



Catalog 1107-6

Daikin Water to Water Source Heat Pumps

Models WRA, WHA, WCA

Unit Sizes 036 – 420 R-410A Refrigerant



People and ideas you can trust.TM

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Model WRA

Category	Code Item	Code Option	Code Designation & Description
Product Category	1	1	W = Water Source Heat Pump
Product Identifier	2	2-4	WCA = Base Cooling Only Unit with Copper Coaxial Water Coils WHA = Base Heating Only Unit with Copper Coaxial Water Coils WRA = Base Cooling and Heating Only Unit with Copper Coaxial Water Coils
Design Series	3	5	1 = 1st Design 2 = 2nd Design 3 = 3rd Design 4 = 4th Design
Nominal Capacity	4	6-8	036 = 36,000 Btuh Nominal Cooling 048 = 48,000 Btuh Nominal Cooling 060 = 60,000 Btuh Nominal Cooling 072 = 72,000 Btuh Nominal Cooling 120 = 120,000 Btuh Nominal Cooling 150 = 150,000 Btuh Nominal Cooling 180 = 180,000 Btuh Nominal Cooling 240 = 240,000 Btuh Nominal Cooling 300 = 300,000 Btuh Nominal Cooling 360 = 360,000 Btuh Nominal Cooling 420 = 420,000 Btuh Nominal Cooling
Unit Control	5	9	A = ALC control for standard Sequence of Operations (See Note) L = ALC control w/ Lonworks card D = Terminal strips for field-mounted DDC controls T = Terminal strips for aquastat control
Note: ALC controls include built-in communication card for BACnet®, Modbus and N2 protocols. For use with LONWORKS® protocol, the accessory LONWORKS Card must also be selected. It is required that at least one BACview6 handheld be purchased per jobsite unless other means of communicating with the controller is being used. If an ALC control with a non-standard sequence of operations is required, contact factory for pricing.			
Voltage	6	10	E = 208-230/60/1 F = 208-230/60/3 K = 460/60/3 L = 575/60/3
Head Pressure Control	7	11	Y = None
A selection must be made from this section for units only if unit will operate as described below:			
Units operating in cooling mode with an entering water temperature of 75°F (23.9°C) or higher do not require water regulating valves.			
Units operating AT ANY TIME in cooling mode with an entering water temperature less than 75°F (23.9°C) require water regulating valves.			
Includes valves, bypass refrigeration circuit and check valve.			
Water Piping Location	8	12	F = Front T = Top L = Left Hand Side R = Right Hand Side
Control Box Location	9	13	F = Front L = Left Side Control Box R = Right Side Control Box
Status Lights	10	14-15	YY = None SL = Three Lights-Compressor-1, Compressor-2, Compressor fault
Freezestat	11	16-17	YY = None FS = Adjustable for Geothermal and Boiler/Tower Application
Construction Type	12	18	A = Standard
Source Water to Refrigerant Heat Exchanger Construction	13	19	C = Copper Coax L = Load Side Cupro Nickel Coax S = Source Side Cupro Nickel Coax B = Load & Source Side Cupro Nickel Coax
Desuperheater	14	20	Y = None D = Waste Heat Recovery Water Heater
Refrigerant	15	21	A = R-410A
Cabinet Electrical	22		YYY= Reserved for future use

Model WRA – Heating & Cooling Units

Rated in accordance with AHRI/ASHRAE/ISO Standard 13256-2.

Unit Size	GPM	Cooling			Heating			
		EWT °F	Total Cap. (Btuh)	EER (Btuh/Watt)	EWT °F	Total Cap. (Btuh)	COP	
Water Loop								
036	Load	9.0	53.6	33,200	12.1	104	4.5	
	Source		86			68		
048	Load	12.0	53.6	41,000	14.3	104	4.6	
	Source		86			68		
060	Load	13.5	53.6	45,000	12.9	104	4.5	
	Source		86			68		
072	Load	17.0	53.6	60,000	12.6	104	4.3	
	Source		86			68		
120	Load	24.0	53.6	91,500	13.4	104	4.4	
	Source		86			68		
150	Load	30.0	53.6	118,500	12.9	104	4.7	
	Source		86			68		
Ground Water								
036	Load	9.0	53.6	39,000	18.7	104	3.7	
	Source		59			50		
048	Load	12.0	53.6	47,500	21.8	104	3.8	
	Source		59			50		
060	Load	13.5	53.6	52,500	19.7	104	3.7	
	Source		59			50		
072	Load	17.0	53.6	70,000	18.9	104	3.6	
	Source		59			50		
120	Load	24.0	53.6	107,000	20.6	104	3.6	
	Source		59			50		
150	Load	30.0	53.6	Outside the scope of AHRI/ASHRAE Standard 13256-2		104	Outside the scope of AHRI/ASHRAE Standard 13256-2	
	Source		59			50		
Ground Loop								
036	Load	9.0	53.6	32,500	13.0	104	2.9	
	Source		77			32		
048	Load	12.0	53.6	40,000	15.3	104	3.0	
	Source		77			32		
060	Load	13.5	53.6	44,000	13.8	104	2.9	
	Source		77			32		
072	Load	17.0	53.6	58,500	13.3	104	2.9	
	Source		77			32		
120	Load	24.0	53.6	89,500	14.4	104	2.9	
	Source		77			32		
150	Load	30.0	53.6	116,500	13.8	104	3.1	
	Source		77			32		

Note: Units operating in cooling mode with an entering water temperature of 75°F (23.9°C) or higher do not require water regulating valves.

Units operating AT ANY TIME in cooling mode with an entering water temperature less than 75°F (23.9°C) require water regulating valves.

Includes valves, bypass refrigeration circuit and check valve.

Legend:

Btuh = British Thermal Units per Hour

CFM = Airflow Rate, Cubic Feet per Minute

COP = Coefficient of Performance

EER = Energy Efficiency Ratio

GPM = Gallons per Minute

Model WCA – Cooling Only Units & Model WHA – Heating Only Units

Rated in accordance with AHRI/ASHRAE/ISO Standard 13256-2.

Unit Size	GPM	Model WCA – Cooling Only Units			Model WHA – Heating Only Units			
		EWT °F	Total Cap. (Btuh)	EER (Btuh/Watt)	EWT °F	Total Cap. (Btuh)	COP	
Water Loop								
036	Load	9.0	53.6	33,200	12.1	104	4.5	
	Source		86			68		
048	Load	12.0	53.6	41,000	14.3	104	4.6	
	Source		86			68		
060	Load	13.5	53.6	45,000	12.9	104	4.5	
	Source		86			68		
072	Load	17.0	53.6	60,000	12.6	104	4.3	
	Source		86			68		
120	Load	24.0	53.6	91,500	13.4	104	4.4	
	Source		86			68		
150	Load	30.0	53.6	118,500	12.9	104	4.7	
	Source		86			68		
Ground Water								
036	Load	9.0	53.6	39,000	18.7	104	3.7	
	Source		59			50		
048	Load	12.0	53.6	47,500	21.8	104	3.8	
	Source		59			50		
060	Load	13.5	53.6	52,500	19.7	104	3.7	
	Source		59			50		
072	Load	17.0	53.6	70,000	18.9	104	3.6	
	Source		59			50		
120	Load	24.0	53.6	107,000	20.6	104	3.6	
	Source		59			50		
150	Load	30.0	53.6	Outside the scope of AHRI/ASHRAE Standard 13256-2		104	3.9	
	Source		59			50		
Ground Loop								
036	Load	9.0	53.6	32,500	13.0	104	2.9	
	Source		77			32		
048	Load	12.0	53.6	40,000	15.3	104	3.0	
	Source		77			32		
060	Load	13.5	53.6	44,000	13.8	104	2.9	
	Source		77			32		
072	Load	17.0	53.6	58,500	13.3	104	2.9	
	Source		77			32		
120	Load	24.0	53.6	89,500	14.4	104	2.9	
	Source		77			32		
150	Load	30.0	53.6	116,500	13.8	104	3.1	
	Source		77			32		

Legend:

Btuh = British Thermal Units per Hour

COP = Coefficient of Performance

GPM = Gallons per Minute

CFM = Airflow Rate, Cubic Feet per Minute

EER = Energy Efficiency Ratio

Model WRA - Heating and Cooling

Unit – 60Hz:

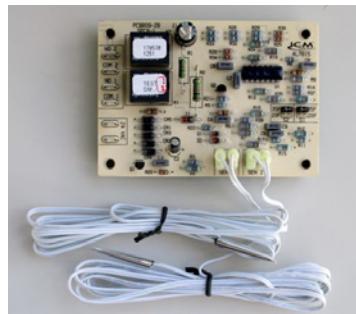
- Paint Finish meets or exceeds 1,000 hour Salt Spray Test per ASTM B117 97.
- 1/2" high-density fiberglass insulation for thermal and sound insulation.
- Service connections factory installed in compressor suction and discharge lines for ease of servicing.
- Bi-flow Thermal Expansion Valve (TXV) for precise metering of refrigerant flow under all expected operating conditions.
- High efficiency coaxial water-to-refrigerant coils, fully insulated with polyurethane foam to maximize performance while helping to prevent condensate build-up in unit base pan.
- High pressure and low pressure equipment protection built into the source side refrigeration circuit to guard against abnormal unit operation.
- Fully insulated refrigerant and water lines to help prevent condensation from collecting in the unit base.
- High efficiency scroll compressors
- 24-volt electromechanical control system.
- Phase/Voltage Monitor (3 phase only) – Monitors main power for low voltage, high voltage or phase loss.



- Threaded copper fittings outside the cabinet allow for load and source piping connection.
- Water flow switches (source and load sides) - suspends compressor operation until water flow is proven.

Accessories & Options:

- Temperature Control System (sizes 036 through 420) – Controls return water temperature and has a separate setpoint for heating and cooling (1–2 stages). Requires a field supplied signal for heat/cool changeover.
- Adjustable Freezestat for geothermal and boiler tower applications. Senses leaving water on the source side and will shut down the unit if below setpoint.



- Three Light Status Panel (sizes 120 through 420) – Compressor 1 “ON”, compressor 2 “ON” and “compressor fault” lights located outside unit.



- Source Side Coaxial Water Coil – Single wall cupro-nickel inner tube coaxial heat exchanger.
- Load Side Coaxial Water Coil – Single wall cupro-nickel inner tube coaxial heat exchanger.
- R-410A Refrigerant – No Ozone Depletion Potential with no phase out date.
- Heat Recovery Coil For Domestic Water Heating (models 036-072) – Special heat recovery (desuperheater) coil is piped into the compressor discharge line. Domestic water connections are 1/2" female pipe threads.



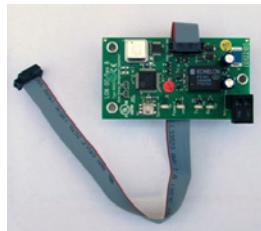
Optional Direct Digital or Electromechanical Controls

- Direct Digital Controller operates as a stand-alone controller or in conjunction with a Building Management System (BMS) via the BACnet®, Modbus, LonWORKS® and N2 protocols.

Figure 1: Direct Digital Controller



Figure 2: LonWORKS Card



- BACview⁶ Handheld can locally access controllers and operational properties or manage small facility with easy-to-use keypad/display.

Figure 3: BACview6 Handheld Keypad/Display



Note: When a LonWORKS card is used, it is required that at least one BACview6 Handheld be purchased, unless other means of communicating with the controller is used.

■ Aquastat Temperature Control System

A microprocessor-based temperature control designed to provide on/off control for commercial heating, cooling, air conditioning and refrigeration applications. Its wide temperature range, one and two stage capability, selectable heating/cooling modes and multi-voltage input, makes it one of the most versatile temperature controls available.

Figure 4: Aquastat Temperature Control



Models WRA, WHA, WCA 036 – 420

Table 1: Electrical data

Unit Size	Voltage/Hz/Ph	Compressor			Total Unit FLA	Voltage Min./Max.	Minimum Circuit Ampacity	Maximum Fuse or HACR Breaker
		Quantity	RLA	LRA				
036	208-230/60/1	1	16.7	79.0	16.7	197/253	20.9	35
	208-230/60/3		10.4	73.0	10.4	187/253	13.0	20
	460/60/3		5.8	38.0	5.8	414/506	7.3	15
	575/60/3		3.8	36.5	3.8	517/632	4.8	15
048	208-230/60/1	1	19.9	109.0	19.9	197/253	24.9	40
	208-230/60/3		13.6	83.1	13.6	187/253	17.0	30
	460/60/3		6.1	41.0	6.1	414/506	7.6	15
	575/60/3		4.2	33.0	4.2	517/632	5.3	15
060	208-230/60/1	1	21.4	135.0	21.4	197/253	26.8	45
	208-230/60/3		14.5	98.0	14.5	187/253	18.1	30
	460/60/3		6.3	55.0	6.3	414/506	7.9	15
	575/60/3		6.0	41.0	6.0	517/632	7.5	15
072	208-230/60/3	1	19.2	136.0	19.2	187/253	24.0	40
	460/60/3		8.7	66.0	8.7	414/506	10.8	15
	575/60/3		6.8	55.3	6.8	517/632	8.5	15
120	208-230/60/3	2	14.5	98.0	29.0	187/253	32.6	45
	460/60/3		6.3	55.0	12.6	414/506	14.2	20
	575/60/3		6.0	41.0	12.0	517/632	13.5	15
150	208-230/60/3	2	19.2	136.0	38.4	187/253	43.2	60
	460/60/3		8.7	66.0	17.4	414/506	19.5	25
	575/60/3		6.9	55.0	13.8	517/632	15.5	20
180	208-230/60/3	2	25.0	164.0	50.0	187/253	56.3	80
	460/60/3		12.1	100.0	24.2	414/506	27.2	35
	575/60/3		8.9	78.0	17.8	517/632	20.0	25
240	208-230/60/3	2	30.1	225.0	60.2	187/253	67.7	90
	460/60/3		16.6	114.0	33.2	414/506	37.4	50
	575/60/3		12.1	80.0	24.2	517/632	27.2	35
300	208-230/60/3	2	33.3	239.0	66.6	187/253	74.9	100
	460/60/3		17.9	125.0	35.8	414/506	40.3	50
	575/60/3		12.8	80.0	25.6	517/632	28.8	40
360	208-230/60/3	2	51.2	300.0	102.4	187/253	115.2	150
	460/60/3		23.0	150.0	46.0	414/506	51.8	70
	575/60/3		19.8	109.0	39.6	517/632	44.6	60
420	208-230/60/3	2	55.7	340.0	111.4	187/253	125.3	175
	460/60/3		26.9	173.0	53.8	414/506	60.5	80
	575/60/3		23.7	132.0	47.4	517/632	53.3	70

Legend:

FLA = Full Load Amps

HACR = Heating, Air Conditioning and Refrigeration Breaker

LRA = Lock Rotor Amps

RLA = Rated Load Amps

WRA, WCA 036 – Cooling

Source			ELT °F	Load Flow 4.5 GPM							Load Flow 6.75 GPM							Load Flow 9.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	4.5	1.3	50	36.8	29.8	1.30	34.3	22.9	1.3	55.2	40.5	32.0	1.34	36.6	24.0	2.7	56.2	42.7	33.0	1.36	37.6	24.2	4.5	56.7
		1.3	60	44.8	34.2	1.35	38.8	25.3	1.3	57.3	49.1	36.8	1.38	41.5	26.8	2.6	58.4	51.4	38.5	1.40	43.3	27.5	4.3	59.2
		1.3	70	52.7	39.0	1.38	43.7	28.3	1.2	59.4	57.6	42.0	1.41	46.8	29.8	2.5	60.8	60.2	44.0	1.44	48.9	30.6	4.2	61.7
		1.3	80	60.4	44.0	1.42	48.8	31.1	1.2	61.7	65.9	47.5	1.46	52.5	32.6	2.5	63.3	68.9	50.0	1.49	55.1	33.5	4.1	64.5
		1.3	90	68.2	49.0	1.46	54.0	33.5	1.2	64.0	74.1	53.5	1.52	58.7	35.3	2.4	66.1	77.6	56.0	1.56	61.3	35.9	4.0	67.3
	6.75	2.7	50	36.5	30.4	1.22	34.6	24.9	1.3	50.2	40.3	32.8	1.25	37.0	26.3	2.7	51.0	42.4	34.0	1.27	38.3	26.8	4.5	51.4
		2.7	60	44.4	35.0	1.25	39.3	27.9	1.3	51.6	48.8	37.8	1.27	42.1	29.9	2.6	52.5	51.2	39.5	1.28	43.9	30.8	4.3	53.0
		2.7	70	52.2	40.0	1.27	44.3	31.6	1.2	53.1	57.1	43.5	1.28	47.9	33.9	2.5	54.2	59.9	45.5	1.30	49.9	34.9	4.2	54.8
		2.7	80	60.0	45.0	1.28	49.4	35.1	1.2	54.6	65.5	49.0	1.31	53.5	37.5	2.5	55.8	68.7	51.0	1.33	55.6	38.2	4.1	56.5
		2.7	90	67.6	50.5	1.31	55.0	38.6	1.2	56.3	73.7	55.0	1.35	59.6	40.9	2.4	57.7	77.2	57.5	1.38	62.2	41.8	4.0	58.4
50	4.5	4.5	50	36.3	30.8	1.18	34.8	26.0	1.3	47.7	40.2	33.2	1.21	37.3	27.5	2.7	48.3	42.4	34.4	1.23	38.6	28.0	4.5	48.6
		4.5	60	44.3	35.4	1.21	39.5	29.2	1.3	48.8	48.6	38.5	1.22	42.7	31.6	2.6	49.5	51.1	40.0	1.23	44.2	32.5	4.3	49.8
		4.5	70	52.0	40.5	1.21	44.6	33.4	1.2	49.9	57.0	44.0	1.22	48.2	36.0	2.5	50.7	59.8	46.0	1.24	50.2	37.1	4.2	51.2
		4.5	80	59.8	45.5	1.22	49.7	37.3	1.2	51.0	65.2	50.0	1.24	54.2	40.4	2.5	52.1	68.4	52.0	1.26	56.3	41.3	4.1	52.5
		4.5	90	67.3	51.0	1.24	55.2	41.3	1.2	52.3	73.4	56.0	1.26	60.3	44.4	2.4	53.4	77.0	58.5	1.29	62.9	45.4	4.0	54.0
	6.75	1.3	50	37.2	28.8	1.48	33.8	19.5	1.3	65.0	40.9	30.8	1.51	35.9	20.4	2.7	66.0	43.0	31.6	1.53	36.8	20.6	4.5	66.4
		1.3	60	45.3	33.0	1.53	38.2	21.6	1.3	67.0	49.6	35.2	1.55	40.5	22.7	2.6	68.0	51.9	36.6	1.57	42.0	23.3	4.3	68.7
		1.2	70	53.3	37.6	1.56	42.9	24.2	1.2	69.1	58.0	40.5	1.59	45.9	25.5	2.5	70.4	60.6	42.5	1.62	48.0	26.3	4.2	71.3
		1.2	80	61.1	42.5	1.60	47.9	26.6	1.2	71.3	66.4	46.0	1.64	51.6	28.1	2.5	72.9	69.3	48.0	1.67	53.7	28.7	4.1	73.9
		1.2	90	68.9	47.5	1.65	53.1	28.9	1.2	73.6	74.7	51.5	1.70	57.3	30.3	2.4	75.5	78.0	54.0	1.74	60.0	31.0	4.0	76.6
70	4.5	2.6	50	36.9	29.4	1.40	34.2	21.1	1.3	60.1	40.7	31.4	1.42	36.2	22.1	2.7	60.7	42.8	32.4	1.44	37.3	22.4	4.5	61.1
		2.6	60	45.1	33.6	1.43	38.5	23.5	1.3	61.4	49.3	36.2	1.45	41.1	25.0	2.6	62.2	51.6	38.0	1.46	43.0	26.0	4.3	62.7
		2.6	70	52.9	38.5	1.45	43.4	26.6	1.2	62.9	57.6	42.0	1.47	47.0	28.7	2.5	63.9	60.3	43.5	1.49	48.6	29.3	4.2	64.4
		2.6	80	60.7	43.5	1.47	48.5	29.7	1.2	64.4	65.9	47.5	1.49	52.6	31.8	2.5	65.6	69.0	49.5	1.52	54.7	32.5	4.1	66.2
		2.6	90	68.2	49.0	1.50	54.1	32.7	1.2	66.0	74.1	53.5	1.54	58.7	34.8	2.4	67.4	77.6	56.0	1.57	61.4	35.7	4.0	68.2
	9.0	4.4	50	36.8	29.6	1.36	34.3	21.7	1.3	57.6	40.6	31.8	1.39	36.5	22.9	2.7	58.1	42.7	32.8	1.41	37.6	23.3	4.5	58.4
		4.3	60	44.9	34.0	1.39	38.8	24.4	1.3	58.6	49.1	36.8	1.40	41.6	26.3	2.6	59.2	51.4	38.5	1.42	43.3	27.2	4.3	59.6
		4.3	70	52.7	39.0	1.40	43.8	27.9	1.2	59.7	57.4	42.5	1.41	47.3	30.1	2.5	60.5	60.1	44.5	1.43	49.4	31.1	4.2	61.0
		4.3	80	60.4	44.0	1.41	48.8	31.2	1.2	60.8	65.8	48.0	1.43	52.9	33.6	2.5	61.8	68.9	50.0	1.45	55.0	34.4	4.1	62.2
		4.3	90	68.0	49.5	1.43	54.4	34.7	1.2	62.1	74.0	54.0	1.46	59.0	37.0	2.4	63.1	77.3	57.0	1.49	62.1	38.3	4.0	63.8
80	4.5	1.2	50	38.4	26.2	1.86	32.5	14.1	1.3	84.5	41.8	27.6	1.89	34.0	14.6	2.7	85.1	43.6	28.6	1.91	35.1	15.0	4.5	85.6
		1.2	60	46.6	30.2	1.91	36.7	15.8	1.3	86.3	50.4	32.4	1.94	39.0	16.7	2.6	87.3	52.5	33.6	1.96	40.3	17.2	4.3	87.9
		1.2	70	54.6	34.6	1.94	41.2	17.8	1.2	88.3	58.9	37.4	1.97	44.1	18.9	2.5	89.6	61.3	39.0	2.00	45.8	19.5	4.2	90.4
		1.2	80	62.4	39.5	1.99	46.3	19.9	1.2	90.6	67.4	42.5	2.03	49.4	21.0	2.5	92.0	70.1	44.5	2.06	51.5	21.6	4.1	92.9
		1.2	90	70.2	44.5	2.04	51.5	21.8	1.2	92.9	75.8	48.0	2.10	55.2	22.9	2.4	94.5	78.9	50.0	2.14	57.3	23.3	4.0	95.5
	6.75	2.4	50	38.1	26.8	1.78	32.9	15.1	1.3	79.7	41.5	28.6	1.80	34.8	15.9	2.7	80.3	43.4	29.6	1.83	35.8	16.2	4.5	80.6
		2.4	60	46.3	30.8	1.82	37.0	16.9	1.3	81.0	50.2	33.2	1.83	39.5	18.1	2.6	81.7	52.3	34.6	1.85	40.9	18.7	4.3	82.1
		2.4	70	54.2	35.6	1.83	41.9	19.4	1.2	82.4	58.6	38.5	1.85	44.8	20.8	2.5	83.3	61.1	40.0	1.88	46.4	21.3	4.2	83.7
		2.4	80	62.0	40.5	1.86	46.8	21.8	1.2	83.9	67.0	44.0	1.89	50.4	23.3	2.5	84.9	69.8	46.0	1.92	52.5	24.0	4.1	85.6
		2.4	90	69.8	45.5	1.89	52.0	24.0	1.2	85.4	75.3	49.5	1.94	56.1	25.6	2.4	86.6	78.4	52.0	1.97	58.7	26.4	4.0	87.4
90	4.5	4.1	50	38.0	27.0	1.75	33.0	15.5	1.3	77.3	41.4	29.0	1.77	35.0	16.4	2.7	77.8	43.3	30.0	1.79	36.1	16.8	4.5	78.0
		4.1	60	46.1	31.2	1.78	37.3	17.5	1.3	78.3	50.0	33.8	1.79	39.9	18.9	2.6	78.9	52.2	35.2	1.80	41.4	19.5	4.3	79.2
		4.1	70	54.0	36.0	1.79	42.1	20.2	1.2	79.4	58.4	39.0	1.80	45.1	21.7	2.5	80.0	61.0	40.5	1.82	46.7	22.3	4.2	80.4
		4.1	80	61.8	41.0	1.80	47.1	22.8	1.2	80.5	66.8	44.5	1.83	50.7	24.4	2.5	81.3	69.7	46.5	1.85	52.8	25.1	4.1	81.7
		4.0	90	69.6	46.0	1.83	52.2	25.2	1.2	81.6	75.0	50.5	1.86	56.9	27.1	2.4	82.6	78.3	52.5	1.90	59.0	27.7	4.0	83.1
	6.75	1.1	50	39.0	24.8	2.08</																		

WRA, WCA 036 – Cooling (continued)

Source			ELT °F	Load Flow 4.5 GPM						Load Flow 6.75 GPM						Load Flow 9.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	4.5	1.1	50	40.8	20.6	2.97	30.7	6.9	1.3	123.7	43.5	21.8	2.98	32.0	7.3	2.7	124.2	44.9	22.8	3.00	33.0	7.6	4.5	124.7
		1.1	60	49.2	24.4	2.99	34.6	8.2	1.3	125.4	52.3	26.0	3.01	36.3	8.6	2.6	126.1	54.0	26.8	3.03	37.1	8.8	4.3	126.5
		1.1	70	57.4	28.4	3.02	38.7	9.4	1.2	127.2	61.0	30.4	3.05	40.8	10.0	2.5	128.1	63.0	31.6	3.08	42.1	10.2	4.2	128.7
		1.1	80	65.5	32.6	3.07	43.1	10.6	1.2	129.2	69.6	35.2	3.11	45.8	11.3	2.4	130.4	72.0	36.2	3.14	46.9	11.5	4.1	130.9
		1.1	90	73.6	37.0	3.13	47.7	11.8	1.2	131.2	78.3	39.5	3.18	50.4	12.4	2.4	132.4	80.9	41.0	3.22	52.0	12.7	3.9	133.1
	6.75	2.2	50	40.7	21.0	2.87	30.8	7.3	1.3	119.1	43.4	22.4	2.88	32.2	7.8	2.7	119.5	44.9	23.0	2.89	32.9	8.0	4.5	119.7
		2.2	60	48.9	25.0	2.87	34.8	8.7	1.3	120.3	52.1	26.6	2.89	36.5	9.2	2.6	120.8	53.9	27.6	2.91	37.5	9.5	4.3	121.1
		2.2	70	57.1	29.0	2.89	38.9	10.0	1.2	121.5	60.8	31.2	2.91	41.1	10.7	2.5	122.2	62.8	32.4	2.93	42.4	11.1	4.2	122.6
		2.2	80	65.1	33.6	2.91	43.5	11.5	1.2	122.9	69.3	36.2	2.94	46.2	12.3	2.4	123.7	71.7	37.4	2.96	47.5	12.6	4.1	124.1
		2.2	90	73.1	38.0	2.95	48.1	12.9	1.2	124.2	77.9	41.0	2.98	51.2	13.7	2.4	125.2	80.4	43.0	3.02	53.3	14.2	3.9	125.8
	9.0	3.7	50	40.6	21.2	2.83	30.9	7.5	1.3	116.9	43.3	22.6	2.84	32.3	8.0	2.7	117.2	44.8	23.4	2.85	33.1	8.2	4.5	117.4
		3.7	60	48.8	25.2	2.83	34.8	8.9	1.3	117.7	52.0	27.0	2.83	36.7	9.5	2.6	118.1	53.8	28.0	2.85	37.7	9.8	4.3	118.4
		3.6	70	56.9	29.4	2.83	39.1	10.4	1.2	118.7	60.6	31.6	2.84	41.3	11.1	2.5	119.2	62.7	32.8	2.86	42.6	11.5	4.2	119.5
		3.6	80	64.9	34.0	2.84	43.7	12.0	1.2	119.7	69.1	36.8	2.86	46.6	12.9	2.4	120.3	71.6	38.0	2.88	47.8	13.2	4.1	120.6
		3.6	90	72.9	38.5	2.86	48.3	13.4	1.2	120.7	77.6	42.0	2.90	51.9	14.5	2.4	121.5	80.3	43.5	2.93	53.5	14.9	3.9	121.9
120	4.5	1.0	50	41.3	19.5	3.32	30.8	5.9	1.3	133.7	43.9	20.6	3.35	32.0	6.2	2.7	134.2	45.4	20.8	3.36	32.3	6.2	4.5	134.3
		1.0	60	49.8	23.0	3.35	34.4	6.9	1.3	135.3	52.7	24.6	3.36	36.1	7.3	2.6	136.0	54.4	25.4	3.39	37.0	7.5	4.3	136.4
		1.0	70	58.1	26.8	3.38	38.3	7.9	1.2	137.0	61.4	29.0	3.41	40.6	8.5	2.5	138.1	63.4	29.6	3.43	41.3	8.6	4.2	138.4
		1.0	80	66.3	30.8	3.42	42.5	9.0	1.2	138.9	70.2	33.0	3.46	44.8	9.5	2.4	139.9	72.4	34.2	3.49	46.1	9.8	4.0	140.5
		1.0	90	74.4	35.2	3.49	47.1	10.1	1.2	140.9	78.9	37.6	3.54	49.7	10.6	2.4	142.1	81.3	39.0	3.58	51.2	10.9	3.9	142.8
	6.75	2.1	50	42.0	18.0	3.25	29.1	5.5	1.3	128.6	44.1	20.0	3.25	31.1	6.2	2.7	129.2	45.2	21.6	3.25	32.7	6.6	4.5	129.7
		2.1	60	49.6	23.4	3.23	34.4	7.2	1.3	130.2	52.6	25.0	3.24	36.1	7.7	2.6	130.7	54.3	25.8	3.26	36.9	7.9	4.3	130.9
		2.1	70	57.8	27.4	3.24	38.5	8.5	1.2	131.4	61.3	29.4	3.26	40.5	9.0	2.5	132.0	63.2	30.6	3.28	41.8	9.3	4.2	132.4
		2.1	80	66.0	31.6	3.27	42.7	9.7	1.2	132.7	69.9	34.0	3.29	45.2	10.3	2.4	133.4	72.2	35.2	3.32	46.5	10.6	4.1	133.8
		2.1	90	74.0	36.0	3.30	47.3	10.9	1.2	134.0	78.4	39.0	3.34	50.4	11.7	2.4	134.9	81.0	40.5	3.37	52.0	12.0	3.9	135.4
	9.0	3.6	50	42.1	17.8	3.21	28.8	5.5	1.3	126.4	43.8	21.0	3.19	31.9	6.6	2.7	127.1	45.1	22.0	3.21	32.9	6.9	4.5	127.3
		3.6	60	49.5	23.6	3.18	34.4	7.4	1.3	127.7	52.5	25.4	3.19	36.3	8.0	2.6	128.1	54.2	26.2	3.20	37.1	8.2	4.3	128.2
		3.6	70	57.6	27.8	3.18	38.7	8.7	1.2	128.6	61.2	29.8	3.19	40.7	9.3	2.5	129.0	63.1	31.0	3.21	42.0	9.6	4.2	129.3
		3.6	80	65.8	32.0	3.20	42.9	10.0	1.2	129.5	69.8	34.4	3.22	45.4	10.7	2.4	130.1	72.0	35.8	3.24	46.8	11.1	4.1	130.4
		3.6	90	73.7	36.6	3.22	47.6	11.4	1.2	130.6	78.3	39.5	3.25	50.6	12.2	2.4	131.2	80.9	41.0	3.28	52.2	12.5	3.9	131.6

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 036 – Heating

Source			ELT °F	Load Flow 4.5 GPM							Load Flow 6.75 GPM							Load Flow 9.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	4.5	1.4	60	70.4	23.4	1.55	18.1	4.4	1.2	21.9	67.0	23.6	1.50	18.5	4.6	2.5	21.8	65.3	23.8	1.48	18.7	4.7	4.2	21.7
		1.4	80	90.0	22.4	1.96	15.7	3.3	1.2	23.0	86.6	22.4	1.91	15.9	3.4	2.4	22.9	85.1	22.8	1.89	16.3	3.5	4.0	22.7
		1.4	100	109.6	21.6	2.52	13.0	2.5	1.1	24.2	106.3	21.4	2.46	13.0	2.5	2.3	24.2	104.8	21.8	2.43	13.5	2.6	3.8	24.0
		1.4	120	129.3	21.0	3.25	9.9	1.9	1	25.6	126.2	20.9	3.21	10.0	1.9	2.2	25.6	124.6	20.6	3.13	9.9	1.9	3.6	25.6
	6.75	2.9	60	70.9	24.6	1.57	19.2	4.6	1.2	24.3	67.3	24.8	1.52	19.6	4.8	2.5	24.2	65.6	25.0	1.50	19.9	4.9	4.2	24.1
		2.9	80	90.4	23.4	1.98	16.6	3.5	1.2	25.1	87.0	23.6	1.92	17.0	3.6	2.4	25.0	85.2	23.6	1.91	17.1	3.6	4.0	24.9
		2.9	100	109.9	22.2	2.53	13.6	2.6	1.1	26.0	106.6	22.4	2.46	14.0	2.7	2.3	25.9	105.0	22.4	2.45	14.0	2.7	3.8	25.8
		2.9	120	129.7	21.8	3.28	10.6	1.9	1	26.9	126.5	21.8	3.21	10.9	2.0	2.1	26.8	124.8	21.4	3.14	10.7	2.0	3.6	26.8
	9.0	4.8	60	71.2	25.2	1.59	19.8	4.6	1.2	25.6	67.6	25.6	1.54	20.4	4.9	2.5	25.5	65.7	25.8	1.52	20.6	5.0	4.2	25.4
		4.8	80	90.6	23.8	2.00	17.0	3.5	1.2	26.2	87.1	24.0	1.94	17.4	3.6	2.4	26.1	85.4	24.2	1.92	17.6	3.7	4.0	26.1
		4.8	100	110.0	22.6	2.56	13.9	2.6	1.1	26.9	106.8	23.0	2.49	14.5	2.7	2.3	26.8	105.1	22.8	2.46	14.4	2.7	3.8	26.8
		4.8	120	129.9	22.2	3.29	11.0	2.0	1	27.6	126.6	22.2	3.22	11.2	2.0	2.1	27.5	125.0	22.3	3.21	11.4	2.0	3.6	27.5
50	4.5	1.4	60	72.0	27.0	1.59	21.6	5.0	1.2	30.4	68.1	27.2	1.53	22.0	5.2	2.5	30.2	66.1	27.4	1.50	22.3	5.3	4.2	30.1
		1.4	80	91.4	25.6	2.00	18.8	3.8	1.2	31.7	87.6	25.8	1.93	19.2	3.9	2.4	31.5	85.8	26.0	1.91	19.5	4.0	4.0	31.3
		1.4	100	110.9	24.6	2.55	15.9	2.8	1.1	32.9	107.3	24.8	2.47	16.4	2.9	2.3	32.7	105.6	25.0	2.44	16.7	3.0	3.8	32.6
		1.4	120	130.8	24.2	3.29	13.0	2.2	1	34.2	126.9	23.4	3.22	12.4	2.1	2.1	34.5	125.3	23.8	3.18	12.9	2.2	3.6	34.2
	6.75	2.8	60	72.6	28.4	1.61	22.9	5.2	1.2	33.2	68.5	28.8	1.55	23.5	5.5	2.5	33.0	66.4	28.6	1.52	23.4	5.5	4.2	33.1
		2.8	80	92.0	27.0	2.02	20.1	3.9	1.2	34.0	88.1	27.2	1.95	20.5	4.1	2.4	33.9	86.1	27.4	1.93	20.8	4.2	4.0	33.8
		2.8	100	111.4	25.6	2.59	16.8	2.9	1.1	35.0	107.6	25.8	2.49	17.3	3.0	2.3	34.9	105.8	26.0	2.46	17.6	3.1	3.8	34.8
		2.8	120	131.2	25.2	3.29	14.0	2.2	1	35.9	127.3	24.8	3.23	13.8	2.2	2.1	35.9	125.6	25.0	3.18	14.1	2.3	3.6	35.8
	9.0	4.6	60	73.0	29.2	1.63	23.6	5.2	1.2	34.8	68.8	29.6	1.57	24.3	5.5	2.5	34.6	66.6	29.8	1.54	24.5	5.7	4.2	34.5
		4.6	80	92.3	27.6	2.05	20.6	4.0	1.2	35.4	88.3	28.0	1.97	21.3	4.2	2.4	35.3	86.3	28.2	1.95	21.6	4.2	4.0	35.2
		4.6	100	111.7	26.4	2.59	17.6	3.0	1.1	36.1	107.8	26.4	2.51	17.8	3.1	2.3	36.0	106.0	26.8	2.47	18.4	3.2	3.8	35.9
		4.6	120	131.4	25.6	3.31	14.3	2.3	1	36.8	127.6	25.6	3.24	14.5	2.3	2.1	36.8	125.7	25.6	3.19	14.7	2.3	3.6	36.7
40	4.5	1.3	60	73.7	30.8	1.63	25.2	5.5	1.2	38.8	69.2	31.2	1.56	25.9	5.9	2.5	38.5	67.0	31.4	1.53	26.2	6.0	4.2	38.4
		1.3	80	93.1	29.4	2.04	22.4	4.2	1.2	40.0	88.8	29.6	1.96	22.9	4.4	2.4	39.8	86.6	29.8	1.93	23.2	4.5	4.0	39.7
		1.3	100	112.5	28.2	2.59	19.4	3.2	1.1	41.4	108.4	28.4	2.50	19.9	3.3	2.3	41.2	106.4	28.6	2.46	20.2	3.4	3.8	41.0
		1.3	120	132.4	27.8	3.29	16.6	2.5	1	42.6	127.8	26.2	3.23	15.2	2.4	2.1	43.3	126.2	28.0	3.16	17.2	2.6	3.6	42.3
	6.75	2.7	60	74.5	32.6	1.66	26.9	5.8	1.2	42.0	69.8	33.0	1.58	27.6	6.1	2.5	41.8	67.4	33.2	1.55	27.9	6.3	4.2	41.7
		2.7	80	93.9	31.2	2.08	24.1	4.4	1.1	42.9	89.3	31.4	1.99	24.6	4.6	2.4	42.7	87.0	31.6	1.95	24.9	4.7	4.0	42.6
		2.7	100	113.3	30.0	2.62	21.1	3.4	1.1	43.8	108.9	30.2	2.52	21.6	3.5	2.2	43.6	106.7	30.0	2.48	21.5	3.5	3.8	43.6
		2.7	120	132.7	28.6	3.31	17.3	2.5	1	44.9	128.6	29.0	3.21	18.0	2.6	2.1	44.7	126.4	29.0	3.17	18.2	2.7	3.6	44.6
	9.0	4.5	60	74.9	33.6	1.68	27.9	5.8	1.2	43.8	70.1	34.2	1.60	28.7	6.3	2.5	43.6	67.6	34.4	1.57	29.0	6.4	4.2	43.5
		4.5	80	94.2	32.0	2.10	24.8	4.5	1.1	44.5	89.5	32.2	2.01	25.3	4.7	2.4	44.4	87.2	32.6	1.98	25.9	4.8	4.0	44.3
		4.5	100	113.5	30.4	2.64	21.4	3.4	1.1	45.2	109.1	30.6	2.54	21.9	3.5	2.2	45.1	106.9	31.0	2.50	22.5	3.6	3.8	45.0
		4.5	120	133.0	29.2	3.34	17.8	2.6	1	46.0	128.7	29.4	3.22	18.4	2.7	2.1	45.9	126.5	29.2	3.18	18.3	2.7	3.6	45.9

WRA, WHA 036 – Heating (continued)

