



# SUBMITTAL DATA - I-P UNITS Unit Designation: Job Name: \_\_\_\_\_ Architect: \_\_\_\_\_ Engineer: Contractor: PERFORMANCE DATA Cooling Capacity: Btuh EER: Heating Capacity: \_\_\_\_\_ Btuh COP: \_\_\_\_\_ Ambient Air Temp: \_\_\_\_\_ °F Entering Water Temp (Clg): °F °F Entering Air Temp (Clg): Entering Water Temp (Htg): °F Entering Air Temp (Htg): °F Airflow: CFM Fan Speed or Motor/RPM/Turns:\_\_\_\_\_ Operating Weight: (lb) ELECTRICAL DATA Power Supply: Volts Phase Hz Minimum Circuit Ampacity: Maximum Overcurrent Protection:





## SUBMITTAL DATA - S-I UNITS Unit Designation: Job Name: \_\_\_\_\_ Architect: Engineer: Contractor: PERFORMANCE DATA Cooling Capacity: kW EER: Heating Capacity: \_\_\_\_\_ kW COP: \_\_\_\_\_ Ambient Air Temp: \_\_\_\_\_ °C Entering Water Temp (Clg): °C °C Entering Air Temp (Clg): Entering Water Temp (Htg): °C Entering Air Temp (Htg): °C Airflow: l/s Fan Speed or Motor/RPM/Turns: Operating Weight: (kg) ELECTRICAL DATA Power Supply: Volts Phase Hz Minimum Circuit Ampacity: Maximum Overcurrent Protection:



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#### THE CONSOLE (CCE) SERIES

The CCE series console unit provides a high efficiency WSHP "ductless" solution for spaces where individual, quiet control of the heating and cooling system is important. CCE units are especially ideal where ceiling height and space are limited, or when preserving the integrity of an existing structure. The CCE series meets ASHRAE 90.1 efficiencies, yet maintains small cabinet dimensions.

Available in sizes 1/2 ton (1.76 kW) through 1-1/2 tons (5.3 kW) with numerous cabinet, water piping and control choices, the CCE series offers a wide range of units for most any installation. The CCE has an extended range refrigerant circuit, capable of ground loop (geothermal) applications as well as water loop (boiler-tower) applications. Standard features are many. Microprocessor controls, galvanized steel cabinet, polyester powder coat paint and TXV refrigerant metering device are just some of the features of the flexible CCE series.

ClimateMaster's exclusive double isolation compressor mounting system makes the CCE series one of the quietest console units on the market. Compressors are mounted on vibration isolation springs to a heavy gauge mounting plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration/ sound attenuation. Options such as e-coated air coil, DDC controls, internal pump and factory-installed water solenoid valves allow customized design solutions.

The CCE Series console water-source heat pumps are designed to meet the challenges of today's HVAC demands with a low cost/high value "ductless" solution.

#### **UNIT FEATURES**

- Sizes 007 (1/2 ton, 1.76 kW) through 019 (1-1/2 ton, 5.3 kW)
- R22 Refrigerant
- Efficient Rotary compressors
- Meets ASHRAE 90.1 efficiencies
- Two-piece chassis/cabinet design
- Galvanized steel cabinet with durable Polar Ice powder coat finish
- Slope top/aluminum rigid bar supply air grille
- Unique double isolation compressor mounting for quiet operation
- TXV metering device
- Extended range (20 to 120°F, -6.7 to 48.9°C) operation
- ADA approved unit mounted controls, auto or manualchange-over
- Remote-mounted controls available
- Microprocessor controls standard (optional DXM and/or DDC controls)
- LonWorks, BACnet, Modbus and Johnson N2 compatibility options for DDC controls
- Factory-mounted hanger brackets for horizontal units
- Right or left-hand piping arrangement
- Front or bottom return
- Unit Performance Sentinel performance monitoring system (remote controls)
- Eight Safeties Standard
- Wide variety of options including e-coated air coils and internal pumps



New EarthPure® HFC-410A console chassis available in the new Tranquility Console (TRC) Series.



#### **Selection Procedure**

### **Reference Calculations**

Heating	Cooling	
$LWT = EWT - \frac{HE}{GPM \times 500}$	$LWT = EWT + \frac{HR}{GPM \times 500}$	LC = TC - SC
$LAT = EAT + \frac{HC}{CFM \times 1.08}$	LAT (DB) = EAT (DB) - $\frac{SC}{CFM \times 1.08}$	$S/T = \frac{SC}{TC}$

### Legend and Glossary of Abbreviations

<ul> <li>BTUH = BTU( British Thermal Unit) per hour</li> <li>CFM = airflow, cubic feet/minute</li> <li>COP = coefficient of performance = BTUH output/BTUH input</li> <li>DB = dry bulb temperature (°F)</li> <li>EAT = entering air temperature, Fahrenheit (dry bulb/wet bulb)</li> <li>EER = energy efficiency ratio = BTUH output/Watt input</li> <li>EPT = external pipe thread</li> <li>ESP = external static pressure (inches w.g.)</li> <li>EWT = entering water temperature</li> <li>GPM = water flow in U.S. gallons/minute</li> <li>HE = total heat of extraction, BTUH</li> <li>HR = total heat of rejection, BTUH</li> </ul>	HWC = hot water generator (desuperheater) capacity, Mbtuh IPT = internal pipe thread KW = total power unit input, kilowatts LAT = leaving air temperature, °F LC = latent cooling capacity, BTUH LWT = leaving water temperature, °F MBTUH = 1000 BTU per hour S/T = sensible to total cooling ratio SC = sensible cooling capacity, BTUH TC = total cooling capacity, BTUH WB = wet bulb temperature (°F) WPD = waterside pressure drop (psi & ft. of hd.)
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#### Conversion Table - to convert inch-pound (English) to SI (Metric)

Air Flow	Water Flow	Ext Static Pressure	Water Pressure Drop
Airflow (L/s) = CFM x 0.472	Water Flow (L/s) = gpm x 0.0631	ESP (Pa) = ESP (in of wg) x 249	PD (kPa) = PD (ft of hd) x 2.99

#### **Selection Procedure**

- Step 1 Determine the actual heating and cooling loads at the desired dry bulb and wet bulb conditions.
- Step 2 Obtain the following design parameters: Entering water temperature, water flow rate in GPM, air flow in CFM, water flow pressure drop and design wet and dry bulb temperatures. Air flow CFM should be between 300 and 450 CFM per ton. Unit water pressure drop should be kept as close as possible to each other to make water balancing easier. Go to the appropriate tables and find the proper indicated water flow and water temperature.
- Step 3 Select a unit based on total and sensible cooling conditions. Select a unit which is closest to, but no larger than, the actual cooling load.
- Step 4 Enter tables at the design water flow and water temperature. Read the total and sensible cooling capacities (Note: interpolation is permissible, extrapolation is not).
- Step 5 Read the heating capacity. If it exceeds the design criteria it is acceptable. It is quite normal for Water-Source Heat Pumps to be selected on cooling capacity only since the heating output is usually greater than the cooling capacity.
- Step 6 Determine the correction factors associated with the variable factors of dry bulb and wet bulb.

Corrected Total Cooling = tabulated total cooling x wet bulb correction. Corrected Sensible Cooling = tabulated sensible cooling x wet/dry bulb correction.

- Step 7 Compare the corrected capacities to the load requirements. Normally if the capacities are within 10% of the loads, the equipment is acceptable. It is better to undersize than oversize, as undersizing improves humidity control, reduces sound levels and extends the life of the equipment.
- Step 8 When completed, calculate water temperature rise and assess the selection. If the units selected are not within 10% of the load calculations, then review what effect changing the GPM, water temperature and/or air flow and air temperature would have on the corrected capacities. If the desired capacity cannot be achieved, select the next larger or smaller unit and repeat the procedure. Remember, when in doubt, undersize slightly for best performance.

### **Example Equipment Selection For Cooling**

Step 1 Load Determination:

Assume we have determined that the appropriate cooling load at the desired dry bulb 80°F and wet bulb 65°F conditions is as follows:

Step 2 Design Conditions:

Similarly, we have also obtained the following design parameters:

#### Step 3, 4 & 5 HP Selection:

After making our preliminary selection (CCE12), we enter the tables at design water flow and water temperature and read Total Cooling, Sens. Cooling and Heat of Rej. capacities:

Total Cooling	12,000 BTUH
Sensible Cooling	
Heat of Rejection	15,000 BTUH

Step 6 & 7 Entering Air and Airflow Corrections: Next, we determine our correction factors.

	Table	Ent Air	Air Flow	Corrected
Corrected Total Cooling =	12,000	x 0.964	x 1.000 =	11,568
Corrected Sens Cooling =	8,800 >	(1.085 x	1.000 =	9,548
Corrected Heat of Reject	= 15,80	00 x 0.96	67 x 1.000	0 = 15,279

Step 8 Water Temperature Rise Calculation & Assessment:

Actual Temperature Rise 13.2°F

When we compare the Corrected Total Cooling and Corrected Sensible Cooling figures with our load requirements stated in Step 1, we discover that our selection is within +/- 10% of our sensible load requirement. Furthermore, we see that our Corrected Total Cooling figure is slightly undersized as recommended, when compared to the actual indicated load.



