	22.2	33.2	39.0
WSA	27.4	41.1	48.2
OPD	35	45	50

Table 25 50 Hz electrical data, evaporator with integral water/glycol condensing unit with one main power feed

Nominal Capacity, Tons	1.5	2	3
Cooling Only			
Evaporator Model	DME020E-WC	DME027E-WC	DME037E-WC
Condensing Model	DMC022WGW	DMC029WGW	DMC040WGW
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	10.5	11.4	19.1
WSA	12.8	13.9	23.3
With Reheat			
Evaporator Model	DME020E-W0	DME027E-W0	DME037E-W0
Condensing Model	DMC022WGW	DMC029WGW	DMC040WGW
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	20.9	32.2	39.9
WSA	25.8	39.9	49.3
With Reheat & Humidifier			
Evaporator Model	DME020E-WH	DME027E-WH	DME037E-WH
Condensing Model	DMC022WGW	DMC029WGW	DMC040WGW
Volt-Ph-Hz	200/230-1-50	200/230-1-50	200/230-1-50
FLA	20.9	32.2	39.9
WSA	25.8	39.9	49.3

Table 26 60 Hz electrical data, water/glycol cooled condensing unit

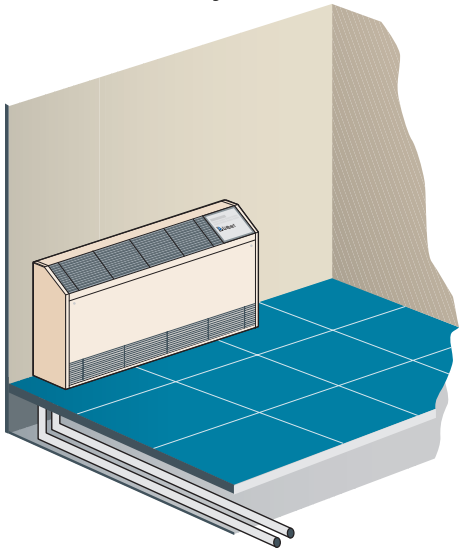
Nominal Capacity, Tons	1.5	2	2	3	3	3	3
Model	N/A	MC_26W_P	MC_26W_X	MC_38W_P	MC_38W_X	MC_38W_Y	MC_38W_A
Volt-Ph-Hz		208/230-1-60	277-1-60	208/230-1-60	277-1-60	208/230-3-60	460-3-60
FLA		11.4	9.6	15.7	14.3	11.4	5.7
WSA		14.3	12.0	19.6	17.9	14.3	7.1
OPD		25	20	35	30	25	15

Table 27 50 Hz electrical data, centrifugal fan condensing unit

Nominal Capacity, Tons	1.5	2	2	3	3
Model	N/A	MC_25W_S	MC_25W_M	MC_37W_S	MC_37W_M
Volt-Ph-Hz		220/240-1-50	380/415-3-50	220/240-1-50	380/415-3-50
FLA		11.4	4.3	17.1	6.4
WSA		14.3	5.4	21.4	8.0

4.0 CHILLED WATER SYSTEMS

Figure 16 General arrangement, chilled water systems



This unit connects to a chilled water loop for quick and easy installation.

Table 28 Chilled water system configurations

Nominal Capacity	Evaporator Unit
3 Tons	DME044C

4.1 Model Number Designations—Chilled Water Units

Figure 17 Chilled water unit model numbers*

DME 044 C- P H 3

- **DME** = DME = DataMate Evaporator Unit
- **044** = Nominal Capacity (1000 BTU/H)
- **C-** = C = Chilled Water
- **P** = P = 208/230, 1ph, 60Hz; W = 200/220, 1ph, 50Hz
- **H** = H = With Humidifier & Reheat (Evaporator); 0 = With Reheat; C = Cooling Only
- **3** = Revision Level