Source			ELT °F	Load Flow 4.5 GPM							Load Flow 6.75 GPM							Load Flow 9.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	4.5	1.3	60	75.6	35.0	1.68	29.3	6.1	1.2	47.0	70.5	35.4	1.59	30.0	6.5	2.5	46.7	67.9	35.6	1.56	30.3	6.7	4.2	46.5
		1.3	80	94.8	33.4	2.10	26.2	4.7	1.1	48.3	90.0	33.8	2.00	27.0	4.9	2.4	48.0	87.6	34.0	1.97	27.3	5.1	4.0	47.9
		1.3	100	114.3	32.2	2.63	23.2	3.6	1.1	49.7	109.6	32.4	2.53	23.8	3.7	2.2	49.4	107.2	32.4	2.49	23.9	3.8	3.8	49.4
		1.3	120	133.9	31.2	3.26	20.1	2.8	1	51.1	129.2	31.0	3.15	20.3	2.9	2.1	51.0	127.0	31.6	3.14	20.9	3.0	3.6	50.7
	6.75	2.6	60	76.5	37.2	1.71	31.4	6.4	1.2	50.7	71.2	37.8	1.62	32.3	6.8	2.5	50.4	68.4	38.0	1.58	32.6	7.0	4.2	50.3
		2.6	80	95.6	35.2	2.13	27.9	4.8	1.1	51.7	90.6	35.8	2.03	28.9	5.2	2.4	51.4	88.0	36.0	1.99	29.2	5.3	4.0	51.3
		2.6	100	115.0	33.8	2.65	24.8	3.7	1.1	52.7	110.2	34.4	2.55	25.7	4.0	2.2	52.4	107.6	34.4	2.50	25.9	4.0	3.7	52.3
		2.6	120	134.5	32.6	3.33	21.2	2.9	1	53.7	129.8	33.0	3.21	22.1	3.0	2.1	53.5	127.3	32.8	3.16	22.0	3.0	3.6	53.5
	9.0	4.3	60	77.1	38.5	1.73	32.6	6.5	1.2	52.8	71.6	39.0	1.63	33.4	7.0	2.5	52.6	68.8	39.5	1.59	34.1	7.3	4.2	52.4
		4.3	80	96.3	36.6	2.15	29.3	5.0	1.1	53.5	91.0	37.0	2.05	30.0	5.3	2.4	53.3	88.3	37.4	2.00	30.6	5.5	4.0	53.2
		4.3	100	115.5	34.8	2.67	25.7	3.8	1.1	54.3	110.4	35.2	2.56	26.5	4.0	2.2	54.1	107.9	35.4	2.52	26.8	4.1	3.7	54.0
		4.3	120	134.4	32.4	3.35	21.0	2.8	1	55.3	129.7	32.8	3.22	21.8	3.0	2.1	55.2	127.3	33.0	3.17	22.2	3.0	3.6	55.1
70	4.5	1.2	60	77.6	39.5	1.72	33.6	6.7	1.2	55.0	71.9	40.0	1.62	34.5	7.3	2.5	54.7	68.9	40.0	1.58	34.6	7.4	4.2	54.6
		1.2	80	96.8	37.8	2.14	30.5	5.2	1.1	56.4	91.3	38.0	2.03	31.1	5.5	2.4	56.2	88.6	38.5	1.98	31.7	5.7	4.0	55.9
		1.2	100	116.1	36.2	2.66	27.1	4.0	1.1	58.0	110.8	36.6	2.55	27.9	4.2	2.2	57.6	108.2	36.8	2.50	28.3	4.3	3.7	57.4
		1.2	120	135.6	35.2	3.34	23.8	3.1	1	59.4	130.5	35.4	3.20	24.5	3.2	2.1	59.1	127.9	35.4	3.15	24.7	3.3	3.6	59.0
	6.75	2.5	60	78.9	42.5	1.74	36.6	7.1	1.2	59.2	72.7	43.0	1.63	37.4	7.7	2.5	58.9	69.7	43.5	1.59	38.1	8.0	4.2	58.7
		2.5	80	97.8	40.0	2.16	32.6	5.4	1.1	60.3	92.1	41.0	2.05	34.0	5.9	2.4	59.9	89.1	41.0	2.00	34.2	6.0	4.0	59.9
		2.5	100	116.9	38.0	2.69	28.8	4.1	1.1	61.5	111.4	38.5	2.56	29.8	4.4	2.2	61.2	108.7	39.0	2.51	30.4	4.6	3.7	61.0
		2.5	120	136.4	37.0	3.35	25.6	3.2	1	62.4	130.8	36.6	3.22	25.6	3.3	2.1	62.4	128.3	37.2	3.16	26.4	3.4	3.6	62.2
	9.0	4.2	60	79.6	44.0	1.77	38.0	7.3	1.2	61.6	73.2	44.5	1.65	38.9	7.9	2.5	61.4	70.0	45.0	1.60	39.5	8.2	4.2	61.2
		4.2	80	98.4	41.5	2.19	34.0	5.6	1.1	62.4	92.6	42.5	2.07	35.4	6.0	2.4	62.1	89.4	42.5	2.01	35.6	6.2	4.0	62.1
		4.2	100	117.6	39.5	2.71	30.2	4.3	1.1	63.3	111.7	39.5	2.58	30.7	4.5	2.2	63.2	109.0	40.5	2.52	31.9	4.7	3.7	62.9
		4.2	120	136.9	38.0	3.38	26.5	3.3	1	64.1	131.3	38.0	3.23	27.0	3.4	2.1	64.0	128.6	38.5	3.18	27.7	3.6	3.6	63.9
80	4.5	1.2	60	79.8	44.5	1.75	38.5	7.4	1.2	62.9	73.3	45.0	1.64	39.4	8.1	2.5	62.5	70.1	45.5	1.58	40.1	8.4	4.2	62.2
		1.2	80	98.9	42.5	2.17	35.1	5.7	1.1	64.4	92.7	43.0	2.05	36.0	6.1	2.4	64.0	89.7	43.5	2.00	36.7	6.4	3.9	63.7
		1.2	100	118.0	40.5	2.71	31.3	4.4	1.1	66.1	112.1	41.0	2.57	32.2	4.7	2.2	65.7	109.2	41.5	2.51	33.0	4.9	3.7	65.4
		1.2	120	137.8	40.0	3.38	28.5	3.5	1	67.3	131.9	40.0	3.23	29.0	3.6	2.1	67.1	128.8	39.5	3.16	28.7	3.7	3.6	67.2
	6.75	2.5	60	81.1	47.5	1.79	41.4	7.8	1.2	67.7	74.4	48.5	1.66	42.8	8.6	2.5	67.3	70.9	49.0	1.60	43.5	9.0	4.2	67.1
		2.4	80	100.2	45.5	2.21	38.0	6.0	1.1	68.8	93.6	46.0	2.08	38.9	6.5	2.4	68.5	90.3	46.5	2.02	39.6	6.8	3.9	68.3
		2.4	100	119.1	43.0	2.74	33.7	4.6	1.1	70.0	112.9	43.5	2.59	34.7	4.9	2.2	69.7	109.8	44.0	2.52	35.4	5.1	3.7	69.5
		2.4	120	138.3	41.1	3.36	29.6	3.6	1	71.2	132.4	41.8	3.26	30.7	3.8	2.1	70.9	129.9	44.5	3.19	33.6	4.1	3.6	70.0
	9.0	4.1	60	82.0	49.5	1.82	43.3	8.0	1.2	70.4	75.0	50.5	1.69	44.7	8.8	2.5	70.1	71.3	51.0	1.63	45.5	9.2	4.2	69.9
		4.1	80	102.2	50.0	2.28	42.2	6.4	1.1	70.6	94.7	49.5	2.12	42.3	6.9	2.4	70.6	90.9	49.0	2.05	42.0	7.0	3.9	70.7
		4.1	100	119.8	44.6	2.77	35.2	4.7	1.1	72.2	113.4	45.3	2.62	36.4	5.1	2.2	71.9	110.2	45.7	2.55	37.0	5.3	3.7	71.8
		4.0	120	139.0	42.7	3.44	31.0	3.6	1	73.1	130.9	36.6	3.24	25.6	3.3	2.1	74.3	129.1	41.0	3.10	30.4	3.9	3.6	73.2

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

WRA, WCA 048 – Cooling

Source			ELT °F	Load Flow 6.0 GPM						Load Flow 9.0 GPM						Load Flow 12.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)
60	2.2	50	37.9	36.4	1.67	42.1	21.8	2.2	54.0	41.3	39.0	1.69	44.8	23.1	4.5	54.9	43.3	40.5	1.72	46.4	23.6	7.5	55.5
	2.2	60	46.0	42.0	1.67	47.7	25.1	2.1	55.9	50.0	45.0	1.69	50.8	26.7	4.3	56.9	52.2	47.0	1.71	52.8	27.5	7.2	57.6
	2.2	70	54.0	48.0	1.66	53.7	28.8	2.1	57.9	58.4	52.0	1.67	57.7	31.1	4.2	59.2	61.0	54.0	1.69	59.8	32.0	7.0	59.9
	2.1	80	61.8	54.5	1.65	60.1	33.1	2.0	60.0	66.9	59.0	1.64	64.6	36.0	4.1	61.5	69.8	61.5	1.65	67.1	37.3	6.8	62.4
	2.1	90	69.7	61.0	1.61	66.5	37.9	2.0	62.2	75.3	66.0	1.58	71.4	41.7	4.0	63.8	78.5	69.0	1.58	74.4	43.7	6.6	64.8
	4.5	50	37.6	37.2	1.61	42.7	23.1	2.2	49.5	41.2	39.5	1.62	45.0	24.3	4.5	50.0	43.1	41.5	1.65	47.1	25.2	7.5	50.5
	4.5	60	45.7	43.0	1.60	48.5	26.9	2.1	50.8	49.7	46.5	1.60	52.0	29.1	4.3	51.5	52.0	48.0	1.62	53.5	29.6	7.2	51.9
	4.5	70	53.7	49.0	1.57	54.4	31.2	2.1	52.1	58.2	53.0	1.56	58.3	34.0	4.2	53.0	60.8	55.5	1.57	60.9	35.3	7.0	53.5
	4.5	80	61.5	55.5	1.53	60.7	36.3	2.0	53.5	66.6	60.5	1.50	65.6	40.3	4.1	54.6	69.4	63.5	1.50	68.6	42.4	6.8	55.2
	4.4	90	69.2	62.5	1.47	67.5	42.7	2.0	55.0	74.9	68.0	1.42	72.8	48.0	4.0	56.2	78.2	71.0	1.40	75.8	50.9	6.6	56.8
40	7.5	50	37.5	37.4	1.61	42.9	23.3	2.2	47.1	41.0	40.5	1.62	46.0	25.1	4.5	47.7	43.0	42.0	1.64	47.6	25.6	7.5	47.9
	7.5	60	45.5	43.5	1.59	48.9	27.4	2.1	48.2	49.6	47.0	1.58	52.4	29.7	4.3	48.7	51.8	49.0	1.60	54.5	30.7	7.2	49.1
	7.5	70	53.5	49.5	1.55	54.8	32.0	2.1	49.1	58.0	54.0	1.53	59.2	35.3	4.2	49.9	60.6	56.5	1.54	61.7	36.8	7.0	50.3
	7.5	80	61.2	56.5	1.49	61.6	37.8	2.0	50.3	66.3	61.5	1.46	66.5	42.2	4.1	51.1	69.3	64.5	1.45	69.4	44.5	6.8	51.6
	7.5	90	68.8	63.5	1.42	68.3	44.8	2.0	51.4	74.7	69.0	1.35	73.6	51.0	4.0	52.3	77.8	73.0	1.33	77.5	55.0	6.6	52.9
	2.1	50	38.3	35.0	1.84	41.3	19.0	2.2	63.8	41.7	37.4	1.86	43.8	20.1	4.5	64.6	43.5	39.0	1.90	45.5	20.6	7.5	65.2
	2.1	60	46.5	40.5	1.85	46.8	21.9	2.1	65.6	50.3	43.5	1.87	49.9	23.3	4.3	66.6	52.5	45.0	1.90	51.5	23.7	7.2	67.2
	2.1	70	54.5	46.5	1.85	52.8	25.1	2.1	67.6	58.9	50.0	1.87	56.4	26.8	4.2	68.8	61.3	52.0	1.89	58.5	27.5	7.0	69.5
	2.1	80	62.5	52.5	1.85	58.8	28.4	2.0	69.6	67.4	56.5	1.85	62.8	30.6	4.1	70.9	70.2	59.0	1.86	65.4	31.7	6.8	71.8
	2.1	90	70.3	59.0	1.82	65.2	32.4	1.9	71.7	75.8	64.0	1.81	70.2	35.4	4.0	73.4	78.8	67.0	1.81	73.2	37.1	6.6	74.4
50	4.3	50	38.1	35.6	1.77	41.6	20.1	2.2	59.3	41.6	38.0	1.79	44.1	21.3	4.5	59.8	43.4	39.5	1.81	45.7	21.8	7.5	60.2
	4.3	60	46.2	41.5	1.76	47.5	23.5	2.1	60.6	50.1	44.5	1.77	50.6	25.1	4.3	61.2	52.3	46.5	1.80	52.6	25.9	7.2	61.7
	4.3	70	54.2	47.5	1.75	53.5	27.2	2.1	61.9	58.6	51.5	1.75	57.5	29.5	4.2	62.8	61.1	53.5	1.76	59.5	30.4	7.0	63.2
	4.3	80	62.0	54.0	1.72	59.9	31.5	2.0	63.3	67.0	58.5	1.70	64.3	34.4	4.1	64.3	69.8	61.0	1.70	66.8	35.8	6.8	64.8
	4.3	90	69.8	60.5	1.66	66.2	36.4	2.0	64.7	75.3	66.0	1.63	71.5	40.6	4.0	65.9	78.5	69.0	1.61	74.5	42.8	6.6	66.6
	7.3	50	38.0	36.0	1.76	42.0	20.5	2.2	57.0	41.4	38.5	1.77	44.5	21.8	4.5	57.4	43.3	40.0	1.80	46.1	22.3	7.5	57.7
	7.3	60	46.0	42.0	1.74	48.0	24.1	2.1	58.0	50.0	45.0	1.75	51.0	25.8	4.3	58.5	52.2	47.0	1.77	53.0	26.6	7.2	58.8
	7.2	70	54.0	48.0	1.72	53.9	28.0	2.1	59.0	58.4	52.0	1.71	57.8	30.4	4.2	59.6	61.0	54.0	1.72	59.9	31.4	7.0	60.0
	7.2	80	61.8	54.5	1.67	60.2	32.6	2.0	60.0	66.8	59.5	1.64	65.1	36.2	4.1	60.9	69.7	62.0	1.64	67.6	37.7	6.8	61.3
	7.2	90	69.5	61.5	1.61	67.0	38.2	2.0	61.2	75.1	67.0	1.56	72.3	43.0	4.0	62.1	78.3	70.0	1.54	75.2	45.6	6.6	62.5
70	2.0	50	39.3	32.0	2.29	39.8	14.0	2.2	83.3	42.4	34.0	2.32	41.9	14.7	4.5	84.0	44.1	35.2	2.36	43.2	14.9	7.4	84.4
	2.0	60	47.6	37.2	2.32	45.1	16.0	2.1	85.0	51.2	39.5	2.34	47.5	16.9	4.3	85.8	53.1	41.5	2.38	49.6	17.4	7.2	86.5
	2.0	70	55.7	43.0	2.34	51.0	18.4	2.1	87.0	59.8	46.0	2.36	54.1	19.5	4.2	88.0	62.1	47.5	2.39	55.7	19.9	7.0	88.6
	1.9	80	63.7	49.0	2.35	57.0	20.9	2.0	89.0	68.3	52.5	2.36	60.6	22.2	4.1	90.2	70.9	54.5	2.38	62.6	22.9	6.8	90.9
	1.9	90	71.7	55.0	2.34	63.0	23.5	1.9	91.0	76.9	59.0	2.34	67.0	25.3	4.0	92.3	79.8	61.5	2.35	69.5	26.2	6.6	93.2
	4.1	50	39.1	32.6	2.20	40.1	14.8	2.2	78.9	42.3	34.8	2.22	42.4	15.6	4.5	79.4	44.0	36.0	2.26	43.7	16.0	7.4	79.7
	4.1	60	47.3	38.0	2.21	45.5	17.2	2.1	80.1	51.0	40.5	2.23	48.1	18.2	4.3	80.7	52.9	42.5	2.26	50.2	18.8	7.2	81.2
	4.1	70	55.3	44.0	2.21	51.5	19.9	2.1	81.5	59.6	47.0	2.22	54.6	21.2	4.2	82.1	61.8	49.0	2.24	56.6	21.9	7.0	82.6
	4.0	80	63.3	50.0	2.19	57.5	22.8	2.0	82.8	68.0	54.0	2.19	61.5	24.6	4.1	83.7	70.7	56.0	2.20	63.5	25.4	6.8	84.1
	4.0	90	71.2	56.5	2.16	63.9	26.2	1.9	84.2	76.4	61.0	2.14	68.3	28.5	4.0	85.2	79.4	63.5	2.13	70.8	29.8	6.6	85.7
80	6.6	50	39.0	30.4	2.58	39.2	11.8	2.2	93.1	42.8	32.2	2.60	41.1	12.4	4.5	93.7	44.4	33.4	2.64	42.4	12.6	7.4	94.1
	6.6	60	48.1	35.6	2.61	44.5	13.7	2.1	94.8	51.6	38.0	2.63	47.0	14.4	4.3	95.7	53.4	39.5	2.67	48.6	14.8	7.2	96.2
	6.6	70	56.3	41.0	2.63	50.0	15.6	2.1	96.7	60.3	43.5	2.65	52.6	16.4	4.2	97.5	62.4	45.5	2.69	54.7	16.9	7.0	98.2
	6.6	80	64.3	47.0	2.64	56.0	17.8	2.0	98.7	68.9	50.0	2.66	59.1	18.8	4.1	99.7	71.3	52.0	2.69	61.2	19.4	6.8	100.4
	6.6	90	72.5	52.5	2.64	61.5	19.9	1.9	100.5	77.4	56.5	2.64	65.5	21.4	4.0	101.8	80.2	59.0	2.66	68.1	22.2	6.6	102.7
	4.0	50	39.7	31.0	2.48	39.5	12.5	2.2	88.8	42.7	33.0	2.50	41.5	13.2	4.5	89.2	44.3	34.2	2.54	42.9	13.5	7.4	89.5
	3.9	60	47.9	36.4	2.49	44.9	14.6	2.1	90.0	51.4	38.5	2.51	47.1	15.3	4.3	90.5	53.3	40.5	2.54	49.2	15.9	7.2	90.9
	3.9	70	56.0	42.0	2.49	50.5	16.8	2.1	91.2	60.0	45.0	2.51	53.5	18.0	4.								

WRA, WCA 048 – Cooling (continued)

EST °F	Flow GPM	WPD (Ft)	ELT °F	Load Flow 6.0 GPM							Load Flow 9.0 GPM							Load Flow 12.0 GPM						
				LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
6.0	1.8	50	41.5	25.6	3.63	38.0	7.0	2.2	122.7	44.0	27.2	3.67	39.7	7.4	4.5	123.2	45.4	27.8	3.71	40.5	7.5	7.4	123.5	
	1.8	60	49.9	30.2	3.69	42.8	8.2	2.1	124.3	52.9	32.0	3.72	44.7	8.6	4.3	124.9	54.6	32.6	3.76	45.4	8.7	7.2	125.1	
	1.8	70	58.3	35.0	3.73	47.7	9.4	2.1	125.9	61.7	37.2	3.75	50.0	9.9	4.2	126.7	63.6	38.5	3.79	51.4	10.2	6.9	127.1	
	1.8	80	66.7	40.0	3.75	52.8	10.7	2.0	127.6	70.4	43.0	3.77	55.9	11.4	4.1	128.6	72.7	44.0	3.79	56.9	11.6	6.7	129.0	
	1.8	90	74.8	45.5	3.75	58.3	12.1	1.9	129.4	79.2	48.5	3.75	61.3	12.9	3.9	130.4	81.8	49.5	3.77	62.4	13.1	6.5	130.8	
110	3.7	50	41.3	26.2	3.54	38.3	7.4	2.2	118.5	43.9	27.6	3.57	39.8	7.7	4.5	118.8	45.3	28.4	3.60	40.7	7.9	7.4	119.0	
	3.6	60	49.7	30.8	3.57	43.0	8.6	2.1	119.6	52.7	32.8	3.59	45.1	9.1	4.3	120.0	54.4	33.8	3.62	46.1	9.3	7.2	120.3	
	3.6	70	58.0	36.0	3.57	48.2	10.1	2.1	120.7	61.4	38.5	3.59	50.7	10.7	4.2	121.3	63.4	39.5	3.61	51.8	10.9	6.9	121.5	
	3.6	80	66.2	41.5	3.57	53.7	11.6	2.0	121.9	70.2	44.0	3.57	56.2	12.3	4.1	122.5	72.4	45.5	3.59	57.8	12.7	6.7	122.8	
	3.6	90	74.3	47.0	3.54	59.1	13.3	1.9	123.1	78.9	50.0	3.53	62.1	14.2	4.0	123.8	81.3	52.0	3.54	64.1	14.7	6.6	124.2	
12.0	6.1	50	41.2	26.4	3.50	38.4	7.5	2.2	116.4	43.8	28.0	3.53	40.1	7.9	4.5	116.7	45.2	28.8	3.57	41.0	8.1	7.4	116.8	
	6.1	60	49.6	31.2	3.52	43.2	8.9	2.1	117.2	52.6	33.2	3.54	45.3	9.4	4.3	117.5	54.3	34.2	3.56	46.4	9.6	7.2	117.7	
	6.1	70	57.9	36.4	3.51	48.4	10.4	2.1	118.1	61.3	39.0	3.52	51.0	11.1	4.2	118.5	63.3	40.0	3.55	52.1	11.3	6.9	118.7	
	6.1	80	66.0	42.0	3.50	53.9	12.0	2.0	119.0	70.1	44.5	3.49	56.4	12.7	4.1	119.4	72.3	46.5	3.51	58.5	13.2	6.7	119.7	
	6.1	90	74.2	47.5	3.46	59.3	13.7	1.9	119.9	78.7	51.0	3.44	62.7	14.8	4.0	120.5	81.2	53.0	3.45	64.8	15.4	6.6	120.8	
6.0	1.7	50	42.0	24.0	4.04	37.8	5.9	2.2	132.6	44.4	25.4	4.08	39.3	6.2	4.5	133.1	45.7	25.8	4.12	39.9	6.3	7.4	133.3	
	1.7	60	50.5	28.4	4.10	42.4	6.9	2.1	134.1	53.3	30.0	4.13	44.1	7.3	4.3	134.7	54.9	30.8	4.17	45.0	7.4	7.2	135.0	
	1.7	70	59.0	33.0	4.14	47.1	8.0	2.0	135.7	62.2	35.0	4.17	49.2	8.4	4.2	136.4	64.1	35.4	4.21	49.8	8.4	6.9	136.6	
	1.7	80	67.3	38.0	4.17	52.2	9.1	2.0	137.4	71.1	40.0	4.19	54.3	9.6	4.1	138.1	73.1	41.5	4.21	55.9	9.8	6.7	138.6	
	1.7	90	75.7	43.0	4.17	57.2	10.3	1.9	139.1	79.9	45.5	4.18	59.8	10.9	3.9	139.9	82.2	47.0	4.20	61.3	11.2	6.5	140.4	
120	3.6	50	41.8	24.6	3.95	38.1	6.2	2.2	128.5	44.3	25.8	3.97	39.4	6.5	4.5	128.7	45.6	26.6	4.01	40.3	6.6	7.4	129.0	
	3.6	60	50.3	29.0	3.98	42.6	7.3	2.1	129.5	53.2	30.6	4.01	44.3	7.6	4.3	129.8	54.7	31.6	4.04	45.4	7.8	7.2	130.1	
	3.6	70	58.7	33.8	4.00	47.5	8.4	2.0	130.5	62.0	35.8	4.02	49.5	8.9	4.2	131.0	63.9	36.4	4.05	50.2	9.0	6.9	131.2	
	3.6	80	67.0	39.0	4.00	52.6	9.8	2.0	131.7	70.8	41.5	4.01	55.2	10.4	4.1	132.3	72.9	42.5	4.03	56.2	10.6	6.7	132.5	
	3.5	90	75.3	44.0	3.98	57.6	11.1	1.9	132.8	79.6	47.0	3.97	60.6	11.8	3.9	133.5	81.9	48.5	3.98	62.1	12.2	6.5	133.8	
12.0	6.0	50	41.7	24.8	3.92	38.2	6.3	2.2	126.4	44.2	26.0	3.94	39.4	6.6	4.5	126.6	45.5	26.8	3.98	40.4	6.7	7.4	126.7	
	5.9	60	50.3	29.2	3.94	42.6	7.4	2.1	127.1	53.1	31.0	3.96	44.5	7.8	4.3	127.4	54.7	31.8	4.00	45.4	8.0	7.2	127.6	
	5.9	70	58.6	34.2	3.95	47.7	8.7	2.0	127.9	61.9	36.4	3.96	49.9	9.2	4.2	128.3	63.8	37.4	3.98	51.0	9.4	6.9	128.5	
	5.9	80	66.8	39.5	3.93	52.9	10.0	2.0	128.8	70.7	42.0	3.93	55.4	10.7	4.1	129.2	72.8	43.5	3.95	57.0	11.0	6.7	129.5	
	5.9	90	75.0	45.0	3.90	58.3	11.5	1.9	129.7	79.3	48.0	3.88	61.3	12.4	3.9	130.2	81.8	49.5	3.89	62.8	12.7	6.5	130.5	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

MBtuH - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 048 – Heating

Source			ELT °F	Load Flow 6.0 GPM							Load Flow 9.0 GPM							Load Flow 12.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	6.0	2.4	60	69.9	29.8	1.93	23.2	4.5	2	22.3	66.7	30.0	1.89	23.6	4.7	4.2	22.1	65.0	30.2	1.89	23.8	4.7	7.1	22.1
		2.4	80	89.5	28.4	2.41	20.2	3.4	1.9	23.3	86.4	28.6	2.36	20.6	3.6	4	23.1	84.8	28.8	2.35	20.8	3.6	6.6	23.1
		2.4	100	109.1	27.4	3.09	16.9	2.6	1.8	24.4	106.1	27.4	3.01	17.1	2.7	3.8	24.3	104.6	27.6	3.00	17.4	2.7	6.3	24.2
		2.4	120	129.0	27.0	3.90	13.7	2.0	1.7	25.4	126.0	26.8	3.84	13.7	2.0	3.6	25.4	124.5	27.0	3.83	13.9	2.1	6.0	25.4
	9.0	4.8	60	70.4	31.2	1.97	24.5	4.6	2	24.6	67.0	31.4	1.92	24.8	4.8	4.2	24.5	65.3	31.8	1.92	25.3	4.9	7.0	24.4
		4.8	80	89.9	29.6	2.45	21.2	3.5	1.9	25.3	86.6	29.8	2.39	21.6	3.7	4	25.2	85.0	30.0	2.38	21.9	3.7	6.6	25.1
		4.8	100	109.5	28.4	3.12	17.7	2.7	1.8	26.1	106.4	28.6	3.05	18.2	2.7	3.8	26.0	104.8	28.6	3.03	18.3	2.8	6.3	25.9
		4.8	120	129.2	27.6	3.94	14.1	2.1	1.7	26.9	126.1	27.6	3.88	14.4	2.1	3.6	26.8	124.6	27.8	3.86	14.6	2.1	6.0	26.7
	12.0	8.0	60	70.7	32.0	2.01	25.1	4.7	2	25.8	67.2	32.4	1.96	25.7	4.8	4.2	25.7	65.4	32.6	1.96	25.9	4.9	7.0	25.7
		8.0	80	90.1	30.2	2.50	21.7	3.5	1.9	26.4	86.8	30.6	2.43	22.3	3.7	4	26.3	85.1	30.8	2.42	22.5	3.7	6.6	26.2
		8.0	100	109.7	29.0	3.16	18.2	2.7	1.8	27.0	106.5	29.2	3.09	18.7	2.8	3.8	26.9	104.9	29.4	3.07	18.9	2.8	6.3	26.8
		8.0	120	129.4	28.2	3.98	14.6	2.1	1.7	27.6	126.3	28.2	3.92	14.8	2.1	3.6	27.5	124.7	28.4	3.90	15.1	2.1	6.0	27.5
40	6.0	2.3	60	71.4	34.2	1.99	27.4	5.0	2	30.9	67.6	34.4	1.93	27.8	5.2	4.2	30.7	65.8	34.6	1.92	28.1	5.3	7.0	30.6
		2.3	80	90.9	32.6	2.49	24.1	3.8	1.9	32.0	87.3	33.0	2.41	24.8	4.0	4	31.7	85.5	33.2	2.40	25.0	4.1	6.6	31.7
		2.3	100	110.5	31.4	3.17	20.6	2.9	1.8	33.1	107.0	31.6	3.08	21.1	3.0	3.8	33.0	105.3	31.8	3.06	21.4	3.0	6.3	32.9
		2.3	120	130.3	30.8	3.96	17.3	2.3	1.7	34.2	126.9	31.0	3.89	17.7	2.3	3.6	34.1	125.1	30.8	3.87	17.6	2.3	6.0	34.1
	9.0	4.7	60	72.0	36.0	2.03	29.1	5.2	2	33.5	68.0	36.2	1.96	29.5	5.4	4.2	33.4	66.1	36.4	1.95	29.7	5.5	7.0	33.4
		4.7	80	91.3	34.0	2.54	25.3	3.9	1.9	34.4	87.7	34.6	2.45	26.2	4.1	4	34.2	85.8	34.8	2.43	26.5	4.2	6.6	34.1
		4.6	100	110.9	32.6	3.22	21.6	3.0	1.8	35.2	107.3	32.8	3.12	22.1	3.1	3.7	35.1	105.5	33.2	3.09	22.6	3.1	6.3	35.0
		4.6	120	130.7	32.0	3.99	18.4	2.3	1.7	35.9	127.1	32.0	3.92	18.6	2.4	3.6	35.9	125.3	31.8	3.89	18.5	2.4	6.0	35.9
	12.0	7.7	60	72.3	37.0	2.07	29.9	5.2	2	35.0	68.3	37.4	2.00	30.6	5.5	4.2	34.9	66.3	37.8	1.99	31.0	5.6	7.0	34.8
		7.7	80	91.7	35.2	2.58	26.4	4.0	1.9	35.6	87.9	35.4	2.50	26.9	4.2	4	35.5	85.9	35.6	2.48	27.1	4.2	6.6	35.5
		7.7	100	111.2	33.6	3.25	22.5	3.0	1.8	36.2	107.5	33.8	3.17	23.0	3.1	3.8	36.2	105.7	34.0	3.14	23.3	3.2	6.3	36.1
		7.7	120	130.9	32.6	4.03	18.8	2.4	1.7	36.9	127.3	32.8	3.95	19.3	2.4	3.6	36.8	125.5	32.8	3.93	19.4	2.4	6.0	36.8
50	6.0	2.2	60	73.0	39.0	2.04	32.1	5.6	2	39.3	68.8	39.5	1.96	32.8	5.9	4.2	39.1	66.6	39.5	1.94	32.9	6.0	7.0	39.0
		2.2	80	92.5	37.4	2.56	28.7	4.3	1.9	40.4	88.4	37.8	2.47	29.4	4.5	4	40.2	86.3	38.0	2.44	29.7	4.6	6.6	40.1
		2.2	100	112.0	36.0	3.23	25.0	3.3	1.8	41.7	108.1	36.4	3.13	25.7	3.4	3.7	41.4	106.1	36.4	3.10	25.8	3.4	6.3	41.4
		2.2	120	131.7	35.2	4.02	21.5	2.6	1.7	42.8	127.9	35.4	3.92	22.0	2.6	3.6	42.7	125.9	35.4	3.89	22.1	2.7	6.0	42.6
	9.0	4.5	60	73.7	41.0	2.06	34.0	5.8	2	42.5	69.2	41.5	1.98	34.8	6.2	4.2	42.3	67.0	42.0	1.96	35.3	6.3	7.0	42.2
		4.5	80	93.2	39.5	2.59	30.7	4.5	1.9	43.2	88.8	39.5	2.49	31.0	4.7	4	43.1	86.7	40.0	2.46	31.6	4.8	6.6	43.0
		4.5	100	112.6	37.8	3.27	26.6	3.4	1.8	44.1	108.4	38.0	3.16	27.2	3.5	3.7	44.0	106.4	38.5	3.13	27.8	3.6	6.3	43.8
		4.5	120	132.2	36.6	4.06	22.8	2.6	1.7	44.9	128.2	36.8	3.95	23.3	2.7	3.6	44.8	126.1	36.8	3.92	23.4	2.8	6.0	44.8
	12.0	7.5	60	74.2	42.5	2.10	35.3	5.9	2	44.1	69.7	43.5	2.01	36.6	6.3	4.2	43.9	67.3	43.5	1.99	36.7	6.4	7.0	43.9
		7.4	80	93.5	40.5	2.63	31.5	4.5	1.9	44.7	89.1	41.0	2.52	32.4	4.8	4	44.6	86.9	41.5	2.49	33.0	4.9	6.6	44.5
		7.4	100	112.8	38.5	3.31	27.2	3.4	1.8	45.5	108.6	38.5	3.20	27.6	3.5	3.7	45.4	106.5	39.0	3.16	28.2	3.6	6.2	45.3
		7.4	120	132.3	36.8	4.09	22.8	2.6	1.7	46.2	128.4	37.6	3.99	24.0	2.8	3.6	46.0	126.3	37.8	3.96	24.3	2.8	6.0	45.9

WRA, WHA 048 – Heating (continued)

Source			ELT °F	Load Flow 6.0 GPM						Load Flow 9.0 GPM						Load Flow 12.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	6.0	2.1	60	74.8	44.5	2.06	37.5	6.3	2	47.5	70.0	45.0	1.96	38.3	6.7	4.2	47.2	67.6	45.5	1.94	38.9	6.9	7.0	47.0
		2.1	80	94.2	42.5	2.59	33.7	4.8	1.9	48.8	89.6	43.0	2.48	34.5	5.1	3.9	48.5	87.3	43.5	2.44	35.2	5.2	6.6	48.3
		2.1	100	113.7	41.0	3.27	29.8	3.7	1.8	50.1	109.2	41.5	3.15	30.8	3.9	3.7	49.7	106.9	41.5	3.11	30.9	3.9	6.2	49.7
		2.1	120	133.3	40.0	4.08	26.1	2.9	1.7	51.3	128.9	40.0	3.96	26.5	3.0	3.6	51.2	126.7	40.0	3.92	26.6	3.0	6.0	51.1
	9.0	4.3	60	75.7	47.0	2.08	39.9	6.6	2	51.1	70.7	48.0	1.98	41.3	7.1	4.2	50.8	68.1	48.5	1.94	41.9	7.3	7.0	50.7
		4.3	80	95.0	45.0	2.62	36.1	5.0	1.9	52.0	90.1	45.5	2.50	37.0	5.3	3.9	51.8	87.7	46.0	2.46	37.6	5.5	6.6	51.6
		4.3	100	114.3	43.0	3.30	31.7	3.8	1.8	52.9	109.7	43.5	3.17	32.7	4.0	3.7	52.7	107.3	44.0	3.12	33.3	4.1	6.2	52.6
		4.3	120	133.8	41.5	4.11	27.5	3.0	1.7	53.9	129.2	41.5	3.99	27.9	3.0	3.6	53.8	127.0	42.0	3.94	28.5	3.1	5.9	53.7
	12.0	7.2	60	76.3	49.0	2.11	41.8	6.8	2	53.0	71.0	49.5	2.00	42.7	7.3	4.2	52.9	68.3	50.0	1.97	43.3	7.5	7.0	52.8
		7.2	80	95.5	46.5	2.66	37.4	5.1	1.9	53.8	90.4	47.0	2.53	38.4	5.5	3.9	53.6	87.9	47.5	2.48	39.0	5.6	6.6	53.5
		7.2	100	114.7	44.0	3.33	32.6	3.9	1.8	54.6	109.9	44.5	3.20	33.6	4.1	3.7	54.4	107.5	45.0	3.15	34.2	4.2	6.2	54.3
		7.2	120	134.2	42.5	4.15	28.3	3.0	1.7	55.3	129.4	42.5	4.02	28.8	3.1	3.6	55.2	127.2	43.0	3.98	29.4	3.2	5.9	55.1
70	6.0	2.1	60	76.8	50.5	2.07	43.4	7.2	2	55.5	71.3	51.0	1.95	44.3	7.7	4.2	55.2	68.6	51.5	1.92	45.0	7.9	7.0	55.0
		2.1	80	96.0	48.0	2.62	39.1	5.4	1.9	57.0	90.8	48.5	2.48	40.0	5.7	3.9	56.7	88.2	49.0	2.43	40.7	5.9	6.6	56.4
		2.1	100	115.5	46.5	3.30	35.2	4.1	1.8	58.3	110.3	46.5	3.16	35.7	4.3	3.7	58.1	107.8	47.0	3.10	36.4	4.4	6.2	57.9
		2.0	120	134.8	44.5	4.12	30.4	3.2	1.7	59.9	130.0	45.0	3.99	31.4	3.3	3.6	59.5	127.5	45.0	3.93	31.6	3.4	5.9	59.5
	9.0	4.2	60	77.8	53.5	2.09	46.4	7.5	2	59.7	72.1	54.5	1.96	47.8	8.2	4.2	59.4	69.2	55.0	1.91	48.5	8.4	7.0	59.2
		4.2	80	97.0	51.0	2.64	42.0	5.7	1.9	60.7	91.6	52.0	2.49	43.5	6.1	3.9	60.3	88.7	52.0	2.44	43.7	6.2	6.6	60.3
		4.2	100	116.2	48.5	3.33	37.1	4.3	1.8	61.7	111.0	49.5	3.17	38.7	4.6	3.7	61.4	108.3	49.5	3.11	38.9	4.7	6.2	61.4
		4.2	120	135.3	46.0	4.14	31.9	3.3	1.7	62.9	130.3	46.5	4.00	32.9	3.4	3.6	62.7	127.9	47.5	3.94	34.0	3.5	5.9	62.4
	12.0	7.0	60	78.5	55.5	2.12	48.3	7.7	2	62.0	72.6	56.5	1.98	49.8	8.4	4.2	61.7	69.5	57.0	1.93	50.4	8.7	7.0	61.6
		7.0	80	97.5	52.5	2.67	43.4	5.8	1.9	62.8	91.9	53.5	2.52	44.9	6.2	3.9	62.5	89.0	54.0	2.46	45.6	6.4	6.6	62.4
		6.9	100	116.5	49.5	3.37	38.0	4.3	1.8	63.7	111.2	50.5	3.20	39.6	4.6	3.7	63.4	108.5	51.0	3.14	40.3	4.8	6.2	63.3
		6.9	120	135.8	47.5	4.19	33.2	3.3	1.7	64.5	130.7	48.0	4.03	34.2	3.5	3.6	64.3	128.1	48.5	3.97	35.0	3.6	5.9	64.2
80	6.0	2.0	60	78.8	56.5	2.07	49.4	8.0	2	63.5	72.7	57.0	1.93	50.4	8.6	4.2	63.2	69.6	57.5	1.89	51.1	8.9	7.0	63.0
		2.0	80	98.0	54.0	2.63	45.0	6.0	1.9	65.0	92.1	54.5	2.47	46.1	6.5	3.9	64.6	89.2	55.0	2.41	46.8	6.7	6.6	64.4
		2.0	100	117.2	51.5	3.32	40.2	4.5	1.8	66.6	111.6	52.0	3.15	41.2	4.8	3.7	66.3	108.8	52.5	3.09	42.0	5.0	6.2	66.0
		2.0	120	136.5	49.5	4.15	35.4	3.5	1.7	68.2	131.1	50.0	3.98	36.4	3.7	3.6	67.9	128.4	50.5	3.92	37.1	3.8	5.9	67.6
	9.0	4.1	60	80.0	60.0	2.08	52.9	8.5	2	68.2	73.7	61.5	1.92	54.9	9.4	4.2	67.8	70.3	62.0	1.86	55.6	9.7	7.0	67.6
		4.1	80	99.2	57.5	2.65	48.5	6.4	1.9	69.2	93.0	58.5	2.47	50.1	6.9	3.9	68.9	89.8	59.0	2.40	50.8	7.2	6.6	68.7
		4.1	100	118.2	54.5	3.34	43.1	4.8	1.8	70.4	112.3	55.5	3.16	44.7	5.1	3.7	70.1	109.3	56.0	3.09	45.5	5.3	6.2	69.9
		4.1	120	135.7	47.0	4.62	31.3	3.0	1.2	73.1	132.0	54.0	3.98	40.4	4.0	3.6	71.0	129.0	54.0	3.91	40.6	4.0	5.9	71.0
	12.0	6.8	60	80.8	62.5	2.10	55.3	8.7	2	70.8	74.1	63.5	1.93	56.9	9.6	4.2	70.5	70.8	64.5	1.87	58.1	10.1	7.0	70.3
		6.8	80	99.8	59.5	2.67	50.4	6.5	1.9	71.6	93.4	60.5	2.49	52.0	7.1	3.9	71.3	90.2	61.0	2.42	52.8	7.4	6.6	71.2
		6.8	100	118.7	56.2	3.38	44.7	4.9	1.8	72.5	112.7	57.1	3.19	46.3	5.3	3.7	72.3	110.1	60.5	3.08	50.0	5.8	6.2	71.7
		6.7	120	137.8	53.4	4.20	39.0	3.7	1.7	73.5	132.0	54.0	4.02	40.3	3.9	3.6	73.3	129.1	54.4	3.94	41.0	4.0	5.9	73.2