#### **CCE Series Nomenclature**



Rev.: 05/21/09B

### Performance Data ARI/ASHRAE/ISO 13256-1

#### ASHRAE/ARI/ISO 13256-1. English (IP) Units

	W	ater Loop	Heat Pun	np	Gro	ound Wate	er Heat Pu	mp	Ground Loop Heat Pump					
Madal	Coolin	g 86°F	Heating 68°F		Cooling 59°F		Heating 50°F		Coolin	g 77°F	Heating 32°F			
Model	Capac- ity Btuh	EER Btuh/W	Capac- ity Btuh	СОР	Capac- ity Btuh	EER Btuh/W	Capac- ity Btuh	СОР	Capac- ity Btuh	EER Btuh/W	Capac- ity Btuh	СОР		
CCE07	7,800	12.1	10,400	4.9	8,900	19.5	8,400	4.3	8,000	14.0	6,500	3.6		
CCE09	9,300	12.0	12,000	4.4	10,300	18.1	9,700	3.8	10,000	14.0	7,800	3.4		
CCE12	12,300	11.6	15,000	4.4	13,700	17.8	12,400	3.8	12,800	13.4	9,800	3.3		
CCE15	13,800	11.8	17,300	4.4	15,200	17.3	14,000	3.8	14,100	13.5	11,000	3.3		
CCE19	16,000	12.0	19,300	4.2	17,800	17.3	16,000	3.7	16,400	13.4	12,500	3.1		

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature Heating capacities based upon 68°F DB, 59°F WB entering air temperature All air flow is rated on high speed

All ratings based upon operation at lower voltage of dual voltage rated models

ASHRAE/ARI/ISO 13256-1. Metric (SI) Units

	W	ater Loop	Heat Pun	ıp	Gro	ound Wate	er Heat Pu	mp	Ground Loop Heat Pump					
	Coolin	g 30°C	Heating 20°C		Cooling 15°C		Heating 10°C		Coolin	g 25°C	Heating 0°C			
Model	Capac- ity Watts	EER W/W	Capac- ity Watts	СОР	Capac- ity Watts	EER W/W	Capac- ity Watts	СОР	Capac- ity Watts	EER W/W	Capac- ity Watts	СОР		
CCE07	2,286	3.5	3,048	4.9	2,608	5.7	2,462	4.3	2,345	4.1	1,905	3.6		
CCE09	2,726	3.5	3,517	4.4	3,019	5.3	2,843	3.8	2,931	4.1	2,286	3.4		
CCE12	3,605	3.4	4,396	4.4	4,015	5.2	3,634	3.8	3,751	3.9	2,872	3.3		
CCE15	4,045	3.5	5,070	4.4	4,455	5.1	4,103	3.8	4,132	4.0	3,224	3.3		
CCE19	4,689	3.5	5,657	4.2	5,217	5.1	4,689	3.7	4,807	3.9	3,664	3.1		

Cooling capacities based upon 27°C DB, 19°C WB entering air temperature

Heating capacities based upon 20°C DB, 15°C WB entering air temperature

All air flow is rated on high speed

All ratings based upon operation at lower voltage of dual voltage rated models



Performance Data Selection Notes

For operation in the shaded area when water is used in lieu of an anti-freeze solution, the LWT (Leaving Water Temperature) must be calculated. Flow must be maintained to a level such that the LWT is maintained above 42°F [5.6°C] when the JW3 jumper is not clipped (see example below). This is due to the potential of the refrigerant temperature being as low as 32°F [0°C] with 40°F [4.4°C] LWT, which may lead to a nuisance cutout due to the activation of the Low Temperature Protection. JW3 should never be clipped for standard range equipment or systems without antifreeze.

#### Example:

At 50°F EWT (Entering Water Temperature) and 1.5 gpm/ ton, a 3 ton unit has a HE of 22,500 Btuh. To calculate LWT, rearrange the formula for HE as follows:

 $HE = TD \times GPM \times 500$ , where HE = Heat of Extraction (Btuh); TD = temperature difference (EWT - LWT) and GPM = U.S. Gallons per Minute.

TD = HE / (GPM x 500)

TD = 22,500 / (4.5 x 500)

 $TD = 10^{\circ}F$ 

LWT = EWT - TD

 $LWT = 50 - 10 = 40^{\circ}F$ 

In this example, a higher flow rate will be required for EWTs at or below  $50^{\circ}$ F without antifreeze. At 2 gpm/ton, the calculation above results in a TD of 7.5. LWT = 50 - 7.5 = 42.5°F, which is above 42°F EWT, and is acceptable for this application.

			Heatir	ng - EA	T 70°F	
/	EER	HC	kW	HE	LAT	СОР
Jed		5.5	0.50	3.8	91.0	3.22
0.9	26.7	6.0	0.51	4.3	93.1	3.44
10.9	29.9	6.3	0.52	4.5	94.1	3.55
10.9	31.7	6.4	0.52	4.7	94.8	3.62
10.8	22.9	6.9	0.53	5.1	96.5	3.79
0.9	25.8	7.2	0.54	5.4	97.9	3.91
k	27.4	7.4	0.55	5.6	98.6	3.97
	19.6	7.8	0.56	5.9	100.0	4.10
	2,1	8.2	0.57	6.3	101.6	4.23
		8.4	0.57	6.5	102.4	4.30
			0.58	6.7	103	

### **Performance Data** CCE07B

			240 CFM No	ominal (Rat	ed) Airflow	I							Performance capacities shown in thousands of Btuh					
	D Add		EWT		WF	PD*		Coc	oling - E	AT 80/6	57°F			Heatir	ng - EA	T 70°F		
	orized \ CCE07 Cv = 4.	,	°F	GPM	PSI	FT	тс	SC	Sens/ Tot Ratio	kW	HR	EER	НС	kW	HE	LAT	СОР	
MOF	PD = 15	0 psi)	20	1.9	3.7	8.5	-	Operat	ion Not	Recomn	nended		5.5	0.50	3.8	91.0	3.22	
GPM	WPD	Adder	-	1.0	1.4	3.2	9.7	6.9	0.71	0.36	10.9	26.7	6.0	0.51	4.3	93.1	3.44	
	PSI	FT	30	1.4	2.2	5.1	9.8	6.9	0.70	0.33	10.9	29.9	6.3	0.52	4.5	94.1	3.55	
1.0	0.20	0.47	-	1.9	3.3	7.6	9.9	6.9	0.70	0.31	10.9	31.7	6.4	0.52	4.7	94.8	3.62	
1.4	0.44	1.00	-	1.0	1.0	2.3	9.4	6.8	0.72	0.41	10.8	22.9	6.9	0.53	5.1	96.5	3.79	
1.9	0.87	2.00	40	1.4	1.5	3.5	9.6	6.9	0.71	0.37	10.9	25.8	7.2	0.54	5.4	97.9	3.91	
			ļ	1.9	2.1	4.9	9.7	6.9	0.71	0.36	10.9	27.4	7.4	0.55	5.6	98.6	3.97	
				1.0	0.9	2.1	9.0	6.7	0.74	0.46	10.6	19.6	7.8	0.56	5.9	100.0	4.10	
			50	1.4	1.4	3.2	9.3	6.8	0.73	0.42	10.8	22.1	8.2	0.57	6.3	101.6	4.23	
				1.9	2.0	4.6	9.5	6.8	0.72	0.40	10.8	23.4	8.4	0.57	6.5	102.4	4.30	
				1.0	0.8	1.8	8.6	6.5	0.76	0.52	10.4	16.6	8.7	0.58	6.7	103.6	4.39	
			60	1.4	1.3	3.0	8.9	6.6	0.74	0.48	10.5	18.8	9.2	0.59	7.2	105.4	4.53	
			ļ	1.9	1.9	4.4	9.1	6.7	0.74	0.46	10.6	20.0	9.4	0.60	7.4	106.3	4.61	
				1.0	0.7	1.6	8.1	6.3	0.78	0.58	10.1	14.0	9.6	0.61	7.6	107.1	4.67	
			70	1.4	1.2	2.8	8.5	6.5	0.76	0.53	10.3	15.9	10.2	0.62	8.1	109.1	4.82	
				1.9	1.8	4.2	8.6	6.5	0.76	0.51	10.4	16.9	10.5	0.63	8.3	110.2	4.90	
				1.0	0.7	1.6	7.6	6.1	0.79	0.65	9.8	11.8	10.6	0.63	8.4	110.7	4.93	
			80	1.4	1.1	2.5	8.0	6.2	0.78	0.60	10.0	13.3	11.1	0.64	9.0	112.9	5.10	
				1.9	1.6	3.7	8.1	6.3	0.78	0.57	10.1	14.2	11.5	0.65	9.3	114.1	5.19	
				1.0	0.6	1.4	7.4	5.9	0.80	0.68	9.7	10.8	11.0	0.64	8.9	112.5	5.06	
			85	1.4	1.0	2.3	7.7	6.1	0.79	0.63	9.9	12.2	11.6	0.65	9.4	114.8	5.24	
				1.9	1.5	3.5	7.9	6.2	0.78	0.61	10.0	13.0	12.0	0.66	9.7	116.1	5.33	
				1.0	0.6	1.4	7.2	5.8	0.81	0.72	9.6	9.9	11.5	0.65	9.3	114.2	5.19	
			90	1.4	1.0	2.3	7.5	6.0	0.80	0.67	9.8	11.1	12.1	0.66	9.9	116.7	5.38	
				1.9	1.4	3.2	7.6	6.1	0.79	0.64	9.8	11.9	12.5	0.67	10.2	118.0	5.48	
				1.0	0.5	1.2	6.7	5.5	0.81	0.81	9.5	8.3						
			100	1.4	0.9	2.1	7.0	5.7	0.81	0.75	9.6	9.3						
				1.9	1.3	3.0	7.2	5.8	0.81	0.72	9.6	9.9	Or	peration	Not Rec	ommeno	ded	
				1.0	0.5	1.2	6.4	5.2	0.81	0.91	9.5	7.0	Operation Not Recommended					
			110	1.4	0.9	2.1	6.6	5.4	0.81	0.84	9.5	7.8						
	1.9 1.3 3.0 6.7 5.5 0.81 0.81 9.5 8.3												;					
I.9       I.3       3.0       6.7       5.5       0.81       0.81       9.5       5.3         Interpolation is permissible; extrapolation is not.       All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.       ARI/ISO certified conditions are 80°F DB and 66.2°F WB in cooling and 68°F DB in heating.         ARI/ISO certified conditions are 80°F DB and 66.2°F WB in cooling and 68°F DB in heating.       Table does not reflect fan or pump power corrections for ARI/ISO conditions.         All performance is based upon the lower voltage of dual voltage rated units.       Performance stated is at the rated power supply: performance may vary as the power supply varies from the rated.         Operation below 40°F EVIT is based upon a 15% antifreeze solution.       Operation below 60°F EVIT is optional insulated water/refrigerant circuit.         See performance correction tables for operating conditions ther than those listed above.       See Performance Data Selection Notes for operation in shaded areas.													er's Customer					