*** Not all combinations are possible.**

Figure 18 Evaporator section—chilled water applications

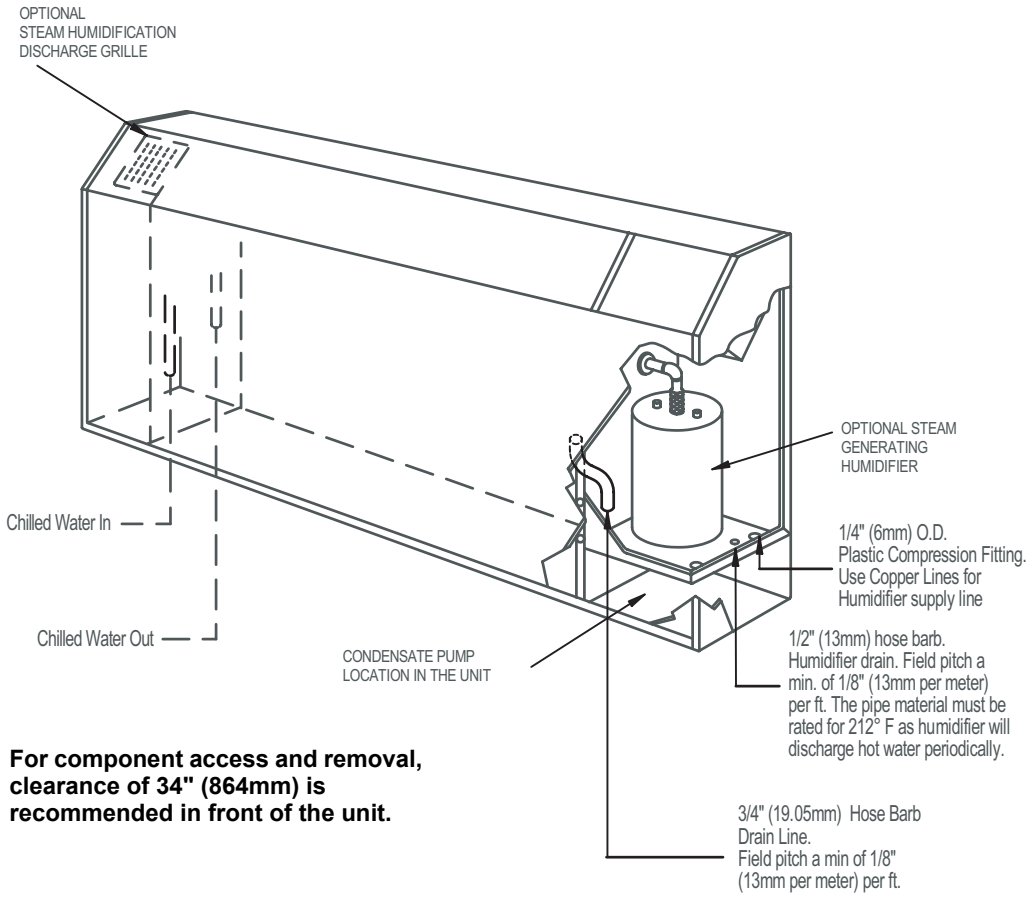


Table 29 Unit dimensions, chilled water applications

Model	Weight	Width	Depth	Height
DME044C	364 lb (165kg)	64-1/8" (1628mm)	11-7/8" (302mm)	32" (813mm)

Figure 19 Condensate section, optional, field-installed, chilled water applications