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

WRA, WCA 060 – Cooling

Source			ELT °F	Load Flow 7.5 GPM						Load Flow 11.25 GPM						Load Flow 15.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	7.5	1.6	50	38.4	43.5	1.94	50.1	22.5	1.6	53.4	41.7	46.5	1.95	53.1	23.9	3.3	54.2	43.6	48.0	1.97	54.7	24.3	5.5	54.6
		1.6	60	46.7	50.0	1.92	56.6	26.0	1.6	55.1	50.5	53.5	1.93	60.1	27.7	3.2	56.0	52.5	56.0	1.96	62.7	28.6	5.3	56.7
		1.6	70	54.8	57.0	1.91	63.5	29.8	1.5	56.9	59.1	61.5	1.92	68.1	32.0	3.1	58.1	61.5	64.0	1.94	70.6	32.9	5.2	58.8
		1.6	80	62.8	64.5	1.90	71.0	33.9	1.5	58.9	67.6	70.0	1.91	76.5	36.6	3.0	60.4	70.3	73.0	1.93	79.6	37.8	5.0	61.2
		1.6	90	70.5	73.0	1.89	79.5	38.5	1.4	61.2	76.1	78.0	1.90	84.5	41.0	2.9	62.5	79.1	82.0	1.92	88.6	42.6	4.9	63.6
	11.25	3.3	50	38.1	44.5	1.84	50.8	24.3	1.6	49.0	41.6	47.5	1.83	53.8	25.9	3.3	49.6	43.5	49.0	1.85	55.3	26.5	5.5	49.8
		3.3	60	46.4	51.0	1.80	57.1	28.4	1.6	50.2	50.2	55.0	1.79	61.1	30.7	3.2	50.9	52.4	57.0	1.80	63.1	31.6	5.3	51.2
		3.3	70	54.4	58.5	1.76	64.5	33.3	1.5	51.5	58.8	63.0	1.74	68.9	36.2	3.1	52.3	61.2	66.0	1.75	72.0	37.7	5.2	52.8
		3.3	80	62.4	66.0	1.71	71.8	38.6	1.5	52.8	67.2	72.0	1.69	77.8	42.6	3.0	53.8	70.0	75.0	1.70	80.8	44.2	5.0	54.4
		3.3	90	70.0	75.0	1.66	80.7	45.2	1.4	54.3	75.6	81.0	1.64	86.6	49.5	2.9	55.4	78.7	85.0	1.64	90.6	51.8	4.9	56.1
50	7.5	5.6	50	38.1	44.5	1.80	50.7	24.7	1.6	46.8	41.5	48.0	1.79	54.1	26.8	3.3	47.2	43.3	50.0	1.81	56.2	27.7	5.5	47.5
		5.6	60	46.3	51.5	1.75	57.5	29.5	1.6	47.7	50.1	55.5	1.73	61.4	32.0	3.2	48.2	52.3	58.0	1.74	63.9	33.4	5.3	48.5
		5.6	70	54.3	59.0	1.69	64.8	35.0	1.5	48.6	58.6	64.0	1.66	69.7	38.5	3.1	49.3	61.1	67.0	1.67	72.7	40.2	5.2	49.7
		5.6	80	62.1	67.0	1.62	72.5	41.3	1.5	49.7	67.0	73.0	1.59	78.4	45.9	3.0	50.5	69.9	76.0	1.59	81.4	47.8	5.0	50.9
		5.5	90	69.7	76.0	1.55	81.3	48.9	1.4	50.8	75.4	82.0	1.51	87.2	54.2	2.9	51.6	78.5	86.0	1.51	91.1	57.1	4.9	52.2
	11.25	1.6	50	38.9	41.5	2.17	48.9	19.1	1.6	63.0	42.1	44.5	2.19	52.0	20.3	3.3	63.9	43.9	46.0	2.22	53.6	20.8	5.5	64.3
		1.6	60	47.2	48.0	2.17	55.4	22.1	1.6	64.8	50.8	51.5	2.19	59.0	23.5	3.2	65.7	52.9	53.5	2.22	61.1	24.1	5.3	66.3
		1.5	70	55.3	55.0	2.18	62.4	25.3	1.5	66.6	59.4	59.5	2.19	67.0	27.2	3.1	67.9	61.8	61.5	2.22	69.1	27.7	5.2	68.4
		1.5	80	63.3	62.5	2.18	69.9	28.7	1.5	68.6	68.1	67.0	2.20	74.5	30.5	3.0	69.9	70.7	70.0	2.22	77.6	31.5	5.0	70.7
		1.5	90	71.3	70.0	2.18	77.4	32.1	1.4	70.7	76.5	76.0	2.20	83.5	34.5	2.9	72.3	79.5	79.0	2.23	86.6	35.5	4.9	73.1
70	7.5	3.2	50	38.7	42.5	2.08	49.6	20.5	1.6	58.8	41.9	45.5	2.08	52.6	21.9	3.3	59.4	43.7	47.0	2.10	54.2	22.3	5.5	59.6
		3.2	60	46.9	49.0	2.05	56.0	23.9	1.6	60.0	50.6	53.0	2.05	60.0	25.8	3.2	60.7	52.7	55.0	2.07	62.1	26.5	5.3	61.0
		3.2	70	54.9	56.5	2.03	63.4	27.9	1.5	61.3	59.2	61.0	2.02	67.9	30.1	3.1	62.1	61.5	63.5	2.04	70.5	31.1	5.2	62.5
		3.2	80	62.9	64.0	2.00	70.8	32.0	1.5	62.6	67.7	69.0	1.99	75.8	34.7	3.0	63.5	70.4	72.0	2.00	78.8	35.9	5.0	64.0
		3.2	90	70.8	72.0	1.97	78.7	36.6	1.4	64.0	76.1	78.0	1.95	84.7	39.9	2.9	65.1	79.1	82.0	1.96	88.7	41.8	4.9	65.8
	15.0	5.4	50	38.5	43.0	2.05	50.0	21.0	1.6	56.7	41.8	46.0	2.05	53.0	22.5	3.3	57.1	43.7	47.5	2.06	54.5	23.0	5.5	57.3
		5.4	60	46.8	49.5	2.01	56.4	24.6	1.6	57.5	50.5	53.5	2.00	60.3	26.7	3.2	58.0	52.6	55.5	2.02	62.4	27.5	5.3	58.3
		5.4	70	54.8	57.0	1.97	63.7	29.0	1.5	58.5	59.1	61.5	1.95	68.2	31.5	3.1	59.1	61.4	64.5	1.96	71.2	32.9	5.2	59.5
		5.4	80	62.7	65.0	1.92	71.5	33.9	1.5	59.5	67.6	70.0	1.90	76.5	36.9	3.0	60.2	70.3	73.0	1.91	79.5	38.3	5.0	60.6
		5.3	90	70.5	73.0	1.87	79.4	39.1	1.4	60.6	76.0	79.0	1.84	85.3	42.9	2.9	61.4	78.9	83.0	1.84	89.3	45.1	4.9	61.9
80	7.5	1.5	50	39.9	38.0	2.70	47.2	14.1	1.6	82.6	42.8	40.5	2.72	49.8	14.9	3.3	83.3	44.4	42.0	2.76	51.4	15.2	5.5	83.7
		1.5	60	48.1	44.5	2.72	53.8	16.4	1.6	84.3	51.6	47.5	2.74	56.9	17.3	3.2	85.2	53.5	49.0	2.78	58.5	17.6	5.3	85.6
		1.5	70	56.4	51.0	2.74	60.4	18.6	1.5	86.1	60.3	54.5	2.77	64.0	19.7	3.1	87.1	62.5	56.5	2.80	66.1	20.2	5.2	87.6
		1.4	80	64.5	58.0	2.77	67.4	21.0	1.5	88.0	69.0	62.0	2.80	71.5	22.2	3.0	89.1	71.4	64.5	2.83	74.2	22.8	5.0	89.8
		1.4	90	72.7	65.0	2.79	74.5	23.3	1.4	89.9	77.6	70.0	2.83	79.6	24.8	2.9	91.2	80.3	73.0	2.86	82.8	25.5	4.9	92.1
	11.25	3.0	50	39.6	39.0	2.60	47.9	15.0	1.6	78.5	42.6	41.5	2.62	50.4	15.9	3.3	79.0	44.3	43.0	2.64	52.0	16.3	5.5	79.2
		3.0	60	48.0	45.0	2.60	53.9	17.3	1.6	79.6	51.4	48.5	2.61	57.4	18.6	3.2	80.2	53.3	50.0	2.64	59.0	18.9	5.3	80.5
		3.0	70	56.1	52.0	2.60	60.9	20.0	1.5	80.8	60.0	56.0	2.61	64.9	21.5	3.1	81.5	62.3	58.0	2.64	67.0	22.0	5.2	81.9
		3.0	80	64.1	59.5	2.59	68.3	22.9	1.5	82.2	68.6	64.0	2.61	72.9	24.6	3.0	83.0	71.1	67.0	2.63	76.0	25.5	5.0	83.5
		3.0	90	72.1	67.0	2.59	75.8	25.9	1.4	83.5	77.2	72.0	2.60	80.9	27.7	2.9	84.4	80.0	75.0	2.62	83.9	28.6	4.9	84.9
90	7.5	5.0	50	39.6	39.0	2.57	47.8	15.2	1.6	76.4	42.5	42.0	2.58	50.8	16.3	3.3	76.8	44.2	43.5	2.60	52.4	16.7	5.5	77.0
		5.0	60	47.9	45.5	2.56	54.2	17.8	1.6	77.2	51.3	49.0	2.56	57.7	19.1	3.2	77.7	53.2	51.0	2.59	59.8	19.7	5.3	78.0
		5.0	70	56.0	52.5	2.54	61.2	20.7	1.5	78.2	60.0	56.5	2.55	65.2	22.2	3.1	78.7	62.1	59.0	2.57	67.8	23.0	5.2	79.0
		5.0	80	64.0	60.0	2.52	68.6	23.8	1.5	79.1	68.4	65.0	2.52	73.6	25.8	3.0	79.8	70.9	68.0	2.54	76.7	26.7	5.0	80.2
		5.0	90	71.9	68.0	2.50	76.5	27.2	1.4	80.2	76.8	74.0	2.50	82.5	29.6	2.9	81.0	79.7	77.0	2.51	85.6	30.7	4.9	81.4
	11.25	4.9	50	40.4	36.0	3.01	46.3	12.0	1.6	92.3	4													

WRA, WCA 060 – Cooling (continued)

Source			ELT °F	Load Flow 7.5 GPM							Load Flow 11.25 GPM							Load Flow 15.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	7.5	1.3	50	41.8	30.6	4.22	45.0	7.3	1.6	122.0	44.3	32.2	4.25	46.7	7.6	3.3	122.5	45.6	33.0	4.29	47.6	7.7	5.5	122.7
		1.3	60	50.5	35.8	4.26	50.4	8.4	1.6	123.4	53.2	38.0	4.30	52.7	8.8	3.2	124.0	54.9	38.5	4.33	53.3	8.9	5.3	124.2
		1.3	70	58.9	41.5	4.31	56.2	9.6	1.5	125.0	62.2	44.0	4.34	58.8	10.1	3.1	125.7	63.9	45.5	4.37	60.4	10.4	5.1	126.1
		1.3	80	67.3	47.5	4.35	62.3	10.9	1.5	126.6	71.0	50.5	4.38	65.4	11.5	3.0	127.5	73.1	52.0	4.42	67.1	11.8	5.0	127.9
		1.3	90	75.6	54.0	4.39	69.0	12.3	1.4	128.4	79.8	57.5	4.43	72.6	13.0	2.9	129.4	82.1	59.0	4.47	74.2	13.2	4.9	129.8
	11.25	2.7	50	41.7	31.0	4.10	45.0	7.6	1.6	118.0	44.2	32.4	4.12	46.5	7.9	3.3	118.3	45.5	33.8	4.15	48.0	8.1	5.5	118.5
		2.7	60	50.2	36.6	4.12	50.7	8.9	1.6	119.0	53.2	38.5	4.14	52.6	9.3	3.2	119.4	54.7	39.5	4.18	53.8	9.5	5.3	119.6
		2.7	70	58.7	42.5	4.13	56.6	10.3	1.5	120.1	61.9	45.5	4.14	59.6	11.0	3.1	120.6	63.8	46.5	4.17	60.7	11.1	5.2	120.8
		2.7	80	66.9	49.0	4.13	63.1	11.9	1.5	121.2	70.8	52.0	4.15	66.2	12.5	3.0	121.8	72.8	54.0	4.18	68.3	12.9	5.0	122.1
		2.7	90	75.2	55.5	4.15	69.6	13.4	1.4	122.4	79.5	59.0	4.17	73.2	14.1	2.9	123.0	81.9	61.0	4.20	75.3	14.5	4.9	123.4
120	15.0	4.5	50	41.6	31.4	4.05	45.2	7.7	1.6	116.0	44.2	32.8	4.07	46.7	8.1	3.3	116.2	45.5	34.0	4.10	48.0	8.3	5.5	116.4
		4.5	60	50.1	37.0	4.06	50.9	9.1	1.6	116.8	53.1	39.0	4.08	52.9	9.6	3.2	117.1	54.6	40.5	4.10	54.5	9.9	5.3	117.3
		4.5	70	58.5	43.0	4.05	56.8	10.6	1.5	117.6	61.9	45.5	4.07	59.4	11.2	3.1	117.9	63.7	47.5	4.09	61.5	11.6	5.2	118.2
		4.5	80	66.8	49.5	4.05	63.3	12.2	1.5	118.4	70.6	53.0	4.06	66.9	13.1	3.0	118.9	72.7	54.5	4.09	68.4	13.3	5.0	119.1
		4.5	90	74.9	56.5	4.05	70.3	14.0	1.4	119.4	79.3	60.0	4.06	73.9	14.8	2.9	119.8	81.7	62.5	4.09	76.5	15.3	4.9	120.2
	11.25	1.3	50	42.4	28.6	4.74	44.8	6.0	1.6	131.9	44.7	30.0	4.76	46.3	6.3	3.3	132.3	45.9	30.8	4.80	47.2	6.4	5.5	132.6
		1.3	60	51.0	33.8	4.77	50.1	7.1	1.6	133.4	53.7	35.6	4.81	52.0	7.4	3.2	133.9	55.1	36.6	4.84	53.1	7.6	5.3	134.2
		1.3	70	59.6	39.0	4.82	55.4	8.1	1.5	134.8	62.6	41.5	4.85	58.1	8.6	3.1	135.5	64.4	42.0	4.89	58.7	8.6	5.1	135.6
		1.3	80	68.0	45.0	4.86	61.6	9.3	1.5	136.4	71.6	47.5	4.90	64.2	9.7	3.0	137.1	73.5	49.0	4.93	65.8	9.9	5.0	137.6
		1.3	90	76.4	51.0	4.90	67.7	10.4	1.4	138.1	80.4	54.0	4.94	70.9	10.9	2.9	138.9	82.6	55.5	4.98	72.5	11.2	4.9	139.3
130	15.0	2.6	50	42.3	29.0	4.61	44.7	6.3	1.6	128.0	44.6	30.6	4.63	46.4	6.6	3.3	128.2	45.8	31.4	4.66	47.3	6.7	5.5	128.4
		2.6	60	50.8	34.4	4.63	50.2	7.4	1.6	128.9	53.5	36.4	4.65	52.3	7.8	3.2	129.3	55.0	37.4	4.68	53.4	8.0	5.3	129.5
		2.6	70	59.3	40.0	4.65	55.9	8.6	1.5	129.9	62.4	42.5	4.67	58.4	9.1	3.1	130.4	64.3	43.0	4.69	59.0	9.2	5.1	130.5
		2.6	80	67.7	46.0	4.66	61.9	9.9	1.5	131.0	71.3	49.0	4.67	64.9	10.5	3.0	131.5	73.3	50.5	4.70	66.5	10.7	5.0	131.8
		2.6	90	76.0	52.5	4.66	68.4	11.3	1.4	132.2	80.1	55.5	4.69	71.5	11.8	2.9	132.7	82.3	57.5	4.72	73.6	12.2	4.9	133.1
	11.25	4.4	50	42.2	29.4	4.56	45.0	6.4	1.6	126.0	44.5	31.0	4.58	46.6	6.8	3.3	126.2	45.8	31.6	4.61	47.3	6.9	5.5	126.3
		4.4	60	50.7	34.8	4.57	50.4	7.6	1.6	126.7	53.5	36.8	4.59	52.4	8.0	3.2	127.0	55.0	37.8	4.61	53.5	8.2	5.3	127.1
		4.4	70	59.2	40.5	4.58	56.1	8.9	1.5	127.5	62.4	43.0	4.59	58.7	9.4	3.1	127.8	64.1	44.0	4.61	59.7	9.5	5.1	128.0
		4.4	80	67.6	46.5	4.57	62.1	10.2	1.5	128.3	71.2	49.5	4.58	65.1	10.8	3.0	128.7	73.2	51.0	4.61	66.7	11.1	5.0	128.9
		4.4	90	75.9	53.0	4.56	68.6	11.6	1.4	129.1	80.0	56.5	4.58	72.1	12.3	2.9	129.6	82.2	58.5	4.61	74.2	12.7	4.9	129.9

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 060 – Heating

Source			ELT °F	Load Flow 7.5 GPM							Load Flow 11.25 GPM							Load Flow 15.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	7.5	1.8	60	69.5	35.6	2.30	27.7	4.5	1.5	22.6	66.4	35.8	2.25	28.1	4.7	3.1	22.5	64.8	36.2	2.24	28.5	4.7	5.2	22.4
		1.8	80	89.0	33.6	2.84	23.9	3.5	1.5	23.6	86.0	34.0	2.77	24.5	3.6	2.9	23.5	84.6	34.2	2.76	24.8	3.6	4.9	23.4
		1.8	100	108.7	32.6	3.61	20.3	2.6	1.5	24.6	105.8	32.8	3.53	20.8	2.7	2.8	24.5	104.4	32.8	3.50	20.9	2.7	4.6	24.4
		1.7	120	128.6	32.2	4.64	16.4	2.0	1.5	25.6	125.7	32.0	4.56	16.5	2.1	2.7	25.6	124.3	32.2	4.53	16.7	2.1	4.4	25.5
	11.25	3.6	60	69.9	37.2	2.34	29.2	4.7	1.5	24.8	66.7	37.6	2.28	29.8	4.8	3.1	24.7	65.1	38.0	2.27	30.3	4.9	5.2	24.6
		3.6	80	89.4	35.2	2.88	25.4	3.6	1.5	25.5	86.3	35.6	2.81	26.0	3.7	2.9	25.4	84.8	35.8	2.79	26.3	3.8	4.9	25.3
		3.6	100	108.9	33.4	3.65	21.0	2.7	1.5	26.3	106.0	34.0	3.56	21.9	2.8	2.8	26.1	104.5	33.8	3.53	21.8	2.8	4.6	26.1
		3.6	120	128.9	33.4	4.67	17.5	2.1	1.5	26.9	125.9	33.2	4.58	17.6	2.1	2.7	26.9	124.4	33.2	4.55	17.7	2.1	4.4	26.9
	15.0	6.0	60	70.1	38.0	2.38	29.9	4.7	1.5	26.0	66.8	38.5	2.32	30.6	4.9	3.1	25.9	65.2	39.0	2.31	31.1	5.0	5.2	25.8
		6.0	80	89.6	36.0	2.92	26.0	3.6	1.5	26.5	86.5	36.4	2.85	26.7	3.7	2.9	26.4	84.9	36.6	2.83	26.9	3.8	4.9	26.4
		6.0	100	109.2	34.4	3.68	21.8	2.7	1.5	27.1	106.2	34.6	3.59	22.4	2.8	2.8	27.0	104.6	34.8	3.56	22.6	2.9	4.6	27.0
		5.9	120	129.0	33.6	4.71	17.5	2.1	1.5	27.7	126.0	33.6	4.62	17.8	2.1	2.7	27.6	124.5	33.8	4.60	18.1	2.2	4.4	27.6
50	7.5	1.7	60	70.8	40.5	2.35	32.5	5.0	1.5	31.3	67.3	41.0	2.28	33.2	5.3	3.1	31.1	65.5	41.0	2.27	33.3	5.3	5.2	31.1
		1.7	80	90.3	38.5	2.91	28.6	3.9	1.5	32.4	86.9	39.0	2.83	29.3	4.0	2.9	32.2	85.2	39.0	2.81	29.4	4.1	4.9	32.2
		1.7	100	110.0	37.4	3.69	24.8	3.0	1.5	33.4	106.7	37.6	3.58	25.4	3.1	2.8	33.2	105.0	37.8	3.55	25.7	3.1	4.6	33.2
		1.7	120	129.8	36.8	4.68	20.8	2.3	1.5	34.4	126.5	36.8	4.57	21.2	2.4	2.7	34.3	124.9	36.8	4.54	21.3	2.4	4.4	34.3
	11.25	3.4	60	71.3	42.5	2.39	34.3	5.2	1.5	33.9	67.6	43.0	2.31	35.1	5.4	3.1	33.8	65.8	43.5	2.30	35.7	5.6	5.2	33.7
		3.4	80	90.8	40.5	2.96	30.4	4.0	1.5	34.6	87.3	41.0	2.87	31.2	4.2	2.9	34.5	85.5	41.0	2.84	31.3	4.2	4.9	34.4
		3.4	100	110.4	39.0	3.72	26.3	3.1	1.5	35.3	106.9	39.0	3.63	26.6	3.2	2.8	35.3	105.2	39.0	3.59	26.8	3.2	4.6	35.2
		3.4	120	130.1	38.0	4.71	21.9	2.4	1.5	36.1	126.8	38.0	4.60	22.3	2.4	2.7	36.0	125.1	38.0	4.56	22.4	2.4	4.4	36.0
	15.0	5.7	60	71.7	44.0	2.44	35.7	5.3	1.5	35.2	67.9	44.5	2.35	36.5	5.5	3.1	35.1	66.0	45.0	2.33	37.0	5.7	5.2	35.1
		5.7	80	91.1	41.5	3.00	31.3	4.1	1.5	35.8	87.5	42.0	2.91	32.1	4.2	2.9	35.7	85.7	42.5	2.88	32.7	4.3	4.9	35.6
		5.7	100	110.5	39.5	3.75	26.7	3.1	1.5	36.4	107.1	40.0	3.65	27.5	3.2	2.8	36.3	105.3	40.0	3.62	27.6	3.2	4.6	36.3
		5.7	120	130.3	38.5	4.75	22.3	2.4	1.5	37.0	126.9	39.0	4.62	23.2	2.5	2.7	36.9	125.2	39.0	4.59	23.4	2.5	4.4	36.9
70	7.5	1.6	60	72.4	46.5	2.41	38.3	5.6	1.5	39.8	68.4	47.0	2.32	39.1	5.9	3.1	39.6	66.3	47.0	2.29	39.2	6.0	5.2	39.6
		1.6	80	91.7	44.0	2.99	33.8	4.3	1.5	41.0	87.9	44.5	2.89	34.6	4.5	2.9	40.8	86.0	45.0	2.86	35.2	4.6	4.9	40.6
		1.6	100	111.3	42.5	3.74	29.8	3.3	1.5	42.1	107.6	43.0	3.62	30.6	3.5	2.8	41.8	105.7	43.0	3.58	30.8	3.5	4.6	41.8
		1.6	120	131.1	41.5	4.71	25.4	2.6	1.5	43.2	127.5	42.0	4.58	26.4	2.7	2.6	43.0	125.6	42.0	4.54	26.5	2.7	4.4	42.9
	11.25	3.3	60	73.1	49.0	2.43	40.7	5.9	1.5	42.8	68.8	49.5	2.33	41.6	6.2	3.1	42.6	66.7	50.0	2.30	42.2	6.4	5.2	42.5
		3.3	80	92.4	46.5	3.01	36.2	4.5	1.5	43.6	88.4	47.0	2.91	37.1	4.7	2.9	43.4	86.3	47.5	2.87	37.7	4.9	4.9	43.3
		3.3	100	111.9	44.5	3.77	31.6	3.5	1.5	44.4	108.0	45.0	3.65	32.6	3.6	2.8	44.2	106.0	45.0	3.60	32.7	3.7	4.6	44.2
		3.3	120	131.6	43.5	4.74	27.3	2.7	1.5	45.1	127.7	43.5	4.60	27.8	2.8	2.6	45.1	125.8	43.5	4.55	28.0	2.8	4.4	45.0
	15.0	5.5	60	73.5	50.5	2.46	42.1	6.0	1.5	44.4	69.1	51.0	2.35	43.0	6.3	3.1	44.3	66.9	51.5	2.32	43.6	6.5	5.2	44.2
		5.5	80	92.8	48.0	3.05	37.6	4.6	1.5	45.0	88.6	48.5	2.93	38.5	4.8	2.9	44.9	86.5	49.0	2.90	39.1	5.0	4.9	44.8
		5.5	100	112.1	45.5	3.80	32.5	3.5	1.5	45.7	108.1	45.5	3.68	32.9	3.6	2.8	45.6	106.1	46.0	3.64	33.6	3.7	4.6	45.5
		5.5	120	131.7	44.0	4.77	27.7	2.7	1.5	46.3	127.9	44.5	4.63	28.7	2.8	2.6	46.2	125.9	44.5	4.58	28.9	2.8	4.4	46.2

WRA, WHA 060 – Heating (continued)

Source			ELT °F	Load Flow 7.5 GPM							Load Flow 11.25 GPM							Load Flow 15.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	7.5	1.6	60	74.0	52.5	2.42	44.2	6.4	1.5	48.2	69.4	53.0	2.31	45.1	6.7	3.1	48.0	67.1	53.5	2.27	45.8	6.9	5.2	47.8
		1.6	80	93.5	50.5	3.01	40.2	4.9	1.5	49.3	89.1	51.0	2.89	41.1	5.2	2.9	49.0	86.9	51.5	2.85	41.8	5.3	4.9	48.9
		1.6	100	112.9	48.5	3.78	35.6	3.8	1.5	50.5	108.7	49.0	3.64	36.6	3.9	2.8	50.2	106.5	49.0	3.59	36.8	4.0	4.6	50.2
		1.6	120	132.5	47.0	4.75	30.8	2.9	1.5	51.8	128.4	47.0	4.60	31.3	3.0	2.6	51.6	126.3	47.5	4.54	32.0	3.1	4.4	51.5
	11.25	3.2	60	74.9	56.0	2.44	47.7	6.7	1.5	51.5	70.0	56.5	2.31	48.6	7.2	3.1	51.4	67.6	57.0	2.27	49.3	7.4	5.2	51.2
		3.2	80	94.1	53.0	3.04	42.6	5.1	1.5	52.4	89.6	54.0	2.91	44.1	5.4	2.9	52.2	87.3	54.5	2.86	44.7	5.6	4.9	52.0
		3.2	100	113.6	51.0	3.81	38.0	3.9	1.5	53.2	109.0	50.5	3.65	38.0	4.0	2.8	53.2	106.9	51.5	3.60	39.2	4.2	4.6	53.0
		3.2	120	133.1	49.0	4.77	32.7	3.0	1.5	54.2	128.7	49.0	4.62	33.2	3.1	2.6	54.1	126.6	49.5	4.56	33.9	3.2	4.4	54.0
	15.0	5.3	60	75.5	58.0	2.47	49.6	6.9	1.5	53.4	70.4	58.5	2.34	50.5	7.3	3.1	53.3	67.9	59.0	2.29	51.2	7.6	5.2	53.2
		5.3	80	94.7	55.0	3.08	44.5	5.2	1.5	54.1	89.9	55.5	2.94	45.5	5.5	2.9	53.9	87.5	56.0	2.88	46.2	5.7	4.9	53.8
		5.3	100	113.9	52.0	3.84	38.9	4.0	1.5	54.8	109.3	52.5	3.69	39.9	4.2	2.8	54.7	107.1	53.0	3.63	40.6	4.3	4.6	54.6
		5.3	120	133.3	50.0	4.81	33.6	3.0	1.5	55.5	129.0	50.5	4.65	34.6	3.2	2.6	55.4	126.7	50.5	4.59	34.8	3.2	4.4	55.4
70	7.5	1.5	60	75.9	59.5	2.43	51.2	7.2	1.5	56.3	70.7	60.0	2.29	52.2	7.7	3.1	56.1	68.1	60.5	2.24	52.8	7.9	5.2	55.9
		1.5	80	95.2	57.0	3.04	46.6	5.5	1.5	57.6	90.2	57.5	2.90	47.6	5.8	2.9	57.3	87.7	58.0	2.84	48.3	6.0	4.9	57.1
		1.5	100	114.5	54.5	3.81	41.5	4.2	1.5	58.9	109.8	55.0	3.65	42.6	4.4	2.8	58.7	107.4	55.5	3.58	43.3	4.5	4.6	58.5
		1.5	120	134.0	52.5	4.79	36.2	3.2	1.5	60.4	129.4	53.0	4.62	37.2	3.4	2.6	60.1	127.1	53.0	4.55	37.5	3.4	4.4	60.0
	11.25	3.1	60	76.9	63.5	2.45	55.1	7.6	1.5	60.2	71.5	64.5	2.30	56.7	8.2	3.1	59.9	68.7	65.0	2.24	57.4	8.5	5.2	59.8
		3.1	80	96.1	60.5	3.07	50.0	5.8	1.5	61.1	90.8	61.0	2.91	51.1	6.1	2.9	60.9	88.2	61.5	2.85	51.8	6.3	4.9	60.8
		3.1	100	115.2	57.0	3.83	43.9	4.4	1.5	62.2	110.3	58.0	3.66	45.5	4.6	2.8	61.9	107.8	58.5	3.59	46.2	4.8	4.6	61.8
		3.1	120	134.7	55.0	4.82	38.5	3.3	1.5	63.1	129.9	55.5	4.64	39.7	3.5	2.6	62.9	127.3	55.0	4.57	39.4	3.5	4.4	63.0
	15.0	5.2	60	77.6	66.0	2.49	57.5	7.8	1.5	62.3	71.9	67.0	2.32	59.1	8.5	3.1	62.1	68.9	67.0	2.25	59.3	8.7	5.2	62.1
		5.2	80	96.5	62.0	3.11	51.4	5.8	1.5	63.1	91.2	63.0	2.94	53.0	6.3	2.9	62.9	88.5	64.0	2.87	54.2	6.5	4.9	62.8
		5.2	100	115.7	59.0	3.88	45.8	4.5	1.5	63.9	110.6	59.5	3.69	46.9	4.7	2.8	63.7	108.0	60.0	3.62	47.6	4.9	4.6	63.6
		5.1	120	134.9	56.0	4.86	39.4	3.4	1.5	64.7	130.0	56.5	4.67	40.6	3.5	2.6	64.6	127.6	57.0	4.59	41.3	3.6	4.4	64.5
80	7.5	1.5	60	77.9	67.0	2.45	58.7	8.0	1.5	64.4	72.1	68.0	2.28	60.2	8.7	3.1	63.9	69.1	68.0	2.21	60.5	9.0	5.2	63.9
		1.5	80	97.1	64.0	3.07	53.5	6.1	1.5	65.7	91.5	64.5	2.90	54.6	6.5	2.9	65.4	88.7	65.0	2.83	55.3	6.7	4.9	65.2
		1.5	100	116.3	61.0	3.85	47.9	4.6	1.5	67.2	110.9	61.5	3.66	49.0	4.9	2.8	66.9	108.3	62.0	3.58	49.8	5.1	4.6	66.7
		1.5	120	135.6	58.5	4.83	42.0	3.5	1.5	68.8	130.5	59.0	4.63	43.2	3.7	2.6	68.5	127.9	59.5	4.55	44.0	3.8	4.4	68.3
	11.25	3.0	60	78.9	71.0	2.47	62.6	8.4	1.5	68.9	72.8	72.0	2.28	64.2	9.3	3.1	68.6	69.7	73.0	2.20	65.5	9.7	5.2	68.4
		3.0	80	98.1	68.0	3.11	57.4	6.4	1.5	69.8	92.3	69.0	2.92	59.0	6.9	2.9	69.5	89.3	70.0	2.84	60.3	7.2	4.9	69.3
		3.0	100	117.2	64.5	3.88	51.3	4.9	1.5	70.9	111.6	65.0	3.68	52.5	5.2	2.8	70.7	108.8	66.0	3.59	53.7	5.4	4.6	70.4
		3.0	120	136.4	61.4	4.87	44.7	3.7	1.5	72.0	131.0	62.0	4.66	46.1	3.9	2.6	71.8	128.3	62.4	4.57	46.8	4.0	4.4	71.7
	15.0	5.0	60	79.7	74.0	2.50	65.5	8.7	1.5	71.3	73.3	75.0	2.30	67.2	9.6	3.1	71.0	70.1	76.0	2.21	68.4	10.1	5.2	70.9
		5.0	80	99.2	72.0	3.15	61.2	6.7	1.5	71.8	92.6	71.0	2.95	60.9	7.1	2.9	71.9	89.6	72.0	2.86	62.2	7.4	4.9	71.7
		5.0	100	117.7	66.3	3.93	52.9	4.9	1.5	72.9	112.0	67.3	3.71	54.6	5.3	2.8	72.7	109.1	67.9	3.63	55.5	5.5	4.6	72.6
		5.0	120	136.7	62.8	4.90	46.1	3.8	1.5	73.9	131.1	62.6	4.68	46.6	3.9	2.6	73.8	128.4	63.1	4.59	47.4	4.0	4.4	73.7

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

WRA, WCA 072 – Cooling

Source			ELT °F	Load Flow 9.0 GPM							Load Flow 13.5 GPM							Load Flow 18.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	9.0	6.1	50	37.2	57.5	2.44	65.8	23.6	6.2	54.6	40.9	61.5	2.52	70.1	24.4	12.7	55.6	43.0	63.0	2.66	72.1	23.7	21.0	56.0
		6.1	60	45.1	67.0	2.47	75.4	27.2	6.0	56.8	49.5	71.0	2.56	79.7	27.8	12.2	57.7	51.8	74.0	2.70	83.2	27.4	20.3	58.5
		6.0	70	53.1	76.0	2.51	84.6	30.2	5.8	58.8	57.9	82.0	2.62	90.9	31.3	11.9	60.2	60.6	85.0	2.76	94.4	30.8	19.7	61.0
		6.0	80	60.7	87.0	2.58	95.8	33.7	5.7	61.3	66.2	93.0	2.71	102.2	34.3	11.5	62.7	69.2	97.0	2.86	106.8	33.9	19.1	63.7
		6.0	90	68.4	97.0	2.68	106.1	36.2	5.5	63.6	74.4	105.0	2.83	114.6	37.1	11.2	65.5	77.9	109.0	3.00	119.2	36.4	18.6	66.5
	13.50	12.7	50	37.0	58.5	2.39	66.7	24.5	6.2	49.9	40.7	62.5	2.46	70.9	25.4	12.7	50.5	42.8	64.5	2.60	73.4	24.9	21.0	50.9
		12.6	60	44.9	68.0	2.40	76.2	28.4	6.0	51.3	49.2	73.0	2.47	81.4	29.5	12.3	52.1	51.7	75.0	2.61	83.9	28.8	20.3	52.4
		12.6	70	52.7	78.0	2.42	86.2	32.3	5.8	52.8	57.6	84.0	2.51	92.5	33.5	11.9	53.7	60.3	87.0	2.64	96.0	32.9	19.7	54.2
		12.5	80	60.4	88.0	2.46	96.4	35.8	5.7	54.3	65.9	95.0	2.57	103.8	37.0	11.5	55.4	69.0	99.0	2.71	108.3	36.5	19.1	56.0
		12.5	90	68.0	99.0	2.52	107.6	39.2	5.5	55.9	74.0	108.0	2.66	117.1	40.7	11.2	57.3	77.6	112.0	2.82	121.6	39.8	18.6	58.0
50	18.0	21.2	50	36.9	59.0	2.46	67.4	24.0	6.2	47.5	40.7	63.0	2.53	71.6	24.9	12.7	48.0	42.8	65.0	2.66	74.1	24.5	21.0	48.2
		21.2	60	44.7	69.0	2.45	77.4	28.1	6.0	48.6	49.2	73.0	2.52	81.6	28.9	12.3	49.1	51.6	76.0	2.67	85.1	28.5	20.3	49.5
		21.1	70	52.4	79.0	2.46	87.4	32.1	5.8	49.7	57.4	85.0	2.54	93.7	33.4	11.9	50.4	60.2	88.0	2.68	97.1	32.9	19.7	50.8
		21.0	80	60.2	89.0	2.49	97.5	35.8	5.7	50.8	65.6	97.0	2.59	105.8	37.5	11.5	51.8	68.9	100.0	2.73	109.3	36.6	19.1	52.1
		21.0	90	67.8	100.0	2.54	108.7	39.3	5.5	52.1	73.9	109.0	2.66	118.1	41.0	11.2	53.1	77.3	114.0	2.82	123.6	40.5	18.6	53.7
	9.0	5.9	50	37.7	55.5	2.75	64.9	20.2	6.2	67.3	41.3	59.0	2.84	68.7	20.8	12.7	68.3	43.3	60.5	2.97	70.6	20.3	21.0	68.8
		5.9	60	45.8	64.0	2.78	73.5	23.0	6.0	69.6	49.8	69.0	2.87	78.8	24.0	12.2	71.0	52.1	71.0	3.01	81.3	23.6	20.3	71.7
		5.8	70	53.6	74.0	2.83	83.7	26.1	5.8	72.3	58.3	79.0	2.94	89.0	26.9	11.9	73.7	61.0	81.0	3.08	91.5	26.3	19.6	74.4
		5.8	80	61.6	83.0	2.90	92.9	28.6	5.7	74.8	66.7	90.0	3.03	100.3	29.7	11.5	76.8	69.7	93.0	3.18	103.9	29.2	19.1	77.7
		5.8	90	69.1	94.0	3.00	104.2	31.3	5.5	77.8	75.0	101.0	3.15	111.7	32.1	11.2	79.8	78.3	105.0	3.32	116.3	31.6	18.5	81.0
70	13.50	12.2	50	37.4	56.5	2.70	65.7	20.9	6.2	61.7	41.1	60.0	2.78	69.5	21.6	12.7	62.4	43.2	61.5	2.91	71.4	21.1	21.0	62.7
		12.2	60	45.6	65.0	2.71	74.2	24.0	6.0	63.2	49.6	70.0	2.79	79.5	25.1	12.2	64.1	52.0	72.0	2.92	82.0	24.6	20.3	64.6
		12.1	70	53.3	75.0	2.73	84.3	27.4	5.8	65.0	58.0	81.0	2.83	90.6	28.7	11.9	66.1	60.7	84.0	2.97	94.1	28.3	19.7	66.7
		12.1	80	61.1	85.0	2.78	94.5	30.6	5.7	66.8	64.4	92.0	2.89	101.9	31.9	11.5	68.1	69.3	96.0	3.03	106.4	31.6	19.1	68.9
		12.1	90	68.7	96.0	2.85	105.7	33.7	5.5	68.8	74.6	104.0	2.98	114.2	34.9	11.2	70.3	78.0	108.0	3.14	118.7	34.4	18.6	71.1
	18.0	20.5	50	37.4	56.5	2.77	66.0	20.4	6.2	58.8	41.0	60.5	2.84	70.2	21.3	12.7	59.4	43.1	62.0	2.97	72.1	20.9	21.0	59.6
		20.4	60	45.3	66.0	2.77	75.4	23.9	6.0	60.1	49.5	71.0	2.84	80.7	25.0	12.2	60.8	51.9	73.0	2.97	83.1	24.6	20.3	61.1
		20.3	70	53.1	76.0	2.78	85.5	27.4	5.8	61.4	57.9	82.0	2.86	91.8	28.6	11.9	62.2	60.7	84.0	2.97	94.2	28.0	19.7	62.6
		20.3	80	60.9	86.0	2.81	95.6	30.6	5.7	62.7	66.2	93.0	2.91	102.9	32.0	11.5	63.7	69.2	97.0	3.05	107.4	31.8	19.1	64.3
		20.2	90	68.4	97.0	2.86	106.8	33.9	5.5	64.2	74.4	105.0	2.99	115.2	35.2	11.2	65.4	77.8	110.0	3.14	120.7	35.0	18.6	66.1
80	9.0	5.5	50	38.8	50.5	3.45	62.3	14.6	6.2	86.6	42.1	53.0	3.53	65.1	15.0	12.6	87.3	43.9	54.5	3.67	67.0	14.9	21.0	87.9
		5.5	60	46.9	59.0	3.48	70.9	16.9	6.0	88.9	50.7	63.0	3.57	75.2	17.6	12.2	90.1	52.8	64.5	3.71	77.2	17.4	20.3	90.6
		5.5	70	54.9	68.0	3.53	80.1	19.2	5.8	91.3	59.3	72.0	3.64	84.4	19.8	11.8	92.5	61.7	75.0	3.78	87.9	19.8	19.6	93.4
		5.5	80	62.9	77.0	3.61	89.3	21.3	5.6	93.8	67.9	82.0	3.73	94.7	22.0	11.5	95.3	70.6	85.0	3.89	98.3	21.9	19.0	96.2
		5.4	90	70.7	87.0	3.71	99.7	23.4	5.5	96.6	76.2	93.0	3.86	106.2	24.1	11.2	98.3	79.2	97.0	4.02	110.7	24.1	18.5	99.5
	13.50	11.5	50	38.7	51.0	3.39	62.6	15.0	6.2	81.1	41.9	54.5	3.47	66.3	15.7	12.6	81.8	43.8	56.0	3.60	68.3	15.6	21.0	82.1
		11.4	60	46.7	60.0	3.40	71.6	17.6	6.0	82.7	50.5	64.0	3.48	75.9	18.4	12.2	83.5	52.7	66.0	3.62	78.3	18.3	20.3	83.9
		11.4	70	54.7	69.0	3.43	80.7	20.1	5.8	84.3	59.0	74.0	3.52	86.0	21.0	11.8	85.3	61.6	76.0	3.66	88.5	20.8	19.6	85.7
		11.4	80	62.4	79.0	3.48	90.9	22.7	5.6	86.2	67.4	85.0	3.59	97.2	23.7	11.5	87.3	70.2	88.0	3.73	100.7	23.6	19.1	87.9
		11.3	90	70.2	89.0	3.55	101.1	25.1	5.5	88.0	75.8	96.0	3.68	108.6	26.1	11.2	89.3	79.0	99.0	3.84	112.1	25.8	18.5	89.9
90	18.0	19.1	50	38.6	51.5	3.45	63.3	14.9	6.2	78.4	41.9	55.0	3.52	67.0	15.6	12.6	78.9	43.7	56.5	3.65	69.0	15.5	21.0	79.2
		19.1	60	46.6	60.5	3.45	72.3	17.5	6.0	79.6	50.4	64.5	3.52	76.5	18.3	12.2	80.2	52.7	66.0	3.65	78.5	18.1	20.3	80.5
		19.1	70	54.4	70.0	3.46	81.8	20.2	5.8	80.9	58.9	75.0	3.55	87.1	21.1	11.8	81.6	61.4	77.0	3.68	89.6	20.9	19.6	81.9
		19.0	80	62.2	80.0	3.50	91.9	22.9	5.6	82.3	67.3	86.0	3.59	98.3										

WRA, WCA 072 – Cooling (continued)

Source			ELT °F	Load Flow 9.0 GPM							Load Flow 13.5 GPM							Load Flow 18.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
9.0	5.0	50	41.0	40.5	5.35	58.8	7.6	6.2	125.7	43.7	42.5	5.44	61.1	7.8	12.6	126.3	45.2	43.0	5.58	62.1	7.7	20.9	126.5	
	5.0	60	49.4	47.5	5.42	66.0	8.8	6.0	127.6	52.6	50.0	5.51	68.8	9.1	12.2	128.4	54.3	51.0	5.65	70.3	9.0	20.2	128.7	
	5.0	70	58.2	53.0	5.47	71.7	9.7	5.8	129.1	61.4	58.0	5.59	77.1	10.4	11.8	130.6	63.4	59.5	5.74	79.1	10.4	19.6	131.1	
	4.9	80	66.0	63.0	5.58	82.1	11.3	5.6	131.9	70.2	66.0	5.69	85.4	11.6	11.4	132.8	72.3	69.0	5.83	88.9	11.8	19.0	133.7	
	4.9	90	90.0						110.0	78.9	75.0	5.81	94.8	12.9	11.1	135.3	81.3	78.0	5.96	98.4	13.1	18.5	136.2	
110	10.3	50	40.9	41.0	5.27	59.0	7.8	6.2	120.5	43.6	43.0	5.35	61.3	8.0	12.6	120.9	45.2	43.5	5.48	62.2	7.9	20.9	121.1	
	10.3	60	49.2	48.5	5.30	66.6	9.1	6.0	121.8	52.5	50.5	5.38	68.8	9.4	12.2	122.2	54.3	51.5	5.51	70.3	9.4	20.2	122.5	
	10.2	70	57.7	55.5	5.33	73.7	10.4	5.8	123.1	61.1	60.0	5.43	78.5	11.0	11.8	124.0	63.3	60.5	5.56	79.5	10.9	19.6	124.1	
	10.2	80	65.8	64.0	5.40	82.4	11.9	5.6	124.7	69.9	68.0	5.49	86.7	12.4	11.4	125.4	72.4	68.0	5.61	87.1	12.1	19.0	125.5	
	10.2	90	74.0	72.0	5.44	90.6	13.2	5.4	126.1	78.6	77.0	5.56	96.0	13.8	11.1	127.1	81.1	80.0	5.71	99.5	14.0	18.5	127.7	
18.0	17.2	50	40.9	41.0	5.30	59.1	7.7	6.2	117.9	43.6	43.0	5.38	61.3	8.0	12.6	118.2	45.1	44.0	5.52	62.8	8.0	20.9	118.4	
	17.1	60	49.2	48.5	5.32	66.7	9.1	6.0	118.9	52.4	51.5	5.40	69.9	9.5	12.2	119.3	54.2	52.5	5.53	71.4	9.5	20.2	119.5	
	17.1	70	57.4	56.5	5.34	74.7	10.6	5.8	120.0	61.2	59.5	5.43	78.0	11.0	11.8	120.4	63.2	61.5	5.56	80.5	11.1	19.6	120.7	
	17.1	80	65.6	65.0	5.39	83.4	12.1	5.6	121.1	69.8	69.0	5.47	87.7	12.6	11.4	121.7	72.0	72.0	5.61	91.1	12.8	19.0	122.2	
	17.1	90	73.8	73.0	5.42	91.5	13.5	5.4	122.2	78.3	79.0	5.53	97.9	14.3	11.1	123.1	80.9	82.0	5.68	101.4	14.4	18.5	123.5	
9.0	4.9	50	41.6	37.8	6.01	58.3	6.3	6.2	135.5	44.1	39.5	6.09	60.3	6.5	12.6	136.1	45.5	40.5	6.23	61.8	6.5	20.9	136.5	
	4.9	60	50.1	44.5	6.06	65.2	7.3	6.0	137.4	53.0	47.0	6.15	68.0	7.6	12.2	138.1	54.7	47.5	6.29	69.0	7.6	20.2	138.4	
	4.8	70	58.6	51.5	6.12	72.4	8.4	5.8	139.3	62.0	54.0	6.22	75.2	8.7	11.8	140.1	63.8	55.5	6.37	77.2	8.7	19.6	140.6	
	4.8	80	66.7	60.0	6.22	81.2	9.7	5.6	141.7	70.7	63.0	6.33	84.6	10.0	11.5	142.6	72.9	64.0	6.47	86.1	9.9	19.0	143.0	
	4.8	90	76.3	61.5	6.25	82.8	9.8	5.5	142.1	79.6	70.0	6.44	92.0	10.9	11.1	144.5	81.9	73.0	6.61	95.5	11.1	18.5	145.5	
120	10.0	50	41.4	38.5	5.91	58.7	6.5	6.2	130.4	44.1	40.0	5.99	60.5	6.7	12.6	130.7	45.4	41.0	6.13	61.9	6.7	20.9	131.0	
	10.0	60	50.0	45.0	5.94	65.3	7.6	6.0	131.6	53.0	47.5	6.02	68.0	7.9	12.2	132.1	54.6	48.5	6.15	69.5	7.9	20.2	132.4	
	10.0	70	58.4	52.0	5.97	72.4	8.7	5.8	132.9	61.8	55.5	6.06	76.2	9.2	11.8	133.5	63.7	56.5	6.19	77.6	9.1	19.6	133.8	
	10.0	80	67.0	58.5	6.01	79.0	9.7	5.6	134.0	70.6	63.5	6.13	84.4	10.4	11.5	135.0	72.7	66.0	6.27	87.4	10.5	19.0	135.5	
	10.0	90	90.0						120.0	79.2	73.0	6.22	94.2	11.7	11.1	136.8	81.7	75.0	6.36	96.7	11.8	18.5	137.2	
18.0	16.8	50	41.4	38.5	5.95	58.8	6.5	6.2	127.8	44.0	40.5	6.02	61.1	6.7	12.6	128.1	45.4	41.5	6.16	62.5	6.7	20.9	128.3	
	16.7	60	49.9	45.5	5.96	65.8	7.6	6.0	128.8	52.9	48.0	6.03	68.6	8.0	12.2	129.1	54.6	49.0	6.17	70.0	7.9	20.2	129.3	
	16.7	70	58.2	53.0	5.98	73.4	8.9	5.8	129.8	61.7	56.0	6.07	76.7	9.2	11.8	130.2	63.6	57.5	6.20	78.6	9.3	19.6	130.5	
	16.7	80	66.9	59.0	6.01	79.5	9.8	5.6	130.6	70.4	65.0	6.13	85.9	10.6	11.4	131.5	72.6	67.0	6.27	88.4	10.7	19.0	131.8	
	16.7	90	76.1	62.5	6.01	83.0	10.4	5.5	131.1	79.0	74.0	6.17	95.1	12.0	11.1	132.7	81.4	77.0	6.31	98.5	12.2	18.5	133.1	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