#### **Performance Data** CCE09B

			300 CFM N	ominal (Ra	ted) Airflov	W	_					Performance capacities shown in thousands of Btuh					
	D Adde		EWT		WF	PD*		Coc	oling - E	AT 80/6	57°F			Heati	ng - EA	T 70°F	
	orized V CCE09 Cv = 4.9		°F	GPM	PSI	FT	тс	SC	Sens/ Tot Ratio	kW	HR	EER	НС	kW	HE	LAT	СОР
MOF	PD = 15	) psi)	20	2.5	6.2	14.3		Operat	tion Not	Recomn	nended		7.2	0.63	5.1	92.3	3.35
GPM	WPD	Adder		1.3	1.8	4.2	11.3	7.6	0.67	0.48	13.0	23.8	7.5	0.66	5.2	93.0	3.34
	PSI	FT	30	1.9	3.2	7.4	11.7	7.7	0.66	0.44	13.2	26.5	7.6	0.67	5.4	93.5	3.36
1.3	0.34	0.80		2.5	5.0	11.6	11.9	7.8	0.66	0.42	13.3	28.1	7.7	0.67	5.4	93.8	3.38
1.9	0.80	1.85		1.3	1.5	3.5	10.9	7.4	0.68	0.54	12.8	20.4	8.1	0.69	5.8	95.1	3.46
2.5	1.50	3.46	40	1.9	2.6	6.0	11.2	7.5	0.67	0.49	12.9	22.6	8.4	0.70	6.0	95.9	3.52
				2.5	4.0	9.2	11.3	7.6	0.67	0.47	13.0	23.9	8.6	0.71	6.2	96.4	3.56
				1.3	1.3	3.0	10.6	7.2	0.68	0.60	12.6	17.6	9.1	0.72	6.6	97.9	3.67
			50	1.9	2.5	5.8	10.8	7.3	0.68	0.56	12.7	19.4	9.4	0.73	6.9	99.1	3.77
				2.5	3.9	9.0	10.9	7.4	0.67	0.53	12.8	20.5	9.7	0.74	7.1	99.7	3.82
				1.3	1.2	2.8	10.2	7.1	0.69	0.67	12.5	15.2	10.1	0.75	7.6	101.2	3.94
			60	1.9	2.4	5.5	10.4	7.2	0.69	0.62	12.6	16.8	10.6	0.77	8.0	102.7	4.05
				2.5	3.7	8.5	10.6	7.2	0.68	0.60	12.6	17.6	10.9	0.77	8.2	103.5	4.12
				1.3	1.2	2.8	9.8	6.9	0.71	0.75	12.4	13.1	11.3	0.79	8.6	104.8	4.21
			70	1.9	2.2	5.1	10.1	7.0	0.70	0.70	12.5	14.4	11.9	0.80	9.1	106.6	4.34
				2.5	3.5	8.1	10.2	7.1	0.69	0.67	12.5	15.2	12.2	0.81	9.4	107.5	4.42
				1.3	1.1	2.5	9.3	6.8	0.73	0.83	12.1	11.2	12.5	0.82	9.7	108.4	4.48
			80	1.9	2.1	4.9	9.6	6.9	0.71	0.78	12.3	12.4	13.1	0.83	10.3	110.4	4.61
				2.5	3.2	7.5	9.8	6.9	0.71	0.75	12.4	13.1	13.5	0.84	10.6	111.5	4.68
				1.3	1.1	2.5	9.0	6.7	0.74	0.87	12.0	10.3	13.1	0.83	10.2	110.3	4.60
			85	1.9	2.0	4.6	9.4	6.8	0.72	0.82	12.2	11.5	13.7	0.85	10.8	112.3	4.73
				2.5	3.1	7.2	9.6	6.9	0.72	0.79	12.3	12.1	14.1	0.86	11.2	113.4	4.79
				1.3	1.0	2.3	8.7	6.5	0.75	0.92	11.8	9.4	13.7	0.85	10.8	112.1	4.71
			90	1.9	2.0	4.6	9.1	6.7	0.74	0.86	12.0	10.5	14.3	0.87	11.4	114.1	4.83
				2.5	3.0	6.9	9.3	6.8	0.73	0.83	12.1	11.1	14.7	0.88	11.7	115.2	4.89
				1.3	1.0	2.3	7.9	6.2	0.79	1.01	11.3	7.8					
			100	1.9	1.9	4.4	8.4	6.4	0.77	0.95	11.6	8.8					
				2.5	3.0	6.9	8.6	6.5	0.76	0.92	11.8	9.4					
				1.3	1.0	2.3	6.9	5.7	0.83	1.10	10.7	6.3	Op	Operation Not Recommended			ded
			110	1.9	1.9	4.4	7.5	6.0	0.80	1.04	11.1	7.2					
				2.5	3.0	6.9	7.8	6.2	0.79	1.02	11.3	7.7					
			Interpolatio	air conditie	ons are 80	°F DB and	67°F WB i	n cooling,	and 70°F D	B in heatin	g						

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating. Table does not reflect fan or pump power corrections for ARI/ISO conditions. All performance is based upon the lower voltage of dual voltage rated units. Performance stated is at the rated power supply: performance may vary as the power supply varies from the rated. Operation below 40°F EWT is based upon a 15% antifreeze solution. Operation below 60°F EWT requires optional insulated water/refrigerant circuit. See performance totated is for operating conditions other than those listed above. See Performance Data Selection Notes for operation in shaded areas.

### **Performance Data** CCE12B

				omman (rea	ted) Airflov	N					Performance capacities shown in thousands of Btuh						
	D Adde		EWT		WF	D*		Coc	oling - E	AT 80/6	67°F			Heatir	ng - EA	T 70°F	
	orized \ CCE12 Cv = 4.9	2	°F	GPM	PSI	FT	тс	SC	Sens/ Tot Ratio	kW	HR	EER	НС	kW	HE	LAT	СОР
	PD = 15		20	3.1	9.1	21.0		Operat	ion Not	Recomn	nended		8.7	0.78	6.0	93.0	3.26
GPM	WPD	Adder		1.6	2.5	5.8	14.8	9.8	0.66	0.60	16.8	24.6	9.4	0.81	6.6	94.8	3.39
GPIVI	PSI	FT	30	2.3	4.4	10.2	14.9	9.9	0.66	0.55	16.8	27.1	9.7	0.83	6.9	95.7	3.46
1.6	0.52	1.21		3.1	7.2	16.6	15.0	9.9	0.66	0.53	16.8	28.4	9.9	0.83	7.1	96.2	3.49
2.3	1.17	2.71		1.6	2.0	4.6	14.4	9.6	0.67	0.68	16.7	21.3	10.6	0.86	7.7	97.9	3.63
3.1	2.31	5.33	40	2.3	3.5	8.1	14.7	9.7	0.66	0.62	16.8	23.7	11.0	0.87	8.0	99.1	3.71
				3.1	5.7	13.2	14.8	9.8	0.66	0.59	16.8	24.9	11.2	0.88	8.3	99.7	3.76
				1.6	1.9	4.4	14.0	9.5	0.68	0.76	16.6	18.3	11.8	0.89	8.8	101.2	3.88
			50	2.3	3.4	7.9	14.3	9.6	0.67	0.70	16.7	20.4	12.3	0.91	9.2	102.5	3.98
				3.1	5.5	12.7	14.5	9.6	0.67	0.67	16.7	21.6	12.6	0.92	9.5	103.2	4.03
				1.6	1.8	4.2	13.5	9.3	0.69	0.86	16.4	15.6	13.1	0.93	9.9	104.5	4.13
			60	2.3	3.4	7.9	13.8	9.4	0.68	0.79	16.5	17.5	13.6	0.94	10.4	106.0	4.24
				3.1	5.3	12.2	14.0	9.5	0.68	0.76	16.6	18.5	13.9	0.95	10.7	106.8	4.30
				1.6	1.7	3.9	12.9	9.1	0.71	0.97	16.2	13.2	14.3	0.96	11.0	107.8	4.38
			70	2.3	3.0	6.9	13.3	9.2	0.69	0.90	16.3	14.8	14.9	0.97	11.6	109.3	4.50
				3.1	4.6	10.6	13.5	9.3	0.69	0.86	16.4	15.7	15.2	0.98	11.9	110.1	4.56
				1.6	1.6	3.7	12.2	8.9	0.73	1.10	15.9	11.1	15.5	0.98	12.1	110.8	4.62
			80	2.3	2.8	6.5	12.7	9.0	0.71	1.01	16.1	12.5	16.0	0.99	12.7	112.4	4.74
				3.1	4.4	10.2	12.9	9.1	0.71	0.97	16.2	13.3	16.3	1.00	12.9	113.1	4.80
				1.6	1.5	3.5	11.8	8.8	0.74	1.16	15.8	10.2	16.0	0.99	12.6	112.2	4.73
			85	2.3	2.7	6.2	12.3	8.9	0.72	1.07	16.0	11.5	16.6	1.00	13.2	113.7	4.85
				3.1	4.4	10.2	12.6	9.0	0.72	1.03	16.1	12.2	16.9	1.01	13.4	114.5	4.91
				1.6	1.4	3.2	11.5	8.6	0.75	1.23	15.7	9.3	16.5	1.00	13.1	113.6	4.83
			90	2.3	2.6	6.0	12.0	8.8	0.73	1.14	15.8	10.5	17.1	1.01	13.6	115.0	4.95
				3.1	4.3	9.9	12.2	8.9	0.73	1.09	15.9	11.2	17.3	1.01	13.9	115.7	5.01
				1.6	1.4	3.2	10.7	8.4	0.78	1.37	15.4	7.8					
			100	2.3	2.6	6.0	11.2	8.6	0.76	1.27	15.6	8.8		Operation Not Recommended			
				3.1	4.3	9.9	11.5	8.6	0.75	1.23	15.7	9.4				hed	
				1.6	1.4	3.2	9.9	8.1	0.82	1.52	15.1	6.5	Operation Not Recommended				
			110	2.3	2.6	6.0	10.4	8.3	0.79	1.42	15.3	7.3					
			Interpolatio	3.1	4.3	9.9	10.7	8.4	0.78	1.37	15.4	7.8					

Interpolation is permissible; extrapolation is not. All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating. Table does not reflect fan or pump power corrections for ARI/ISO conditions. All performance is based upon the lower voltage of dual voltage rated units. Performance stated is at the rated power supply: performance may vary as the power supply varies from the rated. Operation below 40°F EWT is based upon a 15% antiffeeze solution. Generation below 40°F EWT requires optional insulated water/refigerant circuit. See performance Data Selection Notes for operating conditions other than those listed above. See Performance Data Selection Notes for operating the dareas.