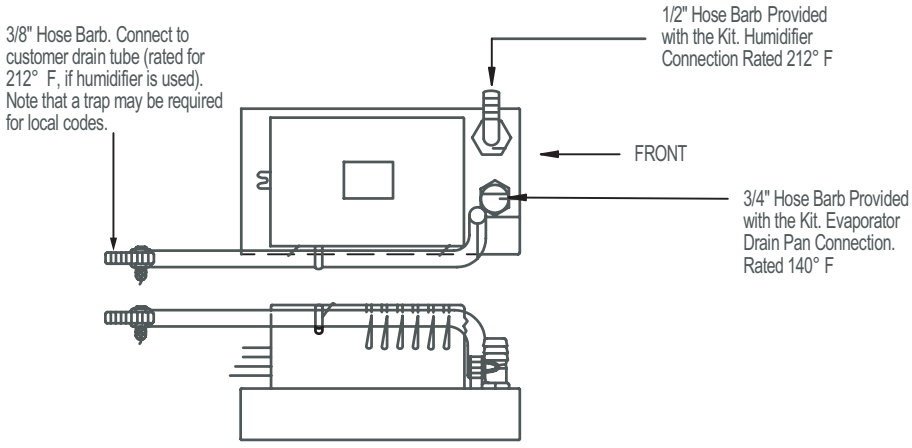


Table 30 60Hz capacities & typical specifications, chilled water applications

		Chilled Water
Nominal Capacity, Tons		**3**
Evaporator Section		**DME044C**
Capacity Data - BTU/H (kW) High Fan Speed (1) 45°F (7.2°C) EWT		
80°F (26.7°C) DB	Total	44200 (13.0)
50% RH	Sensible	32200 (9.4)
Flow Rate - GPM (l/s)		10.2 (38.6)
Pressure Drop - ft. (kPa)		25.3 (75.4)
75°F (23.9°C) DB	Total	32700 (9.6)
50% RH	Sensible	27500 (8.1)
Flow Rate - GPM (l/s)		8.0 (30.2)
Pressure Drop - ft. (kPa)		16.2 (48.3)
72°F (22.2°C) DB	Total	26900 (7.9)
50% RH	Sensible	24800 (7.3)
Flow Rate - GPM (l/s)		6.8 (25.7)
Pressure Drop - ft. (kPa)		12.1 (36.1)
Capacity Data - BTU/H (kW) Low Fan Speed (1) 45°F (7.2°C) EWT		
80°F (26.7°C) DB	Total	40900 (12.0)
50% RH	Sensible	29600 (8.7)
Flow Rate - GPM (l/s)		9.3 (35.2)
Pressure Drop - ft. (kPa)		21.3 (63.5)
75°F (23.9°C) DB	Total	30300 (8.9)
50% RH	Sensible	25300 (7.4)
Flow Rate - GPM (l/s)		7.5 (28.4)
Pressure Drop - ft. (kPa)		14.3 (42.6)
72°F (22.2°C) DB	Total	24800 (7.3)
50% RH	Sensible	22700 (6.7)
Flow Rate - GPM (l/s)		6.3 (23.8)
Pressure Drop - ft. (kPa)		10.4 (31.0)
Fan Data - Direct Drive		
Air Volume - CFM (CMH)	High	1320 (2243)
Air Volume - CFM (CMH)	Low	1175 (1996)
Fan Motor hp (W)		*.27 (200)
Chilled Water Coil - Copper Tube, Aluminum Fin		
Face Area ft.^{2} (m^2)		3.9 (0.36)
Rows of Coil		3
Chilled Water Controls		
Maximum Design Pressure - PSI (kPa)		125 (862)
Valve Type		Slow Close Solenoid
Valve Body		2-way
Valve C_v		8
Valve Close-Off Pressure - PSI (kPa)		8 (55)
Valve Size - Inches		3/4
Reheat Data - Electric (Includes Fan Motor Heat)		
Capacity - BTU/H (kW)		18765 (5.5)
Humidifier Data - Steam Generating Type		
Capacity - lbs/hr (kg/h)		3 (1.4)
Connection Sizes inches		
Chilled Water Supply and Return - FPT		3/4
Humidifier Supply - Compr Ftg, in.		1/4
Evaporator Drain - Barb Ftg, in.		1/2
Evaporator Drain - OD, in.		3/4

* 2 motors - .11 & .16 hp

(1) All capacities are nominal values, actual performance will be ±5%.