= Operation not recommended

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 072 – Heating

Source			ELT °F	Load Flow 9.0 GPM							Load Flow 13.50 GPM							Load Flow 18.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	9.0	6.7	60	67.9	35.6	2.95	25.5	3.5	5.8	24.3	66.9	46.5	2.95	36.4	4.6	11.9	21.9	65.2	47.0	3.03	36.7	4.5	19.9	21.9
		6.7	80	87.5	33.6	3.69	21.0	2.7	5.4	25.3	86.4	43.5	3.67	31.0	3.5	11.2	23.1	84.9	44.5	3.74	31.7	3.5	18.7	23.0
		6.7	100	107.2	32.6	4.64	16.8	2.1	5.1	26.3	106.3	42.5	4.61	26.8	2.7	10.6	24.1	104.8	43.0	4.68	27.0	2.7	17.6	24.0
		6.6	120	127.2	32.2	5.88	12.1	1.6	4.9	27.3	126.2	42.0	5.84	22.1	2.1	10.1	25.1	124.7	42.5	5.90	22.4	2.1	16.8	25.0
	13.50	13.6	60	68.3	37.2	3.05	26.8	3.6	5.8	26.0	67.1	48.0	3.04	37.6	4.6	11.9	24.4	65.4	48.5	3.12	37.8	4.5	19.9	24.4
		13.6	80	87.8	35.2	3.79	22.3	2.7	5.4	26.7	86.7	45.0	3.77	32.1	3.5	11.2	25.2	85.1	46.0	3.84	32.9	3.5	18.6	25.1
		13.6	100	107.4	33.4	4.73	17.2	2.1	5.1	27.4	106.5	44.0	4.70	28.0	2.7	10.6	25.9	104.9	44.5	4.76	28.3	2.7	17.6	25.8
		13.6	120	127.4	33.4	5.97	13.0	1.6	4.9	28.1	126.4	43.5	5.92	23.3	2.2	10.1	26.6	124.9	44.0	5.98	23.6	2.2	16.8	26.5
	18.0	22.7	60	68.4	38.0	3.21	27.1	3.5	5.8	27.0	67.3	49.5	3.19	38.6	4.5	11.9	25.7	65.6	50.0	3.28	38.8	4.5	19.8	25.7
		22.6	80	88.0	36.0	3.94	22.5	2.7	5.4	27.5	87.0	47.0	3.93	33.6	3.5	11.2	26.3	85.2	47.0	3.99	33.4	3.4	18.6	26.3
		22.6	100	107.6	34.4	4.88	17.7	2.1	5.1	28.0	106.7	45.0	4.84	28.5	2.7	10.6	26.8	105.1	45.5	4.90	28.8	2.7	17.6	26.8
		22.6	120	127.5	33.6	6.11	12.7	1.6	4.9	28.6	126.5	44.0	6.07	23.3	2.1	10.1	27.4	124.9	44.5	6.12	23.6	2.1	16.8	27.4
50	9.0	6.4	60	69.0	40.5	3.05	30.1	3.9	5.7	33.3	67.9	53.0	3.01	42.7	5.2	11.9	30.5	66.0	54.0	3.09	43.5	5.1	19.8	30.3
		6.4	80	88.6	38.5	3.75	25.7	3.0	5.4	34.3	87.5	50.5	3.71	37.8	4.0	11.2	31.6	85.7	51.5	3.79	38.6	4.0	18.6	31.4
		6.4	100	108.3	37.4	4.68	21.4	2.3	5.1	35.2	107.3	49.0	4.63	33.2	3.1	10.6	32.6	105.5	49.5	4.68	33.5	3.1	17.6	32.6
		6.4	120	128.2	36.8	5.92	16.6	1.8	4.9	36.3	127.1	48.0	5.86	28.0	2.4	10.1	33.8	125.4	48.5	5.90	28.3	2.4	16.8	33.7
	13.50	13.1	60	69.4	42.5	3.13	31.8	4.0	5.7	35.3	68.2	55.5	3.10	44.9	5.2	11.9	33.3	66.3	56.5	3.17	45.7	5.2	19.8	33.2
		13.1	80	89.0	40.5	3.83	27.4	3.1	5.4	35.9	87.9	53.0	3.80	40.0	4.1	11.2	34.1	85.9	53.5	3.86	40.3	4.1	18.6	34.0
		13.1	100	108.7	39.0	4.77	22.7	2.4	5.1	36.6	107.6	51.0	4.71	34.9	3.2	10.6	34.8	105.7	51.5	4.76	35.2	3.2	17.6	34.8
		13.1	120	128.4	38.0	6.00	17.5	1.9	4.9	37.4	127.4	50.0	5.93	29.7	2.5	10.1	35.6	125.6	50.0	5.98	29.6	2.5	16.8	35.6
	18.0	21.8	60	69.8	44.0	3.27	32.8	3.9	5.7	36.4	68.4	57.0	3.23	46.0	5.2	11.9	34.9	66.4	58.0	3.31	46.7	5.1	19.8	34.8
		21.7	80	89.2	41.5	3.98	27.9	3.1	5.4	36.9	88.0	54.0	3.94	40.6	4.0	11.1	35.5	86.1	54.5	4.00	40.8	4.0	18.6	35.5
		21.7	100	108.8	39.5	4.91	22.7	2.4	5.1	37.5	107.7	52.0	4.85	35.5	3.1	10.6	36.1	105.8	52.5	4.90	35.8	3.1	17.6	36.0
		21.7	120	128.6	38.5	6.14	17.5	1.8	4.9	38.1	127.5	50.5	6.07	29.8	2.4	10.1	36.7	125.7	51.0	6.11	30.1	2.4	16.8	36.7
90	9.0	6.2	60	70.3	46.5	3.07	36.0	4.4	5.7	42.0	69.0	61.0	3.02	50.7	5.9	11.8	38.7	66.9	62.0	3.09	51.5	5.9	19.8	38.6
		6.2	80	89.8	44.0	3.80	31.0	3.4	5.4	43.1	88.6	58.0	3.75	45.2	4.5	11.1	40.0	86.6	59.5	3.81	46.5	4.6	18.6	39.7
		6.2	100	109.4	42.5	4.72	26.4	2.6	5.1	44.1	108.2	55.5	4.65	39.6	3.5	10.6	41.2	106.3	56.5	4.70	40.5	3.5	17.6	41.0
		6.2	120	129.2	41.5	5.96	21.2	2.0	4.9	45.3	128.1	54.5	5.87	34.5	2.7	10.1	42.3	126.1	55.0	5.91	34.8	2.7	16.8	42.3
	13.50	12.6	60	70.9	49.0	3.15	38.3	4.6	5.7	44.3	69.6	64.5	3.09	53.9	6.1	11.8	42.0	67.2	65.0	3.16	54.2	6.0	19.8	42.0
		12.6	80	90.3	46.5	3.90	33.2	3.5	5.4	45.1	89.1	61.5	3.83	48.4	4.7	11.1	42.8	86.9	62.0	3.89	48.7	4.7	18.6	42.8
		12.6	100	109.9	44.5	4.82	28.0	2.7	5.1	45.8	108.6	58.0	4.74	41.8	3.6	10.5	43.8	106.5	58.5	4.77	42.2	3.6	17.6	43.7
		12.6	120	129.7	43.5	6.04	22.9	2.1	4.9	46.6	128.4	56.5	5.95	36.2	2.8	10.1	44.6	126.3	57.0	5.98	36.6	2.8	16.8	44.6
	18.0	21.0	60	71.2	50.5	3.28	39.3	4.5	5.7	45.6	69.8	66.0	3.22	55.0	6.0	11.8	43.9	67.4	67.0	3.28	55.8	6.0	19.8	43.8
		21.0	80	90.7	48.0	4.03	34.2	3.5	5.4	46.2	89.3	63.0	3.97	49.4	4.6	11.1	44.5	87.1	63.5	4.03	49.8	4.6	18.6	44.5
		21.0	100	110.1	45.5	4.95	28.6	2.7	5.1	46.8	108.8	59.5	4.87	42.9	3.6	10.5	45.2	106.7	60.0	4.91	43.2	3.6	17.6	45.2
		20.9	120	129.8	44.0	6.18	22.9	2.1	4.9	47.5	128.6	58.0	6.09	37.2	2.8	10.1	45.9	126.5	58.5	6.12	37.6	2.8	16.8	45.8

WRA, WHA 072 – Heating (continued)

Source			ELT °F	Load Flow 9.0 GPM							Load Flow 13.50 GPM							Load Flow 18.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	9.0	6.0	60	71.7	52.5	3.09	41.9	5.0	5.7	50.7	70.4	70.0	3.03	59.7	6.8	11.8	46.7	67.9	71.0	3.08	60.5	6.7	19.8	46.6
		6.0	80	91.2	50.5	3.86	37.3	3.8	5.4	51.7	89.9	67.0	3.78	54.1	5.2	11.1	48.0	87.4	67.0	3.82	54.0	5.1	18.6	48.0
		6.0	100	110.8	48.5	4.79	32.2	3.0	5.1	52.9	109.6	64.5	4.70	48.5	4.0	10.5	49.2	107.2	65.0	4.73	48.9	4.0	17.6	49.1
		6.0	120	130.4	47.0	6.01	26.5	2.3	4.9	54.1	129.1	61.5	5.90	41.4	3.1	10	50.8	126.9	62.0	5.92	41.8	3.1	16.8	50.7
	13.50	12.2	60	72.4	56.0	3.18	45.1	5.2	5.7	53.3	71.0	74.0	3.10	63.4	7.0	11.8	50.6	68.3	75.0	3.16	64.2	7.0	19.7	50.5
		12.2	80	91.8	53.0	3.95	39.5	3.9	5.4	54.1	90.4	70.0	3.85	56.9	5.3	11.1	51.6	87.9	71.0	3.89	57.7	5.3	18.5	51.4
		12.2	100	111.3	51.0	4.89	34.3	3.1	5.1	54.9	109.9	67.0	4.78	50.7	4.1	10.5	52.5	107.6	68.0	4.81	51.6	4.1	17.6	52.4
		12.2	120	130.9	49.0	6.10	28.2	2.4	4.9	55.8	129.5	64.0	5.98	43.6	3.1	10	53.5	127.2	64.5	6.00	44.0	3.2	16.8	53.5
	18.0	20.3	60	72.9	58.0	3.32	46.7	5.1	5.7	54.8	71.4	77.0	3.23	66.0	7.0	11.8	52.7	68.7	78.0	3.28	66.8	7.0	19.7	52.6
		20.3	80	92.2	55.0	4.08	41.1	3.9	5.4	55.4	90.7	72.0	3.99	58.4	5.3	11.1	53.5	88.1	73.0	4.02	59.3	5.3	18.5	53.4
		20.2	100	111.6	52.0	5.02	34.9	3.0	5.1	56.1	109.9	67.0	4.91	50.3	4.0	10.5	54.4	107.6	68.0	4.94	51.2	4.0	17.6	54.3
		20.2	120	131.1	50.0	6.24	28.7	2.3	4.9	56.8	129.8	66.0	6.11	45.1	3.2	10	55.0	127.3	66.0	6.13	45.1	3.2	16.8	55.0
70	9.0	5.8	60	73.2	59.5	3.14	48.8	5.6	5.7	59.2	71.7	79.0	3.05	68.6	7.6	11.8	54.8	68.9	80.0	3.09	69.5	7.6	19.7	54.6
		5.8	80	92.7	57.0	3.91	43.7	4.3	5.4	60.3	91.1	75.0	3.80	62.0	5.8	11.1	56.2	88.4	76.0	3.83	62.9	5.8	18.5	56.0
		5.8	100	112.1	54.5	4.86	37.9	3.3	5.1	61.6	110.7	72.0	4.74	55.8	4.4	10.5	57.6	108.0	72.0	4.77	55.7	4.4	17.6	57.6
		5.8	120	131.7	52.5	6.08	31.7	2.5	4.9	62.9	130.2	69.0	5.94	48.7	3.4	10	59.2	127.7	69.0	5.94	48.7	3.4	16.7	59.2
	13.50	11.8	60	74.1	63.5	3.24	52.4	5.7	5.7	62.2	72.6	85.0	3.13	74.3	7.9	11.8	59.0	69.6	86.0	3.17	75.2	7.9	19.7	58.9
		11.8	80	93.4	60.5	4.00	46.8	4.4	5.4	63.1	91.9	80.0	3.89	66.7	6.0	11.1	60.1	89.0	81.0	3.91	67.7	6.1	18.5	60.0
		11.8	100	112.7	57.0	4.98	40.0	3.4	5.1	64.1	111.3	76.0	4.84	59.5	4.6	10.5	61.2	108.6	77.0	4.84	60.5	4.7	17.6	61.0
		11.8	120	132.2	55.0	6.17	34.0	2.6	4.9	65.0	130.5	71.0	6.02	50.5	3.5	10	62.5	128.1	73.0	6.03	52.4	3.5	16.7	62.2
	18.0	19.6	60	74.7	66.0	3.38	54.5	5.7	5.7	63.9	73.0	88.0	3.27	76.8	7.9	11.8	61.5	69.9	89.0	3.31	77.7	7.9	19.7	61.4
		19.6	80	93.8	62.0	4.15	47.9	4.4	5.4	64.7	92.3	83.0	4.02	69.3	6.1	11.1	62.3	89.2	83.0	4.04	69.2	6.0	18.5	62.3
		19.6	100	113.1	59.0	5.11	41.6	3.4	5.1	65.4	111.6	78.0	4.96	61.1	4.6	10.5	63.2	108.8	79.0	4.97	62.0	4.7	17.6	63.1
		19.5	120	132.4	56.0	6.32	34.4	2.6	4.9	66.2	130.8	73.0	6.15	52.0	3.5	10	64.2	128.2	74.0	6.14	53.0	3.5	16.7	64.1
80	9.0	5.6	60	74.9	67.0	3.21	56.0	6.1	5.7	67.5	73.2	89.0	3.09	78.5	8.4	11.8	62.6	70.0	90.0	3.12	79.3	8.4	19.7	62.4
		5.6	80	94.2	64.0	3.98	50.4	4.7	5.3	68.8	92.6	85.0	3.85	71.9	6.5	11.1	64.0	89.6	86.0	3.86	72.8	6.5	18.5	63.8
		5.6	100	113.6	61.0	4.93	44.2	3.6	5.1	70.2	112.0	81.0	4.79	64.7	5.0	10.5	65.6	108.9	80.0	4.78	63.7	4.9	17.5	65.8
		5.6	120	133.0	58.5	6.14	37.5	2.8	4.8	71.7	131.4	77.0	6.00	56.5	3.8	10	67.4	128.4	76.0	5.97	55.6	3.7	16.7	67.6
	13.50	11.5	60	75.8	71.0	3.33	59.6	6.2	5.7	71.2	74.2	96.0	3.20	85.1	8.8	11.7	67.4	70.8	97.0	3.22	86.0	8.8	19.7	67.3
		11.5	80	95.1	68.0	4.09	54.0	4.9	5.3	72.0	93.3	90.0	3.95	76.5	6.7	11.1	68.7	90.1	91.0	3.96	77.5	6.7	18.5	68.5
		11.5	100	114.3	64.5	5.05	47.3	3.7	5.1	73.0	112.6	85.0	4.87	68.4	5.1	10.5	69.9	109.6	86.0	4.87	69.4	5.2	17.5	69.7
		11.4	120	133.6	61.4	6.26	40.0	2.9	4.8	74.1	132.0	81.1	6.10	60.3	3.9	10	71.1	129.0	80.9	6.08	60.1	3.9	16.7	71.1
	18.0	19.1	60	76.4	74.0	3.52	62.0	6.2	5.6	73.1	75.0	101.0	3.35	89.6	8.8	11.7	70.0	71.2	101.0	3.36	89.5	8.8	19.6	70.1
		19.0	80	96.0	72.0	4.25	57.5	5.0	5.3	73.6	93.9	93.9	4.10	79.9	6.7	11	71.1	90.5	94.7	4.10	80.7	6.8	18.5	71.0
		19.0	100	114.7	66.3	5.21	48.5	3.7	5.1	74.6	112.4	83.9	4.99	66.9	4.9	10.5	72.6	110.0	89.8	5.02	72.6	5.2	17.5	71.9
		19.0	120	134.0	62.8	6.41	40.9	2.9	4.8	75.5	132.0	81.2	6.21	60.0	3.8	10	73.3	129.3	84.1	6.22	62.9	4.0	16.7	73.0

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

WRA, WCA 120 – Cooling

Source			ELT °F	Load Flow 15.0 GPM							Load Flow 22.5 GPM							Load Flow 30.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
15.0	1.6	50	38.5	86.0	3.90	99.3	22.1	1.6	53.2	41.8	92.0	3.92	105.4	23.5	3.3	54.1	43.7	95.0	3.97	108.6	23.9	5.5	54.5	
	1.6	60	46.8	99.0	3.88	112.2	25.5	1.6	55.0	50.6	106.0	3.90	119.3	27.2	3.2	55.9	52.6	111.0	3.95	124.5	28.1	5.3	56.6	
	1.6	70	54.9	113.0	3.87	126.2	29.2	1.5	56.8	59.2	122.0	3.88	135.3	31.4	3.1	58.0	61.5	127.0	3.93	140.4	32.3	5.2	58.7	
	1.6	80	62.9	128.0	3.85	141.2	33.2	1.5	58.8	67.7	138.0	3.88	151.2	35.6	3.0	60.2	70.4	144.0	3.92	157.4	36.7	5.0	61.0	
	1.6	90	70.8	144.0	3.84	157.1	37.5	1.4	60.9	76.1	156.0	3.87	169.2	40.3	2.9	62.6	79.2	162.0	3.91	175.4	41.4	4.9	63.4	
40	3.3	50	38.3	88.0	3.70	100.6	23.8	1.6	48.9	41.6	94.0	3.70	106.6	25.4	3.3	49.5	43.5	97.0	3.73	109.7	26.0	5.5	49.8	
	3.3	60	46.5	101.0	3.63	113.4	27.8	1.6	50.1	50.3	109.0	3.62	121.3	30.1	3.2	50.8	52.5	113.0	3.65	125.5	31.0	5.3	51.2	
	3.3	70	54.5	116.0	3.56	128.2	32.6	1.5	51.4	58.9	125.0	3.54	137.1	35.4	3.1	52.2	61.3	130.0	3.56	142.2	36.5	5.2	52.6	
	3.3	80	62.4	132.0	3.48	143.9	37.9	1.5	52.8	67.4	142.0	3.45	153.8	41.2	3.0	53.7	70.1	148.0	3.47	159.8	42.7	5.0	54.2	
	3.3	90	70.3	148.0	3.39	159.6	43.6	1.4	54.2	75.8	160.0	3.36	171.5	47.6	2.9	55.2	78.8	168.0	3.37	179.5	49.8	4.9	56.0	
30.0	5.6	50	38.1	89.0	3.63	101.4	24.5	1.6	46.8	41.6	95.0	3.62	107.3	26.3	3.3	47.2	43.4	99.0	3.65	111.5	27.1	5.5	47.4	
	5.6	60	46.4	102.0	3.53	114.1	28.9	1.6	47.6	50.2	110.0	3.51	122.0	31.4	3.2	48.1	52.3	115.0	3.53	127.0	32.6	5.3	48.5	
	5.6	70	54.4	117.0	3.44	128.7	34.1	1.5	48.6	58.7	127.0	3.39	138.6	37.5	3.1	49.2	61.2	132.0	3.40	143.6	38.8	5.2	49.6	
	5.6	80	62.1	134.0	3.31	145.3	40.5	1.5	49.7	67.2	144.0	3.26	155.1	44.2	3.0	50.3	70.0	150.0	3.26	161.1	46.0	5.0	50.7	
	5.5	90	70.0	150.0	3.19	160.9	47.0	1.4	50.7	75.6	162.0	3.12	172.7	51.9	2.9	51.5	78.7	170.0	3.12	180.6	54.6	4.9	52.0	
15.0	1.6	50	38.9	83.0	4.36	97.9	19.0	1.6	63.1	42.2	88.0	4.40	103.0	20.0	3.3	63.7	43.9	91.0	4.46	106.2	20.4	5.5	64.2	
	1.6	60	47.3	95.0	4.37	109.9	21.7	1.6	64.7	50.9	102.0	4.41	117.0	23.2	3.2	65.6	52.9	106.0	4.46	121.2	23.7	5.3	66.2	
	1.5	70	55.5	109.0	4.38	124.0	24.9	1.5	66.5	59.5	118.0	4.42	133.1	26.7	3.1	67.7	61.9	122.0	4.48	137.3	27.3	5.2	68.3	
	1.5	80	63.5	124.0	4.40	139.0	28.2	1.5	68.5	68.1	134.0	4.44	149.1	30.2	3.0	69.9	70.7	140.0	4.49	155.3	31.2	5.0	70.7	
	1.5	90	71.3	140.0	4.41	155.1	31.7	1.4	70.7	76.7	150.0	4.45	165.2	33.7	2.9	72.0	79.6	156.0	4.51	171.4	34.6	4.9	72.9	
50	3.2	50	38.8	84.0	4.17	98.2	20.1	1.6	58.7	42.0	90.0	4.19	104.3	21.5	3.3	59.3	43.8	93.0	4.24	107.5	22.0	5.5	59.6	
	3.2	60	47.1	97.0	4.14	111.1	23.4	1.6	59.9	50.7	105.0	4.14	119.1	25.4	3.2	60.6	52.7	109.0	4.18	123.3	26.1	5.3	61.0	
	3.2	70	55.1	112.0	4.09	126.0	27.4	1.5	61.2	59.2	121.0	4.09	135.0	29.6	3.1	62.0	61.6	126.0	4.13	140.1	30.5	5.2	62.5	
	3.2	80	63.1	127.0	4.04	140.8	31.4	1.5	62.5	67.7	138.0	4.03	151.8	34.2	3.0	63.5	70.4	144.0	4.07	157.9	35.4	5.0	64.0	
	3.2	90	70.8	144.0	3.99	157.6	36.1	1.4	64.0	76.1	156.0	3.97	169.6	39.3	2.9	65.1	79.2	162.0	4.00	175.7	40.5	4.9	65.6	
30.0	5.4	50	38.7	85.0	4.11	99.0	20.7	1.6	56.6	41.9	91.0	4.12	105.1	22.1	3.3	57.0	43.7	94.0	4.16	108.2	22.6	5.5	57.2	
	5.4	60	46.9	98.0	4.06	111.8	24.2	1.6	57.5	50.6	106.0	4.04	119.8	26.2	3.2	58.0	52.7	110.0	4.07	123.9	27.0	5.3	58.3	
	5.4	70	54.9	113.0	3.98	126.6	28.4	1.5	58.4	59.2	122.0	3.95	135.5	30.9	3.1	59.0	61.5	127.0	3.98	140.6	31.9	5.2	59.4	
	5.4	80	62.8	129.0	3.89	142.3	33.2	1.5	59.5	67.6	140.0	3.86	153.2	36.3	3.0	60.2	70.3	146.0	3.88	159.2	37.6	5.0	60.6	
	5.3	90	70.5	146.0	3.80	159.0	38.4	1.4	60.6	76.0	158.0	3.76	170.8	42.0	2.9	61.4	79.1	164.0	3.77	176.9	43.5	4.9	61.8	
15.0	1.5	50	40.0	75.0	5.42	93.5	13.8	1.6	82.5	42.9	80.0	5.46	98.6	14.6	3.3	83.2	44.5	83.0	5.53	101.9	15.0	5.5	83.6	
	1.5	60	48.3	88.0	5.46	106.6	16.1	1.6	84.2	51.6	94.0	5.51	112.8	17.1	3.2	85.0	53.5	97.0	5.58	116.0	17.4	5.3	85.5	
	1.5	70	56.5	101.0	5.51	119.8	18.3	1.5	86.0	60.4	108.0	5.56	127.0	19.4	3.1	86.9	62.5	112.0	5.63	131.2	19.9	5.2	87.5	
	1.4	80	64.7	115.0	5.56	134.0	20.7	1.5	87.9	69.1	123.0	5.62	142.2	21.9	3.0	89.0	71.5	128.0	5.70	147.4	22.5	5.0	89.7	
	1.4	90	72.7	130.0	5.62	149.2	23.1	1.4	89.9	77.7	138.0	5.69	157.4	24.3	2.9	91.0	80.4	144.0	5.76	163.7	25.0	4.9	91.8	
70	3.0	50	39.7	77.0	5.22	94.8	14.8	1.6	78.4	42.7	82.0	5.25	99.9	15.6	3.3	78.9	44.3	85.0	5.31	103.1	16.0	5.5	79.2	
	3.0	60	48.1	89.0	5.22	106.8	17.0	1.6	79.5	51.5	96.0	5.25	113.9	18.3	3.2	80.1	53.3	100.0	5.30	118.1	18.9	5.3	80.5	
	3.0	70	56.3	103.0	5.22	120.8	19.7	1.5	80.7	60.1	111.0	5.25	128.9	21.1	3.1	81.5	62.3	115.0	5.30	133.1	21.7	5.2	81.8	
	3.0	80	64.3	118.0	5.22	135.8	22.6	1.5	82.1	68.7	127.0	5.25	144.9	24.2	3.0	82.9	71.2	132.0	5.30	150.1	24.9	5.0	83.3	
	3.0	90	72.4	132.0	5.22	149.8	25.3	1.4	83.3	77.2	144.0	5.25	161.9	27.4	2.9	84.4	80.0	150.0	5.29	168.1	28.4	4.9	84.9	
30.0	5.0	50	39.6	78.0	5.16	95.6	15.1	1.6	76.4	42.6	83.0	5.18	100.7	16.0	3.3	76.7	44.3	86.0	5.23	103.9	16.4	5.5	76.9	
	5.0	60	48.0	90.0	5.14	107.5	17.5	1.6	77.2	51.4	97.0	5.15	114.6	18.8	3.2	77.6	53.3	101.0	5.20	118.8	19.4	5.3	77.9	
	5.0	70	56.1	104.0	5.11	121.5	20.3	1.5	78.1	60.0	113.0	5.12	130.5	22.1	3.1	78.7	62.2	117.0	5.17	134.6	22.6	5.2	79.0	
	5.0	80	64.1	119.0	5.09	136.4	23.4	1.5	79.1	68.5	129.0	5.09	146.4	25.4	3.0	79.8	71.1	134.0	5.13	151.5	26.1	5.0	80.1	
	5.0	90	72.1	134.0	5.05	151.2	26.5	1.4	80.1	77.0	146.0	5.05	163.2	28.9	2.9	80.9	79.9	152.0	5.08	169.3	29.9	4.9	81.3	
15.0	1.4	50	40.5	71.0	6.04	91.6	11.8	1.6	92.2	43.2	76.0	6.08	96.8	12.5	3.3	92.9	44.7	79.0						

WRA, WCA 120 – Cooling (continued)

Source			ELT °F	Load Flow 15.0 GPM							Load Flow 22.5 GPM							Load Flow 30.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
15.0	1.3	50	41.9	60.5	8.44	89.3	7.2	1.6	121.9	44.3	64.0	8.50	93.0	7.5	3.3	122.4	45.7	65.0	8.58	94.3	7.6	5.5	122.6	
	1.3	60	50.5	71.0	8.54	100.1	8.3	1.6	123.4	53.3	75.0	8.61	104.4	8.7	3.2	123.9	54.9	76.0	8.68	105.6	8.8	5.3	124.1	
	1.3	70	58.9	83.0	8.64	112.5	9.6	1.5	125.0	62.3	87.0	8.69	116.7	10.0	3.1	125.6	64.0	90.0	8.77	119.9	10.3	5.1	126.0	
	1.3	80	67.3	95.0	8.71	124.7	10.9	1.5	126.6	71.1	100.0	8.78	130.0	11.4	3.0	127.3	73.1	104.0	8.86	134.2	11.7	5.0	127.9	
	1.3	90	75.7	107.0	8.80	137.0	12.2	1.4	128.3	79.9	114.0	8.88	144.3	12.8	2.9	129.2	82.2	117.0	8.96	147.6	13.1	4.9	129.7	
110	2.7	50	41.8	61.5	8.20	89.5	7.5	1.6	118.0	44.3	64.0	8.25	92.1	7.8	3.3	118.2	45.5	67.0	8.32	95.4	8.1	5.5	118.5	
	2.7	60	50.3	73.0	8.25	101.2	8.8	1.6	119.0	53.2	76.0	8.30	104.3	9.2	3.2	119.3	54.8	78.0	8.37	106.6	9.3	5.3	119.5	
	2.7	70	58.8	84.0	8.28	112.3	10.1	1.5	120.0	62.0	90.0	8.31	118.4	10.8	3.1	120.5	63.8	93.0	8.37	121.6	11.1	5.1	120.8	
	2.7	80	67.1	97.0	8.29	125.3	11.7	1.5	121.1	70.8	104.0	8.33	132.4	12.5	3.0	121.8	72.9	107.0	8.39	135.6	12.7	5.0	122.1	
	2.7	90	75.3	110.0	8.32	138.4	13.2	1.4	122.3	79.5	118.0	8.37	146.6	14.1	2.9	123.0	81.9	122.0	8.44	150.8	14.5	4.9	123.4	
30.0	4.5	50	41.7	62.0	8.12	89.7	7.6	1.6	116.0	44.2	65.0	8.16	92.8	8.0	3.3	116.2	45.5	68.0	8.22	96.1	8.3	5.5	116.4	
	4.5	60	50.3	73.0	8.15	100.8	9.0	1.6	116.7	53.2	77.0	8.18	104.9	9.4	3.2	117.0	54.7	79.0	8.24	107.1	9.6	5.3	117.1	
	4.5	70	58.5	86.0	8.13	113.8	10.6	1.5	117.6	61.9	91.0	8.16	118.8	11.2	3.1	117.9	63.7	94.0	8.21	122.0	11.5	5.2	118.1	
	4.5	80	66.9	98.0	8.12	125.7	12.1	1.5	118.4	70.7	105.0	8.15	132.8	12.9	3.0	118.9	72.8	108.0	8.20	136.0	13.2	5.0	119.1	
	4.5	90	75.1	112.0	8.13	139.7	13.8	1.4	119.3	79.3	120.0	8.16	147.9	14.7	2.9	119.9	81.7	124.0	8.21	152.0	15.1	4.9	120.1	
15.0	1.3	50	42.5	56.5	9.48	88.9	6.0	1.6	131.8	44.7	59.5	9.54	92.0	6.2	3.3	132.3	45.9	61.0	9.61	93.8	6.3	5.5	132.5	
	1.3	60	51.1	67.0	9.56	99.6	7.0	1.6	133.3	53.7	71.0	9.62	103.8	7.4	3.2	133.8	55.2	72.0	9.69	105.1	7.4	5.3	134.0	
	1.3	70	59.6	78.0	9.65	110.9	8.1	1.5	134.8	62.7	82.0	9.72	115.2	8.4	3.1	135.4	64.5	83.0	9.78	116.4	8.5	5.1	135.5	
	1.3	80	68.1	89.0	9.75	122.3	9.1	1.5	136.3	71.6	94.0	9.81	127.5	9.6	3.0	137.0	73.5	97.0	9.88	130.7	9.8	5.0	137.4	
	1.3	90	76.5	101.0	9.82	134.5	10.3	1.4	137.9	80.5	107.0	9.90	140.8	10.8	2.9	138.8	82.7	110.0	9.98	144.1	11.0	4.9	139.2	
120	2.6	50	42.3	57.5	9.23	89.0	6.2	1.6	127.9	44.6	60.5	9.27	92.1	6.5	3.3	128.2	45.8	62.5	9.33	94.4	6.7	5.5	128.4	
	2.6	60	50.9	68.0	9.26	99.6	7.3	1.6	128.9	53.6	72.0	9.31	103.8	7.7	3.2	129.2	55.1	74.0	9.37	106.0	7.9	5.3	129.4	
	2.6	70	59.5	79.0	9.31	110.8	8.5	1.5	129.8	62.5	84.0	9.36	115.9	9.0	3.1	130.3	64.3	85.0	9.41	117.1	9.0	5.1	130.4	
	2.6	80	67.9	91.0	9.33	122.9	9.7	1.5	130.9	71.4	97.0	9.37	129.0	10.3	3.0	131.5	73.3	100.0	9.43	132.2	10.6	5.0	131.7	
	2.6	90	76.1	104.0	9.36	135.9	11.1	1.4	132.1	80.2	110.0	9.41	142.1	11.7	2.9	132.6	82.4	114.0	9.47	146.3	12.0	4.9	133.0	
30.0	4.4	50	42.3	58.0	9.14	89.2	6.3	1.6	125.9	44.5	61.5	9.17	92.8	6.7	3.3	126.2	45.8	63.0	9.23	94.5	6.8	5.5	126.3	
	4.4	60	50.8	69.0	9.15	100.2	7.5	1.6	126.7	53.5	73.0	9.19	104.4	7.9	3.2	127.0	55.0	75.0	9.24	106.5	8.1	5.3	127.1	
	4.4	70	59.3	80.0	9.17	111.3	8.7	1.5	127.4	62.4	85.0	9.20	116.4	9.2	3.1	127.8	64.2	87.0	9.24	118.5	9.4	5.1	127.9	
	4.4	80	67.6	93.0	9.16	124.3	10.2	1.5	128.3	71.3	98.0	9.19	129.4	10.7	3.0	128.6	73.2	102.0	9.24	133.5	11.0	5.0	128.9	
	4.4	90	76.0	105.0	9.16	136.3	11.5	1.4	129.1	80.0	112.0	9.19	143.4	12.2	2.9	129.6	82.3	116.0	9.24	147.5	12.5	4.9	129.8	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

MBtuH - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 120 – Heating

Source			ELT °F	Load Flow 15.0 GPM							Load Flow 22.5 GPM							Load Flow 30.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	15.0	1.8	60	69.3	70.0	4.61	54.3	4.5	1.5	22.8	66.3	71.0	4.50	55.6	4.6	3.1	22.6	64.7	71.0	4.49	55.7	4.6	5.2	22.6
		1.8	80	88.8	66.0	5.67	46.7	3.4	1.4	23.8	86.0	67.0	5.54	48.1	3.5	2.9	23.6	84.5	67.0	5.52	48.2	3.6	4.9	23.6
		1.8	100	108.6	64.5	7.20	39.9	2.6	1.4	24.7	105.7	64.5	7.04	40.5	2.7	2.8	24.6	104.3	65.0	6.99	41.1	2.7	4.6	24.5
		1.7	120	128.3	62.5	9.31	30.7	2.0	1.3	25.9	125.6	63.5	9.11	32.4	2.0	2.7	25.7	124.2	63.5	9.06	32.6	2.1	4.4	25.7
	22.5	3.6	60	69.7	73.0	4.68	57.0	4.6	1.5	24.9	66.6	74.0	4.56	58.4	4.8	3.1	24.8	65.0	75.0	4.54	59.5	4.8	5.2	24.7
		3.6	80	89.3	70.0	5.75	50.4	3.6	1.4	25.5	86.2	70.0	5.62	50.8	3.7	2.9	25.5	84.7	71.0	5.59	51.9	3.7	4.9	25.4
		3.6	100	108.9	67.0	7.27	42.2	2.7	1.4	26.3	106.0	67.0	7.11	42.7	2.8	2.8	26.2	104.5	67.0	7.05	42.9	2.8	4.6	26.2
		3.6	120	128.7	65.0	9.34	33.1	2.0	1.3	27.1	125.9	66.0	9.16	34.7	2.1	2.7	26.9	124.3	65.0	9.11	33.9	2.1	4.4	27.0
	30.0	6.0	60	70.0	75.0	4.76	58.8	4.6	1.5	26.1	66.8	76.0	4.64	60.2	4.8	3.1	26.0	65.1	77.0	4.62	61.2	4.9	5.2	25.9
		6.0	80	89.5	71.0	5.84	51.1	3.6	1.4	26.6	86.4	72.0	5.70	52.6	3.7	2.9	26.5	84.8	72.0	5.66	52.7	3.7	4.9	26.5
		6.0	100	109.1	68.0	7.36	42.9	2.7	1.4	27.1	106.0	68.0	7.18	43.5	2.8	2.8	27.1	104.6	69.0	7.12	44.7	2.8	4.6	27.0
		5.9	120	128.8	66.0	9.42	33.9	2.1	1.3	27.7	125.9	66.0	9.25	34.4	2.1	2.7	27.7	124.5	67.0	9.18	35.7	2.1	4.4	27.6
40	15.0	1.7	60	70.7	80.0	4.71	63.9	5.0	1.5	31.5	67.2	81.0	4.57	65.4	5.2	3.1	31.3	65.4	81.0	4.54	65.5	5.2	5.2	31.3
		1.7	80	90.1	76.0	5.81	56.2	3.8	1.4	32.5	86.8	77.0	5.66	57.7	4.0	2.9	32.3	85.1	77.0	5.61	57.8	4.0	4.9	32.3
		1.7	100	109.9	74.0	7.37	48.9	2.9	1.4	33.5	106.6	74.0	7.16	49.6	3.0	2.8	33.4	105.0	75.0	7.09	50.8	3.1	4.6	33.2
		1.7	120	129.7	73.0	9.35	41.1	2.3	1.3	34.5	126.5	73.0	9.15	41.8	2.3	2.7	34.4	124.9	73.0	9.09	42.0	2.4	4.4	34.4
	22.5	3.4	60	71.2	84.0	4.78	67.7	5.1	1.5	34.0	67.6	85.0	4.63	69.2	5.4	3.1	33.9	65.7	85.0	4.60	69.3	5.4	5.2	33.8
		3.4	80	90.7	80.0	5.91	59.8	4.0	1.4	34.7	87.2	81.0	5.73	61.4	4.1	2.9	34.5	85.4	81.0	5.69	61.6	4.2	4.9	34.5
		3.4	100	110.3	77.0	7.44	51.6	3.0	1.4	35.4	106.8	77.0	7.25	52.3	3.1	2.8	35.4	105.1	77.0	7.17	52.5	3.1	4.6	35.3
		3.4	120	130.0	75.0	9.41	42.9	2.3	1.3	36.2	126.7	75.0	9.19	43.6	2.4	2.7	36.1	125.0	75.0	9.12	43.9	2.4	4.4	36.1
	30.0	5.7	60	71.6	87.0	4.87	70.4	5.2	1.5	35.3	67.8	88.0	4.71	71.9	5.5	3.1	35.2	65.9	88.0	4.67	72.1	5.5	5.2	35.2
		5.7	80	90.9	82.0	5.99	61.5	4.0	1.4	35.9	87.4	83.0	5.82	63.1	4.2	2.9	35.8	85.6	84.0	5.77	64.3	4.3	4.9	35.7
		5.7	100	110.4	78.0	7.51	52.4	3.0	1.4	36.5	107.0	79.0	7.31	54.0	3.2	2.8	36.4	105.3	80.0	7.24	55.3	3.2	4.6	36.3
		5.7	120	130.3	77.0	9.46	44.7	2.4	1.3	37.0	126.8	77.0	9.24	45.5	2.4	2.7	37.0	125.1	77.0	9.17	45.7	2.5	4.4	37.0
50	15.0	1.6	60	72.1	91.0	4.83	74.5	5.5	1.5	40.1	68.2	92.0	4.65	76.1	5.8	3.1	39.8	66.2	93.0	4.60	77.3	5.9	5.2	39.7
		1.6	80	91.7	88.0	5.98	67.6	4.3	1.4	41.0	87.8	88.0	5.78	68.3	4.5	2.9	40.9	85.9	88.0	5.72	68.5	4.5	4.9	40.9
		1.6	100	111.2	84.0	7.47	58.5	3.3	1.3	42.2	107.6	85.0	7.24	60.3	3.4	2.8	42.0	105.7	85.0	7.17	60.5	3.5	4.6	41.9
		1.6	120	131.1	83.0	9.42	50.9	2.6	1.3	43.2	127.4	83.0	9.17	51.7	2.7	2.7	43.1	125.5	83.0	9.08	52.0	2.7	4.4	43.1
	22.5	3.3	60	72.8	96.0	4.87	79.4	5.8	1.5	42.9	68.7	98.0	4.68	82.0	6.1	3.1	42.7	66.6	99.0	4.62	83.2	6.3	5.2	42.6
		3.3	80	92.1	91.0	6.04	70.4	4.4	1.4	43.7	88.2	92.0	5.82	72.1	4.6	2.9	43.6	86.3	94.0	5.75	74.4	4.8	4.9	43.4
		3.3	100	111.7	88.0	7.53	62.3	3.4	1.3	44.5	107.9	89.0	7.30	64.1	3.6	2.8	44.3	105.9	89.0	7.21	64.4	3.6	4.6	44.3
		3.3	120	131.5	86.0	9.46	53.7	2.7	1.3	45.2	127.6	86.0	9.21	54.6	2.7	2.6	45.1	125.7	86.0	9.11	54.9	2.8	4.4	45.1
	30.0	5.5	60	73.3	100.0	4.94	83.1	5.9	1.5	44.5	69.0	101.0	4.73	84.8	6.3	3.1	44.3	66.8	102.0	4.67	86.1	6.4	5.2	44.3
		5.5	80	92.5	94.0	6.11	73.1	4.5	1.4	45.1	88.4	95.0	5.88	74.9	4.7	2.9	45.0	86.4	96.0	5.81	76.2	4.8	4.9	44.9
		5.5	100	112.0	90.0	7.61	64.0	3.5	1.3	45.7	108.1	91.0	7.36	65.9	3.6	2.8	45.6	106.1	92.0	7.28	67.2	3.7	4.6	45.5
		5.5	120	131.6	87.0	9.53	54.5	2.7	1.3	46.4	127.8	88.0	9.27	56.4	2.8	2.6	46.2	125.9	88.0	9.17	56.7	2.8	4.4	46.2