#### **Performance Data** CCE15B

			400 CFM N	ominal (Ra	ted) Airflov	v							Perform	ance capad	tities show	n in thousa	inds of Btuh
	D Adde		EWT		WF	PD*		Сос	oling - E	AT 80/6	57°F			Heatir	ng - EA	T 70°F	
	orized V CCE15 Cv = 4.9		°F	GPM	PSI	FT	тс	SC	Sens/ Tot Ratio	kW	HR	EER	НС	kW	HE	LAT	СОР
MOF	PD = 15	0 psi)	20	3.6	4.9	11.3		Operat	ion Not	Recomn	nended		9.9	0.93	6.7	92.8	3.10
GPM	WPD	Adder		1.8	1.2	2.8	16.5	11.2	0.67	0.68	18.8	24.5	10.4	0.95	7.2	94.1	3.20
	PSI	FT	30	2.7	2.6	6.0	16.6	11.1	0.67	0.62	18.7	26.6	10.7	0.96	7.4	94.8	3.26
1.8	0.66	1.53		3.6	4.2	9.7	16.6	11.0	0.67	0.60	18.6	27.6	10.9	0.97	7.6	95.2	3.29
2.7	1.62	3.74		1.8	1.3	3.0	16.3	11.1	0.68	0.76	18.9	21.5	11.6	0.99	8.2	96.9	3.44
3.6	3.11	7.18	40	2.7	2.3	5.3	16.5	11.2	0.68	0.70	18.9	23.6	12.1	1.00	8.7	97.9	3.53
				3.6	3.6	8.3	16.5	11.2	0.67	0.67	18.8	24.6	12.3	1.01	8.9	98.5	3.57
				1.8	1.2	2.8	15.8	11.0	0.70	0.85	18.7	18.7	13.1	1.03	9.6	100.2	3.72
			50	2.7	2.2	5.1	16.2	11.1	0.69	0.78	18.8	20.6	13.7	1.05	10.1	101.6	3.84
				3.6	3.5	8.1	16.3	11.1	0.68	0.75	18.9	21.6	14.0	1.05	10.4	102.4	3.90
				1.8	1.2	2.8	15.2	10.8	0.71	0.94	18.4	16.1	14.7	1.07	11.1	104.0	4.03
			60	2.7	2.1	4.9	15.6	10.9	0.70	0.87	18.6	17.9	15.4	1.09	11.7	105.7	4.17
				3.6	3.4	7.9	15.8	11.0	0.69	0.84	18.7	18.8	15.8	1.09	12.1	106.6	4.24
				1.8	1.1	2.5	14.3	10.5	0.73	1.04	17.9	13.7	16.4	1.10	12.6	107.8	4.34
			70	2.7	2.0	4.6	14.9	10.7	0.72	0.97	18.2	15.3	17.2	1.12	13.4	109.7	4.50
				3.6	3.2	7.4	15.2	10.8	0.71	0.94	18.4	16.1	17.6	1.13	13.8	110.7	4.58
				1.8	1.1	2.5	13.4	10.2	0.76	1.16	17.3	11.6	18.0	1.13	14.1	111.6	4.65
			80	2.7	2.0	4.6	14.0	10.4	0.74	1.08	17.7	13.0	18.8	1.15	14.9	113.5	4.82
				3.6	3.1	7.2	14.3	10.5	0.73	1.05	17.9	13.7	19.3	1.15	15.3	114.5	4.91
				1.8	1.1	2.5	12.9	10.0	0.78	1.21	17.0	10.6	18.8	1.14	14.8	113.3	4.80
			85	2.7	1.9	4.4	13.5	10.3	0.76	1.14	17.4	11.9	19.6	1.15	15.6	115.2	4.98
				3.6	3.0	6.9	13.9	10.4	0.75	1.10	17.6	12.6	20.0	1.16	16.0	116.1	5.07
				1.8	1.0	2.3	12.3	9.9	0.80	1.27	16.7	9.7	19.5	1.15	15.5	115.0	4.95
			90	2.7	1.9	4.4	13.0	10.1	0.78	1.20	17.1	10.9	20.2	1.16	16.3	116.7	5.13
				3.6	3.0	6.9	13.4	10.2	0.76	1.16	17.3	11.5	20.6	1.16	16.6	117.6	5.22
				1.8	1.0	2.3	11.1	9.4	0.85	1.40	15.9	8.0					
			100	2.7	1.8	4.2	11.9	9.7	0.82	1.32	16.4	9.0					
				3.6	2.9	6.7	12.2	9.8	0.80	1.28	16.6	9.5		oration		00000	dod
				1.8	1.0	2.3	9.8	8.9	0.91	1.53	15.0	6.4	U	peration	NUL REC	ommend	ueu
			110	2.7	1.8	4.2	10.6	9.2	0.87	1.45	15.5	7.3					
				3.6	2.9	6.7	11.0	9.4	0.85	1.41	15.8	7.8					
ClimatoMast	ar works contin		Interpolatio All entering ARI/ISO cet Table does All performanc Operation b See perform See Perforn ve its products.	air conditi rtified cond not reflect ance is bas setated is below 40°F below 60°F nance corr nance Data	ons are 80 ditions are 3 fan or pun sed upon tl at the rate EWT is ba EWT requ ection tabl a Selection	<sup>°</sup> F DB and 80.6°F DB pp power of elower vo ed power s ised upon ires option es for oper Notes for	67°F WB is and 66.2°F corrections oltage of du upply; perf a 15% anti al insulated rating conc operation	WB in cou for ARI/ISC ual voltage ormance n freeze solu d water/refi litions othe in shaded a	bling and 6 D condition rated units hay vary as tion. igerant circ r than thos areas.	8°F DB in h s. the power cuit. e listed abo	ieating. supply var ove.			ihed herein P	lease contact	ClimateMast	er's Customer

### **Performance Data** CCE19B

			460 CFM N	lominal (Ra	ited) Airflo	N							Perform	ance capac	ities show	n in thousa	inds of Btuh
	D Adde		EWT		WI	D*		Coo	oling - E	AT 80/6	57°F	1		Heatir	ng - EA	T 70°F	
	CCE19 CV = 4.	)	°F	GPM	PSI	FT	ТС	SC	Sens/ Tot Ratio	kW	HR	EER	НС	kW	HE	LAT	СОР
MOF	PD = 15	0 psi)	20	4.8	7.9	18.2		Operat	tion Not	Recomn	nended		11.2	1.05	7.6	92.5	3.13
GPM	WPD	Adder		2.4	2.1	4.9	20.1	13.2	0.66	0.81	22.8	24.7	12.2	1.09	8.5	94.6	3.30
	PSI	FT	30	3.6	4.2	9.7	20.5	13.4	0.66	0.76	23.1	26.9	12.6	1.10	8.9	95.3	3.36
2.4	1.17	2.71		4.8	6.8	15.7	20.7	13.5	0.65	0.74	23.2	28.1	12.8	1.11	9.0	95.7	3.40
3.6	2.88	6.64		2.4	2.0	4.6	19.4	12.9	0.66	0.90	22.5	21.6	13.8	1.14	9.9	97.8	3.54
4.8	5.53	12.77	40	3.6	3.8	8.8	19.8	13.1	0.66	0.84	22.7	23.5	14.3	1.16	10.3	98.7	3.61
				4.8	6.2	14.3	20.0	13.2	0.66	0.82	22.8	24.6	14.5	1.17	10.6	99.2	3.64
				2.4	2.0	4.6	18.7	12.5	0.67	1.00	22.1	18.8	15.5	1.21	11.4	101.1	3.76
			50	3.6	3.7	8.5	19.2	12.7	0.66	0.94	22.4	20.5	16.0	1.23	11.9	102.2	3.83
				4.8	6.0	13.9	19.4	12.8	0.66	0.91	22.5	21.4	16.3	1.24	12.1	102.8	3.86
				2.4	1.9	4.4	18.0	12.1	0.67	1.11	21.8	16.2	17.2	1.27	12.8	104.5	3.96
			60	3.6	3.5	8.1	18.5	12.4	0.67	1.04	22.0	17.8	17.8	1.30	13.4	105.7	4.02
				4.8	5.8	13.4	18.7	12.5	0.67	1.01	22.1	18.6	18.1	1.31	13.6	106.4	4.06
				2.4	1.8	4.2	17.2	11.8	0.68	1.23	21.4	14.0	18.8	1.34	14.2	107.8	4.13
			70	3.6	3.3	7.6	17.7	12.0	0.68	1.16	21.6	15.3	19.4	1.36	14.8	109.0	4.19
				4.8	5.5	12.7	17.9	12.1	0.67	1.12	21.8	16.0	19.8	1.37	15.1	109.7	4.22
				2.4	1.7	3.9	16.3	11.4	0.70	1.36	20.9	12.0	20.3	1.40	15.6	110.8	4.27
			80	3.6	3.2	7.4	16.8	11.6	0.69	1.28	21.2	13.1	20.9	1.42	16.1	112.1	4.33
				4.8	5.2	12.0	17.1	11.7	0.69	1.24	21.3	13.8	21.3	1.43	16.4	112.7	4.35
				2.4	1.6	3.7	15.8	11.2	0.71	1.43	20.7	11.1	21.0	1.42	16.2	112.2	4.33
			85	3.6	3.1	7.2	16.4	11.4	0.70	1.35	21.0	12.2	21.6	1.44	16.7	113.4	4.39
				4.8	5.0	11.6	16.7	11.5	0.69	1.31	21.1	12.7	21.9	1.46	16.9	114.0	4.41
				2.4	1.6	3.7	15.3	11.0	0.72	1.50	20.4	10.2	21.7	1.45	16.7	113.5	4.39
			90	3.6	3.0	6.9	15.9	11.2	0.71	1.42	20.7	11.2	22.2	1.47	17.2	114.6	4.44
				4.8	4.9	11.3	16.2	11.3	0.70	1.38	20.9	11.7	22.5	1.48	17.4	115.2	4.46
				2.4	1.6	3.7	14.1	10.5	0.75	1.65	19.8	8.6					
			100	3.6	2.9	6.7	14.8	10.8	0.73	1.56	20.1	9.5					
				4.8	4.8	11.1	15.1	10.9	0.72	1.52	20.3	9.9	Or	oration	Not Pac	ommeno	hor
				2.4	1.6	3.7	12.8	10.0	0.78	1.81	19.0	7.1				omment	JEU
			110	3.6	2.9	6.7	13.6	10.3	0.76	1.72	19.4	7.9					
				4.8	4.8	11.1	13.9	10.5	0.75	1.68	19.6	8.3					
ClimateMast	er works conti		Interpolatio All entering ARI/ISO cei Table does All performanc Operation b Operation b See perforr See Perforr we its products or specific info	air condition rtified conco not reflect ance is base ce stated is below 40°F below 60°F mance corre mance Data	ons are 80 ditions are fan or pur sed upon t at the rate EWT is ba EWT requ ection tab a Selection	°F DB and 80.6°F DB np power of he lower voted power s ased upon lires option les for oper n Notes for	67°F WB i and 66.2°I corrections bitage of de upply; peri- a 15% ant al insulate rating conco operation	F WB in con for ARI/ISO ual voltage formance n lifreeze solu d water/refi ditions othe in shaded a	oling and 6 O condition rated units nay vary as ition. rigerant cirr er than thos areas.	8°F DB in r s. the power cuit. e listed abo	eating. supply var			ribed herein. F	lease contac	t ClimateMast	er's Customer