Table 31 50Hz capacities & typical specifications, chilled water applications

		Chilled Water
Nominal Capacity, Tons		**3**
Evaporator Section		**DME044C**
Capacity Data - BTU/H (kW) High Fan Speed (1) 45°F (7.2°C) EWT		
80°F (26.7°C) DB	Total	40400 (11.8)
50% RH	Sensible	28600 (8.4)
Flow Rate - GPM (l/s)		10.2 (38.6)
Pressure Drop - ft. (kPa)		25.3 (75.4)
75°F (23.9°C) DB	Total	29900 (8.8)
50% RH	Sensible	24400 (7.1)
Flow Rate - GPM (l/s)		8.0 (30.2)
Pressure Drop - ft. (kPa)		16.2 (48.3)
72°F (22.2°C) DB	Total	24400 (7.1)
50% RH	Sensible	22000 (6.4)
Flow Rate - GPM (l/s)		6.8 (25.7)
Pressure Drop - ft. (kPa)		12.1 (36.1)
Capacity Data - BTU/H (kW) Low Fan Speed (1) 45°F (7.2°C) EWT		
80°F (26.7°C) DB	Total	37300 (10.9)
50% RH	Sensible	26200 (7.7)
Flow Rate - GPM (l/s)		9.3 (35.2)
Pressure Drop - ft. (kPa)		21.3 (63.5)
75°F (23.9°C) DB	Total	27700 (8.1)
50% RH	Sensible	22400 (6.6)
Flow Rate - GPM (l/s)		7.5 (28.4)
Pressure Drop - ft. (kPa)		14.4 (42.9)
72°F (22.2°C) DB	Total	22500 (6.6)
50% RH	Sensible	20100 (5.9)
Flow Rate - GPM (l/s)		6.3 (23.8)
Pressure Drop - ft. (kPa)		10.4 (31.0)
Fan Data - Direct Drive		
Air Volume - CFM (CMH)	High	1100 (1869)
Air Volume - CFM (CMH)	Low	980 (1665)
Fan Motor hp (W)		*.27 (200)
Chilled Water Coil - Copper Tube, Aluminum Fin		
Face Area ft.^{2} (m^2)		3.9 (0.36)
Rows of Coil		3
Chilled Water Controls		
Maximum Design Pressure - PSI (kPa)		125 (862)
Valve Type		Slow Close Solenoid
Valve Body		2-way
Valve C_v		8
Valve Close-Off Pressure - PSI (kPa)		8 (55)
Valve Size - Inches		3/4
Reheat Data - Electric (Includes Fan Motor Heat)		
Capacity - BTU/H (kW)		18765 (5.5)
Humidifier Data - Steam Generating Type		
Capacity - lbs/hr (kg/h)		3 (1.4)
Connection Sizes inches		
Chilled Water Supply and Return - FPT		3/4
Humidifier Supply - Compr Ftg, in.		1/4
Evaporator Drain - Barb Ftg, in.		1/2
Evaporator Drain - OD, in.		3/4

* 2 motors - .11 & .16 hp

(1) All capacities are nominal values, actual performance will be ±5%.

Table 32 60Hz electrical data, evaporator section, chilled water applications

Nominal Capacity, Tons	3
Cooling Only	
Model	DME044C-PC
Volt-Ph-Hz	208/230-1-60
FLA	2.2
WSA	2.8
OPD	15
With Reheat	
Model	DME044C-P0
Volt-Ph-Hz	208/230-1-60
FLA	23.0
WSA	28.8
OPD	30
With Reheat & Humidifier	
Model	DME044C-PH
Volt-Ph-Hz	208/230-1-60
FLA	30.0
WSA	37.5
OPD	40

Table 33 50Hz electrical data, evaporator section, chilled water applications

Nominal Capacity, Tons	3
Cooling Only	
Model	DME044C-WC
Volt-Ph-Hz	200/230-1-50
FLA	2.2
WSA	2.8
With Reheat	
Model	DME044C-W0
Volt-Ph-Hz	200/230-1-50
FLA	23.0
OPD	28.8
With Reheat & Humidifier	
Model	DME044C-WH
Volt-Ph-Hz	200/230-1-50
FLA	30.0
WSA	37.5

GUIDE SPECIFICATIONS

1.0 GENERAL

1.1 Summary

These specifications describe requirements for a computer-room environmental control system. The system shall be designed to maintain temperature and relative humidity conditions within the room.

The manufacturer shall design and furnish all equipment to be fully compatible with heat dissipation requirements of the site.

1.2 Design Requirements

The computer room environmental control system shall be a Liebert DataMate, factory assembled unit. The refrigeration system shall be split, with the compressor located in a remote or close coupled condensing unit. The evaporator section shall be specifically designed for floor or wall-mounted installation and serviceable from the front of the system. Condensing units shall be designed for outdoor, below the raised floor, above-dropped-ceiling, or in room installation. Refer to **Guide Specifications 2.4 - Standard Features/ Individual Systems**. Each system shall be capable of delivering_____CFM (CMH). The circulating-air fan shall be two speed for precise dehumidification control. The fan motor shall be_____hp (kW). The system shall be designed for blow through air arrangement.