WRA, WHA 120 – Heating (continued)

Source			ELT °F	Load Flow 15.0 GPM						Load Flow 22.5 GPM						Load Flow 30.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	15.0	1.6	60	73.9	104.0	4.86	87.4	6.3	1.5	48.3	69.3	105.0	4.64	89.2	6.6	3.1	48.1	67.1	106.0	4.57	90.4	6.8	5.2	47.9
		1.6	80	93.3	100.0	6.04	79.4	4.9	1.4	49.4	89.0	101.0	5.80	81.2	5.1	2.9	49.2	86.7	101.0	5.71	81.5	5.2	4.9	49.1
		1.6	100	112.8	96.0	7.57	70.2	3.7	1.3	50.6	108.6	97.0	7.30	72.1	3.9	2.8	50.4	106.5	97.0	7.19	72.5	4.0	4.6	50.3
		1.6	120	132.4	93.0	9.49	60.6	2.9	1.3	51.9	128.4	94.0	9.20	62.6	3.0	2.6	51.7	126.3	94.0	9.09	63.0	3.0	4.4	51.6
	22.5	3.2	60	74.8	111.0	4.90	94.3	6.6	1.5	51.6	70.0	112.0	4.66	96.1	7.0	3.1	51.5	67.5	113.0	4.57	97.4	7.2	5.2	51.3
		3.2	80	94.0	105.0	6.09	84.2	5.0	1.4	52.5	89.5	107.0	5.83	87.1	5.4	2.9	52.3	87.1	107.0	5.74	87.4	5.5	4.9	52.2
		3.2	100	113.3	100.0	7.63	74.0	3.8	1.3	53.4	108.9	100.0	7.32	75.0	4.0	2.8	53.3	106.8	102.0	7.22	77.4	4.1	4.6	53.1
		3.2	120	132.9	97.0	9.55	64.4	3.0	1.3	54.3	128.6	97.0	9.25	65.4	3.1	2.6	54.2	126.5	98.0	9.13	66.9	3.1	4.4	54.1
	30.0	5.3	60	75.2	114.0	4.97	97.1	6.7	1.5	53.5	70.3	116.0	4.71	99.9	7.2	3.1	53.3	67.8	117.0	4.61	101.3	7.4	5.2	53.2
		5.3	80	94.4	108.0	6.16	87.0	5.1	1.4	54.2	89.8	110.0	5.89	89.9	5.5	2.9	54.0	87.4	111.0	5.79	91.2	5.6	4.9	53.9
		5.3	100	113.7	103.0	7.69	76.7	3.9	1.3	54.9	109.2	104.0	7.39	78.8	4.1	2.8	54.7	107.0	105.0	7.27	80.2	4.2	4.6	54.7
		5.3	120	133.2	99.0	9.63	66.1	3.0	1.3	55.6	128.9	100.0	9.31	68.2	3.1	2.6	55.5	126.7	100.0	9.19	68.6	3.2	4.4	55.4
70	15.0	1.5	60	75.7	118.0	4.89	101.3	7.1	1.5	56.5	70.6	119.0	4.62	103.2	7.6	3.1	56.2	68.0	120.0	4.52	104.6	7.8	5.2	56.1
		1.5	80	95.1	113.0	6.10	92.2	5.4	1.4	57.7	90.1	114.0	5.81	94.2	5.7	2.9	57.4	87.7	115.0	5.71	95.5	5.9	4.9	57.3
		1.5	100	114.4	108.0	7.63	82.0	4.1	1.3	59.1	109.7	109.0	7.31	84.1	4.4	2.8	58.8	107.3	110.0	7.18	85.5	4.5	4.6	58.6
		1.5	120	133.9	104.0	9.57	71.3	3.2	1.3	60.5	129.3	105.0	9.24	73.5	3.3	2.6	60.2	127.1	106.0	9.11	74.9	3.4	4.4	60.0
	22.5	3.1	60	76.7	125.0	4.93	108.2	7.4	1.5	60.4	71.3	127.0	4.63	111.2	8.0	3.1	60.1	68.5	128.0	4.52	112.6	8.3	5.2	60.0
		3.1	80	95.9	119.0	6.16	98.0	5.7	1.4	61.3	90.8	121.0	5.85	101.0	6.1	2.9	61.0	88.1	122.0	5.73	102.5	6.2	4.9	60.9
		3.1	100	114.9	112.0	7.67	85.8	4.3	1.3	62.4	110.2	115.0	7.35	89.9	4.6	2.8	62.0	107.7	116.0	7.21	91.4	4.7	4.6	61.9
		3.1	120	134.5	109.0	9.65	76.1	3.3	1.3	63.2	129.6	108.0	9.28	76.3	3.4	2.6	63.2	127.3	110.0	9.15	78.8	3.5	4.4	63.0
	30.0	5.2	60	77.3	130.0	5.00	112.9	7.6	1.5	62.5	71.7	132.0	4.68	116.0	8.3	3.1	62.3	68.9	134.0	4.55	118.5	8.6	5.2	62.1
		5.2	80	96.4	123.0	6.23	101.7	5.8	1.4	63.2	91.1	125.0	5.91	104.8	6.2	2.9	63.0	88.4	126.0	5.78	106.3	6.4	4.9	62.9
		5.2	100	115.6	117.0	7.76	90.5	4.4	1.3	64.0	110.5	118.0	7.40	92.7	4.7	2.8	63.8	107.9	119.0	7.26	94.2	4.8	4.6	63.7
		5.1	120	134.8	111.0	9.71	77.8	3.3	1.3	64.8	130.0	112.0	9.36	80.1	3.5	2.6	64.7	127.5	113.0	9.20	81.6	3.6	4.4	64.6
80	15.0	1.5	60	77.6	132.0	4.92	115.2	7.9	1.5	64.6	71.9	134.0	4.59	118.3	8.5	3.1	64.2	69.1	136.0	4.46	120.8	8.9	5.2	63.9
		1.5	80	96.8	126.0	6.16	105.0	6.0	1.4	66.0	91.4	128.0	5.82	108.1	6.4	2.9	65.6	88.6	129.0	5.69	109.6	6.6	4.9	65.4
		1.5	100	116.1	121.0	7.70	94.7	4.6	1.3	67.4	110.8	122.0	7.33	97.0	4.9	2.8	67.1	108.2	123.0	7.18	98.5	5.0	4.6	66.9
		1.5	120	135.5	116.0	9.68	83.0	3.5	1.3	68.9	130.4	117.0	9.28	85.3	3.7	2.6	68.6	127.9	118.0	9.11	86.9	3.8	4.4	68.4
	22.5	3.0	60	78.7	140.0	4.97	123.0	8.3	1.5	69.1	72.8	144.0	4.60	128.3	9.2	3.1	68.6	69.6	144.0	4.45	128.8	9.5	5.2	68.6
		3.0	80	97.9	134.0	6.23	112.7	6.3	1.4	70.0	92.1	136.0	5.86	116.0	6.8	2.9	69.7	89.2	138.0	5.72	118.5	7.1	4.9	69.5
		3.0	100	116.9	127.0	7.77	100.5	4.8	1.3	71.1	111.5	129.0	7.37	103.8	5.1	2.8	70.8	108.7	130.0	7.21	105.4	5.3	4.6	70.6
		3.0	120	136.2	121.6	9.76	88.3	3.7	1.3	72.2	130.9	122.8	9.33	91.0	3.9	2.6	71.9	128.2	123.6	9.16	92.3	4.0	4.4	71.8
	30.0	5.0	60	79.5	146.0	5.03	128.8	8.5	1.4	71.4	73.2	148.0	4.65	132.1	9.3	3.1	71.2	70.0	150.0	4.48	134.7	9.8	5.2	71.0
		5.0	80	99.2	144.0	6.34	122.4	6.7	1.4	71.8	92.8	144.0	5.92	123.8	7.1	2.9	71.7	89.5	142.0	5.76	122.3	7.2	4.9	71.8
		5.0	100	117.5	131.3	7.87	104.4	4.9	1.3	73.0	111.8	133.3	7.45	107.9	5.2	2.8	72.8	109.0	134.5	7.28	109.6	5.4	4.6	72.7
		5.0	120	136.6	124.3	9.83	90.8	3.7	1.3	73.9	131.2	125.8	9.39	93.7	3.9	2.6	73.8	128.4	126.7	9.20	95.3	4.0	4.4	73.6

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

WRA, WCA 150 – Cooling

Source			ELT °F	Load Flow 18.75 GPM						Load Flow 28.13 GPM						Load Flow 37.5 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	18.75	2.3	50	37.9	113.0	4.78	129.3	23.6	2.3	53.8	41.5	120.0	4.89	136.7	24.5	4.7	54.6	43.3	125.0	5.00	142.1	25.0	7.8	55.2
		2.3	60	46.1	130.0	4.89	146.7	26.6	2.2	55.6	50.0	140.0	5.01	157.1	27.9	4.5	56.8	52.2	146.0	5.15	163.6	28.3	7.5	57.4
		2.3	70	54.0	150.0	5.03	167.2	29.8	2.2	57.8	58.6	160.0	5.18	177.7	30.9	4.4	59.0	61.1	166.0	5.34	184.2	31.1	7.3	59.7
		2.2	80	62.1	168.0	5.21	185.8	32.2	2.1	59.8	67.1	182.0	5.41	200.5	33.6	4.3	61.4	70.0	188.0	5.59	207.1	33.7	7.1	62.1
		2.2	90	69.7	190.0	5.44	208.6	34.9	2.0	62.2	75.5	204.0	5.69	223.4	35.8	4.2	63.8	78.7	212.0	5.91	232.2	35.9	6.9	64.8
	28.13	4.7	50	37.7	115.0	4.57	130.6	25.2	2.3	49.3	41.3	123.0	4.65	138.9	26.4	4.7	49.9	43.2	128.0	4.76	144.2	26.9	7.8	50.3
		4.7	60	45.7	134.0	4.62	149.8	29.0	2.2	50.6	49.9	142.0	4.72	158.1	30.1	4.5	51.2	52.1	148.0	4.85	164.5	30.5	7.5	51.7
		4.7	70	53.8	152.0	4.71	168.1	32.2	2.2	52.0	58.3	164.0	4.84	180.5	33.9	4.4	52.8	60.9	170.0	4.98	187.0	34.2	7.3	53.3
		4.7	80	61.7	172.0	4.84	188.5	35.5	2.1	53.4	66.8	186.0	5.01	203.1	37.1	4.3	54.4	69.7	194.0	5.17	211.7	37.5	7.1	55.0
		4.7	90	69.3	194.0	5.02	211.1	38.6	2.0	55.0	75.1	210.0	5.25	227.9	40.0	4.2	56.2	78.3	220.0	5.43	238.5	40.5	6.9	57.0
50	18.75	7.9	50	37.6	116.0	4.54	131.5	25.5	2.3	47.0	41.2	124.0	4.60	139.7	26.9	4.7	47.5	43.1	129.0	4.71	145.1	27.4	7.8	47.7
		7.9	60	45.7	134.0	4.56	149.6	29.4	2.2	48.0	49.8	144.0	4.64	159.8	31.0	4.5	48.5	52.0	150.0	4.76	166.3	31.5	7.5	48.9
		7.8	70	53.6	154.0	4.62	169.8	33.3	2.2	49.1	58.2	166.0	4.73	182.2	35.1	4.4	49.7	60.8	172.0	4.86	188.6	35.4	7.3	50.1
		7.8	80	61.4	174.0	4.72	190.1	36.8	2.1	50.1	66.5	190.0	4.87	206.6	39.0	4.3	51.0	69.4	198.0	5.06	215.3	39.1	7.1	51.5
		7.8	90	69.1	196.0	4.91	212.7	40.0	2.0	51.3	74.8	214.0	5.08	231.3	42.1	4.2	52.3	78.2	222.0	5.27	240.0	42.1	6.9	52.8
	28.13	2.2	50	38.4	109.0	5.38	127.3	20.3	2.3	63.6	41.8	116.0	5.48	134.7	21.2	4.7	64.4	43.7	119.0	5.60	138.1	21.3	7.8	64.7
		2.2	60	46.6	126.0	5.48	144.7	23.0	2.2	65.4	50.5	134.0	5.61	153.1	23.9	4.5	66.3	52.5	140.0	5.74	159.6	24.4	7.5	67.0
		2.2	70	54.6	144.0	5.63	163.2	25.6	2.2	67.4	59.1	154.0	5.78	173.7	26.6	4.4	68.5	61.5	160.0	5.94	180.3	26.9	7.3	69.2
		2.2	80	62.5	164.0	5.82	183.9	28.2	2.1	69.6	67.5	176.0	6.02	196.5	29.3	4.3	71.0	70.3	182.0	6.20	203.1	29.4	7.1	71.7
		2.2	90	70.4	184.0	6.06	204.7	30.4	2.0	71.8	75.9	198.0	6.31	219.5	31.4	4.1	73.4	79.1	204.0	6.51	226.2	31.3	6.9	74.1
	37.5	4.5	50	38.2	111.0	5.16	128.6	21.5	2.3	59.1	41.6	118.0	5.25	135.9	22.5	4.7	59.7	43.5	122.0	5.35	140.3	22.8	7.8	60.0
		4.5	60	46.3	128.0	5.22	145.8	24.5	2.2	60.4	50.2	138.0	5.33	156.2	25.9	4.5	61.1	52.4	142.0	5.45	160.6	26.0	7.5	61.4
		4.5	70	54.4	146.0	5.32	164.2	27.4	2.2	61.7	58.8	158.0	5.45	176.6	29.0	4.4	62.6	61.3	164.0	5.59	183.1	29.3	7.3	63.0
		4.5	80	62.1	168.0	5.46	186.6	30.8	2.1	63.3	67.2	180.0	5.62	199.2	32.0	4.3	64.2	70.0	188.0	5.77	207.7	32.6	7.1	64.8
		4.5	90	69.9	188.0	5.64	207.2	33.3	2.0	64.7	75.5	204.0	5.85	224.0	34.9	4.2	65.9	78.7	212.0	6.04	232.6	35.1	6.9	66.5
	37.5	7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3	43.4	124.0	5.31	142.1	23.4	7.8	57.6
		7.6	60	46.1	130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7
		7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9
		7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2
		7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4	36.2	4.2	62.0	78.5	216.0	5.86	236.0	36.8	6.9	62.6
70	18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3	15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8	84.0
		2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1
		2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4
		2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7
		2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0	7.67	208.2	23.7	4.1	92.2	79.9	190.0	7.86	216.8	24.2	6.9	93.1
	28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5
		4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9
		4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5
		4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1
		4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19	212.6	26.1	4.1	85.1	79.5	196.0	7.37	221.2	26.6	6.9	85.7
	37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2
		7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3
		7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5
		7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7
		7.1	90	71.0	178.0	6.84	201.3	26.0																

WRA, WCA 150 – Cooling (continued)

Source			ELT °F	Load Flow 18.75 GPM							Load Flow 28.13 GPM							Load Flow 37.5 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
18.75	1.9	50	41.5	80.0	10.57	116.1	7.6	2.3	122.4	44.0	84.0	10.67	120.4	7.9	4.7	122.8	45.4	86.0	10.79	122.8	8.0	7.8	123.1	
	1.8	60	50.0	94.0	10.72	130.6	8.8	2.2	123.9	53.0	99.0	10.83	136.0	9.1	4.5	124.5	54.6	102.0	10.95	139.4	9.3	7.5	124.9	
	1.8	70	58.4	109.0	10.86	146.1	10.0	2.1	125.6	61.8	115.0	10.98	152.5	10.5	4.4	126.3	63.7	119.0	11.12	157.0	10.7	7.3	126.7	
	1.8	80	66.7	125.0	11.04	162.7	11.3	2.1	127.4	70.6	132.0	11.20	170.2	11.8	4.2	128.2	72.7	136.0	11.35	174.7	12.0	7.1	128.6	
	1.8	90	75.1	140.0	11.27	178.5	12.4	2.0	129.0	79.3	150.0	11.47	189.2	13.1	4.1	130.2	81.8	154.0	11.65	193.8	13.2	6.9	130.7	
28.13	3.8	50	41.4	81.0	10.29	116.1	7.9	2.3	118.3	43.9	86.0	10.37	121.4	8.3	4.7	118.6	45.3	88.0	10.49	123.8	8.4	7.8	118.8	
	3.8	60	49.8	96.0	10.38	131.4	9.2	2.2	119.3	52.8	101.0	10.46	136.7	9.7	4.5	119.7	54.5	104.0	10.55	140.0	9.9	7.5	120.0	
	3.8	70	58.2	111.0	10.43	146.6	10.6	2.1	120.4	61.6	118.0	10.53	153.9	11.2	4.4	120.9	63.5	122.0	10.65	158.3	11.5	7.3	121.3	
	3.8	80	66.3	128.0	10.54	164.0	12.1	2.1	121.7	70.3	136.0	10.67	172.4	12.7	4.2	122.3	72.5	140.0	10.81	176.9	13.0	7.1	122.6	
	3.8	90	74.6	144.0	10.71	180.5	13.4	2.0	122.8	79.1	154.0	10.87	191.1	14.2	4.1	123.6	81.5	160.0	11.03	197.7	14.5	6.9	124.1	
37.5	6.4	50	41.3	82.0	10.21	116.9	8.0	2.3	116.2	43.9	86.0	10.29	121.1	8.4	4.7	116.5	45.3	89.0	10.40	124.5	8.6	7.8	116.6	
	6.4	60	49.7	97.0	10.26	132.0	9.5	2.2	117.0	52.7	102.0	10.32	137.2	9.9	4.5	117.3	54.4	105.0	10.42	140.6	10.1	7.5	117.5	
	6.4	70	57.9	113.0	10.29	148.1	11.0	2.1	117.9	61.5	120.0	10.37	155.4	11.6	4.4	118.3	63.4	124.0	10.48	159.8	11.8	7.3	118.5	
	6.4	80	66.2	129.0	10.37	164.4	12.4	2.1	118.8	70.2	138.0	10.48	173.8	13.2	4.3	119.3	72.4	142.0	10.61	178.2	13.4	7.1	119.5	
	6.3	90	74.4	146.0	10.50	181.8	13.9	2.0	119.7	78.9	156.0	10.65	192.3	14.7	4.1	120.3	81.4	162.0	10.79	198.8	15.0	6.9	120.6	
18.75	1.8	50	42.0	75.0	11.86	115.5	6.3	2.3	132.3	44.5	78.0	11.95	118.8	6.5	4.7	132.7	45.7	80.0	12.07	121.2	6.6	7.8	132.9	
	1.8	60	50.6	88.0	11.99	128.9	7.3	2.2	133.8	53.4	93.0	12.10	134.3	7.7	4.5	134.3	54.9	95.0	12.23	136.7	7.8	7.5	134.6	
	1.8	70	59.1	102.0	12.16	143.5	8.4	2.1	135.3	62.3	108.0	12.28	149.9	8.8	4.4	136.0	64.1	110.0	12.39	152.3	8.9	7.3	136.2	
	1.8	80	67.5	117.0	12.33	159.1	9.5	2.1	137.0	71.2	124.0	12.47	166.6	9.9	4.2	137.8	73.2	127.0	12.61	170.1	10.1	7.0	138.1	
	1.8	90	75.9	132.0	12.55	174.8	10.5	2.0	138.6	80.0	140.0	12.73	183.4	11.0	4.1	139.6	82.3	144.0	12.90	188.0	11.2	6.8	140.1	
28.13	3.7	50	41.9	76.0	11.57	115.5	6.6	2.3	128.2	44.3	80.0	11.65	119.8	6.9	4.7	128.5	45.6	82.0	11.76	122.1	7.0	7.8	128.7	
	3.7	60	50.4	90.0	11.65	129.8	7.7	2.2	129.2	53.2	95.0	11.74	135.1	8.1	4.5	129.6	54.8	97.0	11.85	137.4	8.2	7.5	129.8	
	3.7	70	58.8	105.0	11.74	145.1	8.9	2.1	130.3	62.1	111.0	11.83	151.4	9.4	4.4	130.8	63.9	114.0	11.94	154.8	9.5	7.3	131.0	
	3.7	80	67.2	120.0	11.84	160.4	10.1	2.1	131.4	70.9	128.0	11.95	168.8	10.7	4.2	132.0	73.0	132.0	12.08	173.2	10.9	7.0	132.3	
	3.7	90	75.5	136.0	11.99	176.9	11.3	2.0	132.6	79.8	144.0	12.14	185.4	11.9	4.1	133.2	82.0	150.0	12.29	191.9	12.2	6.9	133.6	
37.5	6.2	50	41.9	76.0	11.49	115.2	6.6	2.3	126.1	44.2	81.0	11.56	120.4	7.0	4.7	126.4	45.6	83.0	11.67	122.8	7.1	7.8	126.6	
	6.2	60	50.3	91.0	11.54	130.4	7.9	2.2	127.0	53.2	96.0	11.61	135.6	8.3	4.5	127.2	54.8	98.0	11.73	138.0	8.4	7.5	127.4	
	6.2	70	58.7	106.0	11.59	145.6	9.1	2.1	127.8	62.0	112.0	11.66	151.8	9.6	4.4	128.1	63.9	115.0	11.77	155.2	9.8	7.3	128.3	
	6.2	80	67.0	122.0	11.66	161.8	10.5	2.1	128.6	70.8	129.0	11.75	169.1	11.0	4.2	129.0	72.9	134.0	11.88	174.5	11.3	7.1	129.3	
	6.2	90	75.3	138.0	11.77	178.2	11.7	2.0	129.5	79.5	148.0	11.91	188.6	12.4	4.1	130.1	81.9	152.0	12.05	193.1	12.6	6.9	130.3	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 150 – Heating

Source			ELT °F	Load Flow 18.75 GPM							Load Flow 28.13 GPM							Load Flow 37.5 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	18.75	2.5	60	69.4	88.0	5.65	68.7	4.6	2.1	22.7	66.3	88.0	5.54	69.1	4.7	4.4	22.6	64.7	89.0	5.56	70.0	4.7	7.4	22.5
		2.5	80	89.0	84.0	7.05	59.9	3.5	2	23.6	86.0	84.0	6.92	60.4	3.6	4.2	23.6	84.5	85.0	6.93	61.4	3.6	6.9	23.5
		2.5	100	108.6	81.0	8.96	50.4	2.6	1.9	24.6	105.8	81.0	8.79	51.0	2.7	3.9	24.6	104.4	83.0	8.79	53.0	2.8	6.6	24.3
		2.5	120	128.6	81.0	11.50	41.8	2.1	1.8	25.5	125.8	81.0	11.33	42.3	2.1	3.7	25.5	120.0						6.2
	28.13	5.1	60	69.7	91.0	5.75	71.4	4.6	2.1	24.9	66.5	92.0	5.63	72.8	4.8	4.4	24.8	65.0	93.0	5.64	73.7	4.8	7.4	24.8
		5.1	80	89.3	87.0	7.16	62.6	3.6	2	25.6	86.3	88.0	7.02	64.0	3.7	4.2	25.4	84.7	88.0	7.02	64.1	3.7	6.9	25.4
		5.1	100	109.0	84.0	9.06	53.1	2.7	1.9	26.2	106.0	84.0	8.89	53.6	2.8	3.9	26.2	104.5	85.0	8.88	54.7	2.8	6.6	26.1
		5.0	120	128.9	83.0	11.59	43.4	2.1	1.8	26.9	125.9	83.0	11.41	44.1	2.1	3.7	26.9	120.0						6.2
	37.5	8.4	60	69.9	93.0	5.88	72.9	4.6	2.1	26.1	66.7	94.0	5.76	74.4	4.8	4.4	26.0	65.1	95.0	5.76	75.3	4.8	7.4	26.0
		8.4	80	89.5	89.0	7.29	64.1	3.6	2	26.6	86.4	90.0	7.15	65.6	3.7	4.2	26.5	84.8	90.0	7.14	65.6	3.7	6.9	26.5
		8.4	100	109.2	86.0	9.19	54.6	2.7	1.9	27.1	106.1	86.0	9.02	55.2	2.8	3.9	27.1	104.6	87.0	8.99	56.3	2.8	6.6	27.0
		8.4	120	129.1	85.0	11.71	45.0	2.1	1.8	27.6	126.0	85.0	11.54	45.6	2.2	3.7	27.6	120.0						6.2
50	18.75	2.4	60	70.8	101.0	5.79	81.2	5.1	2.1	31.3	67.2	101.0	5.64	81.7	5.2	4.4	31.3	65.4	102.0	5.64	82.7	5.3	7.4	31.2
		2.4	80	90.2	96.0	7.22	71.3	3.9	2	32.4	86.9	97.0	7.06	72.9	4.0	4.1	32.2	85.2	98.0	7.04	74.0	4.1	6.9	32.1
		2.4	100	109.9	93.0	9.15	61.8	3.0	1.9	33.4	106.7	94.0	8.94	63.5	3.1	3.9	33.2	105.0	94.0	8.90	63.8	3.1	6.6	33.2
		2.4	120	129.8	92.0	11.61	52.4	2.3	1.8	34.4	126.5	92.0	11.40	53.1	2.4	3.7	34.3	124.9	92.0	11.35	53.3	2.4	6.2	34.3
	28.13	4.9	60	71.2	105.0	5.90	84.9	5.2	2.1	34.0	67.5	106.0	5.74	86.4	5.4	4.4	33.9	65.7	107.0	5.73	87.4	5.5	7.4	33.8
		4.9	80	90.8	101.0	7.34	75.9	4.0	2	34.6	87.2	101.0	7.16	76.6	4.1	4.1	34.6	85.4	102.0	7.14	77.6	4.2	6.9	34.5
		4.9	100	110.3	97.0	9.27	65.4	3.1	1.9	35.4	106.9	97.0	9.06	66.1	3.1	3.9	35.3	105.3	99.0	9.01	68.2	3.2	6.6	35.1
		4.9	120	130.1	95.0	11.68	55.1	2.4	1.8	36.1	126.8	95.0	11.46	55.9	2.4	3.7	36.0	125.1	96.0	11.41	57.1	2.5	6.2	35.9
	37.5	8.1	60	71.5	108.0	6.04	87.4	5.2	2.1	35.3	67.7	109.0	5.87	89.0	5.4	4.4	35.3	65.9	110.0	5.86	90.0	5.5	7.4	35.2
		8.1	80	91.0	103.0	7.48	77.5	4.0	2	35.9	87.5	105.0	7.30	80.1	4.2	4.1	35.7	85.5	104.0	7.27	79.2	4.2	6.9	35.8
		8.1	100	110.7	100.0	9.39	68.0	3.1	1.9	36.4	107.1	100.0	9.17	68.7	3.2	3.9	36.3	105.3	100.0	9.13	68.8	3.2	6.6	36.3
		8.1	120	130.3	97.0	11.80	56.7	2.4	1.8	37.0	126.9	97.0	11.57	57.5	2.5	3.7	36.9	125.2	98.0	11.52	58.7	2.5	6.2	36.9
50	18.75	2.3	60	72.3	115.0	5.94	94.7	5.7	2.1	39.9	68.2	116.0	5.75	96.4	5.9	4.4	39.7	66.2	117.0	5.73	97.5	6.0	7.4	39.6
		2.3	80	91.7	110.0	7.42	84.7	4.3	2	41.0	87.9	111.0	7.20	86.4	4.5	4.1	40.8	86.0	112.0	7.16	87.6	4.6	6.9	40.7
		2.3	100	111.4	107.0	9.29	75.3	3.4	1.9	42.0	107.6	107.0	9.05	76.1	3.5	3.9	41.9	105.8	109.0	9.00	78.3	3.5	6.5	41.6
		2.3	120	131.3	106.0	11.72	66.0	2.7	1.8	43.0	127.5	105.0	11.45	65.9	2.7	3.7	43.0	125.7	106.0	11.38	67.2	2.7	6.2	42.8
	28.13	4.7	60	73.0	122.0	6.03	101.4	5.9	2.1	42.8	68.7	123.0	5.83	103.1	6.2	4.4	42.7	66.6	124.0	5.79	104.2	6.3	7.4	42.6
		4.7	80	92.4	116.0	7.49	90.4	4.5	2	43.6	88.3	117.0	7.27	92.2	4.7	4.1	43.4	86.3	118.0	7.22	93.4	4.8	6.9	43.4
		4.7	100	111.8	111.0	9.38	79.0	3.5	1.9	44.4	108.0	112.0	9.13	80.8	3.6	3.9	44.3	106.0	113.0	9.07	82.1	3.7	6.5	44.2
		4.7	120	131.5	108.0	11.81	67.7	2.7	1.8	45.2	127.8	110.0	11.52	70.7	2.8	3.7	45.0	125.8	109.0	11.44	69.9	2.8	6.2	45.0
	37.5	7.8	60	73.3	125.0	6.15	104.0	6.0	2.1	44.5	69.0	127.0	5.94	106.7	6.3	4.4	44.3	66.8	128.0	5.90	107.9	6.4	7.4	44.2
		7.8	80	92.7	119.0	7.61	93.0	4.6	2	45.0	88.5	120.0	7.38	94.8	4.8	4.1	44.9	86.5	121.0	7.32	96.0	4.8	6.9	44.9
		7.8	100	112.2	114.0	9.51	81.5	3.5	1.9	45.7	108.2	115.0	9.25	83.4	3.6	3.9	45.5	106.2	116.0	9.18	84.7	3.7	6.5	45.5
		7.8	120	131.7	110.0	11.91	69.3	2.7	1.8	46.3	127.9	111.0	11.63	71.3	2.8	3.7	46.2	125.9	111.0	11.55	71.6	2.8	6.2	46.2

WRA, WHA 150 – Heating (continued)

Source			ELT °F	Load Flow 18.75 GPM							Load Flow 28.13 GPM							Load Flow 37.5 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	18.75	2.2	60	74.1	132.0	6.03	111.4	6.4	2.1	48.1	69.5	134.0	5.80	114.2	6.8	4.4	47.8	67.1	134.0	5.76	114.4	6.8	7.4	47.8
		2.2	80	93.4	126.0	7.50	100.4	4.9	2	49.3	89.0	127.0	7.25	102.3	5.1	4.1	49.1	86.8	128.0	7.18	103.5	5.2	6.9	49.0
		2.2	100	112.9	121.0	9.41	88.9	3.8	1.9	50.5	108.7	122.0	9.11	90.9	3.9	3.9	50.3	106.6	123.0	9.03	92.2	4.0	6.5	50.2
		2.2	120	132.6	118.0	11.82	77.6	2.9	1.8	51.7	128.5	119.0	11.51	79.7	3.0	3.7	51.5	126.3	119.0	11.42	80.0	3.1	6.2	51.5
	28.13	4.5	60	74.9	140.0	6.14	119.0	6.7	2.1	51.5	70.1	142.0	5.89	121.9	7.1	4.4	51.3	67.6	142.0	5.83	122.1	7.1	7.3	51.3
		4.5	80	94.1	132.0	7.61	106.0	5.1	2	52.5	89.5	134.0	7.33	109.0	5.4	4.1	52.3	87.3	136.0	7.26	111.2	5.5	6.9	52.1
		4.5	100	113.5	127.0	9.51	94.6	3.9	1.9	53.3	109.1	128.0	9.19	96.6	4.1	3.9	53.1	106.9	129.0	9.09	98.0	4.2	6.5	53.0
		4.5	120	133.1	123.0	11.92	82.3	3.0	1.8	54.1	128.7	123.0	11.60	83.4	3.1	3.7	54.1	126.6	124.0	11.49	84.8	3.2	6.2	54.0
	37.5	7.5	60	75.4	144.0	6.27	122.6	6.7	2.1	53.5	70.4	146.0	6.01	125.5	7.1	4.4	53.3	67.9	148.0	5.95	127.7	7.3	7.3	53.2
		7.5	80	94.5	136.0	7.74	109.6	5.2	2	54.2	89.8	138.0	7.45	112.6	5.4	4.1	54.0	87.5	140.0	7.37	114.8	5.6	6.9	53.9
		7.5	100	113.9	130.0	9.63	97.1	4.0	1.9	54.8	109.4	132.0	9.30	100.3	4.2	3.9	54.7	107.0	132.0	9.20	100.6	4.2	6.5	54.6
		7.5	120	133.3	125.0	12.05	83.9	3.0	1.8	55.5	129.0	126.0	11.71	86.0	3.2	3.7	55.4	126.8	128.0	11.61	88.4	3.2	6.2	55.3
70	18.75	2.2	60	76.0	150.0	6.16	129.0	7.1	2.1	56.2	70.8	152.0	5.88	131.9	7.6	4.4	55.9	68.1	152.0	5.81	132.2	7.7	7.3	55.9
		2.2	80	95.1	142.0	7.64	115.9	5.4	2	57.6	90.2	144.0	7.33	119.0	5.8	4.1	57.3	87.8	146.0	7.25	121.3	5.9	6.9	57.1
		2.1	100	114.5	136.0	9.53	103.5	4.2	1.9	59.0	109.8	138.0	9.18	106.7	4.4	3.9	58.6	107.5	140.0	9.07	109.1	4.5	6.5	58.4
		2.1	120	134.1	132.0	11.97	91.1	3.2	1.8	60.3	129.5	134.0	11.61	94.4	3.4	3.7	59.9	127.1	134.0	11.49	94.8	3.4	6.2	59.9
	28.13	4.4	60	76.9	158.0	6.30	136.5	7.3	2.1	60.3	71.5	162.0	6.00	141.5	7.9	4.4	59.9	68.6	162.0	5.91	141.8	8.0	7.3	59.9
		4.4	80	96.2	152.0	7.77	125.5	5.7	2	61.1	90.9	154.0	7.44	128.6	6.1	4.1	60.9	88.2	154.0	7.34	128.9	6.1	6.9	60.8
		4.4	100	115.4	144.0	9.65	111.1	4.4	1.9	62.1	110.4	146.0	9.27	114.4	4.6	3.9	61.9	107.8	146.0	9.15	114.8	4.7	6.5	61.8
		4.4	120	134.7	138.0	12.09	96.7	3.3	1.8	63.1	129.8	138.0	11.70	98.1	3.5	3.7	63.0	127.5	140.0	11.56	100.6	3.5	6.2	62.9
	37.5	7.3	60	77.5	164.0	6.45	142.0	7.5	2.1	62.4	71.8	166.0	6.13	145.1	7.9	4.4	62.3	68.9	166.0	6.03	145.4	8.1	7.3	62.2
		7.3	80	96.6	156.0	7.91	129.0	5.8	2	63.1	91.2	158.0	7.57	132.2	6.1	4.1	63.0	88.5	160.0	7.47	134.5	6.3	6.9	62.8
		7.3	100	115.8	148.0	9.78	114.6	4.4	1.9	63.9	110.7	150.0	9.39	118.0	4.7	3.9	63.7	108.0	150.0	9.27	118.4	4.7	6.5	63.7
		7.3	120	135.1	142.0	12.23	100.3	3.4	1.8	64.7	130.2	144.0	11.82	103.7	3.6	3.7	64.5	127.7	144.0	11.66	104.2	3.6	6.2	64.4
80	18.75	2.1	60	77.9	168.0	6.34	146.4	7.8	2.1	64.4	72.1	170.0	6.01	149.5	8.3	4.4	64.1	69.2	172.0	5.91	151.8	8.5	7.3	63.8
		2.1	80	97.1	160.0	7.82	133.3	6.0	2	65.8	91.5	162.0	7.46	136.5	6.4	4.1	65.4	88.7	164.0	7.35	138.9	6.5	6.9	65.2
		2.1	100	116.4	154.0	9.70	120.9	4.7	1.9	67.1	111.1	156.0	9.29	124.3	4.9	3.9	66.7	108.3	156.0	9.15	124.8	5.0	6.5	66.7
		2.1	120	135.8	148.0	12.14	106.6	3.6	1.8	68.6	130.5	148.0	11.70	108.1	3.7	3.7	68.5	128.0	150.0	11.54	110.6	3.8	6.2	68.2
	28.13	4.3	60	79.2	180.0	6.51	157.8	8.1	2.1	68.8	72.9	182.0	6.15	161.0	8.7	4.4	68.6	69.8	184.0	6.03	163.4	8.9	7.3	68.4
		4.3	80	98.1	170.0	7.98	142.8	6.2	2	69.9	92.4	174.0	7.60	148.1	6.7	4.1	69.5	89.4	176.0	7.47	150.5	6.9	6.9	69.3
		4.3	100	118.1	170.0	9.97	136.0	5.0	1.9	70.3	112.1	170.0	9.46	137.7	5.3	3.9	70.2	109.0	168.0	9.29	136.3	5.3	6.5	70.3
		4.2	120	136.4	154.0	12.29	112.1	3.7	1.8	72.0	131.1	156.0	11.82	115.7	3.9	3.7	71.8	128.4	157.0	11.65	117.2	3.9	6.3	71.7
	37.5	7.1	60	80.5	192.0	6.74	169.0	8.3	2.1	71.0	73.5	190.0	6.31	168.5	8.8	4.4	71.0	70.2	192.0	6.18	170.9	9.1	7.3	70.9
		7.1	80	98.8	176.0	8.16	148.1	6.3	2	72.1	93.8	194.0	7.89	167.1	7.2	4.1	71.1	90.3	194.0	7.72	167.7	7.4	6.9	71.1
		7.1	100	117.8	167.0	10.01	132.8	4.9	1.9	72.9	112.0	169.0	9.57	136.3	5.2	3.9	72.7	109.1	171.0	9.41	138.9	5.3	6.5	72.6
		7.0	120	136.9	158.0	12.43	115.6	3.7	1.8	73.8	131.4	160.0	11.95	119.2	3.9	3.7	73.6	128.5	160.0	11.77	119.8	4.0	6.2	73.6

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

= Operation not recommended

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 180 – Cooling

Source			ELT °F	Load Flow 22.5 GPM							Load Flow 33.75 GPM							Load Flow 45.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
22.50	3.7	50	36.5	152.0	7.61	178.0	20.0	3.8	55.8	40.4	162.0	7.89	188.9	20.5	8.0	56.8	42.5	168.0	8.19	196.0	20.5	13.5	57.4	
	3.7	60	44.5	174.0	7.95	201.1	21.9	3.7	57.9	49.0	186.0	8.28	214.2	22.5	7.8	59.0	51.5	192.0	8.60	221.4	22.3	13.2	59.7	
	3.7	70	52.6	196.0	8.33	224.4	23.5	3.6	59.9	57.6	210.0	8.72	239.8	24.1	7.6	61.3	60.2	220.0	9.10	251.0	24.2	13.0	62.3	
	3.7	80	60.4	220.0	8.78	250.0	25.1	3.6	62.2	65.9	238.0	9.23	269.5	25.8	7.5	64.0	69.0	248.0	9.65	280.9	25.7	12.7	65.0	
	3.7	90	68.1	246.0	9.28	277.7	26.5	3.5	64.7	74.2	266.0	9.82	299.5	27.1	7.4	66.6	77.7	276.0	10.28	311.1	26.8	12.5	67.7	
40	8.0	50	36.3	154.0	7.29	178.9	21.1	3.8	50.6	40.2	166.0	7.53	191.7	22.0	8.0	51.4	42.4	172.0	7.83	198.7	22.0	13.5	51.8	
	7.9	60	44.4	176.0	7.57	201.8	23.2	3.7	52.0	48.7	190.0	7.88	216.9	24.1	7.8	52.9	51.2	198.0	8.20	226.0	24.1	13.2	53.4	
	7.9	70	52.2	200.0	7.91	227.0	25.3	3.6	53.5	57.2	216.0	8.27	244.2	26.1	7.6	54.5	60.0	226.0	8.63	255.5	26.2	13.0	55.1	
	7.9	80	59.9	226.0	8.30	254.3	27.2	3.6	55.1	65.5	244.0	8.73	273.8	28.0	7.5	56.2	68.7	254.0	9.13	285.1	27.8	12.7	56.9	
	7.9	90	67.6	252.0	8.74	281.8	28.8	3.5	56.7	73.8	274.0	9.25	305.6	29.6	7.4	58.1	77.3	286.0	9.70	319.1	29.5	12.5	58.9	
45.0	13.6	50	36.1	156.0	7.28	180.9	21.4	3.8	48.0	40.0	168.0	7.51	193.6	22.4	8.0	48.6	42.3	174.0	7.80	200.6	22.3	13.5	48.9	
	13.6	60	44.2	178.0	7.53	203.7	23.6	3.7	49.1	48.6	192.0	7.84	218.7	24.5	7.8	49.7	51.1	200.0	8.15	227.8	24.5	13.2	50.1	
	13.6	70	52.0	202.0	7.84	228.8	25.8	3.6	50.2	57.0	220.0	8.20	248.0	26.8	7.6	51.0	59.9	228.0	8.54	257.2	26.7	13.0	51.4	
	13.5	80	59.7	228.0	8.21	256.0	27.8	3.6	51.4	65.3	248.0	8.62	277.4	28.8	7.5	52.3	68.5	258.0	9.01	288.8	28.6	12.7	52.8	
	13.5	90	67.4	254.0	8.62	283.4	29.5	3.5	52.6	73.5	278.0	9.12	309.1	30.5	7.4	53.7	77.1	290.0	9.55	322.6	30.4	12.5	54.3	
22.50	3.6	50	37.0	146.0	8.41	174.7	17.4	3.8	65.5	40.8	156.0	8.68	185.6	18.0	8.0	66.5	42.9	160.0	8.97	190.6	17.8	13.5	66.9	
	3.6	60	45.1	168.0	8.73	197.8	19.2	3.7	67.6	49.3	180.0	9.05	210.9	19.9	7.8	68.7	51.7	186.0	9.36	218.0	19.9	13.2	69.4	
	3.6	70	53.1	190.0	9.11	221.1	20.9	3.6	69.7	57.9	204.0	9.48	236.4	21.5	7.6	71.0	60.6	212.0	9.84	245.6	21.5	13.0	71.8	
	3.6	80	61.0	214.0	9.54	246.6	22.4	3.6	71.9	66.4	230.0	9.98	264.1	23.1	7.5	73.5	69.4	238.0	10.38	273.4	22.9	12.7	74.3	
	3.6	90	68.8	238.0	10.04	272.3	23.7	3.5	74.2	74.8	256.0	10.56	292.0	24.3	7.3	76.0	78.1	268.0	11.00	305.5	24.4	12.5	77.2	
50	7.8	50	36.8	148.0	8.09	175.6	18.3	3.8	60.4	40.5	160.0	8.33	188.4	19.2	8.0	61.2	42.7	164.0	8.61	193.4	19.0	13.5	61.5	
	7.8	60	44.9	170.0	8.35	198.5	20.4	3.7	61.8	49.1	184.0	8.65	213.5	21.3	7.8	62.7	51.6	190.0	8.94	220.5	21.2	13.2	63.1	
	7.7	70	52.8	194.0	8.67	223.6	22.4	3.6	63.3	57.6	210.0	9.02	240.8	23.3	7.6	64.3	60.3	218.0	9.36	250.0	23.3	13.0	64.8	
	7.7	80	60.6	218.0	9.05	248.9	24.1	3.6	64.7	66.0	236.0	9.46	268.3	25.0	7.5	65.9	69.1	246.0	9.84	279.6	25.0	12.7	66.6	
	7.7	90	68.3	244.0	9.48	276.3	25.7	3.5	66.4	74.4	264.0	9.96	298.0	26.5	7.4	67.7	77.7	276.0	10.39	311.5	26.6	12.5	68.5	
45.0	13.3	50	36.7	150.0	8.08	177.6	18.6	3.8	57.9	40.4	162.0	8.31	190.4	19.5	8.0	58.5	42.6	166.0	8.58	195.3	19.4	13.5	58.7	
	13.3	60	44.7	172.0	8.31	200.4	20.7	3.7	58.9	49.0	186.0	8.60	215.3	21.6	7.8	59.6	51.5	192.0	8.88	222.3	21.6	13.2	59.9	
	13.2	70	52.6	196.0	8.60	225.4	22.8	3.6	60.0	57.4	212.0	8.94	242.5	23.7	7.6	60.8	60.2	220.0	9.27	251.7	23.7	13.0	61.2	
	13.2	80	60.3	222.0	8.95	252.6	24.8	3.6	61.2	65.8	240.0	9.34	271.9	25.7	7.5	62.1	68.9	250.0	9.72	283.2	25.7	12.7	62.6	
	13.2	90	68.0	248.0	9.35	279.9	26.5	3.5	62.4	74.1	268.0	9.82	301.5	27.3	7.4	63.4	77.6	280.0	10.24	314.9	27.3	12.5	64.0	
70	3.5	50	38.1	134.0	10.25	169.0	13.1	3.8	85.0	41.5	144.0	10.50	179.8	13.7	8.0	86.0	43.4	148.0	10.79	184.8	13.7	13.5	86.4	
	3.5	60	46.3	154.0	10.55	190.0	14.6	3.7	86.9	50.2	166.0	10.84	203.0	15.3	7.8	88.0	52.4	170.0	11.15	208.0	15.3	13.2	88.5	
	3.5	70	54.4	176.0	10.91	213.2	16.1	3.6	89.0	58.7	190.0	11.26	228.4	16.9	7.6	90.3	61.3	196.0	11.59	235.5	16.9	13.0	90.9	
	3.5	80	62.2	200.0	11.33	238.7	17.7	3.5	91.2	67.3	214.0	11.74	254.1	18.2	7.5	92.6	70.1	222.0	12.11	263.3	18.3	12.7	93.4	
	3.5	90	70.3	222.0	11.81	262.3	18.8	3.5	93.3	75.8	240.0	12.29	282.0	19.5	7.3	95.1	79.0	248.0	12.70	291.4	19.5	12.5	95.9	
33.75	7.4	50	37.9	136.0	9.90	169.8	13.7	3.8	80.1	41.3	146.0	10.12	180.6	14.4	8.0	80.7	43.3	150.0	10.39	185.5	14.4	13.5	81.0	
	7.4	60	46.0	158.0	10.14	192.6	15.6	3.7	81.4	49.9	170.0	10.40	205.5	16.3	7.8	82.2	52.3	174.0	10.68	210.5	16.3	13.2	82.5	
	7.4	70	54.0	180.0	10.43	215.6	17.3	3.6	82.8	58.5	194.0	10.74	230.7	18.1	7.6	83.7	61.1	200.0	11.05	237.7	18.1	13.0	84.1	
	7.4	80	61.9	204.0	10.78	240.8	18.9	3.5	84.3	67.0	220.0	11.14	258.0	19.7	7.5	85.3	69.9	228.0	11.51	267.3	19.8	12.7	85.8	
	7.4	90	69.7	228.0	11.18	266.2	20.4	3.5	85.8	75.4	246.0	11.62	285.7	21.2	7.3	86.9	78.5	258.0	12.03	299.1	21.4	12.5	87.7	
45.0	12.7	50	37.7	138.0	9.88	171.7	14.0	3.8	77.6	41.2	148.0	10.08	182.4	14.7	8.0	78.1	43.2	152.0	10.36	187.4	14.7	13.5	78.3	
	12.7	60	45.8	160.0	10.08	194.4	15.9	3.7	78.6	49.8	172.0	10.33	207.2	16.7	7.8	79.2	52.1	178.0	10.60	214.2	16.8	13.2	79.5	
	12.7	70	53.8	182.0	10.34	217.3	17.6	3.6	79.7	58.4	196.0	10.64	232.3	18.4	7.6	80.3	60.9	204.0	10.93	241.3	18.7	13.0	80.7	
	12.7	80	61.7	206.0	10.65	242.4	19.3	3.6	80.8	66.8	222.0	11.01	259.6	20.2	7.5	81.5	69.7	232.0	11.35	270.7	20.4	12.7	82.0	
	12.7	90	69.4	232.0	11.02	269.6	21.1	3.5	82.0	75.2	250.0	11.44	289.1	21.8	7.3	82.8	78.4	262.0	11.83	302.4	22.1	12.5	83.4	
33.75	7.3	50	38.4	130.0	10.96																			