#### **Performance Data Correction Tables**

#### **Air Flow Correction Table**

Airflow		Coc	oling	Heating				
% of Rated	Total Capacity	Sensible Capacity	Power	Heat of Rejection	Heating Capacity	Power	Heat of Extraction	
75%	0.951	0.860	0.963	0.952	0.990	1.054	0.966	
81%	0.964	0.894	0.973	0.965	0.993	1.035	0.977	
88%	0.979	0.936	0.984	0.979	0.996	1.019	0.987	
94%	0.990	0.969	0.992	0.990	0.998	1.008	0.994	
100%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
106%	1.010	1.033	1.008	1.010	1.002	0.994	1.005	
113%	1.019	1.069	1.016	1.019	1.003	0.988	1.011	

### **Entering Air Correction Table**

	Heating						
Entering Air DB°F	Heating Capacity	Power	Heat of Extraction				
60	1.011	0.989	1.007				
65	1.004	0.994	1.004				
68	1.002	0.997	1.002				
70	1.000	1.000	1.000				
75	0.996	1.007	0.995				
80	0.991	1.018	0.990				

				С	cooling					
Entering Total Sensible Cooling Capacity Multiplier - Entering DB °F Power							Power	Heat of		
Air WB°F	Capacity	70	75	80	80.6	85	90	95		Rejection
60	0.893	0.889	1.087	*	*	*	*	*	0.964	0.902
65	0.964	0.692	0.884	1.085	1.108	*	*	*	0.988	0.967
66.2	0.983	0.645	0.838	1.036	1.059	1.231	*	*	0.995	0.985
67	1.000	0.613	0.806	1.000	1.027	1.199	*	*	1.000	1.000
70	1.049		0.683	0.879	0.902	1.077	1.274	1.415	1.016	1.046
75	1.118			0.676	0.698	0.866	1.068	1.266	1.037	1.106

 $^*$  = Sensible capacity equals total capacity ARI/ISO/ASHRAE 13256-1 uses entering air conditions of Cooling - 80.6°F DB/66.2°F WB, 1 and Heating - 68°F DB/59°F WB entering air temperature

#### **Antifreeze Correction Table**

			Cooling		Hea	nting	WPD	
Antifreeze Type	Antifreeze %		EWT 90°F		EWT	30°F	Corr. Fct.	
		Total Cap	Sens Cap	Power	Htg Cap	Power	EWT 30°F	
Water	0	1.000	1.000	1.000			1.000	
	5	0.995	0.995	1.003	0.989	0.997	1.070	
Propylene Glycol	15	0.986	0.986	1.009	0.968	0.990	1.210	
	25	0.978	0.978	1.014	0.947	0.983	1.360	
	5	0.997	0.997	1.002	0.989	0.997	1.070	
Methanol	15	0.990	0.990	1.007	0.968	0.990	1.160	
	25	0.982	0.982	1.012	0.949	0.984	1.220	
	5	0.998	0.998	1.002	0.981	0.994	1.140	
Ethanol	15	0.994	0.994	1.005	0.944	0.983	1.300	
	25	0.986	0.986	1.009	0.917	0.974	1.360	
	5	0.998	0.998	1.002	0.993	0.998	1.040	
Ethylene Glycol	15	0.994	0.994	1.004	0.980	0.994	1.120	
	25	0.988	0.988	1.008	0.966	0.990	1.200	



### **Blower Performance & Electrical Data**

#### **Blower Performance**

	Rated	SC	FM
Model	CFM	Low Speed	High Speed
CCE07	240	190	240
CCE09	300	240	300
CCE12	350	300	350
CCE15	400	340	400
CCE19	460	400	460

Fan speed is user selectable

All airflow is rated at lowest Voltage if unit is dual Voltage rated, i.e. 208V for 208-230V units All units ARI/ISO/ASHRAE 13256-1 rated on high fan speed

All units are designed and rated for zero external static pressure (non-ducted) application

### **Electrical Data**

	Voltage	N/ II	Min/Max		Compresso	or	Fan	Total	Min	Max
Model	Code	Voltage	Voltage	QTY	RLA	LRA	Motor FLA	Unit FLA	Circuit Amps	Fuse/ HACR
CCE07	А	115/60/1	104-126	1	7.1	46.5	0.50	7.6	9.3	15
CCE07	G	208-230/60/1	197-254	1	3.7	19.0	0.33	4.0	5.0	15
CCE07	E	265/60/1	239-292	1	2.8	16.0	0.35	3.1	3.8	15
CCE09	А	115/60/1	104-126	1	9.0	46.5	1.30	10.3	12.5	20
CCE09	G	208-230/60/1	197-254	1	4.7	23.0	0.50	5.2	6.3	15
CCE09	E	265/60/1	239-292	1	3.8	16.0	0.50	4.3	5.3	15
CCE12	А	115/60/1	104-126	1	10.6	63.0	1.30	11.9	14.6	25
CCE12	G	208-230/60/1	197-254	1	6.1	29.0	0.50	6.6	8.1	15
CCE12	E	265/60/1	239-292	1	4.8	21.6	0.50	5.3	6.5	15
CCE15	G	208-230/60/1	197-254	1	7.0	33.2	1.10	8.1	9.8	15
CCE15	E	265/60/1	239-292	1	5.4	29.0	1.00	6.4	7.8	15
CCE19	G	208-230/60/1	197-254	1	7.7	38.0	1.10	8.8	10.7	15
CCE19	E	265/60/1	239-292	1	5.8	29.0	1.00	6.8	8.2	15



### **Physical Data**

Model	07	09	12	15	19
Compressor (1 Each)			Rotary		
Factory Charge R22 (oz) [kg]	16 [0.454]	16 [0.454]	21 [0.595]	27 [0.765]	24 [0.680]
PSC Fan Motor & Blower (3	Speeds)				
Fan Motor (hp) [W]	1/20 [27]	1/15 [50]	1/15 [50]	1/6 [124]	1/6 [124]
Blower Wheel Size (dia x w) - (in) [mm]	5-1/4 x 6-1/4 [133 x 159]				
Water Connection Size	•				
O.D. Sweat (in) [mm]	5/8 [15.9]	5/8 [15.9]	5/8 [15.9]	5/8 [15.9]	5/8 [15.9]
Optional IPT Fittings (in)	1/2	1/2	1/2	1/2	1/2
Optional EPT Fittings (in)	1/2	1/2	1/2	1/2	1/2
Condensate Connection Siz	e				
I.D. Vinyl Hose (In) [mm]	5/8 [15.9]	5/8 [15.9]	5/8 [15.9]	5/8 [15.9]	5/8 [15.9]
Air Coil Size					
Dimensions (h x w) - (in) [mm]	8	x 26 [20.3 x 66.	0]	10 x 26 [2	5.4 x 66.0]
Filter Size					
Bottom Return (in) [cm]		1 - 8 x 29-1	/2 x 3/8 [20.3 x	74.9 x 0.95]	
Front Return (In) [cm]		1 - 7 x 29-1	/2 x 1/8 [17.8 x	74.9 x 0.32]	
Cabinet Size					
Bottom Return (Std. 3" Base) (W x H x D) - (In) [cm]		48 x 24 :	x 12 [121.9 x 61.	.0 x 30.5]	
Bottom Return (Std. 5" Base) (W x H x D) - (In) [cm]		48 x 26 x	x 12 [121.9 x 66.	.0 x 30.5]	
Bottom Return (No Subbase) (W x H x D) - (In) [cm]		48 x 21 :	x 12 [121.9 x 53	.3 x 30.5]	
Unit Weight					
Weight - Operating, (lbs) [kg]	173 [78.5]	177 [80.3]	187 [84.5]	193 [87.5]	198 [89.8]
Weight - Packaged, (lbs) [kg]	181 [82.1]	185 [83.9]	195 [88.5]	201 [91.2]	206 [93.4]

Unit Maximum Water Working Pressure					
Options	Max Pressure PSIG [kPa]				
Base Unit	450 [3,100]				
Internal Secondary Pump (ISP)	145 [999]				
Internal Motorized Water Valve (MWV)	300 [2,067]				
Internal Auto Flow Valve	450 [3,100]				

Use the lowest maximum pressure rating when multiple options are combined.