The system shall have a total cooling capacity of_____BTU/H (kW), and a sensible cooling capacity of_____ BTU/H (kW), based on the entering air condition of_____°F (°C) dry bulb, and _____°F (°C) wet bulb. These units are to be supplied with_____volt, PH, _____Hz power supply.

1.3 Submittals

Submittals shall be provided with the proposal and shall include: Single-Line Diagrams; Dimensional, Electrical, and Capacity data; Piping and Electrical Connection Drawings.

2.0 PRODUCT

2.1 Standard Features/ All Systems

2.1.1 Evaporator Cabinet and Frame Construction

The cabinet and chassis shall be constructed of heavy gauge, painted furniture steel. The cabinet shall be designed for easy installation and service access from the front only.

2.1.2 Air Distribution

The air distribution system shall be constructed with a quiet, direct-drive fan assembly equipped with multiple double-inlet blowers, self-aligning sleeve bearings, and lifetime lubrication. Fan motor shall be permanent-split capacitor, high efficiency type, equipped with two speeds for air flow modulation. Dehumidification shall utilize the lower fan speed.

Air filters shall be the cleanable foam type. They shall be easily removable from the front of the system by means of quarter-turn fasteners and shall not require system shutdown for service.

2.1.3 Microprocessor Control

The control system shall be microprocessor based. The wall-mounted control enclosure shall include a 2-line by 16 character LCD display providing continuous display of operating status and alarm condition. An 8-key membrane keypad for setpoint/program control, unit on/off, and fan speed shall be located below the display. Temperature and humidity sensors shall be located in the wallbox which shall be capable of being located up to 300 ft (91.4m) from the evaporator unit.

Monitoring

The LCD display shall provide an on/off indication, fan speed indication, operating mode indication (cooling, heating, humidifying, dehumidifying) and current day, time, temperature and humidity (if applicable) indication. The monitoring system shall be capable of relaying unit operating parameters and alarms to the Liebert monitoring system.

Control Setpoint Parameters

- Temp. Setpoint 65-85°F (18 to 29°C)
- Temp. Sensitivity 1 to 5°F (1 to 3°C)
- Humidity Setpoint 20-80% RH
- Humidity Sensitivity 1 to 10% RH

The microprocessor can be set within these ranges; however, the unit may not be able to control to extreme combinations of temperature and humidity.

2.1.3.3 Unit Controls

Compressor Short-Cycle Control

The control system shall prevent compressor short-cycling by a 3 minute timer from compressor stop to the next start.

Common Alarm and Remote On/Off

A common alarm relay shall be provided to provide a contact closure to a remote alarm device. Two (2) terminals shall also be provided for remote on/off control. Individual alarms shall be "enabled" or "disabled" from reporting to the common alarm.

Setback Control

The control shall be programmable on a daily basis or on a 5 day/2 day program schedule. It shall be capable of accepting 2 programs per day.

Temperature Calibration

The control shall include the capabilities to calibrate the temperature and humidity sensors and adjust the sensor response delay time from 1 to 90 seconds. The control shall be capable of displaying temperature values in °F or °C.

2.1.4 Alarms

Unit Alarm

The control system shall monitor unit operation and activate an audible and visual alarm in the event of the following factory preset alarm conditions:

- High Temperature
- Low Temperature
- High Humidity
- Low Humidity
- High Water Alarm - Lockout Unit Operation
- High Head Pressure
- Loss of Power
- Compressor Short Cycle

Custom Alarms (2x)

- Humidifier Problem
- Filter Clog
- Water Detected
- Smoke Detected

User customized text can be entered for the two (2) custom alarms

System Auto Restart

For start-up after power failure, the system shall provide automatic restart with a programmable (up to 9.9 minutes in 6-second increments) time delay. Programming can be performed either at the unit or from the central site monitoring system.

Alarm Controls

Each alarm (unit and custom) shall be separately enabled or disabled, selected to activate the common alarm (except for high head pressure).

Audible Alarm

The audible alarm shall annunciate any alarm that is enabled by the operator.

Common Alarm

A programmable common alarm shall be provided to interface user selected alarms with a remote alarm device.

Remote Monitoring

All alarms shall be communicated to the Liebert site monitoring system with the following information: date and time of occurrence, unit number, and present temperature and humidity.