WRA, WCA 180 – Cooling (continued)

Source			ELT °F	Load Flow 22.5 GPM						Load Flow 33.75 GPM						Load Flow 45.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)
22.50	3.3	50	40.3	109.0	15.49	161.9	7.0	3.8	124.4	43.2	115.0	15.73	168.7	7.3	7.9	125.0	44.8	118.0	16.00	172.6	7.4	13.5	125.3
	3.3	60	48.7	127.0	15.79	180.9	8.0	3.7	126.1	52.1	134.0	16.05	188.8	8.3	7.8	126.8	53.9	138.0	16.34	193.8	8.4	13.2	127.2
	3.3	70	57.0	146.0	16.14	201.1	9.0	3.6	127.9	60.8	156.0	16.43	212.1	9.5	7.6	128.9	62.9	160.0	16.75	217.2	9.6	12.9	129.3
	3.2	80	65.2	166.0	16.54	222.5	10.0	3.5	129.8	69.5	178.0	16.89	235.7	10.5	7.5	130.9	71.8	184.0	17.24	242.8	10.7	12.7	131.6
	3.2	90	73.3	188.0	17.01	246.1	11.1	3.5	131.9	78.1	200.0	17.43	259.5	11.5	7.3	133.1	80.8	208.0	17.81	268.8	11.7	12.5	133.9
	7.0	50	40.1	111.0	15.08	162.5	7.4	3.8	119.6	43.1	117.0	15.26	169.1	7.7	7.9	120.0	44.6	121.0	15.52	174.0	7.8	13.5	120.3
110	7.0	60	48.4	130.0	15.27	182.1	8.5	3.7	120.8	51.8	138.0	15.49	190.9	8.9	7.8	121.3	53.7	142.0	15.76	195.8	9.0	13.2	121.6
	6.9	70	56.7	150.0	15.52	203.0	9.7	3.6	122.0	60.5	160.0	15.77	213.8	10.1	7.6	122.7	62.7	164.0	16.06	218.8	10.2	12.9	123.0
	6.9	80	64.7	172.0	15.83	226.0	10.9	3.5	123.4	69.2	182.0	16.13	237.0	11.3	7.5	124.0	71.6	188.0	16.45	244.1	11.4	12.7	124.5
	6.9	90	72.8	194.0	16.20	249.3	12.0	3.5	124.8	77.8	206.0	16.55	262.5	12.4	7.3	125.6	80.5	214.0	16.91	271.7	12.7	12.5	126.1
	11.9	50	40.0	113.0	15.00	164.2	7.5	3.8	117.3	43.0	118.0	15.16	169.8	7.8	7.9	117.5	44.6	122.0	15.42	174.6	7.9	13.5	117.8
	11.9	60	48.3	132.0	15.15	183.7	8.7	3.7	118.2	51.7	140.0	15.34	192.3	9.1	7.8	118.5	53.6	144.0	15.60	197.3	9.2	13.2	118.8
45.0	11.9	70	56.5	152.0	15.36	204.4	9.9	3.6	119.1	60.4	162.0	15.56	215.1	10.4	7.6	119.6	62.5	168.0	15.84	222.0	10.6	12.9	119.9
	11.9	80	64.5	174.0	15.58	227.2	11.2	3.5	120.1	69.0	186.0	15.85	240.1	11.7	7.5	120.7	71.5	192.0	16.15	247.1	11.9	12.7	121.0
	11.9	90	72.6	196.0	15.89	250.2	12.3	3.5	121.1	77.6	210.0	16.22	265.4	12.9	7.3	121.8	80.3	218.0	16.55	274.5	13.2	12.5	122.2
	3.2	50	40.8	103.0	17.15	161.5	6.0	3.8	134.4	43.6	108.0	17.39	167.4	6.2	7.9	134.9	45.1	111.0	17.67	171.3	6.3	13.5	135.2
	3.2	60	49.3	120.0	17.51	179.8	6.9	3.7	136.0	52.5	127.0	17.77	187.6	7.1	7.8	136.7	54.2	130.0	18.05	191.6	7.2	13.2	137.0
	3.2	70	57.7	138.0	17.86	198.9	7.7	3.6	137.7	61.3	146.0	18.14	207.9	8.0	7.6	138.5	63.3	150.0	18.45	213.0	8.1	12.9	138.9
120	3.2	80	66.0	158.0	18.26	220.3	8.7	3.5	139.6	70.0	168.0	18.61	231.5	9.0	7.5	140.6	72.4	172.0	18.95	236.7	9.1	12.7	141.0
	6.9	50	40.7	105.0	16.73	162.1	6.3	3.8	129.6	43.4	111.0	16.93	168.8	6.6	7.9	130.0	45.0	113.0	17.20	171.7	6.6	13.5	130.2
	6.9	60	49.1	123.0	16.98	181.0	7.2	3.7	130.7	52.3	130.0	17.19	188.7	7.6	7.8	131.2	54.0	134.0	17.45	193.6	7.7	13.2	131.5
	6.9	70	57.4	142.0	17.22	200.8	8.2	3.6	131.9	61.1	150.0	17.45	209.5	8.6	7.6	132.4	63.1	156.0	17.74	216.6	8.8	12.9	132.8
	6.8	80	65.6	162.0	17.52	221.8	9.2	3.5	133.1	69.8	172.0	17.80	232.8	9.7	7.5	133.8	72.1	178.0	18.11	239.8	9.8	12.7	134.2
	6.8	90	73.6	184.0	17.88	245.0	10.3	3.5	134.5	78.4	196.0	18.22	258.2	10.8	7.3	135.3	81.0	202.0	18.56	265.3	10.9	12.5	135.7
45.0	11.8	50	40.6	106.0	16.65	162.8	6.4	3.8	127.2	43.4	112.0	16.85	169.5	6.6	7.9	127.5	44.9	115.0	17.10	173.4	6.7	13.5	127.7
	11.7	60	49.0	124.0	16.85	181.5	7.4	3.7	128.1	52.2	132.0	17.04	190.2	7.7	7.8	128.5	54.0	136.0	17.29	195.0	7.9	13.2	128.7
	11.7	70	57.2	144.0	17.04	202.2	8.4	3.6	129.0	61.0	152.0	17.24	210.8	8.8	7.6	129.4	63.0	158.0	17.52	217.8	9.0	12.9	129.7
	11.7	80	65.4	164.0	17.29	223.0	9.5	3.5	129.9	69.7	174.0	17.52	233.8	9.9	7.5	130.4	71.9	182.0	17.83	242.9	10.2	12.7	130.8
	11.7	90	73.5	186.0	17.59	246.0	10.6	3.5	130.9	78.1	200.0	17.89	261.1	11.2	7.3	131.6	80.8	206.0	18.22	268.2	11.3	12.5	131.9

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Terperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 180 – Heating

Source			ELT °F	Load Flow 22.5 GPM							Load Flow 33.75 GPM							Load Flow 45.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	22.50	4.0	60	71.2	126.0	8.55	96.8	4.3	3.6	21.4	67.5	127.0	8.36	98.5	4.5	7.6	21.2	65.7	128.0	8.42	99.3	4.5	13.0	21.2
		4.0	80	90.9	123.0	10.55	87.0	3.4	3.5	22.3	87.3	124.0	10.33	88.7	3.5	7.3	22.1	85.6	125.0	10.37	89.6	3.5	12.5	22.0
		4.0	100	110.7	120.0	13.15	75.1	2.7	3.3	23.3	107.2	121.0	12.90	77.0	2.7	7.1	23.2	105.4	122.0	12.91	77.9	2.8	12.1	23.1
		4.0	120	130.7	120.0	16.33	64.3	2.2	3.2	24.3	127.1	120.0	16.08	65.1	2.2	6.9	24.2	125.4	121.0	16.09	66.1	2.2	11.8	24.1
	33.75	8.4	60	71.7	132.0	8.80	102.0	4.4	3.6	24.0	67.9	134.0	8.59	104.7	4.6	7.6	23.8	66.0	134.0	8.64	104.5	4.5	13.0	23.8
		8.4	80	91.4	128.0	10.80	91.2	3.5	3.4	24.6	87.6	129.0	10.56	93.0	3.6	7.3	24.5	85.8	130.0	10.59	93.9	3.6	12.5	24.4
		8.4	100	111.1	125.0	13.39	79.3	2.7	3.3	25.3	107.4	125.0	13.12	80.2	2.8	7.1	25.2	105.6	126.0	13.13	81.2	2.8	12.1	25.2
		8.4	120	130.9	123.0	16.53	66.6	2.2	3.2	26.1	127.3	124.0	16.26	68.5	2.2	6.9	25.9	125.5	124.0	16.26	68.5	2.2	11.8	25.9
	45.0	14.2	60	72.1	136.0	9.09	105.0	4.4	3.6	25.3	68.2	138.0	8.88	107.7	4.6	7.6	25.2	66.1	138.0	8.92	107.6	4.5	13.0	25.2
		14.2	80	91.7	132.0	11.09	94.1	3.5	3.4	25.8	87.8	132.0	10.84	95.0	3.6	7.3	25.8	86.0	134.0	10.87	96.9	3.6	12.5	25.7
		14.2	100	111.3	127.0	13.68	80.3	2.7	3.3	26.4	107.6	128.0	13.41	82.2	2.8	7.1	26.3	105.7	129.0	13.41	83.2	2.8	12.1	26.3
		14.2	120	131.1	125.0	16.83	67.6	2.2	3.2	27.0	127.5	126.0	16.51	69.6	2.2	6.9	26.9	125.6	126.0	16.51	69.6	2.2	11.8	26.9
40	22.50	3.9	60	72.8	144.0	8.91	113.6	4.7	3.6	29.9	68.7	146.0	8.67	116.4	4.9	7.6	29.7	66.5	146.0	8.69	116.3	4.9	13.0	29.7
		3.9	80	92.4	140.0	10.94	102.7	3.7	3.4	30.9	88.3	140.0	10.66	103.6	3.8	7.3	30.8	86.3	142.0	10.67	105.6	3.9	12.5	30.6
		3.9	100	112.1	136.0	13.54	89.8	2.9	3.3	32.0	108.1	136.0	13.24	90.8	3.0	7.1	31.9	106.1	138.0	13.23	92.8	3.1	12.1	31.7
		3.9	120	131.9	134.0	16.67	77.1	2.4	3.2	33.1	128.1	136.0	16.31	80.3	2.4	6.9	32.9	126.0	136.0	16.29	80.4	2.4	11.8	32.9
	33.75	8.2	60	73.5	152.0	9.14	120.8	4.9	3.6	32.8	69.1	154.0	8.87	123.7	5.1	7.6	32.7	66.8	154.0	8.89	123.7	5.1	13.0	32.7
		8.2	80	93.0	146.0	11.17	107.9	3.8	3.4	33.6	88.8	148.0	10.86	110.9	4.0	7.3	33.4	86.6	148.0	10.86	110.9	4.0	12.5	33.4
		8.1	100	112.6	142.0	13.76	95.0	3.0	3.3	34.4	108.4	142.0	13.42	96.2	3.1	7.1	34.3	106.4	144.0	13.39	98.3	3.2	12.1	34.2
		8.1	120	132.4	140.0	16.84	82.5	2.4	3.2	35.1	128.3	140.0	16.50	83.7	2.5	6.9	35.0	126.2	140.0	16.47	83.8	2.5	11.8	35.0
	45.0	13.9	60	73.9	156.0	9.42	123.9	4.9	3.6	34.5	69.4	158.0	9.14	126.8	5.1	7.6	34.4	67.1	160.0	9.15	128.8	5.1	13.0	34.3
		13.9	80	93.3	150.0	11.43	111.0	3.8	3.4	35.1	89.0	152.0	11.12	114.1	4.0	7.3	34.9	86.8	152.0	11.11	114.1	4.0	12.5	34.9
		13.8	100	112.8	144.0	14.03	96.1	3.0	3.3	35.7	108.7	146.0	13.68	99.3	3.1	7.1	35.6	106.5	146.0	13.63	99.5	3.1	12.1	35.6
		13.8	120	132.6	142.0	17.11	83.6	2.4	3.2	36.3	128.4	142.0	16.76	84.8	2.5	6.9	36.2	126.4	144.0	16.72	86.9	2.5	11.8	36.1
50	22.50	3.8	60	74.6	164.0	9.17	132.7	5.2	3.6	38.2	69.8	166.0	8.87	135.7	5.5	7.6	37.9	67.4	166.0	8.87	135.7	5.5	13.0	37.9
		3.8	80	94.0	158.0	11.20	119.8	4.1	3.4	39.4	89.5	160.0	10.86	122.9	4.3	7.3	39.1	87.1	160.0	10.83	123.0	4.3	12.5	39.1
		3.8	100	113.7	154.0	13.83	106.8	3.3	3.3	40.5	109.1	154.0	13.41	108.2	3.4	7.1	40.4	106.9	156.0	13.35	110.4	3.4	12.1	40.2
		3.8	120	133.5	152.0	16.95	94.1	2.6	3.2	41.6	129.0	152.0	16.56	95.5	2.7	6.9	41.5	126.8	152.0	16.50	95.7	2.7	11.8	41.5
	33.75	8.0	60	75.5	174.0	9.42	141.8	5.4	3.6	41.6	70.4	176.0	9.09	145.0	5.7	7.6	41.4	67.9	178.0	9.08	147.0	5.7	13.0	41.3
		8.0	80	94.8	166.0	11.43	127.0	4.3	3.4	42.5	90.0	168.0	11.06	130.2	4.4	7.3	42.3	87.6	170.0	11.02	132.4	4.5	12.5	42.2
		7.9	100	114.2	160.0	14.04	112.1	3.3	3.3	43.4	109.6	162.0	13.59	115.6	3.5	7.1	43.1	107.3	164.0	13.52	117.9	3.6	12.1	43.0
		7.9	120	134.0	158.0	17.18	99.4	2.7	3.2	44.1	129.4	158.0	16.77	100.8	2.8	6.9	44.0	127.0	158.0	16.69	101.0	2.8	11.8	44.0
	45.0	13.5	60	76.0	180.0	9.72	146.8	5.4	3.6	43.5	70.8	182.0	9.37	150.0	5.7	7.6	43.3	68.2	184.0	9.35	152.1	5.8	13.0	43.2
		13.5	80	95.3	172.0	11.71	132.0	4.3	3.4	44.1	90.3	174.0	11.33	135.3	4.5	7.3	44.0	87.8	176.0	11.28	137.5	4.6	12.5	43.9
		13.5	100	114.8	166.0	14.30	117.2	3.4	3.3	44.8	109.8	166.0	13.84	118.8	3.5	7.1	44.7	107.5	168.0	13.76	121.0	3.6	12.1	44.6
		13.5	120	134.2	160.0	17.46	100.4	2.7	3.2	45.5	129.6	162.0	17.03	103.9	2.8	6.9	45.4	127.2	162.0	16.95	104.1	2.8	11.8	45.4

WRA, WHA 180 – Heating (continued)

Source			ELT °F	Load Flow 22.5 GPM							Load Flow 33.75 GPM							Load Flow 45.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	22.50	3.7	60	76.5	186.0	9.47	153.7	5.8	3.6	46.3	71.1	188.0	9.11	156.9	6.0	7.6	46.1	68.4	190.0	9.08	159.0	6.1	13.0	45.9
		3.7	80	95.8	178.0	11.48	138.8	4.5	3.4	47.7	90.7	180.0	11.08	142.2	4.8	7.3	47.4	88.1	182.0	11.02	144.4	4.8	12.5	47.2
		3.7	100	115.5	174.0	14.07	126.0	3.6	3.3	48.8	110.3	174.0	13.59	127.6	3.8	7.1	48.7	107.8	176.0	13.50	129.9	3.8	12.1	48.4
		3.7	120	135.1	170.0	17.31	110.9	2.9	3.2	50.1	130.1	170.0	16.83	112.6	3.0	6.9	50.0	127.6	170.0	16.72	112.9	3.0	11.8	50.0
	33.75	7.8	60	77.6	198.0	9.76	164.7	5.9	3.6	50.2	71.9	200.0	9.37	168.0	6.3	7.6	50.0	69.0	202.0	9.33	170.2	6.3	13.0	49.9
		7.8	80	96.9	190.0	11.75	149.9	4.7	3.4	51.1	91.4	192.0	11.31	153.4	5.0	7.3	50.9	88.6	194.0	11.24	155.6	5.1	12.5	50.8
		7.8	100	116.2	182.0	14.32	133.1	3.7	3.3	52.1	110.9	184.0	13.81	136.9	3.9	7.1	51.9	108.3	186.0	13.69	139.3	4.0	12.1	51.7
		7.8	120	135.6	176.0	17.56	116.1	2.9	3.2	53.1	130.5	178.0	17.03	119.9	3.1	6.9	52.9	127.9	178.0	16.90	120.3	3.1	11.7	52.9
	45.0	13.2	60	78.1	204.0	10.08	169.6	5.9	3.6	52.5	72.3	208.0	9.67	175.0	6.3	7.6	52.2	69.3	210.0	9.62	177.2	6.4	13.0	52.1
		13.2	80	97.4	196.0	12.06	154.8	4.8	3.4	53.1	91.7	198.0	11.60	158.4	5.0	7.3	53.0	88.9	200.0	11.52	160.7	5.1	12.5	52.9
		13.2	100	116.5	186.0	14.61	136.1	3.7	3.3	53.9	111.3	190.0	14.08	142.0	4.0	7.1	53.7	108.4	190.0	13.96	142.4	4.0	12.1	53.7
		13.2	120	136.0	180.0	17.84	119.1	3.0	3.2	54.7	130.8	182.0	17.29	123.0	3.1	6.9	54.5	128.2	184.0	17.15	125.5	3.1	11.7	54.4
70	22.50	3.6	60	78.5	208.0	9.83	174.5	6.2	3.6	54.5	72.6	212.0	9.40	179.9	6.6	7.6	54.0	69.5	214.0	9.34	182.1	6.7	13.0	53.8
		3.6	80	97.8	200.0	11.83	159.6	5.0	3.4	55.8	92.1	204.0	11.35	165.3	5.3	7.3	55.3	89.1	204.0	11.25	165.6	5.3	12.5	55.3
		3.6	100	117.2	194.0	14.40	144.9	3.9	3.3	57.1	111.6	196.0	13.84	148.8	4.1	7.1	56.8	108.8	198.0	13.70	151.2	4.2	12.1	56.6
		3.6	120	136.7	188.0	17.66	127.7	3.1	3.2	58.6	131.3	190.0	17.06	131.8	3.3	6.9	58.3	128.4	190.0	16.90	132.3	3.3	11.7	58.2
	33.75	7.6	60	79.7	222.0	10.17	187.3	6.4	3.6	58.9	73.4	226.0	9.72	192.8	6.8	7.6	58.6	70.1	228.0	9.64	195.1	6.9	13.0	58.4
		7.6	80	99.0	214.0	12.15	172.5	5.2	3.4	59.8	92.8	216.0	11.63	176.3	5.4	7.3	59.6	89.7	218.0	11.52	178.7	5.5	12.5	59.4
		7.6	100	118.1	204.0	14.69	153.9	4.1	3.3	60.9	112.2	206.0	14.09	157.9	4.3	7.1	60.6	109.2	208.0	13.94	160.4	4.4	12.1	60.5
		7.6	120	137.6	198.0	17.93	136.8	3.2	3.2	61.9	131.9	200.0	17.29	141.0	3.4	6.9	61.6	128.9	200.0	17.11	141.6	3.4	11.7	61.6
	45.0	13.0	60	80.4	230.0	10.52	194.1	6.4	3.6	61.4	73.9	234.0	10.04	199.7	6.8	7.6	61.1	70.5	236.0	9.95	202.0	6.9	13.0	61.0
		13.0	80	99.6	220.0	12.48	177.4	5.2	3.4	62.1	93.3	224.0	11.94	183.2	5.5	7.3	61.9	90.0	226.0	11.82	185.7	5.6	12.5	61.7
		12.9	100	118.7	210.0	15.00	158.8	4.1	3.3	62.9	112.7	214.0	14.38	164.9	4.4	7.1	62.7	109.6	216.0	14.22	167.5	4.5	12.1	62.6
		12.9	120	138.0	202.0	18.22	139.8	3.2	3.2	63.8	132.1	204.0	17.57	144.0	3.4	6.9	63.6	129.2	206.0	17.38	146.7	3.5	11.7	63.5
80	22.50	3.6	60	80.6	232.0	10.24	197.1	6.6	3.6	62.5	74.0	236.0	9.75	202.7	7.1	7.6	62.0	70.6	238.0	9.65	205.1	7.2	13.0	61.8
		3.5	80	99.9	224.0	12.23	182.3	5.4	3.4	63.8	93.4	226.0	11.67	186.2	5.7	7.3	63.5	90.2	230.0	11.54	190.6	5.8	12.5	63.1
		3.5	100	119.2	216.0	14.78	165.5	4.3	3.3	65.3	112.9	218.0	14.14	169.8	4.5	7.1	64.9	109.8	220.0	13.96	172.4	4.6	12.1	64.7
		3.5	120	138.7	210.0	18.04	148.4	3.4	3.2	66.8	132.4	210.0	17.35	150.8	3.5	6.9	66.6	129.4	212.0	17.14	153.5	3.6	11.7	66.4
	33.75	7.5	60	82.2	250.0	10.65	213.7	6.9	3.5	67.3	75.1	254.0	10.12	219.4	7.4	7.6	67.0	71.4	256.0	10.01	221.8	7.5	13.0	66.9
		7.5	80	101.2	238.0	12.61	195.0	5.5	3.4	68.4	94.3	242.0	12.01	201.0	5.9	7.3	68.1	90.8	244.0	11.86	203.5	6.0	12.5	67.9
		7.5	100	120.3	228.0	15.13	176.3	4.4	3.3	69.5	113.7	232.0	14.44	182.7	4.7	7.1	69.2	110.4	234.0	14.24	185.4	4.8	12.1	69.0
		7.5	120	139.6	220.0	18.36	157.3	3.5	3.2	70.7	133.2	222.0	17.62	161.9	3.7	6.8	70.4	130.0	224.0	17.39	164.7	3.8	11.7	70.2
	45.0	12.7	60	82.9	258.0	11.03	220.3	6.9	3.5	70.2	75.6	264.0	10.49	228.2	7.4	7.6	69.9	71.9	268.0	10.37	232.6	7.6	13.0	69.7
		12.7	80	101.9	246.0	12.97	201.7	5.6	3.4	71.0	94.9	252.0	12.36	209.8	6.0	7.3	70.7	91.3	254.0	12.19	212.4	6.1	12.5	70.6
		12.7	100	121.2	238.0	15.54	185.0	4.5	3.3	71.8	114.2	240.0	14.76	189.6	4.8	7	71.6	110.8	242.0	14.55	192.3	4.9	12.1	71.5
		12.7	120	140.1	226.0	18.72	162.1	3.5	3.2	72.8	134.3	242.0	18.15	180.0	3.9	6.8	72.0	130.8	242.0	17.84	181.1	4.0	11.7	72.0

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 240 – Cooling

Source			ELT °F	Load Flow 30.0 GPM						Load Flow 45.0 GPM						Load Flow 60.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)
30.0	5.3	50	37.6	186.0	8.98	216.7	20.7	5.4	54.4	41.2	198.0	9.36	230.0	21.1	11.4	55.3	43.2	204.0	9.88	237.7	20.7	19.5	55.8
	5.3	60	45.7	214.0	9.33	229.5	22.9	5.3	56.4	49.9	228.0	9.78	261.4	23.3	11.2	57.4	52.1	238.0	10.33	273.3	23.0	19.1	58.2
	5.3	70	53.7	244.0	9.77	277.4	25.0	5.2	58.5	58.4	262.0	10.31	297.2	25.4	11.0	59.8	60.9	272.0	10.90	309.2	24.9	18.8	60.6
	5.3	80	61.6	276.0	10.32	311.2	26.7	5.1	60.7	66.8	296.0	10.97	333.4	27.0	10.8	62.2	69.7	308.0	11.63	347.7	26.5	18.5	63.2
	5.3	90	69.5	308.0	10.98	345.5	28.0	5.0	63.0	75.2	332.0	11.76	372.2	28.2	10.6	64.8	78.5	346.0	12.51	388.7	27.6	18.2	65.9
40	11.4	50	37.3	190.0	8.65	219.5	22.0	5.4	49.8	41.0	202.0	9.00	232.7	22.4	11.4	50.3	43.0	210.0	9.49	242.4	22.1	19.5	50.8
	11.4	60	45.5	218.0	8.92	248.4	24.4	5.3	51.0	49.6	234.0	9.33	265.9	25.1	11.2	51.8	51.9	242.0	9.86	275.7	24.5	19.1	52.3
	11.4	70	53.5	248.0	9.29	279.7	26.7	5.2	52.4	58.1	268.0	9.78	301.4	27.4	11.0	53.4	60.7	278.0	10.36	313.3	26.8	18.8	53.9
	11.4	80	61.2	282.0	9.75	315.3	28.9	5.1	54.0	66.5	304.0	10.36	339.3	29.4	10.8	55.1	69.4	318.0	11.00	355.5	28.9	18.5	55.8
	11.3	90	68.9	316.0	10.33	351.3	30.6	5.0	55.6	74.8	342.0	11.08	379.8	30.9	10.6	56.9	78.1	358.0	11.80	398.3	30.3	18.2	57.7
60.0	19.6	50	37.2	192.0	8.78	222.0	21.9	5.4	47.4	40.9	204.0	9.11	235.1	22.4	11.4	47.8	42.9	212.0	9.59	244.7	22.1	19.5	48.2
	19.6	60	45.3	220.0	9.01	250.8	24.4	5.3	48.4	49.5	236.0	9.40	268.1	25.1	11.2	48.9	51.8	246.0	9.91	279.8	24.8	19.1	49.3
	19.6	70	53.2	252.0	9.33	283.8	27.0	5.2	49.5	57.9	272.0	9.80	305.5	27.7	11.0	50.2	60.6	282.0	10.37	317.4	27.2	18.8	50.6
	19.5	80	61.1	284.0	9.76	317.3	29.1	5.1	50.6	66.3	308.0	10.34	343.3	29.8	10.8	51.4	69.3	322.0	10.97	359.4	29.4	18.5	52.0
	19.5	90	68.7	320.0	10.29	355.1	31.1	5.0	51.8	74.5	348.0	11.01	385.6	31.6	10.6	52.9	77.9	362.0	11.72	402.0	30.9	18.2	53.4
30.0	5.2	50	38.0	180.0	10.04	214.3	17.9	5.4	64.3	41.5	192.0	10.42	227.6	18.4	11.4	65.2	43.4	198.0	10.92	235.3	18.1	19.5	65.7
	5.2	60	46.3	206.0	10.39	241.5	19.8	5.3	66.1	50.2	220.0	10.82	256.9	20.3	11.2	67.1	52.4	228.0	11.36	266.8	20.1	19.1	67.8
	5.2	70	54.3	236.0	10.82	272.9	21.8	5.2	68.2	58.7	254.0	11.33	292.7	22.4	11.0	69.5	61.3	262.0	11.91	302.7	22.0	18.8	70.2
	5.2	80	62.3	266.0	11.35	304.8	23.4	5.1	70.3	67.3	286.0	11.97	326.8	23.9	10.8	71.8	70.1	298.0	12.62	341.1	23.6	18.5	72.7
	5.2	90	70.0	300.0	12.00	340.9	25.0	5.0	72.7	75.7	322.0	12.74	365.5	25.3	10.6	74.4	78.8	336.0	13.48	382.0	24.9	18.2	75.5
50	11.2	50	37.9	182.0	9.72	215.2	18.7	5.4	59.6	41.3	196.0	10.06	230.3	19.5	11.4	60.2	43.3	202.0	10.54	238.0	19.2	19.5	60.6
	11.2	60	46.0	210.0	9.98	244.1	21.0	5.3	60.8	50.0	226.0	10.38	261.4	21.8	11.2	61.6	52.2	234.0	10.89	271.2	21.5	19.1	62.1
	11.2	70	54.0	240.0	10.33	275.3	23.2	5.2	62.2	58.4	260.0	10.80	296.9	24.1	11.0	63.2	61.0	270.0	11.37	308.8	23.8	18.8	63.7
	11.1	80	61.7	274.0	10.78	310.8	25.4	5.1	63.8	66.9	294.0	11.35	332.8	25.9	10.8	64.8	69.8	306.0	11.98	346.9	25.5	18.5	65.4
	11.1	90	69.6	306.0	11.34	344.7	27.0	5.0	65.3	75.2	332.0	12.05	373.1	27.6	10.6	66.6	78.5	346.0	12.75	389.5	27.1	18.2	67.3
60.0	19.2	50	37.7	184.0	9.84	217.6	18.7	5.4	57.3	41.2	198.0	10.17	232.7	19.5	11.4	57.8	43.2	204.0	10.64	240.3	19.2	19.5	58.0
	19.2	60	45.7	214.0	10.07	248.4	21.3	5.3	58.3	49.9	228.0	10.45	263.7	21.8	11.2	58.8	52.1	238.0	10.95	275.4	21.7	19.1	59.2
	19.2	70	53.7	244.0	10.37	279.4	23.5	5.2	59.3	58.4	262.0	10.83	299.0	24.2	11.0	60.0	60.9	274.0	11.38	312.8	24.1	18.8	60.4
	19.1	80	61.6	276.0	10.78	312.8	25.6	5.1	60.4	66.8	298.0	11.33	336.7	26.3	10.8	61.2	69.6	312.0	11.94	352.8	26.1	18.5	61.8
	19.1	90	69.3	310.0	11.30	348.6	27.4	5.0	61.6	75.0	338.0	11.99	378.9	28.2	10.6	62.6	78.3	352.0	12.67	395.2	27.8	18.2	63.2
70	5.0	50	38.9	166.0	12.46	208.5	13.3	5.4	83.9	42.2	176.0	12.82	219.8	13.7	11.4	84.7	44.0	180.0	13.31	225.4	13.5	19.5	85.0
	5.0	60	47.2	192.0	12.79	235.7	15.0	5.3	85.7	50.9	204.0	13.20	249.1	15.4	11.2	86.6	53.0	210.0	13.73	256.8	15.3	19.1	87.1
	5.0	70	55.3	220.0	13.20	265.1	16.7	5.2	87.7	59.6	234.0	13.68	280.7	17.1	11.0	88.7	61.9	242.0	14.25	290.6	17.0	18.8	89.4
	5.0	80	63.3	250.0	13.72	296.8	18.2	5.1	89.8	68.2	266.0	14.27	314.7	18.6	10.8	91.0	70.8	276.0	14.90	326.9	18.5	18.5	91.8
	5.0	90	71.3	280.0	14.32	328.9	19.6	5.0	91.9	76.7	300.0	15.00	351.2	20.0	10.6	93.4	79.6	312.0	15.71	365.6	19.9	18.2	94.4
45.0	10.8	50	38.8	168.0	12.10	209.3	13.9	5.4	79.3	42.0	180.0	12.43	222.4	14.5	11.4	79.9	43.9	184.0	12.90	228.0	14.3	19.5	80.1
	10.8	60	46.9	196.0	12.35	238.2	15.9	5.3	80.6	50.7	210.0	12.72	253.4	16.5	11.2	81.3	52.8	216.0	13.22	261.1	16.3	19.1	81.6
	10.8	70	55.1	224.0	12.68	267.3	17.7	5.2	81.9	59.3	240.0	13.11	284.7	18.3	11.0	82.7	61.7	250.0	13.65	296.6	18.3	18.8	83.2
	10.7	80	62.9	256.0	13.09	300.7	19.6	5.1	83.4	67.8	274.0	13.61	320.5	20.1	10.8	84.2	70.5	284.0	14.21	332.5	20.0	18.5	84.8
	10.7	90	70.9	286.0	13.61	332.5	21.0	5.0	84.8	76.2	310.0	14.25	358.6	21.8	10.6	85.9	79.3	322.0	14.92	372.9	21.6	18.2	86.6
60.0	18.5	50	38.7	170.0	12.21	211.7	13.9	5.4	77.1	41.9	182.0	12.52	224.7	14.5	11.4	77.5	43.8	186.0	12.99	230.3	14.3	19.5	77.7
	18.5	60	46.8	198.0	12.42	240.4	15.9	5.3	78.0	50.6	212.0	12.77	255.6	16.6	11.2	78.5	52.7	218.0	13.26	263.2	16.4	19.1	78.8
	18.5	70	54.9	226.0	12.70	269.3	17.8	5.2	79.0	59.2	244.0	13.11	288.7	18.6	11.0	79.6	61.6	252.0	13.63	298.5	18.5	18.8	80.0
	18.5	80	62.8	258.0	13.07	302.6	19.7	5.1	80.1	67.6	278.0	13.57	324.3	20.5	10.8	80.8	70.4	288.0	14.14	336.3	20.4	18.5	81.2
	18.4	90	70.7	290.0	13.54	336.2	21.4	5.0	81.2	76.0	314.0	14.16	362.3	22.2	10.6	82.1	79.1	328.0	14.81	378.5	22.2	18.2	

WRA, WCA 240 – Cooling (continued)

Source			ELT °F	Load Flow 30.0 GPM							Load Flow 45.0 GPM							Load Flow 60.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
30.0	4.7	50	41.1	134.0	19.40	200.2	6.9	5.4	123.3	43.7	142.0	19.70	209.2	7.2	11.4	123.9	45.2	144.0	20.16	212.8	7.1	19.5	124.2	
	4.7	60	49.5	158.0	19.67	225.1	8.0	5.3	125.0	52.6	166.0	20.02	234.3	8.3	11.2	125.6	54.3	170.0	20.50	240.0	8.3	19.1	126.0	
	4.7	70	57.9	182.0	20.02	250.3	9.1	5.2	126.7	61.4	194.0	20.42	263.7	9.5	11.0	127.6	63.4	198.0	20.93	269.4	9.5	18.8	128.0	
	4.7	80	66.1	208.0	20.46	277.8	10.2	5.1	128.5	70.2	220.0	20.88	291.3	10.5	10.8	129.4	72.5	226.0	21.48	299.3	10.5	18.5	130.0	
	4.7	90	74.4	234.0	20.97	305.6	11.2	5.0	130.4	79.0	248.0	21.47	321.3	11.6	10.6	131.4	81.5	256.0	22.15	331.6	11.6	18.2	132.1	
45.0	10.2	50	40.9	136.0	18.92	200.6	7.2	5.4	118.9	43.6	144.0	19.18	209.5	7.5	11.4	119.3	45.1	148.0	19.63	215.0	7.5	19.5	119.6	
	10.2	60	49.2	162.0	19.08	227.1	8.5	5.3	120.1	52.4	170.0	19.39	236.2	8.8	11.2	120.5	54.1	176.0	19.85	243.8	8.9	19.1	120.8	
	10.1	70	57.6	186.0	19.32	251.9	9.6	5.2	121.2	61.2	198.0	19.68	265.2	10.1	11.0	121.8	63.2	204.0	20.16	272.8	10.1	18.8	122.1	
	10.1	80	65.7	214.0	19.64	281.0	10.9	5.1	122.5	70.0	226.0	20.00	294.3	11.3	10.8	123.1	72.2	234.0	20.54	304.1	11.4	18.5	123.5	
	10.1	90	73.9	242.0	20.03	310.4	12.1	5.0	123.8	78.6	256.0	20.49	325.9	12.5	10.6	124.5	81.1	266.0	21.10	338.0	12.6	18.2	125.0	
60.0	17.5	50	40.8	138.0	18.94	202.7	7.3	5.4	116.8	43.5	146.0	19.21	211.6	7.6	11.4	117.1	45.0	150.0	19.64	217.0	7.6	19.5	117.2	
	17.5	60	49.2	162.0	19.06	227.1	8.5	5.3	117.6	52.4	172.0	19.36	238.1	8.9	11.2	117.9	54.1	178.0	19.77	245.5	9.0	19.1	118.2	
	17.5	70	57.5	188.0	19.22	253.6	9.8	5.2	118.5	61.0	202.0	19.54	268.7	10.3	11.0	119.0	63.1	206.0	20.00	274.3	10.3	18.8	119.1	
	17.5	80	65.6	216.0	19.46	282.4	11.1	5.1	119.4	69.8	230.0	19.85	297.8	11.6	10.8	119.9	72.1	238.0	20.36	307.5	11.7	18.5	120.2	
	17.4	90	73.7	244.0	19.82	311.6	12.3	5.0	120.4	78.4	260.0	20.27	329.2	12.8	10.6	121.0	81.0	270.0	20.85	341.2	12.9	18.2	121.4	
30.0	4.7	50	41.5	127.0	21.65	200.9	5.9	5.4	133.4	44.0	134.0	21.97	209.0	6.1	11.4	133.9	45.5	136.0	22.43	212.6	6.1	19.5	134.2	
	4.7	60	50.1	148.0	21.95	222.9	6.7	5.3	134.9	53.1	156.0	22.27	232.0	7.0	11.2	135.5	54.7	160.0	22.75	237.6	7.0	19.1	135.8	
	4.7	70	58.5	172.0	22.28	248.0	7.7	5.2	136.5	61.9	182.0	22.65	259.3	8.0	11.0	137.3	63.8	186.0	23.14	265.0	8.0	18.8	137.7	
	4.7	80	66.9	196.0	22.69	273.4	8.6	5.1	138.2	70.8	208.0	23.12	286.9	9.0	10.8	139.1	72.9	214.0	23.65	294.7	9.0	18.4	139.6	
	4.7	90	75.3	220.0	23.18	299.1	9.5	5.0	139.9	79.7	232.0	23.65	312.7	9.8	10.6	140.8	82.0	240.0	24.30	322.9	9.9	18.2	141.5	
45.0	10.0	50	41.4	129.0	21.18	201.3	6.1	5.4	128.9	44.0	136.0	21.45	209.2	6.3	11.4	129.3	45.4	138.0	21.89	212.7	6.3	19.5	129.5	
	10.0	60	49.9	152.0	21.33	224.8	7.1	5.3	130.0	52.9	160.0	21.62	233.8	7.4	11.2	130.4	54.5	164.0	22.07	239.3	7.4	19.1	130.6	
	10.0	70	58.3	176.0	21.54	249.5	8.2	5.2	131.1	61.7	186.0	21.87	260.7	8.5	11.0	131.6	63.6	192.0	22.34	268.3	8.6	18.8	131.9	
	10.0	80	66.5	202.0	21.83	276.5	9.3	5.1	132.3	70.5	214.0	22.22	289.8	9.6	10.8	132.9	72.7	220.0	22.72	297.5	9.7	18.4	133.2	
	10.0	90	74.8	228.0	22.19	303.7	10.3	5.0	133.5	79.2	242.0	22.62	319.2	10.7	10.6	134.2	81.7	250.0	23.23	329.3	10.8	18.2	134.6	
60.0	17.3	50	41.3	130.0	21.21	202.4	6.1	5.4	126.7	43.9	138.0	21.46	211.2	6.4	11.4	127.0	45.3	140.0	21.89	214.7	6.4	19.5	127.2	
	17.3	60	49.7	154.0	21.30	226.7	7.2	5.3	127.6	52.8	162.0	21.57	235.6	7.5	11.2	127.9	54.5	166.0	22.01	241.1	7.5	19.1	128.0	
	17.3	70	58.1	178.0	21.46	251.2	8.3	5.2	128.4	61.6	190.0	21.76	264.3	8.7	11.0	128.8	63.5	194.0	22.21	269.8	8.7	18.8	129.0	
	17.2	80	66.4	204.0	21.68	278.0	9.4	5.1	129.3	70.3	218.0	22.04	293.2	9.9	10.8	129.8	72.5	224.0	22.52	300.9	9.9	18.4	130.0	
	17.2	90	74.7	230.0	21.97	305.0	10.5	5.0	130.2	79.1	246.0	22.40	322.4	11.0	10.6	130.7	81.5	254.0	22.97	332.4	11.1	18.2	131.1	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 240 – Heating