### **Console Cabinet Dimensions Bottom Return - Left Hand Piping**

Left Hand Bottom Return



#### Notes:

All Dimensions are in inches (mm)

\* Dimension with 3" (76.2 mm) subbase. Add 2" (50.8 mm) to dimension shown for 5"(127 mm) subbase.

\* Dimension with 3" (76.2 mm) subpase. Au 2 (50.0 mm) to dimension stremmer a contract of the stremmer and t ClimateMaster works continually to improv Service Department at 1-405-745-6000 for but are merely ClimateMaster's opinion or ecific information on the current design and specification nmendation of its products. The latest version of this do



#### **Console Cabinet Dimensions Bottom Return - Right Hand Piping**



### **Right Hand Bottom Return**

#### Notes:

Notes: All Dimensions are in inches (mm) \* Dimension with 3" (76.2mm) subbase. Add 2" (50.8mm) to dimensions shown for 5" (127mm) subbase. Rev.: 08/06/05D Optimal autorities and the subbase of the s Service Department at 1-405-745-6000 for specific information on the current design and specificat but are merely ClimateMaster's opinion or commendation of its products. The latest version of this

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### Console Cabinet Dimensions Front Return - Left Hand Piping

Left Hand Front Return





Notes:

All Dimensions are in inches (mm)

Optional autoflow valve, motorized water valve and disconnect box are shown. Rev.: 07/14/06D ClimateMaster work continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may. LimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com**.

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#### Console Cabinet Dimensions Front Return - Right Hand Piping



# Right Hand Front Return

3. Optional autoflow regulator, motorized water valve, and disconnect box are not shown.

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### **Console Chassis Dimensions**





**Piping Detail** 



# Left Hand Configuration

Notes:

All Dimensions are in inches (mm)

\* For installed dimension, add to dimension shown 2.9" [74mm] with 3" subbase and 4.9" [124mm] for 5" subbase. Optional autoflow valve, motorized water valve and disconnect box are shown.

Water connection in same location regardless of connection type.

### **CCE Series Wiring Diagram Matrix**

Only CXM and DXM diagrams, with a representative diagram of LON and MPC Options are presented in this submittal. Other diagrams can be located online at climatemaster.com using the part numbers presented below.

Model	Refrigerant	Wiring Diagram Part Number	Electrical	Сог	ntrol	Agency
	R22	96B0099N50			MCO/ACO	ETL
	R22	96B0099N03	115/60/1,		REM	ETL
	R22	96B0099N04	208-230/60/1, 265/60/1		LON	ETL
	R22	96B0099N05	200,00,1		MPC	ETL
	R407C	96B0099N07		СХМ	МСО	CE
	R407C	96B0099N08	]		ACO	CE
	R407C	96B0099N09	220-240/50/1		REM	CE
	R407C	96B0099N10			LON	CE
CCE07 -	R407C	96B0099N11			MPC	CE
CCE19	R22	96B0100N50			MCO/ACO	ETL
	R22	96B0100N03	115/60/1,		REM	ETL
	R22	96B0100N04	208-230/60/1, 265/60/1		LON	ETL
	R22	96B0100N05	200,00,1		MPC	ETL
	R407C	96B0100N07		DXM	МСО	CE
	R407C	96B0100N08			ACO	CE
	R407C	96B0100N09	220-240/50/1		REM	CE
	R407C	96B0100N10	]		LON	CE
	R407C	96B0100N11			MPC	CE

All wiring diagrams available at www.climatemaster.com. R407C submittals will only contain CE Mark wiring diagrams



Typical Wiring Diagram Manual & Auto Change Over CCE Units (Rev. B) With CXM Controller



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### Typical Wiring Diagram Remote Mounted Thermostat CCE Units (Rev. B) With CXM Controller





Typical Wiring Diagram CCE Units (Rev. B) With CXM & LON Controller



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### Typical Wiring Diagram CCE Units (Rev. B) With CXM & MPC Controller



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Typical Wiring Diagram Manual & Auto Change Over CCE Units (Rev. B) With DXM Controller



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### Typical Wiring Diagram Remote Mounted Thermostat CCE Units (Rev. B) With DXM Controller





Typical Wiring Diagram CCE Units (Rev. B) With DXM & LON Controller



### Typical Wiring Diagram CCE Units (Rev. B) With DXM & MPC Controller





### Console (CCE) Series 60Hz Engineering Specifications Rev.: 05/20/09 Page 1

#### General:

Furnish and install ClimateMaster "Console" Water Source Heat Pumps, as indicated on the plans. Equipment shall be completely assembled, piped and internally wired. Capacities and characteristics as listed in the schedule and the specifications that follow.

#### Console Water Source Heat Pumps:

Units shall be supplied completely factory built for an entering water temperature range from 20° to 110°F (-6.7° to 43.3°C) as standard. Equivalent units from other manufacturers can be proposed provided approval to bid is given 10 days prior to bid closing. All equipment listed in this section must be rated and certified in accordance with American Refrigeration Institute / International Standards Organization (ARI / ISO) and Environmental Testing Laboratories for United States and Canada (ETL-US-C). The units shall have ARI / ISO and ETL-US-C labels.

#### **Basic Construction:**

Console Units shall have one of the following air flow and piping arrangements: Front Inlet/Right-hand Piping; Front Inlet/ Left-hand piping; Bottom Inlet/Right-hand piping; or Bottom Inlet/Left-hand piping as shown on the plans. *If units with these arrangements are NOT used, the contractor is responsible for any extra costs incurred by other trades.* If other arrangements make servicing difficult, the contractor must provide access panels and clear routes to ease service. Architect/ Engineer must approve any changes in layout.

The cabinet, wall mounting hardware and subbase shall be constructed of heavy gauge galvanized steel with a baked polyester powder coat paint finish. Corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. *Unit corrosion protection must meet these stringent requirements or unit(s) will not be accepted.* Color will be Polar Ice. Both sides of the steel shall be painted for added protection. Additionally, the wall mounting hardware shall have welded corner bracing. The easily removable cabinet enclosure allows for easy service to the chassis, piping compartment and control compartment.

All interior surfaces shall be lined with 1/4 inch (6.4mm) thick, dual density, 2 lb/ft3 (32 kg/m3) acoustic flexible blanket type glass fiber insulation with a non-woven, anti-microbial treated mat face. Insulation placement shall be designed in a manner that will eliminate any exposed edges to prevent the introduction of glass fibers into the air stream.

Standard insulation must meet NFPA Fire Hazard Classification requirements 25/50 per ASTM E84, UL 723, CAN/ULC S102-M88 and NFPA 90A requirements; air erosion and mold growth limits of UL-181; stringent fungal resistance test per ASTM-C1071 and ASTM G21; and shall meet zero level bacteria growth per ASTM G22. *Unit insulation must meet these stringent requirements or unit(s) will not be accepted.* 

The cabinet shall have a 30° sloped top with aluminum rigid bar type discharge grille. Aluminum discharge grille shall be anodized charcoal grey in color including hinged control door. Cabinet shall have rounded edges (0.325 inch / 8.255 mm minimum radius) on all exposed corners for safety and esthetic purposes. *Units not having sloped top and rounded corners (0.325 inch / 8.255 mm minimum) on front, side, top slope, and top corners shall not be accepted.* 

Return Air Filter shall be 3/8" (9.5mm) permanent cleanable media type or 1/8" (3.2mm) for front return type units.

Option: The unit shall be provided with a keyed lock on the control access door.

Option: The unit shall be provided with a motorized outside air damper and damper assembly, factory mounted and wired.

Option: The unit shall be provided with a 5 inch (127mm) high subbase (3 inch / 76.2mm subbase is standard).

Option: The unit shall be provided without a subbase (3 inch / 76.2mm high subbase is standard).

Option: The unit shall include a front return air grille integrally stamped into Cabinet (no subbase allowed).

Option: The unit shall be supplied with extended range Insulation option, which adds closed cell insulation to internal water lines, and provides insulation on suction side refrigeration tubing including refrigerant to water heat exchanger.

#### Fan and Motor Assembly:

Fan and motor assembly shall be assembled on a slide out fan deck with quick electrical disconnecting means to provide and facilitate easy field servicing. The fan motor shall be multi-speed, permanently lubricated, PSC type, with internal thermal overload protection. Units supplied without permanently lubricated motors must provide external oilers for easy service. The fan motor shall include a torsionally flexible motor mounting system or saddle mount system with resilient rings to inhibit vibration. ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at -405-745-6000 for specific information on the current design and specifications. Statements and other information dereinade herein are not express warranties and do not form the basis of any bargain between the parties, but are merely climateMaster.com.