2.2 Direct Expansion System Components

2.2.1 Direct Expansion Coil

The evaporator coil shall have _____ ft^2 (m^2) face area, _____ rows deep. It shall be constructed of copper tubes and aluminum fins and have a maximum face velocity of _____ FPM (m/s) at _____ CFM (CMH). Refrigerant flow shall be controlled by an externally equalized thermostatic expansion valve. The coil shall be provided with a galvanized steel drain pan.

2.2.2 Refrigeration System

The refrigeration system shall consist of a (hermetic) (scroll) compressor with vibration isolating springs, high pressure safety switch, liquid line filter/drier, and a compressor crankcase heater. Refrigeration components shall be located in remote or close-coupled condensing unit. Refer to **Guide Specifications 2.4 - Standard Features/ Individual Systems**.

2.3 Chilled Water System Components

2.3.1 Chilled Water Control

The water circuit shall include a 2-way slow close motorized valve. Design pressure shall be 125 PSIG (865.85 kPa).

2.3.2 Chilled Water Coil

The cooling coil shall have a minimum of 2.6 sq.ft. (.24m^2) face area, 3 rows deep. It shall be constructed of copper tubes and aluminum fins and be mounted in a stainless steel condensate drain pan. The coil shall be designed for a maximum face velocity of 340 ft. per minute (1.73 m/s) at _____ CFM (CMH). The water circuit shall be designed to distribute water into the entire coil face area. The coil shall be supplied with _____ °F (°C) entering water temperature, with a _____ °F (°C) temperature rise. The coil shall be supplied with _____ GPM (l/s) of chilled water and the pressure drop shall not exceed _____ PSI (kPa).

2.4 Standard Features/ Individual Systems

2.4.1 Air Cooled

The air cooled system shall consist of an evaporator section and a condensing unit section.

1. Centrifugal Fan Condensing Unit

The condenser coil shall be constructed of copper tubes and aluminum fins.The condensing unit shall be factory tested, charged with refrigerant, sealed and be capable of being connected to the evaporator section using pre-charged refrigerant line sets. No piping, brazing, dehydration or charging shall be required.

Components shall include scroll compressor, high-pressure switch, Lee-temp refrigerant receiver, head pressure control valve, and liquid line solenoid valve.

The condensing unit shall be designed for 95°F (35°C) ambient and be capable of operation to -20°F (-29°C) ambient.

A hot gas bypass circuit shall be provided to reduce compressor cycling and improve operation under low load conditions.

The condenser fan shall be designed for _____ CFM (CMH) at _____ inches (Pa) external static pressure.

2. Disconnect (Optional)

Factory-installed non-fused disconnect switch allows unit to be turned off for maintenance.

3. Propeller Fan Condensing Unit

The condenser coil shall be constructed of copper tubes and aluminum fins with a direct drive propeller fan and scroll compressor. (Option) A hot gas bypass circuit shall be provided to ensure operation under low load conditions. All components shall be factory assembled, charged with refrigerant, sealed and be capable of being connected to the evaporator section using pre-charged refrigerant line sets. No piping, brazing, dehydration or charging shall be required.

Condensing unit shall be designed for _____°F (____°C) ambient and be capable of operation to -30°F (-34°C).

(Option) The condensing unit shall be designed to operate at a sound level less than 58 dba.

2.4.2 Water or Glycol Cooled (Integral)

Water or Glycol Cooled Condensing Unit

The water/glycol cooled condensing unit shall include the compressor and the water/glycol cooled condenser, and shall be remote from the evaporator module. The water/glycol cooled condenser shall be designed to balance the heat rejection at_____ °F (°C) entering water/glycol temperature with a flow rate of _____ GPM (l/s). An adjustable water regulating valve shall be included.

All components shall be factory assembled, charged with refrigerant, sealed and be capable of being connected to the evaporator section using pre-charged refrigerant line sets. No piping, brazing, dehydration or charging shall be required.

Drycooler

The Liebert manufactured drycooler shall be the low profile, slow speed, direct drive propeller fan type. The drycooler shall be constructed of aluminum and contain a copper tube aluminum fin coil with an integral electric control panel. The drycooler shall be designed for_____ °F (°C) ambient.