Source			ELT °F	Load Flow 30.0 GPM							Load Flow 45.0 GPM							Load Flow 60.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	30.0	5.6	60	70.4	156.0	10.64	119.7	4.3	5.1	22.0	67.0	158.0	10.47	122.3	4.4	11.0	21.8	65.3	160.0	10.68	123.5	4.4	18.9	21.8
		5.6	80	90.0	150.0	13.26	104.8	3.3	5.0	23.0	86.8	152.0	13.06	107.4	3.4	10.6	22.8	85.1	154.0	13.24	108.8	3.4	18.3	22.7
		5.6	100	109.7	146.0	16.66	89.1	2.6	4.8	24.1	106.6	148.0	16.46	91.8	2.6	10.3	23.9	105.0	150.0	16.61	93.3	2.6	17.7	23.8
		5.6	120	129.7	146.0	20.76	75.2	2.1	4.7	25.0	126.5	146.0	20.51	76.0	2.1	10.1	24.9	124.9	148.0	20.66	77.5	2.1	17.3	24.8
	45.0	11.9	60	70.9	164.0	10.95	126.6	4.4	5.1	24.4	67.4	166.0	10.76	129.3	4.5	11.0	24.3	65.6	168.0	10.95	130.6	4.5	18.9	24.2
		11.9	80	90.4	156.0	13.61	109.5	3.4	5.0	25.1	87.0	158.0	13.38	112.3	3.5	10.6	25.0	85.3	160.0	13.54	113.8	3.5	18.3	24.9
		11.9	100	110.1	152.0	16.99	94.0	2.6	4.8	25.8	106.8	154.0	16.75	96.8	2.7	10.3	25.7	105.2	156.0	16.91	98.3	2.7	17.7	25.6
		11.9	120	130.0	150.0	21.08	78.1	2.1	4.7	26.5	126.8	152.0	20.82	81.0	2.1	10.1	26.4	125.1	152.0	20.95	80.5	2.1	17.3	26.4
	60.0	20.4	60	71.2	168.0	11.42	129.0	4.3	5.1	25.7	67.6	170.0	11.21	131.7	4.4	11.0	25.6	65.7	172.0	11.40	133.1	4.4	18.9	25.6
		20.4	80	90.7	160.0	14.07	112.0	3.3	5.0	26.3	87.2	162.0	13.83	114.8	3.4	10.6	26.2	85.5	164.0	13.99	116.2	3.4	18.3	26.1
		20.4	100	110.4	156.0	17.48	96.3	2.6	4.8	26.8	106.9	156.0	17.23	97.2	2.7	10.3	26.8	105.3	158.0	17.37	98.7	2.7	17.7	26.7
		20.3	120	130.3	154.0	21.56	80.4	2.1	4.7	27.3	126.8	154.0	21.29	81.4	2.1	10.1	27.3	125.2	156.0	21.42	82.9	2.1	17.3	27.2
40	30.0	5.5	60	71.9	178.0	10.86	140.9	4.8	5.1	30.6	68.0	180.0	10.62	143.8	5.0	11.0	30.4	66.1	182.0	10.79	145.2	4.9	18.9	30.3
		5.5	80	91.5	172.0	13.52	125.8	3.7	5.0	31.6	87.7	174.0	13.24	128.8	3.9	10.6	31.4	85.9	176.0	13.38	130.3	3.9	18.3	31.3
		5.5	100	111.2	168.0	16.99	110.0	2.9	4.8	32.7	107.6	170.0	16.64	113.2	3.0	10.3	32.5	105.7	170.0	16.73	112.9	3.0	17.7	32.5
		5.5	120	131.1	166.0	21.14	93.9	2.3	4.7	33.7	127.5	168.0	20.80	97.0	2.4	10.1	33.5	125.6	168.0	20.90	96.7	2.4	17.3	33.6
	45.0	11.7	60	72.5	188.0	11.18	149.8	4.9	5.1	33.3	68.4	190.0	10.91	152.8	5.1	11.0	33.2	66.4	192.0	11.06	154.2	5.1	18.9	33.1
		11.7	80	92.0	180.0	13.83	132.8	3.8	5.0	34.1	88.1	182.0	13.52	135.9	3.9	10.6	34.0	86.1	184.0	13.65	137.4	3.9	18.3	33.9
		11.6	100	111.7	176.0	17.29	117.0	3.0	4.8	34.8	107.8	176.0	16.88	118.4	3.1	10.3	34.7	105.9	178.0	16.97	120.1	3.1	17.7	34.7
		11.6	120	131.5	172.0	21.47	98.7	2.3	4.7	35.6	127.7	174.0	21.10	102.0	2.4	10.1	35.5	125.8	174.0	21.19	101.7	2.4	17.3	35.5
	60.0	19.9	60	72.9	194.0	11.66	154.2	4.9	5.1	34.9	68.7	196.0	11.37	157.2	5.0	11.0	34.8	66.6	198.0	11.52	158.7	5.0	18.9	34.7
		19.9	80	92.4	186.0	14.30	137.2	3.8	5.0	35.4	88.4	188.0	13.98	140.3	3.9	10.6	35.3	86.3	190.0	14.10	141.9	3.9	18.3	35.3
		19.9	100	112.0	180.0	17.75	119.4	3.0	4.8	36.0	108.0	180.0	17.33	120.9	3.0	10.3	36.0	106.1	182.0	17.41	122.6	3.1	17.7	35.9
		19.9	120	131.7	176.0	21.94	101.1	2.3	4.7	36.6	127.8	176.0	21.56	102.4	2.4	10.1	36.6	125.9	178.0	21.64	104.1	2.4	17.3	36.5
50	30.0	5.4	60	73.6	204.0	11.12	166.1	5.4	5.1	38.9	69.2	206.0	10.80	169.1	5.6	11.0	38.7	66.9	208.0	10.93	170.7	5.6	18.9	38.6
		5.4	80	93.1	196.0	13.78	149.0	4.2	5.0	40.1	88.8	198.0	13.41	152.2	4.3	10.6	39.9	86.7	200.0	13.51	153.9	4.3	18.2	39.7
		5.4	100	112.8	192.0	17.20	133.3	3.3	4.8	41.1	108.6	194.0	16.75	136.8	3.4	10.3	40.9	106.5	194.0	16.81	136.6	3.4	17.7	40.9
		5.4	120	132.5	188.0	21.50	114.6	2.6	4.7	42.4	128.4	190.0	21.06	118.1	2.6	10.0	42.1	126.4	192.0	21.10	120.0	2.7	17.3	42.0
	45.0	11.4	60	74.4	216.0	11.48	176.8	5.5	5.1	42.1	69.7	218.0	11.12	180.0	5.7	11.0	42.0	67.3	220.0	11.24	181.7	5.7	18.9	41.9
		11.4	80	93.9	208.0	14.12	159.8	4.3	5.0	42.9	89.3	210.0	13.72	163.2	4.5	10.6	42.7	87.1	212.0	13.80	164.9	4.5	18.2	42.7
		11.4	100	113.3	200.0	17.52	140.2	3.3	4.8	43.8	109.0	202.0	17.03	143.9	3.5	10.3	43.6	106.8	204.0	17.07	145.7	3.5	17.7	43.5
		11.4	120	133.1	196.0	21.83	121.5	2.6	4.7	44.6	128.8	198.0	21.33	125.2	2.7	10.0	44.4	126.7	200.0	21.35	127.1	2.7	17.3	44.3
	60.0	19.5	60	74.8	222.0	11.97	181.1	5.4	5.1	44.0	70.0	226.0	11.60	186.4	5.7	11.0	43.8	67.6	228.0	11.70	188.1	5.7	18.9	43.7
		19.5	80	94.3	214.0	14.60	164.2	4.3	4.9	44.5	89.6	216.0	14.18	167.6	4.5	10.6	44.4	87.3	218.0	14.26	169.3	4.5	18.2	44.4
		19.5	100	113.7	206.0	17.98	144.6	3.4	4.8	45.2	109.2	208.0	17.48	148.3	3.5	10.3	45.1	107.0	210.0	17.51	150.2	3.5	17.7	45.0
		19.5	120	133.3	200.0	22.30	123.9	2.6	4.7	45.9	129.0	202.0	21.77	127.7	2.7	10.0	45.7	126.8	204.0	21.78	129.7	2.7	17.3	45.7

WRA, WHA 240 – Heating (continued)

Source			ELT °F	Load Flow 30.0 GPM							Load Flow 45.0 GPM							Load Flow 60.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	30.0	5.3	60	75.5	232.0	11.45	192.9	5.9	5.1	47.1	70.4	234.0	11.04	196.3	6.2	11.0	46.9	67.9	236.0	11.13	198.0	6.2	18.9	46.8
		5.3	80	94.9	224.0	14.09	175.9	4.7	4.9	48.3	90.0	226.0	13.64	179.5	4.9	10.6	48.0	87.6	228.0	13.69	181.3	4.9	18.2	47.9
		5.3	100	114.4	216.0	17.48	156.3	3.6	4.8	49.6	109.7	218.0	16.93	160.2	3.8	10.3	49.3	107.3	220.0	16.94	162.2	3.8	17.7	49.2
		5.3	120	134.1	212.0	21.80	137.6	2.8	4.7	50.8	129.5	214.0	21.22	141.6	3.0	10.0	50.6	127.2	216.0	21.20	143.7	3.0	17.3	50.4
	45.0	11.2	60	76.4	246.0	11.86	205.5	6.1	5.1	50.9	71.1	250.0	11.42	211.0	6.4	11.0	50.6	68.4	252.0	11.49	212.8	6.4	18.9	50.5
		11.2	80	95.7	236.0	14.48	186.6	4.8	4.9	51.7	90.7	240.0	13.99	192.3	5.0	10.6	51.5	88.1	242.0	14.02	194.1	5.1	18.2	51.4
		11.2	100	115.2	228.0	17.84	167.1	3.7	4.8	52.6	110.2	230.0	17.25	171.1	3.9	10.3	52.4	107.7	232.0	17.24	173.2	3.9	17.7	52.3
		11.2	120	134.8	222.0	22.13	146.5	2.9	4.7	53.5	130.0	224.0	21.50	150.6	3.1	10.0	53.3	127.5	224.0	21.46	150.8	3.1	17.3	53.3
	60.0	19.1	60	76.9	254.0	12.39	211.7	6.0	5.1	52.9	71.5	258.0	11.92	217.3	6.3	11.0	52.8	68.7	262.0	11.98	221.1	6.4	18.8	52.6
		19.1	80	96.3	244.0	14.99	192.8	4.8	4.9	53.6	91.0	248.0	14.48	198.6	5.0	10.6	53.4	88.3	250.0	14.50	200.5	5.1	18.2	53.3
		19.1	100	115.6	234.0	18.33	171.5	3.7	4.8	54.3	110.5	236.0	17.72	175.5	3.9	10.3	54.1	108.0	240.0	17.70	179.6	4.0	17.7	54.0
		19.1	120	135.1	226.0	22.60	148.9	2.9	4.7	55.0	130.1	228.0	21.95	153.1	3.0	10.0	54.9	127.7	230.0	21.90	155.3	3.1	17.3	54.8
70	30.0	5.2	60	77.5	262.0	11.86	221.5	6.5	5.1	55.2	71.7	264.0	11.37	225.2	6.8	11.0	55.0	68.9	268.0	11.42	229.0	6.9	18.8	54.7
		5.2	80	96.8	252.0	14.49	202.5	5.1	4.9	56.5	91.4	256.0	13.94	208.4	5.4	10.6	56.1	88.6	258.0	13.95	210.4	5.4	18.2	56.0
		5.2	100	116.3	244.0	17.84	183.1	4.0	4.8	57.8	110.9	246.0	17.19	187.3	4.2	10.3	57.5	108.3	248.0	17.15	189.5	4.2	17.7	57.4
		5.2	120	135.9	238.0	22.13	162.5	3.2	4.7	59.2	130.6	238.0	21.42	164.9	3.3	10.0	59.0	128.0	240.0	21.35	167.1	3.3	17.3	58.9
	45.0	11.0	60	78.5	278.0	12.34	235.9	6.6	5.1	59.5	72.5	282.0	11.81	241.7	7.0	11.0	59.3	69.5	286.0	11.84	245.6	7.1	18.8	59.1
		11.0	80	97.7	266.0	14.93	215.1	5.2	4.9	60.4	92.0	270.0	14.34	221.1	5.5	10.6	60.2	89.1	274.0	14.33	225.1	5.6	18.2	60.0
		11.0	100	117.1	256.0	18.25	193.7	4.1	4.8	61.4	111.6	260.0	17.56	200.1	4.3	10.3	61.1	108.7	262.0	17.49	202.3	4.4	17.7	61.0
		11.0	120	136.5	248.0	22.50	171.2	3.2	4.7	62.4	131.1	250.0	21.75	175.8	3.4	10.0	62.2	128.4	252.0	21.65	178.1	3.4	17.3	62.1
	60.0	18.8	60	79.3	290.0	12.91	245.9	6.6	5.1	61.8	73.1	294.0	12.36	251.8	7.0	10.9	61.6	69.9	298.0	12.37	255.8	7.1	18.8	61.5
		18.8	80	98.4	276.0	15.49	223.1	5.2	4.9	62.6	92.4	280.0	14.87	229.3	5.5	10.6	62.4	89.5	284.0	14.84	233.3	5.6	18.2	62.2
		18.8	100	117.6	264.0	18.77	199.9	4.1	4.8	63.3	111.9	268.0	18.05	206.4	4.3	10.3	63.1	109.0	270.0	17.97	208.7	4.4	17.7	63.0
		18.8	120	136.9	254.0	22.99	175.5	3.2	4.7	64.1	131.4	256.0	22.21	180.2	3.4	10.0	64.0	128.6	258.0	22.10	182.6	3.4	17.3	63.9
80	30.0	5.1	60	79.5	292.0	12.37	249.8	6.9	5.1	63.3	73.2	298.0	11.79	257.7	7.4	10.9	62.8	70.0	300.0	11.80	259.7	7.5	18.8	62.7
		5.1	80	98.8	282.0	14.97	230.9	5.5	4.9	64.6	92.7	286.0	14.33	237.1	5.8	10.6	64.2	89.6	288.0	14.29	239.2	5.9	18.2	64.1
		5.1	100	118.1	272.0	18.29	209.6	4.4	4.8	66.0	112.2	274.0	17.53	214.2	4.6	10.3	65.7	109.3	278.0	17.44	218.5	4.7	17.7	65.4
		5.1	120	137.6	264.0	22.54	187.1	3.4	4.7	67.5	131.8	266.0	21.71	191.9	3.6	10.0	67.2	128.9	268.0	21.57	194.4	3.6	17.3	67.0
	45.0	10.8	60	80.9	314.0	12.95	269.8	7.1	5.1	68.0	74.2	320.0	12.33	277.9	7.6	10.9	67.6	70.8	324.0	12.31	282.0	7.7	18.8	67.5
		10.8	80	100.0	300.0	15.53	247.0	5.7	4.9	69.0	93.6	306.0	14.82	255.4	6.0	10.6	68.6	90.3	308.0	14.76	257.6	6.1	18.2	68.5
		10.8	100	119.1	286.0	18.77	221.9	4.5	4.8	70.1	113.0	292.0	17.97	230.7	4.8	10.3	69.7	109.8	294.0	17.85	233.1	4.8	17.7	69.6
		10.8	120	138.4	276.0	22.96	197.6	3.5	4.7	71.2	132.4	278.0	22.09	202.6	3.7	10.0	71.0	129.4	282.0	21.92	207.2	3.8	17.2	70.8
	60.0	18.5	60	81.7	326.0	13.58	279.7	7.0	5.1	70.7	74.8	332.0	12.93	287.9	7.5	10.9	70.4	71.2	336.0	12.90	292.0	7.6	18.8	70.3
		18.5	80	100.7	310.0	16.11	255.0	5.6	4.9	71.5	94.0	316.0	15.39	263.5	6.0	10.6	71.2	90.7	320.0	15.31	267.7	6.1	18.2	71.1
		18.5	100	119.7	296.0	19.33	230.0	4.5	4.8	72.3	113.3	300.0	18.50	236.8	4.8	10.3	72.1	110.1	304.0	18.37	241.3	4.8	17.7	72.0
		18.4	120	139.3	290.0	23.64	209.3	3.6	4.7	73.0	132.9	290.0	22.63	212.8	3.8	10.0	72.9	129.7	290.0	22.41	213.5	3.8	17.2	72.9

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 300 – Cooling

Source			ELT °F	Load Flow 37.5 GPM							Load Flow 56.25 GPM							Load Flow 75.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	37.5	4.0	50	38.1	224.0	12.11	265.3	18.5	2.7	54.2	41.5	240.0	12.40	282.3	19.4	5.5	55.1	43.4	248.0	12.73	291.4	19.5	9.2	55.5
		4.0	60	46.2	258.0	12.43	300.4	20.8	2.6	56.0	50.2	276.0	12.72	319.4	21.7	5.3	57.0	52.4	286.0	13.05	330.5	21.9	8.9	57.6
		4.0	70	54.3	294.0	12.73	337.4	23.1	2.5	58.0	58.8	314.0	13.02	358.4	24.1	5.2	59.1	61.3	328.0	13.34	373.5	24.6	8.7	59.9
		4.0	80	62.4	330.0	13.01	374.4	25.4	2.5	60.0	67.4	354.0	13.31	399.4	26.6	5.1	61.3	70.2	368.0	13.62	414.5	27.0	8.5	62.1
		4.0	90	70.4	368.0	13.27	413.3	27.7	2.4	62.0	75.9	396.0	13.59	442.4	29.1	4.9	63.6	79.1	410.0	13.91	457.5	29.5	8.2	64.4
	56.25	8.6	50	37.8	228.0	12.17	269.5	18.7	2.7	49.6	41.3	244.0	12.44	286.5	19.6	5.5	50.2	43.2	254.0	12.75	297.5	19.9	9.2	50.6
		8.6	60	45.9	264.0	12.43	306.4	21.2	2.6	50.9	49.9	284.0	12.69	327.3	22.4	5.3	51.6	52.2	294.0	12.99	338.3	22.6	8.9	52.0
		8.5	70	54.0	300.0	12.65	343.2	23.7	2.5	52.2	58.6	322.0	12.89	366.0	25.0	5.2	53.0	61.0	336.0	13.17	381.0	25.5	8.7	53.5
		8.5	80	62.0	338.0	12.83	381.8	26.4	2.5	53.6	67.1	364.0	13.04	408.5	27.9	5.1	54.5	69.9	380.0	13.31	425.4	28.5	8.5	55.1
		8.5	90	69.8	378.0	12.96	422.2	29.2	2.4	55.0	75.6	405.0	13.16	449.9	30.8	4.9	56.0	78.7	425.0	13.41	470.8	31.7	8.2	56.7
50	75.0	14.7	50	37.7	230.0	12.52	272.7	18.4	2.7	47.3	41.2	248.0	12.78	291.6	19.4	5.5	47.8	43.1	258.0	13.09	302.7	19.7	9.2	48.1
		14.7	60	45.8	266.0	12.76	309.5	20.8	2.6	48.3	49.8	286.0	13.00	330.4	22.0	5.3	48.8	52.1	298.0	13.29	343.4	22.4	8.9	49.2
		14.7	70	53.8	304.0	12.94	348.2	23.5	2.5	49.3	58.3	328.0	13.15	372.9	24.9	5.2	49.9	60.9	340.0	13.42	385.8	25.3	8.7	50.3
		14.7	80	61.8	342.0	13.07	386.6	26.2	2.5	50.3	66.8	370.0	13.25	415.2	27.9	5.1	51.1	69.7	386.0	13.49	432.0	28.6	8.5	51.5
		14.6	90	69.6	382.0	13.14	426.8	29.1	2.4	51.4	75.2	415.0	13.28	460.3	31.3	4.9	52.3	78.5	430.0	13.49	476.0	31.9	8.2	52.7
	56.25	3.9	50	38.5	216.0	12.60	259.0	17.1	2.7	63.8	41.8	230.0	12.91	274.1	17.8	5.5	64.6	43.7	238.0	13.24	283.2	18.0	9.2	65.1
		3.9	60	46.8	248.0	12.97	292.3	19.1	2.6	65.6	50.5	266.0	13.30	311.4	20.0	5.3	66.6	52.6	276.0	13.63	322.5	20.2	8.9	67.2
		3.9	70	54.9	284.0	13.34	329.5	21.3	2.5	67.6	59.2	304.0	13.67	350.7	22.2	5.2	68.7	61.6	316.0	14.02	363.8	22.5	8.7	69.4
		3.9	80	62.9	320.0	13.70	366.8	23.4	2.5	69.6	67.8	342.0	14.05	390.0	24.3	5.1	70.8	70.5	356.0	14.40	405.2	24.7	8.5	71.6
		3.9	90	71.0	356.0	14.06	404.0	25.3	2.4	71.5	76.3	384.0	14.44	433.3	26.6	4.9	73.1	79.3	400.0	14.81	450.5	27.0	8.2	74.0
70	37.5	8.4	50	38.3	220.0	12.51	262.7	17.6	2.7	59.3	41.6	236.0	12.80	279.7	18.4	5.5	59.9	43.5	244.0	13.12	288.8	18.6	9.2	60.3
		8.4	60	46.5	254.0	12.83	297.8	19.8	2.6	60.6	50.3	272.0	13.11	316.7	20.8	5.3	61.3	52.4	284.0	13.42	329.8	21.2	8.9	61.7
		8.4	70	54.5	290.0	13.10	334.7	22.1	2.5	61.9	58.9	312.0	13.38	357.7	23.3	5.2	62.7	61.4	324.0	13.69	370.7	23.7	8.7	63.2
		8.4	80	62.5	328.0	13.35	373.6	24.6	2.5	63.3	67.5	352.0	13.63	398.5	25.8	5.1	64.2	70.2	368.0	13.93	415.5	26.4	8.5	64.8
		8.3	90	70.5	366.0	13.57	412.3	27.0	2.4	64.7	75.9	396.0	13.84	443.2	28.6	4.9	65.8	79.1	410.0	14.14	458.3	29.0	8.2	66.3
	56.25	14.4	50	38.2	222.0	12.77	265.6	17.4	2.7	57.1	41.5	238.0	13.05	282.5	18.2	5.5	57.5	43.4	248.0	13.36	293.6	18.6	9.2	57.8
		14.4	60	46.3	256.0	13.06	300.6	19.6	2.6	58.0	50.2	276.0	13.32	321.5	20.7	5.3	58.6	52.3	288.0	13.63	334.5	21.1	8.9	58.9
		14.4	70	54.3	294.0	13.30	339.4	22.1	2.5	59.1	58.8	316.0	13.55	362.2	23.3	5.2	59.7	61.3	328.0	13.84	375.2	23.7	8.7	60.0
		14.4	80	62.3	332.0	13.50	378.1	24.6	2.5	60.1	67.3	358.0	13.73	404.9	26.1	5.1	60.8	70.1	372.0	14.00	419.8	26.6	8.5	61.2
		14.3	90	70.2	372.0	13.66	418.6	27.2	2.4	61.2	75.8	400.0	13.87	447.3	28.8	4.9	61.9	78.8	420.0	14.13	468.2	29.7	8.2	62.5
80	75.0	3.8	50	39.4	198.0	14.58	247.7	13.6	2.7	83.2	42.5	210.0	14.87	260.8	14.1	5.5	83.9	44.2	216.0	15.21	267.9	14.2	9.2	84.3
		3.8	60	47.7	230.0	14.98	281.1	15.4	2.6	85.0	51.3	244.0	15.31	296.2	15.9	5.3	85.8	53.3	252.0	15.67	305.5	16.1	8.9	86.3
		3.8	70	56.0	262.0	15.42	314.6	17.0	2.5	86.8	60.0	280.0	15.79	333.9	17.7	5.2	87.8	62.3	290.0	16.17	345.2	17.9	8.7	88.4
		3.7	80	64.2	296.0	15.89	350.2	18.6	2.5	88.7	68.7	318.0	16.31	373.7	19.5	5.0	89.9	71.2	330.0	16.71	387.0	19.7	8.4	90.6
		3.7	90	72.2	334.0	16.40	390.0	20.4	2.4	90.8	77.3	358.0	16.88	415.6	21.2	4.9	92.2	80.1	372.0	17.31	431.1	21.5	8.2	93.0
	56.25	8.1	50	39.2	202.0	14.23	250.6	14.2	2.7	78.9	42.3	216.0	14.50	265.5	14.9	5.5	79.4	44.1	222.0	14.82	272.6	15.0	9.2	79.7
		8.1	60	47.5	234.0	14.55	283.7	16.1	2.6	80.1	51.1	250.0	14.85	300.7	16.8	5.3	80.7	53.1	260.0	15.17	311.8	17.1	8.9	81.1
		8.1	70	55.7	268.0	14.89	318.8	18.0	2.5	81.3	59.8	288.0	15.22	339.9	18.9	5.2	82.1	62.1	298.0	15.55	351.1	19.2	8.7	82.5
		8.1	80	63.8	304.0	15.25	356.1	19.9	2.5	82.7	68.3	328.0	15.59	381.2	21.0	5.1	83.6	70.9	340.0	15.94	394.4	21.3	8.4	84.0
		8.0	90	71.8	342.0	15.62	395.3	21.9	2.4	84.1	76.9	368.0	15.99	422.6	23.0	4.9	85.0	79.8	384.0	16.35	439.8	23.5	8.2	85.6
90	75.0	13.9	50	39.1	204.0	14.34	253.0	14.2	2.7	76.7	42.2	218.0	14.58	267.8	14.9	5.5	77.1	44.0	226.0	14.91	276.9	15.2	9.2	77.4
		13.9	60	47.4	236.0	14.63	285.9	16.1	2.6	77.6	51.0	254.0	14.91	304.9	17.0	5.3	78.1	53.0	264.0	15.22	315.9	17.4	8.9	78.4
		13.9	70	55.5	270.2	14.93	323.0	18.2	2.5	78.6	59.6	292.0	15.21	343.9	19.2	5.2	79.2	61.9	304.0	15.53	357.0	19.6	8.7	79.5
		13.9	80	63.6	308.0	15.22	360.0	20.2	2.5	79.														

WRA, WCA 300 – Cooling (continued)

Source			ELT °F	Load Flow 37.5 GPM						Load Flow 56.25 GPM						Load Flow 75.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	37.5	3.6	50	41.7	156.0	22.54	232.9	6.9	2.7	122.4	44.2	164.0	22.75	241.7	7.2	5.5	122.9	45.5	170.0	23.03	248.6	7.4	9.2	123.3
		3.5	60	50.2	184.0	22.80	261.8	8.1	2.6	124.0	53.0	196.0	23.09	274.8	8.5	5.3	124.7	54.6	202.0	23.41	281.9	8.6	8.9	125.0
		3.5	70	58.5	216.0	23.23	295.3	9.3	2.5	125.7	61.9	228.0	23.55	308.4	9.7	5.2	126.4	63.7	236.0	23.94	317.7	9.9	8.7	126.9
		3.5	80	66.8	248.0	23.77	329.1	10.4	2.4	127.6	70.6	264.0	24.21	346.6	10.9	5.0	128.5	72.7	272.0	24.63	356.1	11.0	8.4	129.0
		3.5	90	75.1	280.0	24.45	363.4	11.5	2.4	129.4	79.3	300.0	24.99	385.3	12.0	4.9	130.5	81.7	310.0	25.47	396.9	12.2	8.2	131.2
	56.25	7.6	50	41.5	160.0	21.95	234.9	7.3	2.7	118.4	44.0	168.0	22.12	243.5	7.6	5.5	118.7	45.4	174.0	22.39	250.4	7.8	9.2	118.9
		7.6	60	50.0	188.0	22.10	263.4	8.5	2.6	119.4	52.9	200.0	22.31	276.1	9.0	5.3	119.8	54.5	206.0	22.62	283.2	9.1	8.9	120.1
		7.6	70	58.3	220.0	22.38	296.4	9.8	2.5	120.5	61.7	234.0	22.67	311.4	10.3	5.2	121.1	63.5	242.0	23.00	320.5	10.5	8.7	121.4
		7.6	80	66.5	254.0	22.77	331.7	11.2	2.4	121.8	70.4	270.0	23.10	348.8	11.7	5.0	122.4	72.5	280.0	23.46	360.1	11.9	8.4	122.8
		7.6	90	74.6	288.0	23.23	367.3	12.4	2.4	123.1	79.0	310.0	23.67	390.8	13.1	4.9	123.9	81.5	320.0	24.09	402.2	13.3	8.2	124.3
	75.0	13.1	50	41.4	162.0	21.91	236.8	7.4	2.7	116.3	44.0	170.0	22.05	245.3	7.7	5.5	116.5	45.3	176.0	22.32	252.2	7.9	9.2	116.7
		13.1	60	49.8	192.0	22.00	267.1	8.7	2.6	117.1	52.7	204.0	22.20	279.8	9.2	5.3	117.5	54.4	210.0	22.48	286.7	9.3	8.9	117.6
		13.1	70	58.2	222.0	22.21	297.8	10.0	2.5	117.9	61.5	238.0	22.43	314.5	10.6	5.2	118.4	63.4	246.0	22.73	323.6	10.8	8.7	118.6
		13.1	80	66.3	256.0	22.47	332.7	11.4	2.4	118.9	70.3	274.0	22.79	351.8	12.0	5.0	119.4	72.4	284.0	23.14	363.0	12.3	8.4	119.7
		13.1	90	74.4	292.0	22.88	370.1	12.8	2.4	119.9	78.8	314.0	23.27	393.4	13.5	4.9	120.5	81.3	326.0	23.65	406.7	13.8	8.2	120.8
120	37.5	3.5	50	42.2	146.0	25.14	231.8	5.8	2.7	132.4	44.5	154.0	25.37	240.6	6.1	5.5	132.8	45.8	158.0	25.67	245.6	6.2	9.2	133.1
		3.5	60	50.7	174.0	25.48	261.0	6.8	2.6	133.9	53.5	182.0	25.72	269.8	7.1	5.3	134.4	55.0	188.0	26.04	276.9	7.2	8.9	134.8
		3.5	70	59.2	202.0	25.86	290.3	7.8	2.5	135.5	62.4	214.0	26.19	303.4	8.2	5.2	136.2	64.1	222.0	26.55	312.6	8.4	8.6	136.7
		3.5	80	67.5	234.0	26.41	324.1	8.9	2.4	137.3	71.2	248.0	26.84	339.6	9.2	5.0	138.1	73.2	256.0	27.24	349.0	9.4	8.4	138.6
		3.5	90	75.8	266.0	27.11	358.5	9.8	2.4	139.1	79.9	284.0	27.67	378.4	10.3	4.9	140.2	82.2	294.0	28.14	390.0	10.4	8.2	140.8
	56.25	7.5	50	42.0	150.0	24.58	233.9	6.1	2.7	128.3	44.4	158.0	24.78	242.6	6.4	5.5	128.6	45.7	162.0	25.06	247.5	6.5	9.2	128.8
		7.5	60	50.5	178.0	24.76	262.5	7.2	2.6	129.3	53.4	186.0	24.95	271.2	7.5	5.3	129.6	54.8	194.0	25.24	280.1	7.7	8.9	130.0
		7.5	70	58.9	208.0	25.00	293.3	8.3	2.5	130.4	62.2	220.0	25.27	306.2	8.7	5.2	130.9	63.9	228.0	25.58	315.3	8.9	8.6	131.2
		7.5	80	67.2	240.0	25.37	326.6	9.5	2.4	131.6	70.9	256.0	25.72	343.8	10.0	5.0	132.2	73.0	264.0	26.09	353.1	10.1	8.4	132.6
		7.5	90	75.4	274.0	25.86	362.3	10.6	2.4	132.9	79.5	294.0	26.33	383.9	11.2	4.9	133.6	81.9	304.0	26.75	395.3	11.4	8.2	134.1
	75.0	13.0	50	42.0	150.0	24.56	233.8	6.1	2.7	126.2	44.3	160.0	24.73	244.4	6.5	5.5	126.5	45.6	164.0	24.99	249.3	6.6	9.2	126.6
		13.0	60	50.5	178.0	24.65	262.1	7.2	2.6	127.0	53.3	188.0	24.81	272.7	7.6	5.3	127.3	54.8	196.0	25.09	281.6	7.8	8.9	127.5
		13.0	70	58.8	210.0	24.83	294.7	8.5	2.5	127.9	62.0	224.0	25.05	309.5	8.9	5.2	128.3	63.9	230.0	25.35	316.5	9.1	8.7	128.4
		12.9	80	67.1	242.0	25.11	327.7	9.6	2.4	128.7	70.8	260.0	25.42	346.8	10.2	5.0	129.2	72.9	268.0	25.76	355.9	10.4	8.4	129.5
		12.9	90	75.2	278.0	25.50	365.0	10.9	2.4	129.7	79.4	298.0	25.94	386.5	11.5	4.9	130.3	81.8	308.0	26.32	397.8	11.7	8.2	130.6

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 300 – Heating

Source			ELT °F	Load Flow 37.5 GPM						Load Flow 56.25 GPM						Load Flow 75.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	37.5	2.9	60	69.7	182.0	12.52	139.3	4.3	3.9	22.6	66.5	184.0	12.42	141.6	4.3	8.3	22.4	65.0	186.0	12.66	142.8	4.3	14.2	22.4
		2.9	80	89.4	176.0	15.22	124.1	3.4	3.7	23.4	86.3	176.0	14.96	124.9	3.4	8	23.3	84.7	178.0	15.11	126.4	3.5	13.7	23.3
		2.9	100	109.2	172.0	19.46	105.6	2.6	3.6	24.4	106.1	172.0	19.13	106.7	2.6	7.7	24.3	104.6	174.0	19.22	108.4	2.7	13.3	24.2
		2.8	120	129.1	170.0	24.76	85.5	2.0	3.5	25.4	126.0	170.0	24.40	86.7	2.0	7.6	25.4	124.6	172.0	24.47	88.5	2.1	13.0	25.3
	56.25	5.9	60	70.2	192.0	12.85	148.1	4.4	3.9	24.7	66.9	194.0	12.74	150.5	4.5	8.3	24.6	65.2	196.0	12.97	151.7	4.4	14.2	24.6
		5.9	80	89.7	182.0	15.54	129.0	3.4	3.7	25.4	86.5	184.0	15.26	131.9	3.5	8	25.3	85.0	186.0	15.39	133.5	3.5	13.7	25.3
		5.9	100	109.5	178.0	19.65	110.9	2.7	3.6	26.1	106.3	178.0	19.30	112.1	2.7	7.7	26.0	104.8	180.0	19.39	113.8	2.7	13.3	26.0
		5.9	120	129.4	176.0	24.81	91.3	2.1	3.5	26.8	126.3	176.0	24.45	92.5	2.1	7.6	26.7	124.7	178.0	24.53	94.3	2.1	13.0	26.6
	75.0	9.9	60	70.5	196.0	13.18	151.0	4.4	3.9	26.0	67.1	200.0	13.06	155.4	4.5	8.3	25.9	65.4	202.0	13.28	156.7	4.5	14.2	25.8
		9.8	80	90.0	188.0	15.89	133.8	3.5	3.7	26.4	86.8	190.0	15.60	136.7	3.6	8	26.4	85.1	190.0	15.73	136.3	3.5	13.7	26.4
		9.8	100	109.7	182.0	19.94	114.0	2.7	3.6	27.0	106.5	182.0	19.58	115.2	2.7	7.7	26.9	104.9	184.0	19.67	116.9	2.7	13.3	26.9
		9.8	120	129.5	178.0	25.11	92.3	2.1	3.5	27.5	126.4	180.0	24.70	95.7	2.1	7.6	27.4	124.8	180.0	24.77	95.4	2.1	13.0	27.5
40	30.0	2.8	60	71.2	210.0	12.95	165.8	4.8	3.9	28.9	67.6	214.0	12.80	170.3	4.9	8.3	28.6	65.8	216.0	13.02	171.6	4.9	14.2	28.6
		2.8	80	90.8	202.0	15.62	148.7	3.8	3.7	30.1	87.3	204.0	15.28	151.8	3.9	8	29.9	85.5	206.0	15.39	153.5	3.9	13.7	29.8
		2.8	100	110.5	196.0	19.71	128.7	2.9	3.6	31.4	107.0	198.0	19.30	132.1	3.0	7.7	31.2	105.3	198.0	19.33	132.0	3.0	13.3	31.2
		2.7	120	130.3	194.0	24.74	109.6	2.3	3.5	32.7	126.9	194.0	24.31	111.0	2.3	7.5	32.6	125.2	196.0	24.35	112.9	2.4	13.0	32.5
	45.0	5.7	60	71.9	224.0	13.23	178.8	5.0	3.9	32.1	68.0	226.0	13.07	181.4	5.1	8.3	31.9	66.1	228.0	13.28	182.7	5.0	14.2	31.9
		5.7	80	91.3	212.0	15.85	157.9	3.9	3.7	33.0	87.6	214.0	15.50	161.1	4.0	8	32.8	85.8	216.0	15.59	162.8	4.1	13.7	32.8
		5.7	100	110.9	204.0	19.94	135.9	3.0	3.6	34.0	107.3	206.0	19.46	139.6	3.1	7.7	33.8	105.5	208.0	19.48	141.5	3.1	13.3	33.7
		5.7	120	130.7	200.0	24.92	115.0	2.4	3.5	34.9	127.1	200.0	24.47	116.5	2.4	7.5	34.8	125.4	202.0	24.50	118.4	2.4	13.0	34.7
	60.0	9.5	60	72.3	230.0	13.56	183.7	5.0	3.9	33.9	68.3	234.0	13.39	188.3	5.1	8.2	33.7	66.3	236.0	13.59	189.6	5.1	14.2	33.7
		9.5	80	91.6	218.0	16.16	162.9	4.0	3.7	34.6	87.8	220.0	15.79	166.1	4.1	8	34.5	85.9	222.0	15.88	167.8	4.1	13.7	34.4
		9.5	100	111.1	208.0	20.23	138.9	3.0	3.6	35.4	107.5	210.0	19.72	142.7	3.1	7.7	35.2	105.7	212.0	19.71	144.7	3.2	13.3	35.2
		9.5	120	130.9	204.0	25.19	118.0	2.4	3.5	36.1	127.3	204.0	24.73	119.6	2.4	7.5	36.0	125.5	206.0	24.75	121.5	2.4	13.0	35.9
50	30.0	2.7	60	72.9	242.0	13.33	196.5	5.3	3.8	36.9	68.7	246.0	13.13	201.2	5.5	8.2	36.6	66.6	248.0	13.32	202.5	5.5	14.2	36.5
		2.7	80	92.4	232.0	15.93	177.6	4.3	3.7	38.2	88.3	234.0	15.52	181.0	4.4	8	37.9	86.3	236.0	15.59	182.8	4.4	13.7	37.8
		2.7	100	111.9	224.0	19.97	155.8	3.3	3.6	39.6	108.0	226.0	19.37	159.9	3.4	7.7	39.3	106.1	228.0	19.35	162.0	3.5	13.3	39.2
		2.7	120	131.6	218.0	24.99	132.7	2.6	3.5	41.2	127.8	218.0	24.45	134.6	2.6	7.5	41.0	125.9	220.0	24.42	138.7	2.7	13.0	40.8
	45.0	5.5	60	73.7	256.0	13.63	209.5	5.5	3.8	40.7	69.3	262.0	13.40	216.3	5.7	8.2	40.4	67.0	264.0	13.59	217.6	5.7	14.2	40.3
		5.5	80	93.0	244.0	16.20	188.7	4.4	3.7	41.6	88.8	248.0	15.76	194.2	4.6	8	41.4	86.7	250.0	15.82	196.0	4.6	13.7	41.3
		5.5	100	112.5	234.0	20.16	165.2	3.4	3.6	42.7	108.4	236.0	19.55	169.3	3.5	7.7	42.5	106.3	238.0	19.52	171.4	3.6	13.3	42.4
		5.5	120	132.2	228.0	25.17	142.1	2.7	3.5	43.7	128.1	228.0	24.62	144.0	2.7	7.5	43.6	126.1	230.0	24.59	146.1	2.7	13.0	43.5
	60.0	9.2	60	74.2	266.0	13.97	218.3	5.6	3.8	42.7	69.6	270.0	13.73	223.2	5.8	8.2	42.6	67.3	274.0	13.90	226.6	5.8	14.2	42.4
		9.2	80	93.4	252.0	16.53	195.6	4.5	3.7	43.5	89.0	254.0	16.07	199.2	4.6	8	43.4	86.9	258.0	16.12	203.0	4.7	13.7	43.2
		9.2	100	112.8	240.0	20.45	170.2	3.4	3.6	44.3	108.6	242.0	19.82	174.3	3.6	7.7	44.2	106.5	244.0	19.78	176.5	3.6	13.3	44.1
		9.2	120	132.4	232.0	25.47	145.1	2.7	3.5	45.2	128.3	234.0	24.90	149.0	2.8	7.5	45.0	126.2	234.0	24.86	149.2	2.8	13.0	45.0

WRA, WHA 300 – Heating (continued)