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induced high noise levels associated with "hard wire belly band" motor mounting. The airflow rating of the unit shall be based on a wet coil and a clean filter in place. *Ratings based on a dry coil and / or no filter shall NOT be acceptable.* 

#### **Refrigerant Circuit:**

Units shall have a sealed refrigerant circuit including a high efficiency rotary compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, an enhanced corrugated aluminum lanced fin and rifled copper tube refrigerant to air heat exchanger, reversing valve, coaxial (tube in tube) refrigerant to water heat exchanger, and safety controls including a high pressure switch, low pressure switch (loss of charge), water coil low temperature sensor, and air coil low temperature sensor. Access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety device shall prevent compressor operation via a microprocessor lockout circuit. The lockout circuit shall be reset at the thermostat or at the contractor supplied disconnect switch. *Units that cannot be reset at the thermostat shall not be acceptable.* 

Hermetic compressors shall be internally sprung. The compressor shall have a dual level vibration isolation system. The compressor will be mounted on computer selected vibration isolation grommets to a large heavy gauge compressor mounting tray plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration attenuation. Compressor shall have thermal overload protection. Compressor shall be located in an insulated compartment away from air stream to minimize sound transmission.

Refrigerant to air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled copper tube construction rated to withstand 450 PSIG (3101 kPa) refrigerant working pressure. Refrigerant to water heat exchangers shall be of copper inner water tube and steel refrigerant outer tube design, rated to withstand 450 PSIG (3101 kPa) working refrigerant pressure and 450 PSIG (3101 kPa) working water pressure. The refrigerant to water heat exchanger shall be "electro-coated" with a low cure cathodic epoxy material a minimum of 0.4 mils thick (0.4 – 1.5 mils range) on all surfaces. The black colored coating shall provide a minimum of 1000 hours salt spray protection per ASTM B117-97 on all external steel and copper tubing. The material shall be formulated without the inclusion of any heavy metals and shall exhibit a pencil hardness of 2H (ASTM D3363-92A), crosshatch adhesion of 4B-5B (ASTM D3359-95), and impact resistance of 160 in-lbs (184 kg-cm) direct (ASTM D2794-93).

Refrigerant metering shall be accomplished by thermostatic expansion valve only. Expansion valves shall be dual port balanced types with external equalizer for optimum refrigerant metering. Units shall be designed and tested for operating ranges of entering water temperatures from 20° to 110°F (-6.7° to 43.3°C). Reversing valve shall be four-way solenoid activated refrigerant valve, which shall default to heating mode should the solenoid fail to function. If the reversing valve solenoid defaults to cooling mode, an additional low temperature thermostat must be provided to prevent over-cooling an already cold room.

Option: The unit will be supplied with cupro nickel coaxial water to refrigerant heat exchanger.

- Option: The unit will be supplied with internally factory mounted two-way water valve for variable speed pumping requirements. A factory-mounted or field-installed high pressure switch shall be installed in the water piping to disable compressor operation in the event water pressures build due to water freezing in the piping system.
- Option: The unit will be supplied with internally factory mounted automatic water flow regulators.
- Option: The unit will be supplied with internally mounted secondary pump for primary/secondary applications, specifically onepipe systems.
- Option: The unit shall be supplied with extended range Insulation option, which adds closed cell insulation to internal water lines, and provides insulation on suction side refrigeration tubing including refrigerant to water heat exchanger.
- Option: The refrigerant to air heat exchanger shall be "electro-coated" with a low cure cathodic epoxy material a minimum of 0.4 mils thick (0.4 1.5 mils range) on all surfaces. The black colored coating shall provide a minimum of 1000 hours salt spray protection per ASTM B117-97 on all galvanized end plates and copper tubing, and a minimum of 2000 hours of salt spray on all aluminum fins. The material shall be formulated without the inclusion of any heavy metals and shall exhibit a pencil hardness of 2H (ASTM D3363-92A), crosshatch adhesion of 4B-5B (ASTM D3359-95), and impact resistance of 160 in-lbs (184 kg-cm) direct (ASTM D2794-93).

#### Piping:

Water piping shall terminate in the same location regardless of the connection and valve options.

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Option: Threaded EPT copper fittings (sweat connections are standard).

Option: Threaded IPT copper fittings (sweat connections are standard).

#### Drain Pan:

The drain pan shall be constructed of galvanized steel and have a powder coat paint application to further inhibit corrosion. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. If plastic type material is used, it must be HDPE (High Density Polyethylene) to avoid thermal cycling shock stress failure over the lifetime of the unit. Stainless Steel materials are also acceptable. Drain pan shall be fully insulated. Drain outlet shall be located at pan as to allow complete and unobstructed drainage of condensate. The unit as standard will be supplied with solid-state electronic condensate overflow protection. *Mechanical float switches will NOT be accepted.* 

#### Electrical:

Unit controls shall be located under the hinged control door in the sloped top grille. Operating controls shall consist of slide switches to select "OFF", "HEAT," "COOL," "AUTO" (when equipped with auto change-over option – "AUTO" is not available for standard manual change-over controls), Fan "AUTO" (fan cycles with compressor), Fan "ON" (continuous fan), Fan "LO", and Fan "HI". Temperature adjustment shall be accomplished via two push buttons, one labeled with an arrow up, and the other labeled with an arrow down. Controls shall include an LCD display for display of temperature and set point. *Units without an LCD display shall not be accepted*.

A control box shall be located above the unit compressor compartment and shall contain operating controls as outlined in the paragraph above, 24VAC transformer, double-pole compressor relay, and solid-state controller for complete unit operation. Reversing valve and fan motor wiring shall be routed through this electronic controller. Units shall be name-plated for use with time delay fuses or HACR circuit breakers. A unit-mounted digital thermostat with a remote bulb measuring return air temperature shall control the compressor operation for heating and cooling. Control shall be equipped with a fan switch (provides options to cycle fan with compressor or provide continuous fan) and a fault indicator light. *Units without a fault indicator light shall not be accepted*.

Option: Digital ACO unit mounted thermostat (MCO is standard).

Option: Provisions for remote thermostat (unit mounted is standard).

Option: Disconnect Switch, Non-Fused.

Option: Disconnect Switch, Fused with 15A or 20A fuse.

Option: 20A power plug/cord.

Option: 20A plug / cord, receptacle, disconnect switch, fused with 15A or 20A fuse.

Option: 20A plug / cord, receptacle, disconnect switch, non fused.

#### Solid State Control System (CXM):

Units shall have a solid-state control system. *Units utilizing electro-mechanical control shall not be acceptable.* The control system microprocessor board shall be specifically designed to protect against building electrical system noise contamination, EMI, and RFI interference. The control system shall interface with a heat pump type thermostat. The control system shall have the following features:

- a. Anti-short cycle time delay on compressor operation.
- b. Random start on power up mode.
- c. Low voltage protection.
- d. High voltage protection.
- e. Unit shutdown on high or low refrigerant pressures.
- f. Unit shutdown on low water temperature.
- g. Condensate overflow electronic protection.
- h. Option to reset unit at thermostat or disconnect.
- Automatic intelligent reset. Unit shall automatically reset the unit 5 minutes after trip if the fault has cleared. If a fault occurs 3 times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur.
   Ability to defeat time delays for servicing.
- ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com**.

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- k. Light emitting diode (LED) on circuit board to indicate high pressure, low pressure, low voltage, high voltage, low water/air temperature cut-out, condensate overflow, and control voltage status.
- I. The low-pressure switch shall not be monitored for the first 120 seconds after a compressor start command to prevent nuisance safety trips.
- m. 24V output to cycle a motorized water valve or other device with compressor contactor.
- n. Unit Performance Sentinel (UPS). The UPS warns when the heat pump is running inefficiently.
- o. Water coil low temperature sensing (selectable for water or anti-freeze).
- p. Air coil low temperature sensing.

NOTE: Units not providing the 8 safety protections of anti-short cycle, low voltage, high voltage, high refrigerant pressure, low pressure (loss of charge), air coil low temperature cut-out, water coil low temperature cut-out, and condensate overflow protections will not be accepted.

#### Option: Enhanced solid state control system (DXM)

This control system features two stage control of cooling and two stage control of heating modes for exacting temperature and dehumidification purposes.

This control system coupled with a multi-stage thermostat will better dehumidify room air by automatically running the heat pump's fan at lower speed on the first stage of cooling thereby implementing low sensible heat ratio cooling. On the need for higher cooling performance the system will activate the second stage of cooling and automatically switch the fan to the higher fan speed setting. This system may be further enhanced with a humidistat. *Units not having automatic low sensible heat ratio cooling will not be accepted*; as an alternate a hot gas reheat coil may be provided with control system for automatic activation.

Control shall have all of the above mentioned features of the CXM control system along with the following expanded features:

- a. Removable thermostat connector.
- b. Night setback control.
- c. Random start on return from night setback.
- d. Minimized reversing valve operation (Unit control logic shall only switch the reversing valve when cooling is demanded for the first time. The reversing valve shall be held in this position until the first call for heating, ensuring quiet operation and increased valve life.).
- e. Override temperature control with 2-hour (adjustable) timer for room occupant to override setback temperature at the thermostat.
- f. Dry contact night setback output for digital night setback thermostats.
- g. Ability to work with heat pump or heat/cool (Y, W) type thermostats.
- h. Ability to work with heat pump thermostats using O or B reversing valve control.
- i. Emergency shutdown contacts.
- j. Boilerless system heat control at low loop water temperature.
- k. Ability to allow up to 3 units to be controlled by one thermostat.
- I. Relay to operate an external damper.
- m. Ability to automatically change fan speed from multistage thermostat.
- n. Relay to start system pump.
- o. 75 VA control transformer. Control transformer shall have load side short circuit and overload protection via a built in circuit breaker.

#### Remote Service Sentinel (CXM/DXM):

Solid state control system shall communicate with thermostat to display (at the thermostat) the unit status, fault status, and specific fault condition, as well as retrieve previously stored fault that caused unit shutdown. The Remote Service Sentinel allows building maintenance personnel or service personnel to diagnose unit from the wall thermostat. The control board shall provide a signal to the thermostat fault light, indicating a lockout. Upon cycling the G (fan) input 3 times within a 60 second time period, the fault light shall display the specific code as indicated by a sequence of flashes. A detailed flashing code shall be provided at the thermostat LED to display unit status and specific fault status such as over/under voltage fault, high pressure fault, low pressure fault, low water temperature fault, condensate overflow fault, etc. *Units that do not provide this remote service sentinel shall not be acceptable*.