Glycol Pump Package

This system shall be provided with a centrifugal pump mounted in a weatherproof and vented enclosure. The pump shall be rated for GPM (l/s) at _____ ft. (m) of head, and operate on _____ volt, _____phase, _____Hz.

2.4.3 Water or Glycol Cooled Split Systems

Water or Glycol Cooled Condensing Unit

The water/glycol condensing unit shall be equipped with a coaxial condenser having a total system pressure drop of _____ ft. of water (kPa) and a flow rate of _____ GPM (l/s) with _____ °F (°C) entering water/glycol temperature.

Components shall include scroll compressor and high-pressure switch. The condensing unit shall be factory charged with refrigerant. The condensing module shall be capable of being connected to the evaporator section using pre-charged refrigerant line sets. No piping, brazing, dehydration, or charging shall be required.

The condenser circuit shall be pre-piped with a [(2-way) (3-way)] regulating valve that is head-pressure actuated.

The condenser water/glycol circuit shall be designed for a static operating pressure of [(150 PSI (1034 kPa)) (350 PSI (2413 kPa))].

A hot gas bypass circuit shall be provided to reduce compressor cycling and improve operation under low load conditions.

Disconnect (Optional)

Factory-installed non-fused disconnect switch allows unit to be turned off for maintenance.

2.5 Optional Equipment/All Systems

2.5.1 Electric Reheat

The electric reheats shall be low-watt density, tubular elements and shall include agency approved safety switches to protect the system from overheating. The capacity of the reheat coils shall be _____ BTU/H (kW), controlled in 1 stage.

2.5.2 Steam-Generating Humidifier

Provide electronically controlled steam-generating humidifier factory piped, mounted and wired to the integral control system. The steam generator shall provide dry steam to the bypass air around the evaporator coil.

Controls for the humidification system shall include: High and low humidity setpoints, automatic water feed and drain valves. Capacity shall be ____ lb/hr (_____ kg/hr).

2.5.3 Condensate Pump

The condensate pump shall have the capacity of ____GPH (l/s) at____ft. (m) of head. It shall be complete with integral float switch, pump, motor assembly, check valve and reservoir.

2.5.4 Refrigerant Line Sets

Pre-charged refrigerant line sets shall be provided by Liebert in proper lengths for application. Line set length shall be _____feet (m).

2.5.5 Liebert Site Monitoring System

A Liebert Site Monitoring System Model _____ shall be provided for remote monitoring of the DataMate unit and monitoring of other Liebert support equipment.

2.5.6 Liebert Site Monitoring or Control Systems

Provide indicated quantities of the following:

- _____Water Detection System(s) Model_____
- _____ Universal Monitor Model _____

3.0 EXECUTION

3.1 Installation of Computer-Room Air Conditioning Units

3.1.1 General

Install computer room Air Conditioning units in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.

3.1.2 Electrical Wiring

Install and connect electrical devices furnished by manufacturer but not specified to be factory mounted. Furnish copy of manufacturer's electrical connection diagram submittal to electrical contractor.

3.1.3 Piping Connections

Install and connect devices furnished by manufacturer but not specified to be factory mounted. Furnish copy of manufacturer's piping connection diagram submittal to piping contractor.

3.1.4 Supply and Drain Water Piping

Connect water supply and drains to air conditioning unit. Provide pitch and trap as manufacturer's instructions and local codes require.

3.2 Field Quality Control

Start computer room air conditioning units in accordance with manufacturer's start-up instructions. Test controls and demonstrate compliance with requirements.

NOTES

Liebert®
Keeping Business in Business®

HEAT REMOVAL/PRECISION AIR

DataMate

TECHNICAL DATA

The Company Behind the Products

With over a million installations around the globe, Liebert is the world leader in computer protection systems. Since its founding in 1965, Liebert has developed a complete range of support and protection systems for sensitive electronics:

- Environmental systems—close-control air conditioning from 1 to 60 tons
- Power conditioning and UPS with power ranges from 300 VA to more than 1000 kVA
- Integrated systems that provide both environmental and power protection in a single, flexible package
- Monitoring and control—from systems of any size or location, on-site or remote
- Service and support through more than 100 service centers around the world and a 24/7 Customer Response Center

While every precaution has been taken to ensure the accuracy and completeness of this literature, Liebert Corporation assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

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