#### Option: Lonworks interface system

Units shall have all the features listed above (either CXM or DXM) and the control board will be supplied with a LONWORKS interface board, which is LONMark certified. This will permit all units to be daisy chained via a 2-wire twisted pair shielded cable. ClimateMaster works continuelly to improve its products. As a result, the design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely climateMaster commendation of its products. The latest version of this document is available at **climatemaster.com**.



The following points must be available at a central or remote computer location:

- a. Space temperature
- b. Leaving water temperature
- c. Discharge air temperature
- d. Command of space temperature setpoint
- e. Cooling status
- f. Heating status
- g. Low temperature sensor alarm
- h. Low pressure sensor alarm
- i. High pressure switch alarm
- j. Condensate sensor alarm
- k. Hi/low voltage alarm
- I. Fan "ON/AUTO" position of space thermostat as specified above
- m. Unoccupied / occupied command
- n. Cooling command
- o. Heating command
- p. Fan "ON / AUTO" command
- q. Fault reset command
- r. Itemized fault code revealing reason for specific shutdown fault (any one of 7)

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

#### Option: MPC (Multiple Protocol Control) interface system

Units shall have all the features listed above (either CXM or DXM) and the control board will be supplied with a Multiple Protocol interface board. Available protocols are BACnet MS/TP, Modbus, or Johnson Controls N2. The choice of protocol shall be field selectable/changeable via the use of a simple selector switch. Protocol selection shall not require any additional programming or special external hardware or software tools. This will permit all units to be daisy chain connected by a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

- a. Space temperature
- b. Leaving water temperature
- c. Discharge air temperature
- d. Command of space temperature setpoint
- e. Cooling status
- f. Heating status
- g. Low temperature sensor alarm
- h. Low pressure sensor alarm
- i. High pressure switch alarm
- j. Condensate overflow alarm
- k. Hi/low voltage alarm
- I. Fan "ON/AUTO" position of space thermostat as specified above
- m. Unoccupied / occupied command
- n. Cooling command
- o. Heating command
- p. Fan "ON / AUTO" command
- q. Fault reset command
- r. Itemized fault code revealing reason for specific shutdown fault (any one of 7)

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

#### Warranty:

Climate Master shall warranty equipment for a period of 12 months from start up or 18 months from shipping (which ever occurs first).

Option: Extended 4-year compressor warranty covers compressor for a total of 5 years.

Option: Extended 4-year refrigeration circuit warranty covers coils, reversing valve, expansion valve and compressor for a total of 5 years.

Option: Extended 4-year control board warranty covers the CXM/DXM control board for a total of 5 years.

#### FIELD INSTALLED OPTIONS

#### Hose Kits:

Hoses shall be 1 foot (31cm) long, braided stainless steel; fire rated hoses complete with adapters. Only fire rated hoses will be accepted. Note: Threaded connection (IPT) piping option must be ordered for hose kit connections.

Option: 2 foot (61cm) hose lengths instead of standard 1 foot (31cm) length.

#### Valves:

The following valves are available and will be shipped loose:

- a. Ball valve; bronze material, standard port full flow design, IPT connections.
- b. Ball valve with memory stop and PT Port; standard port full flow design, IPT connections.
- c. "Y" strainer with cap; bronze material, IPT connections.
- d. "Y" strainer with blowdown valve; bronze material, IPT connections.
- e. Motorized water valve; slow acting, 24v, IPT connections.

#### Hose Kit Assemblies:

The following assemblies ship with the valves already assembled to the hose described:

- a. Supply and return hoses having ball valve with PT port.
- b. Supply hose having ball valve with PT port; return hose having automatic flow regulator valve with PT ports, and ball valve.
- c. Supply hose having "Y" strainer with blowdown valve, and ball valve with PT port; return hose having automatic flow regulator with PT ports, and ball valve.

#### Thermostats:

The thermostat shall be a ClimateMaster mechanical or electronic type thermostat as selected below with the described features (Note: "Remote mounted thermostat" control option must be selected for the console unit):

- a. Single Stage Standard Manual Changeover (ATM11C11) Thermostat shall be a single-stage, horizontal mount, manual changeover with HEAT-OFF-COOL system switch and fan ON-AUTO switch. Thermostat shall have a mechanical temperature indicator and set point indication. Thermostat shall only require 4 wires for connection. Mercury bulb thermostats are not acceptable.
   b. Single Stage Digital Auto or Manual Changeover (ATA11U01)
- Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch and fan ON-AUTO switch. Thermostat shall have an LCD display with temperature and set-point(s) in °F or °C. The Thermostat shall provide permanent memory of set-point(s) without batteries. A fault LED shall be provided to display specific fault condition. Thermostat shall provide temperature display offset for custom applications.
- c. Single Stage Digital Automatic Changeover with Two-Speed Fan Control (ATA11C04) Recommended for Console Remote-Mount Thermostat (DXM required) Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch, fan ON-AUTO switch, and fan LO-HI switch. Thermostat shall have an LCD display with temperature and set-point(s) in °F or °C. A fault LED shall be provided to display specific fault condition. Thermostat shall come standard with an on-board temperature sensor, but may be operated with a remote sensor if desired via jumper configuration and remote sensor, AST009.
- Multistage Digital Automatic Changeover (ATA22U01)
   Thermostat shall be multi-stage (2H/2C), manual or automatic changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, set-point(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of set-point(s) without batteries. A fault LED shall be provided to indicate specific fault condition(s). Thermostat shall provide temperature display offset for custom applications. Thermostat shall allow unit to provide better dehumidification with optional DXM controller by automatically using lower fan speed on stage 1 cooling (higher latent cooling) as main cooling mode, and automatically shifting to high speed fan on stage 2 cooling.
- e. Single Stage Manual Changeover Programmable 5/2 Day (ATP11N01) Thermostat shall be 5 day/2 day programmable (with up to 4 set points per day), single stage (1H/1C), manual changeover with HEAT-OFF-COOL system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, set-point(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of set-point(s) without batteries. Thermostat shall provide convenient override feature to temporarily change set point.
- f. Multistage Automatic or Manual Changeover Programmable 5/2 Day (ATP21U01)
- ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com**.

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Thermostat shall be 5 day/2 day programmable (with up to 4 set points per day), multi-stage (2H/1C), automatic or manual changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, set-point(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of set-point(s) without batteries. Thermostat shall provide convenient override feature to temporarily change set point.

- g. Multistage Automatic or Manual Changeover Programmable 7 Day (ATP32U03) Thermostat shall be 7 day programmable (with up to 4 set points per day), multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Thermostat shall have a blue backlit dot matrix LCD display with temperature, set-points, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12 or 24 hour clock. Fault identification shall be provided (when used with ClimateMaster CXM or DXM controls) to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of set-points without batteries. Thermostat shall provide heating set-point range limit, cooling set-point range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. Thermostat shall allow the use of an accessory remote and/or outdoor temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.
- Multistage Automatic or Manual Changeover Programmable 7 Day with Humidity Control (ATP32U04) h Thermostat shall be 7 day programmable (with up to 4 set points per day), multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Separate dehumidification and humidification set points shall be configurable for discreet outputs to a dehumidification option and/or an external humidifier. Installer configuration mode shall allow thermostat dehumidification mode to operate with ClimaDry reheat or with ECM fan dehumidification mode via settings changes. Thermostat shall have a blue backlit dot matrix LCD display with temperature, relative humidity, set-points, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12 or 24 hour clock. Fault identification shall be provided (when used with ClimateMaster CXM or DXM controls) to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of set-points without batteries. Thermostat shall provide heating set-point range limit, cooling set-point range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. Thermostat shall allow the use of an accessory remote and/or outdoor temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.

#### DDC Sensors:

ClimateMaster wall mounted DDC sensor to monitor room temperature and interfaces with optional interface system described above. Several types as described below:

- a. Sensor only with no display (LON and MPC).
- b. Sensor with override (LON only).
- c. Sensor with setpoint and adjustment override (MPC only).
- d. Sensor with setpoint and adjustment override, LCD display, status/fault indication (LON and MPC).



### **Revision History**

Date:	Item:	Action:
26 Aug, 2008	Engineering Specifications	Thermostat & Electrical Sections Updated
26 Aug, 2008	Stand-Alone and Big Book Submittals	Consolidated
26 Aug, 2008	Physical Data Table	Max Working Pressure Table Added
12 June, 2008	Wiring Diagram Matrix	ETL Information Added
30 May, 2008	WMV Pressure Drop Data	Update
19 April, 2007	Table of Contents	Added Table of Contents
19 April, 2007	Specifications	Updated Specifications with new Safety Agency
15 Nov, 2006	Performance Data	Added New Rated Voltage Note
15 Nov, 2006	All	Minor Formatting Changes
19 July, 2006	Model Numbers	Added Rev. B to all model numbers
19 July, 2006	Motorized Valves	Updates Valve Cv & MOPD values
19 July, 2006	Motorized Valves	Updated wiring diagrams to show H.P. switch
19 July, 2006	Motorized Valves	Updated Specs to show H.P. switch
19 July, 2006	Controls	Added information on digital unit mounted control (Rev. B)
19 July, 2006	Controls	Updated Specs with information on digital unit mounted control (Rev. B)
19 July, 2006	Controls	Updated decoder to Rev. B
23 Dec, 2005	Motorized Valves	Adjusted Cv values
30 Nov, 2005	Various	Formatting changes
18 Aug, 2005	Correction Factors	Changed "Nominal" to "Rated"
18 Aug, 2005	Specifications	Updated CXM verbiage
18 Aug, 2005	Added Change Log	