Source			ELT °F	Load Flow 37.5 GPM						Load Flow 56.25 GPM						Load Flow 75.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	37.5	2.6	60	74.7	276.0	13.72	229.2	5.9	3.8	44.7	70.0	280.0	13.45	234.1	6.1	8.2	44.4	67.6	284.0	13.61	237.5	6.1	14.2	44.2
		2.6	80	94.1	264.0	16.31	208.3	4.7	3.7	46.1	89.5	266.0	15.81	212.0	4.9	8	45.9	87.2	270.0	15.84	215.9	5.0	13.7	45.6
		2.6	100	113.5	254.0	20.22	185.0	3.7	3.6	47.7	109.1	256.0	19.55	189.3	3.8	7.7	47.4	106.9	258.0	19.48	191.5	3.9	13.3	47.2
		2.6	120	133.1	246.0	25.29	159.7	2.9	3.5	49.4	128.8	248.0	24.61	164.0	3.0	7.5	49.1	126.7	250.0	24.53	166.3	3.0	13.0	48.9
	56.25	5.3	60	75.7	294.0	14.05	246.1	6.1	3.8	49.1	70.6	298.0	13.74	251.1	6.4	8.2	48.8	68.1	302.0	13.88	254.6	6.4	14.1	48.7
		5.3	80	94.8	278.0	16.63	221.2	4.9	3.7	50.2	90.0	282.0	16.09	227.1	5.1	8	49.9	87.6	286.0	16.10	231.1	5.2	13.7	49.7
		5.3	100	114.2	266.0	20.48	196.1	3.8	3.6	51.3	109.6	270.0	19.78	202.5	4.0	7.7	51.0	107.3	272.0	19.70	204.8	4.0	13.3	50.9
		5.3	120	133.8	258.0	25.53	170.9	3.0	3.5	52.4	129.2	258.0	24.81	173.3	3.0	7.5	52.3	126.9	260.0	24.70	175.7	3.1	13.0	52.2
	75.0	8.9	60	76.1	302.0	14.38	252.9	6.2	3.8	51.6	71.0	308.0	14.06	260.0	6.4	8.2	51.3	68.3	312.0	14.19	263.6	6.4	14.1	51.2
		8.9	80	95.4	288.0	16.98	230.1	5.0	3.7	52.3	90.4	292.0	16.41	236.0	5.2	8	52.1	87.8	294.0	16.41	238.0	5.2	13.7	52.1
		8.9	100	114.6	274.0	20.81	203.0	3.9	3.6	53.2	109.8	276.0	20.08	207.5	4.0	7.7	53.1	107.5	280.0	19.99	211.8	4.1	13.3	52.9
		8.9	120	134.0	262.0	25.83	173.8	3.0	3.5	54.2	129.5	266.0	25.08	180.4	3.1	7.5	54.0	127.1	268.0	24.96	182.8	3.1	13.0	53.9
70	37.5	2.5	60	76.6	312.0	14.12	263.8	6.5	3.8	52.4	71.2	316.0	13.76	269.0	6.7	8.2	52.1	68.5	320.0	13.89	272.6	6.8	14.1	51.8
		2.5	80	95.9	298.0	16.75	240.8	5.2	3.7	53.9	90.7	302.0	16.15	246.9	5.5	8	53.5	88.1	304.0	16.13	249.0	5.5	13.7	53.4
		2.5	100	115.3	286.0	20.62	215.6	4.1	3.6	55.6	110.2	288.0	19.84	220.3	4.3	7.7	55.3	107.8	292.0	19.72	224.7	4.3	13.3	55.0
		2.5	120	134.7	276.0	25.65	188.5	3.2	3.5	57.4	129.9	278.0	24.84	193.2	3.3	7.5	57.1	127.5	280.0	24.68	195.8	3.3	13.0	56.9
	56.25	5.2	60	77.6	330.0	14.47	280.6	6.7	3.8	57.5	71.9	336.0	14.06	288.0	7.0	8.2	57.2	69.1	342.0	14.16	293.7	7.1	14.1	56.9
		5.2	80	96.7	314.0	17.10	255.6	5.4	3.7	58.6	91.4	320.0	16.45	263.8	5.7	7.9	58.3	88.6	322.0	16.41	266.0	5.7	13.7	58.2
		5.2	100	116.0	300.0	20.93	228.6	4.2	3.6	59.8	110.8	304.0	20.11	235.4	4.4	7.7	59.5	108.2	306.0	19.97	237.8	4.5	13.3	59.4
		5.2	120	135.5	290.0	25.97	201.4	3.3	3.5	61.0	130.4	292.0	25.10	206.3	3.4	7.5	60.8	127.8	294.0	24.91	209.0	3.5	13.0	60.7
	75.0	8.7	60	78.2	342.0	14.82	291.4	6.8	3.8	60.3	72.4	350.0	14.39	300.9	7.1	8.2	60.0	69.4	354.0	14.47	304.6	7.2	14.1	59.8
		8.7	80	97.4	326.0	17.50	266.3	5.5	3.7	61.1	91.7	330.0	16.80	272.7	5.8	7.9	60.9	88.9	334.0	16.74	276.9	5.8	13.7	60.8
		8.7	100	116.5	310.0	21.33	237.2	4.3	3.6	62.1	111.2	314.0	20.46	244.2	4.5	7.7	61.9	108.5	318.0	20.29	248.7	4.6	13.3	61.7
		8.7	120	135.9	298.0	26.31	208.2	3.3	3.5	63.1	130.7	300.0	25.40	213.3	3.5	7.5	62.9	128.1	302.0	25.20	216.0	3.5	13.0	62.8
80	37.5	2.5	60	78.6	348.0	14.54	298.4	7.0	3.8	60.1	72.6	354.0	14.07	306.0	7.4	8.2	59.6	69.5	358.0	14.14	309.7	7.4	14.1	59.4
		2.5	80	97.7	332.0	17.25	273.1	5.6	3.7	61.8	92.0	338.0	16.52	281.6	6.0	7.9	61.2	89.1	342.0	16.44	285.9	6.1	13.7	60.9
		2.4	100	117.1	320.0	21.14	247.9	4.4	3.6	63.5	111.5	324.0	20.22	255.0	4.7	7.7	63.0	108.7	326.0	20.03	257.6	4.8	13.3	62.8
		2.4	120	136.5	310.0	26.17	220.7	3.5	3.5	65.3	131.1	312.0	25.20	226.0	3.6	7.5	64.9	128.4	314.0	24.97	228.8	3.7	13.0	64.7
	56.25	5.1	60	79.7	370.0	14.92	319.1	7.3	3.8	65.8	73.4	378.0	14.38	328.9	7.7	8.2	65.4	70.2	384.0	14.41	334.8	7.8	14.1	65.1
		5.0	80	98.9	354.0	17.68	293.7	5.9	3.7	66.9	92.8	360.0	16.88	302.4	6.2	7.9	66.6	89.7	364.0	16.76	306.8	6.4	13.7	66.4
		5.0	100	118.0	338.0	21.57	264.4	4.6	3.6	68.3	112.2	342.0	20.58	271.8	4.9	7.7	67.9	109.2	346.0	20.35	276.5	5.0	13.3	67.7
		5.0	120	137.4	326.0	26.57	235.3	3.6	3.5	69.5	131.7	328.0	24.90	240.9	3.8	7.5	69.3	128.9	332.0	25.26	245.8	3.9	13.0	69.1
	75.0	8.4	60	80.5	384.0	15.30	331.8	7.4	3.8	68.9	73.9	392.0	14.71	341.8	7.8	8.2	68.6	70.6	398.0	14.72	347.8	7.9	14.1	68.4
		8.4	80	99.5	366.0	18.08	304.3	5.9	3.7	69.9	93.2	372.0	17.24	313.2	6.3	7.9	69.6	90.0	376.0	17.09	317.7	6.4	13.7	69.4
		8.4	100	118.6	348.0	21.97	273.0	4.6	3.6	70.9	112.6	354.0	20.94	282.5	5.0	7.7	70.6	109.5	358.0	20.69	287.4	5.1	13.3	70.4
		8.4	120	138.8	352.0	27.35	258.6	3.8	3.5	71.4	132.5	352.0	26.08	263.0	4.0	7.5	71.2	129.4	352.0	25.71	264.2	4.0	13.0	71.2

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 360 – Cooling

Source			ELT °F	Load Flow 45.0 GPM							Load Flow 67.5 GPM							Load Flow 90.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
45.0	2.0	50	37.4	284.0	13.99	331.8	20.3	2.0	54.7	41.0	304.0	14.40	353.2	21.1	4.2	55.7	43.0	316.0	14.79	366.5	21.4	3.0	56.3	
	2.0	60	45.6	324.0	14.58	373.8	22.2	2.0	56.6	49.7	348.0	15.07	399.4	23.1	4.1	57.8	52.0	362.0	15.51	414.9	23.3	2.9	58.4	
	2.0	70	53.6	368.0	15.26	420.1	24.1	1.9	58.7	58.3	396.0	15.84	450.1	25.0	4.0	60.0	60.8	415.0	16.34	470.8	25.4	2.9	60.9	
	2.0	80	61.6	415.0	16.02	469.7	25.9	1.9	60.9	66.8	445.0	16.71	502.0	26.6	3.9	62.3	69.7	465.0	17.28	524.0	26.9	2.8	63.3	
	2.0	90	69.6	460.0	16.86	517.6	27.3	1.8	63.0	75.2	500.0	17.69	560.4	28.3	3.8	64.9	78.4	520.0	18.33	582.6	28.4	2.8	65.9	
40	4.2	50	37.1	290.0	13.42	335.8	21.6	2.0	50.0	40.8	310.0	13.80	357.1	22.5	4.2	50.6	42.8	324.0	14.16	372.3	22.9	3.0	51.0	
	4.2	60	45.2	332.0	13.93	379.5	23.8	2.0	51.2	49.4	358.0	14.37	407.0	24.9	4.1	52.1	51.7	372.0	14.77	422.4	25.2	2.9	52.5	
	4.2	70	53.3	376.0	14.50	425.5	25.9	1.9	52.6	58.0	405.0	15.03	456.3	26.9	4.0	53.5	60.6	425.0	15.49	477.9	27.4	2.9	54.2	
	4.1	80	61.1	425.0	15.15	476.7	28.1	1.9	54.1	66.4	460.0	15.78	513.9	29.2	3.9	55.2	69.3	480.0	16.30	535.6	29.5	2.8	55.9	
	4.1	90	68.9	475.0	15.88	529.2	29.9	1.8	55.7	74.7	515.0	16.63	571.8	31.0	3.8	56.9	78.0	540.0	17.23	598.8	31.3	2.8	57.7	
90.0	7.1	50	37.0	292.0	13.30	337.4	21.9	2.0	47.5	40.7	314.0	13.66	360.6	23.0	4.2	48.0	42.7	328.0	14.00	375.8	23.4	3.0	48.4	
	7.1	60	45.1	336.0	13.76	383.0	24.4	2.0	48.5	49.3	362.0	14.18	410.4	25.5	4.1	49.1	51.6	378.0	14.57	427.7	25.9	2.9	49.5	
	7.1	70	53.0	382.0	14.29	430.8	26.7	1.9	49.6	57.9	410.0	14.79	460.5	27.7	4.0	50.2	60.4	430.0	15.23	482.0	28.2	2.9	50.7	
	7.0	80	60.9	430.0	14.88	480.8	28.9	1.9	50.7	66.2	465.0	15.47	517.8	30.1	3.9	51.5	69.1	490.0	15.97	544.5	30.7	2.8	52.1	
	7.0	90	68.7	480.0	15.56	533.1	30.9	1.8	51.8	74.4	525.0	16.26	580.5	32.3	3.8	52.9	77.8	550.0	16.81	607.4	32.7	2.8	53.5	
45.0	1.9	50	37.8	274.0	15.34	326.4	17.9	2.0	64.5	41.3	292.0	15.74	345.7	18.6	4.2	65.4	43.2	304.0	16.12	359.0	18.9	3.0	66.0	
	1.9	60	46.0	314.0	15.92	368.3	19.7	2.0	66.4	50.0	336.0	16.39	391.9	20.5	4.1	67.4	52.2	350.0	16.82	407.4	20.8	2.9	68.1	
	1.9	70	54.2	356.0	16.59	412.6	21.5	1.9	68.3	58.6	384.0	17.15	442.5	22.4	4.0	69.7	61.1	400.0	17.64	460.2	22.7	2.9	70.5	
	1.9	80	62.2	400.0	17.34	459.2	23.1	1.9	70.4	67.1	435.0	18.02	496.5	24.1	3.9	72.1	70.0	450.0	18.57	513.4	24.2	2.8	72.8	
	1.9	90	70.0	450.0	18.19	512.1	24.7	1.8	72.8	75.6	485.0	19.00	549.8	25.5	3.8	74.4	78.8	505.0	19.63	572.0	25.7	2.8	75.4	
50	4.1	50	37.6	278.0	14.73	328.3	18.9	2.0	59.7	41.2	298.0	15.09	349.5	19.8	4.2	60.4	43.1	310.0	15.43	362.7	20.1	3.0	60.7	
	4.1	60	45.8	320.0	15.21	371.9	21.0	2.0	61.0	49.8	344.0	15.63	397.4	22.0	4.1	61.8	52.0	358.0	16.03	412.7	22.3	2.9	62.2	
	4.0	70	53.8	364.0	15.77	417.8	23.1	1.9	62.4	58.3	394.0	16.28	449.6	24.2	4.0	63.3	60.9	410.0	16.72	467.1	24.5	2.9	63.8	
	4.0	80	61.8	410.0	16.41	466.0	25.0	1.9	63.8	66.8	445.0	17.02	503.1	26.1	3.9	64.9	69.7	465.0	17.53	524.8	26.5	2.8	65.6	
	4.0	90	69.6	460.0	17.13	518.5	26.8	1.8	65.4	75.2	500.0	17.86	561.0	28.0	3.8	66.6	78.4	520.0	18.45	583.0	28.2	2.8	67.3	
90.0	6.9	50	37.5	282.0	14.59	331.8	19.3	2.0	57.4	41.1	302.0	14.92	352.9	20.2	4.2	57.8	43.0	314.0	15.22	366.0	20.6	3.0	58.1	
	6.9	60	45.6	324.0	15.02	375.3	21.6	2.0	58.3	49.7	348.0	15.42	400.6	22.6	4.1	58.9	51.9	364.0	15.79	417.9	23.1	2.9	59.3	
	6.9	70	53.6	368.0	15.53	421.0	23.7	1.9	59.4	58.1	400.0	15.99	454.6	25.0	4.0	60.1	60.8	415.0	16.43	471.1	25.3	2.9	60.5	
	6.8	80	61.6	415.0	16.11	470.0	25.8	1.9	60.4	66.7	450.0	16.68	506.9	27.0	3.9	61.3	69.6	470.0	17.17	528.6	27.4	2.8	61.7	
	6.8	90	69.3	465.0	16.77	522.2	27.7	1.8	61.6	75.0	505.0	17.45	564.6	28.9	3.8	62.5	78.2	530.0	18.01	591.5	29.4	2.8	63.1	
45.0	1.8	50	38.8	252.0	18.67	315.7	13.5	2.0	84.0	42.1	268.0	19.02	332.9	14.1	4.2	84.8	43.9	276.0	19.37	342.1	14.3	3.0	85.2	
	1.8	60	47.1	290.0	19.21	355.6	15.1	2.0	85.8	50.8	310.0	19.63	377.0	15.8	4.1	86.8	52.8	322.0	20.05	390.4	16.1	2.9	87.4	
	1.8	70	55.2	332.0	19.85	399.8	16.7	1.9	87.8	59.5	354.0	20.37	423.5	17.4	4.0	88.8	61.8	368.0	20.84	439.1	17.7	2.9	89.5	
	1.8	80	63.4	374.0	20.60	444.3	18.2	1.9	89.7	68.1	400.0	21.23	472.5	18.8	3.9	91.0	70.8	415.0	21.77	489.3	19.1	2.8	91.7	
	1.8	90	71.3	420.0	21.46	493.2	19.6	1.8	91.9	76.7	450.0	22.21	525.8	20.3	3.8	93.4	79.6	470.0	22.83	547.9	20.6	2.8	94.4	
67.5	3.9	50	38.6	256.0	17.96	317.3	14.3	2.0	79.4	41.9	274.0	18.26	336.3	15.0	4.2	80.0	43.7	284.0	18.59	347.5	15.3	3.0	80.3	
	3.9	60	46.8	296.0	18.38	358.7	16.1	2.0	80.6	50.6	318.0	18.76	382.0	17.0	4.1	81.3	52.7	330.0	19.13	395.3	17.3	2.9	81.7	
	3.8	70	55.0	338.0	18.91	402.5	17.9	1.9	81.9	59.2	364.0	19.37	430.1	18.8	4.0	82.7	61.6	378.0	19.78	445.5	19.1	2.9	83.2	
	3.8	80	62.9	384.0	19.52	450.6	19.7	1.9	83.4	67.7	415.0	20.08	483.5	20.7	3.9	84.3	70.4	430.0	20.56	500.2	20.9	2.8	84.8	
	3.8	90	70.9	430.0	20.23	499.1	21.3	1.8	84.8	76.2	465.0	20.91	536.4	22.2	3.8	85.9	79.2	485.0	21.46	558.2	22.6	2.8	86.5	
90.0	6.5	50	38.5	258.0	17.76	318.6	14.5	2.0	77.1	41.8	276.0	18.04	337.6	15.3	4.2	77.5	43.6	286.0	18.36	348.7	15.6	3.0	77.7	
	6.5	60	46.7	300.0	18.13	361.9	16.5	2.0	78.0	50.5	322.0	18.48	385.1	17.4	4.1	78.6	52.6	334.0	18.82	398.2	17.7	2.9	78.8	
	6.5	70	54.8	342.0	18.59	405.5	18.4	1.9	79.0	59.1	368.0	19.02	432.9	19.4	4.0	79.6	61.5	384.0	19.41	450.2	19.8	2.9	80.0	
	6.5	80	62.8	388.0	19.14	453.3	20.3	1.9	80.1	67.6	420.0	19.66	487.1	21.4	3.9	80.8	70.2	440.0	20.11	508.6	21.9	2.8	81.3	
	6.5	90	70.7	435.0	19.78	502.5	22.0	1.8	81.2	76.1	470.0	20.41	539.7	23.0	3.8	82.0	79.0	495.0	20.94	566.5	23.6	2.8	82.6	
45.0	1.8	50	39.3</																					

WRA, WCA 360 – Cooling (continued)

Source			ELT °F	Load Flow 45.0 GPM							Load Flow 67.5 GPM							Load Flow 90.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
45.0	1.7	50	40.9	204.0	28.28	300.5	7.2	2.0	123.4	43.6	216.0	28.63	313.7	7.5	4.2	123.9	45.1	222.0	28.98	320.9	7.7	3.0	124.3	
	1.7	60	49.4	238.0	28.92	336.7	8.2	1.9	125.0	52.5	252.0	29.29	352.0	8.6	4.1	125.6	54.2	260.0	29.64	361.2	8.8	2.9	126.1	
	1.7	70	57.8	274.0	29.54	374.8	9.3	1.9	126.7	61.4	290.0	29.98	392.3	9.7	3.9	127.4	63.4	296.0	30.34	399.6	9.8	2.9	127.8	
	1.7	80	66.2	310.0	30.27	413.3	10.2	1.9	128.4	70.2	330.0	30.80	435.1	10.7	3.9	129.3	72.4	340.0	31.26	446.7	10.9	2.8	129.9	
	1.7	90	74.4	350.0	31.12	456.2	11.2	1.8	130.3	79.0	372.0	31.78	480.5	11.7	3.8	131.4	81.5	384.0	32.28	494.2	11.9	2.8	132.0	
110	3.6	50	40.8	208.0	27.47	301.8	7.6	2.0	118.9	43.5	218.0	27.75	312.7	7.9	4.2	119.3	45.0	226.0	28.09	321.9	8.0	3.0	119.5	
	3.5	60	49.2	242.0	27.94	337.4	8.7	1.9	120.0	52.4	256.0	28.21	352.3	9.1	4.0	120.4	54.1	266.0	28.55	363.4	9.3	2.9	120.8	
	3.5	70	57.6	280.0	28.38	376.8	9.9	1.9	121.2	61.2	296.0	28.70	394.0	10.3	3.9	121.7	63.2	306.0	29.06	405.2	10.5	2.9	122.0	
	3.5	80	65.8	320.0	28.93	418.8	11.1	1.9	122.4	70.0	338.0	29.34	438.1	11.5	3.9	123.0	72.2	352.0	29.79	453.7	11.8	2.8	123.4	
	3.5	90	74.0	360.0	29.55	460.8	12.2	1.8	123.7	78.6	384.0	30.11	486.8	12.8	3.8	124.4	81.2	398.0	30.62	502.5	13.0	2.8	124.9	
90.0	6.0	50	40.7	210.0	27.20	302.8	7.7	2.0	116.7	43.5	220.0	27.45	313.7	8.0	4.2	117.0	44.9	228.0	27.79	322.8	8.2	3.0	117.2	
	6.0	60	49.2	244.0	27.58	338.1	8.8	1.9	117.5	52.3	260.0	27.82	354.9	9.3	4.0	117.9	54.0	268.0	28.09	363.9	9.5	2.9	118.1	
	6.0	70	57.4	284.0	27.89	379.2	10.2	1.9	118.4	61.1	300.0	28.18	396.2	10.6	3.9	118.8	63.1	310.0	28.54	407.4	10.9	2.9	119.1	
	6.0	80	65.6	324.0	28.34	420.7	11.4	1.9	119.3	69.8	344.0	28.71	442.0	12.0	3.9	119.8	72.0	358.0	29.12	457.4	12.3	2.8	120.2	
	6.0	90	73.7	366.0	28.89	464.6	12.7	1.8	120.3	78.4	390.0	29.38	490.3	13.3	3.8	120.9	81.0	405.0	29.85	506.9	13.6	2.8	121.3	
45.0	1.7	50	41.5	192.0	31.29	298.8	6.1	2.0	133.3	44.1	200.0	31.62	307.9	6.3	4.2	133.7	45.4	208.0	31.97	317.1	6.5	3.0	134.1	
	1.7	60	50.0	224.0	31.94	333.0	7.0	1.9	134.8	53.0	236.0	32.33	346.3	7.3	4.0	135.4	54.6	244.0	32.70	355.6	7.5	2.9	135.8	
	1.7	70	58.5	258.0	32.66	369.5	7.9	1.9	136.4	61.9	274.0	33.08	386.9	8.3	3.9	137.2	63.7	282.0	33.46	396.2	8.4	2.9	137.6	
	1.6	80	66.9	294.0	33.39	408.0	8.8	1.9	138.1	70.9	308.0	33.80	423.4	9.1	3.8	138.8	72.9	320.0	34.33	437.2	9.3	2.8	139.4	
	1.6	90	75.3	330.0	34.24	446.9	9.6	1.8	139.9	79.6	350.0	34.86	469.0	10.0	3.8	140.8	82.0	360.0	35.37	480.7	10.2	2.8	141.4	
67.5	3.5	50	41.3	196.0	30.48	300.0	6.4	2.0	128.9	44.0	204.0	30.74	308.9	6.6	4.2	129.2	45.3	212.0	31.08	318.1	6.8	3.0	129.4	
	3.5	60	49.9	228.0	30.97	333.7	7.4	1.9	129.9	52.9	240.0	31.26	346.7	7.7	4.0	130.3	54.4	250.0	31.63	358.0	7.9	2.9	130.6	
	3.5	70	58.3	264.0	31.49	371.5	8.4	1.9	131.0	61.8	278.0	31.78	386.5	8.7	3.9	131.5	63.6	290.0	32.17	399.8	9.0	2.9	131.8	
	3.5	80	66.6	302.0	32.02	411.3	9.4	1.9	132.2	70.6	318.0	32.38	428.5	9.8	3.9	132.7	72.7	330.0	32.83	442.0	10.1	2.8	133.1	
	3.5	90	74.9	340.0	32.67	451.5	10.4	1.8	133.4	79.3	362.0	33.19	475.3	10.9	3.8	134.1	81.7	374.0	33.64	488.8	11.1	2.8	134.5	
90.0	5.9	50	41.3	196.0	30.22	299.1	6.5	2.0	126.6	43.9	206.0	30.44	309.9	6.8	4.2	126.9	45.2	214.0	30.77	319.0	7.0	3.0	127.1	
	5.9	60	49.8	230.0	30.62	334.5	7.5	1.9	127.4	52.8	244.0	30.90	349.5	7.9	4.0	127.8	54.4	252.0	31.22	358.6	8.1	2.9	128.0	
	5.9	70	58.1	268.0	31.03	373.9	8.6	1.9	128.3	61.6	282.0	31.30	388.8	9.0	3.9	128.6	63.5	294.0	31.65	402.0	9.3	2.9	128.9	
	5.9	80	66.4	306.0	31.47	413.4	9.7	1.9	129.2	70.4	324.0	31.81	432.6	10.2	3.9	129.6	72.5	336.0	32.21	445.9	10.4	2.8	129.9	
	5.9	90	74.6	346.0	32.02	455.3	10.8	1.8	130.1	79.1	368.0	32.49	478.9	11.3	3.8	130.6	81.6	380.0	32.92	492.3	11.5	2.8	130.9	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Termperture

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 360 – Heating

Source			ELT °F	Load Flow 45.0 GPM						Load Flow 67.5 GPM						Load Flow 90.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	45.0	2.1	60	70.5	236.0	15.48	183.2	4.5	1.9	21.9	67.1	238.0	15.05	186.6	4.6	4.0	21.7	65.3	240.0	15.00	188.8	4.7	6.7	21.6
		2.1	80	90.0	226.0	19.18	160.5	3.5	1.8	22.9	86.8	228.0	18.70	164.2	3.6	3.8	22.7	85.1	228.0	18.61	164.5	3.6	6.4	22.7
		2.1	100	109.7	218.0	24.05	135.9	2.7	1.7	24.0	106.5	218.0	23.58	137.5	2.7	3.6	23.9	104.9	220.0	23.45	140.0	2.7	6.1	23.8
		2.1	120	129.5	214.0	29.94	111.8	2.1	1.7	25.0	126.4	216.0	29.45	115.5	2.1	3.5	24.9	124.8	216.0	29.34	115.8	2.2	5.9	24.9
	67.5	4.4	60	70.9	246.0	15.83	192.0	4.6	1.9	24.3	67.4	250.0	15.38	197.5	4.8	4.0	24.1	65.6	250.0	15.31	197.7	4.8	6.7	24.1
		4.4	80	90.5	236.0	19.52	169.4	3.5	1.8	25.0	87.1	238.0	19.02	173.1	3.7	3.8	24.9	85.3	238.0	18.91	173.5	3.7	6.4	24.9
		4.4	100	110.0	226.0	24.38	142.8	2.7	1.7	25.8	106.8	228.0	23.83	146.7	2.8	3.6	25.7	105.1	228.0	23.70	147.1	2.8	6.1	25.6
		4.4	120	129.8	220.0	30.17	117.0	2.1	1.7	26.5	126.6	222.0	29.65	120.8	2.2	3.5	26.4	124.9	222.0	29.53	121.2	2.2	5.9	26.4
	90.0	7.5	60	71.2	252.0	16.20	196.7	4.6	1.9	25.6	67.6	256.0	15.73	202.3	4.8	4.0	25.5	65.7	258.0	15.65	204.6	4.8	6.7	25.5
		7.5	80	90.7	240.0	19.88	172.2	3.5	1.8	26.2	87.2	242.0	19.35	175.9	3.7	3.8	26.1	85.4	244.0	19.24	178.3	3.7	6.4	26.0
		7.5	100	110.2	230.0	24.72	145.6	2.7	1.7	26.8	106.9	232.0	24.16	149.5	2.8	3.6	26.7	105.2	234.0	24.02	152.0	2.9	6.1	26.6
		7.5	120	130.1	228.0	30.52	123.8	2.2	1.7	27.2	126.7	226.0	29.93	123.8	2.2	3.5	27.2	125.1	228.0	29.81	126.3	2.2	5.9	27.2
50	45.0	2.1	60	71.9	268.0	16.13	212.9	4.9	1.9	30.5	68.0	270.0	15.62	216.7	5.1	4.0	30.4	66.0	272.0	15.52	219.0	5.1	6.7	30.3
		2.1	80	91.5	258.0	19.88	190.1	3.8	1.8	31.5	87.6	258.0	19.30	192.1	3.9	3.8	31.5	85.8	260.0	19.15	194.6	4.0	6.4	31.3
		2.1	100	111.1	250.0	24.72	165.6	3.0	1.7	32.6	107.4	250.0	24.11	167.7	3.0	3.6	32.5	105.6	252.0	23.94	170.3	3.1	6.1	32.4
		2.1	120	130.8	244.0	30.41	140.2	2.4	1.7	33.8	127.3	246.0	29.80	144.3	2.4	3.5	33.6	125.5	246.0	29.63	144.9	2.4	5.9	33.6
	67.5	4.3	60	72.5	282.0	16.55	225.5	5.0	1.9	33.3	68.4	284.0	16.00	229.4	5.2	4.0	33.2	66.4	286.0	15.88	231.8	5.3	6.7	33.1
		4.3	80	92.0	270.0	20.29	200.8	3.9	1.8	34.1	88.1	272.0	19.66	204.9	4.1	3.8	33.9	86.1	274.0	19.50	207.5	4.1	6.4	33.9
		4.3	100	111.6	260.0	25.01	174.6	3.0	1.7	34.8	107.8	262.0	24.33	178.9	3.2	3.6	34.7	105.8	262.0	24.14	179.6	3.2	6.1	34.7
		4.3	120	131.3	254.0	30.69	149.3	2.4	1.7	35.6	127.5	254.0	30.03	151.5	2.5	3.5	35.5	125.7	256.0	29.85	154.1	2.5	5.9	35.4
	90.0	7.2	60	72.9	290.0	16.87	232.4	5.0	1.9	34.8	68.7	294.0	16.30	238.4	5.3	4.0	34.7	66.6	296.0	16.17	240.8	5.4	6.7	34.6
		7.2	80	92.3	276.0	20.63	205.6	3.9	1.8	35.4	88.3	280.0	19.97	211.8	4.1	3.8	35.3	86.2	280.0	19.79	212.5	4.1	6.4	35.3
		7.2	100	111.8	266.0	25.34	179.5	3.1	1.7	36.0	107.8	264.0	24.59	180.1	3.1	3.6	36.0	105.9	266.0	24.40	182.7	3.2	6.1	35.9
		7.2	120	131.5	258.0	31.00	152.2	2.4	1.7	36.6	127.7	260.0	30.33	156.5	2.5	3.5	36.5	125.8	260.0	30.13	157.2	2.5	5.9	36.5
45	45.0	2.0	60	73.5	304.0	16.70	247.0	5.3	1.9	39.0	69.1	306.0	16.08	251.1	5.6	4.0	38.8	66.9	310.0	15.93	255.6	5.7	6.7	38.6
		2.0	80	93.0	292.0	20.46	222.2	4.2	1.8	40.1	88.7	294.0	19.75	226.6	4.4	3.8	39.9	86.6	296.0	19.54	229.3	4.4	6.4	39.8
		2.0	100	112.5	282.0	25.28	195.7	3.3	1.7	41.3	108.4	284.0	24.49	200.4	3.4	3.6	41.1	106.4	286.0	24.26	203.2	3.5	6.1	41.0
		2.0	120	132.4	278.0	30.96	172.3	2.6	1.7	42.3	128.2	278.0	30.20	174.9	2.7	3.5	42.2	126.2	278.0	29.97	175.7	2.7	5.9	42.2
	67.5	4.2	60	74.3	322.0	17.05	263.8	5.5	1.9	42.2	69.7	326.0	16.39	270.1	5.8	4.0	42.0	67.3	328.0	16.22	272.6	5.9	6.7	41.9
		4.2	80	93.7	308.0	20.77	237.1	4.3	1.8	43.0	89.2	312.0	20.02	243.7	4.6	3.8	42.8	87.0	314.0	19.79	246.5	4.6	6.4	42.7
		4.2	100	113.2	296.0	25.59	208.7	3.4	1.7	43.8	108.8	298.0	24.76	213.5	3.5	3.6	43.7	106.7	300.0	24.48	216.4	3.6	6.1	43.6
		4.2	120	132.8	288.0	31.28	181.2	2.7	1.7	44.6	128.6	290.0	30.48	186.0	2.8	3.5	44.5	126.4	290.0	30.22	186.9	2.8	5.9	44.5
	90.0	7.0	60	74.8	332.0	17.41	272.6	5.6	1.9	43.9	70.0	336.0	16.73	278.9	5.9	4.0	43.8	67.6	340.0	16.54	283.5	6.0	6.7	43.7
		7.0	80	94.1	318.0	21.11	246.0	4.4	1.8	44.5	89.5	320.0	20.33	250.6	4.6	3.8	44.4	87.2	324.0	20.09	255.4	4.7	6.4	44.3
		7.0	100	113.5	304.0	25.93	215.5	3.4	1.7	45.2	109.1	306.0	25.05	220.5	3.6	3.6	45.1	106.8	308.0	24.75	223.5	3.6	6.1	45.0
		7.0	120	133.1	294.0	31.61	186.1	2.7	1.7	45.9	128.8	296.0	30.78	190.9	2.8	3.5	45.8	126.6	296.0	30.51	191.9	2.8	5.9	45.7

WRA, WHA 360 – Heating (continued)

Source			ELT °F	Load Flow 45.0 GPM							Load Flow 67.5 GPM							Load Flow 90.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	45.0	2.0	60	75.3	344.0	17.23	285.2	5.8	1.9	47.3	70.3	348.0	16.51	291.6	6.2	4.0	47.0	67.8	350.0	16.31	294.3	6.3	6.7	46.9
		2.0	80	94.8	332.0	20.95	260.5	4.6	1.8	48.4	89.9	334.0	20.13	265.3	4.9	3.8	48.2	87.5	336.0	19.86	268.2	5.0	6.4	48.1
		1.9	100	114.2	320.0	25.82	231.9	3.6	1.7	49.7	109.5	322.0	24.85	237.2	3.8	3.6	49.5	107.2	324.0	24.52	240.3	3.9	6.1	49.3
	67.5	1.9	120	133.9	312.0	31.58	204.2	2.9	1.7	50.9	129.2	312.0	30.68	207.3	3.0	3.5	50.8	127.0	314.0	30.37	210.4	3.0	5.9	50.7
		4.1	60	76.3	366.0	17.66	305.7	6.1	1.9	50.9	71.0	372.0	16.89	314.3	6.5	4.0	50.7	68.3	374.0	16.67	317.1	6.6	6.7	50.6
		4.1	80	95.6	350.0	21.34	277.2	4.8	1.8	51.8	90.5	354.0	20.46	284.2	5.1	3.8	51.6	88.0	358.0	20.17	289.2	5.2	6.4	51.4
		4.1	100	114.9	336.0	26.13	246.8	3.8	1.7	52.7	110.1	340.0	25.13	254.2	4.0	3.6	52.5	107.6	342.0	24.78	257.4	4.0	6.1	52.4
	90.0	4.0	120	134.4	324.0	31.95	215.0	3.0	1.7	53.6	129.7	326.0	31.00	220.2	3.1	3.5	53.5	127.3	328.0	30.65	223.4	3.1	5.9	53.4
		6.8	60	76.8	378.0	18.06	316.3	6.1	1.9	53.0	71.4	384.0	17.26	325.1	6.5	4.0	52.8	68.6	386.0	17.02	327.9	6.6	6.7	52.7
		6.8	80	96.1	362.0	21.72	287.9	4.9	1.8	53.6	90.8	366.0	20.81	295.0	5.2	3.8	53.4	88.2	370.0	20.50	300.0	5.3	6.4	53.3
		6.8	100	115.4	346.0	26.48	255.6	3.8	1.7	54.3	110.3	348.0	25.45	261.1	4.0	3.6	54.2	107.8	352.0	25.08	266.4	4.1	6.1	54.1
		6.8	120	134.8	332.0	32.31	221.7	3.0	1.7	55.1	129.9	334.0	31.32	227.1	3.1	3.5	55.0	127.5	336.0	30.97	230.3	3.2	5.9	54.9
70	45.0	1.9	60	77.2	388.0	17.86	327.0	6.4	1.9	55.5	71.6	392.0	17.03	333.9	6.7	4.0	55.2	68.8	396.0	16.78	338.7	6.9	6.7	54.9
		1.9	80	96.5	372.0	21.56	298.4	5.1	1.8	56.7	91.1	376.0	20.60	305.7	5.3	3.8	56.4	88.4	380.0	20.28	310.8	5.5	6.4	56.2
		1.9	100	115.9	358.0	26.35	268.1	4.0	1.7	58.1	110.7	362.0	25.27	275.8	4.2	3.6	57.7	108.1	364.0	24.87	279.1	4.3	6.1	57.6
		1.9	120	135.5	348.0	32.28	237.8	3.2	1.7	59.4	130.4	350.0	31.22	243.5	3.3	3.5	59.2	127.8	352.0	30.80	246.9	3.3	5.9	59.0
	67.5	4.0	60	78.4	415.0	18.39	352.2	6.6	1.9	59.6	72.4	420.0	17.49	360.3	7.0	3.9	59.3	69.4	425.0	17.21	366.3	7.2	6.7	59.1
		4.0	80	97.6	396.0	22.04	320.8	5.3	1.8	60.5	91.9	400.0	21.02	328.3	5.6	3.8	60.3	89.0	405.0	20.66	334.5	5.7	6.4	60.1
		4.0	100	116.8	378.0	26.78	286.6	4.1	1.7	61.5	111.3	382.0	25.63	294.5	4.4	3.6	61.3	108.6	386.0	25.20	300.0	4.5	6.1	61.1
		3.9	120	135.9	358.0	32.60	246.7	3.2	1.7	62.7	130.7	362.0	31.47	254.6	3.4	3.5	62.5	128.1	364.0	31.04	258.1	3.4	5.9	62.4
	90.0	6.7	60	78.9	425.0	18.81	360.8	6.6	1.9	62.0	72.9	435.0	17.90	373.9	7.1	3.9	61.7	69.8	440.0	17.61	379.9	7.3	6.7	61.6
		6.7	80	98.2	410.0	22.48	333.3	5.3	1.8	62.6	92.3	415.0	21.41	341.9	5.7	3.8	62.4	89.3	420.0	21.03	348.2	5.9	6.4	62.3
		6.7	100	117.2	388.0	27.18	295.2	4.2	1.7	63.4	111.7	394.0	25.99	305.3	4.4	3.6	63.2	108.8	398.0	25.54	310.8	4.6	6.1	63.1
		6.7	120	136.5	372.0	33.07	269.1	3.3	1.7	64.2	131.1	376.0	31.87	267.2	3.5	3.5	64.1	128.4	378.0	31.40	270.8	3.5	5.9	64.0
80	45.0	1.9	60	79.3	435.0	18.58	371.6	6.9	1.9	63.5	73.0	440.0	17.64	379.8	7.3	3.9	63.1	69.9	445.0	17.33	385.9	7.5	6.7	62.9
		1.9	80	98.4	415.0	22.28	339.0	5.5	1.8	64.9	92.4	420.0	21.18	347.7	5.8	3.8	64.5	89.4	425.0	20.79	354.1	6.0	6.4	64.3
		1.9	100	117.8	400.0	27.05	307.7	4.3	1.7	66.3	112.0	405.0	25.80	316.9	4.6	3.6	65.9	109.0	405.0	25.33	318.5	4.7	6.1	65.8
		1.9	120	137.2	386.0	33.00	273.4	3.4	1.7	67.8	131.5	388.0	31.72	279.7	3.6	3.5	67.6	128.7	390.0	31.22	283.5	3.7	5.9	67.4
	67.5	3.9	60	80.7	465.0	19.22	399.4	7.1	1.9	68.2	74.1	475.0	18.21	412.8	7.6	3.9	67.8	70.6	475.0	17.85	414.1	7.8	6.7	67.7
		3.9	80	99.8	445.0	22.87	366.9	5.7	1.8	69.1	93.3	450.0	21.70	376.0	6.1	3.8	68.9	90.1	455.0	21.26	382.4	6.3	6.4	68.7
		3.9	100	118.7	420.0	27.58	325.9	4.5	1.7	70.3	112.7	430.0	26.26	340.4	4.8	3.6	69.9	109.6	430.0	25.72	342.2	4.9	6.1	69.9
		3.9	120	138.4	415.0	33.69	300.0	3.6	1.6	71.1	132.1	410.0	32.14	300.3	3.7	3.5	71.1	129.1	410.0	31.58	302.2	3.8	5.9	71.0
	90.0	6.5	60	81.3	480.0	19.76	412.6	7.1	1.9	70.8	74.5	490.0	18.68	426.2	7.7	3.9	70.5	71.0	495.0	18.31	432.5	7.9	6.7	70.4
		6.5	80	100.4	460.0	23.36	380.3	5.8	1.8	71.5	93.8	465.0	22.14	389.4	6.2	3.8	71.3	90.4	470.0	21.70	396.0	6.3	6.4	71.2
		6.5	100	120.4	460.0	28.52	362.7	4.7	1.7	71.9	113.5	455.0	26.86	363.3	5.0	3.6	71.9	110.0	450.0	26.22	360.5	5.0	6.1	72.0
		6.5	120	138.4	414.0	33.94	298.2	3.6	1.7	73.4	132.4	419.0	32.54	308.0	3.8	3.5	73.2	129.4	423.0	31.97	313.9	3.9	5.9	73.0

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

WRA, WCA 420 – Cooling

Source			ELT °F	Load Flow 52.5 GPM						Load Flow 78.75 GPM						Load Flow 105.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	52.5	2.6	50	37.5	328.0	16.45	384.2	19.9	2.7	54.6	41.1	350.0	16.99	408.0	20.6	5.5	55.5	43.1	362.0	17.53	421.8	20.6	9.3	56.1
		2.6	60	45.8	374.0	17.15	432.5	21.8	2.6	56.5	49.8	400.0	17.77	460.6	22.5	5.4	57.5	52.1	415.0	18.36	477.7	22.6	9.1	58.2
		2.6	70	53.8	425.0	17.94	486.2	23.7	2.5	58.5	58.4	455.0	18.67	518.7	24.4	5.2	59.8	61.0	475.0	19.32	540.9	24.6	8.8	60.6
		2.6	80	61.9	475.0	18.83	539.3	25.2	2.5	60.5	66.9	515.0	19.69	582.2	26.2	5.1	62.2	69.8	535.0	20.42	604.7	26.2	8.6	63.0
		2.6	90	69.6	535.0	19.83	602.7	27.0	2.4	63.0	75.4	575.0	20.83	646.1	27.6	5.0	64.6	78.6	600.0	21.65	673.9	27.7	8.5	65.7
	78.75	5.5	50	37.3	334.0	15.81	388.0	21.1	2.7	49.9	40.9	358.0	16.30	413.6	22.0	5.5	50.5	43.0	370.0	16.81	427.4	22.0	9.3	50.9
		5.5	60	45.4	382.0	16.41	438.0	23.3	2.6	51.1	49.6	410.0	16.97	467.9	24.2	5.4	51.9	51.9	425.0	17.52	484.8	24.3	9.1	52.3
		5.5	70	53.4	435.0	17.08	493.3	25.5	2.5	52.5	58.1	470.0	17.73	530.5	26.5	5.3	53.5	60.7	490.0	18.35	552.6	26.7	8.8	54.0
		5.5	80	61.3	490.0	17.84	559.0	27.5	2.5	54.0	66.5	530.0	18.61	593.5	28.5	5.1	55.1	69.4	555.0	19.29	620.8	28.8	8.6	55.8
		5.5	90	69.2	545.0	18.69	608.8	29.2	2.4	55.5	74.9	595.0	19.59	661.9	30.4	5.0	56.8	78.2	620.0	20.36	689.5	30.4	8.5	57.5
	105.0	9.4	50	37.1	338.0	15.74	391.7	21.5	2.7	47.5	40.8	362.0	16.21	417.3	22.3	5.5	47.9	42.9	374.0	16.71	431.0	22.4	9.3	48.2
		9.4	60	45.3	386.0	16.29	441.6	23.7	2.6	48.4	49.5	415.0	16.81	472.4	24.7	5.4	49.0	51.7	435.0	17.36	494.2	25.1	9.1	49.4
		9.3	70	53.2	440.0	16.90	497.7	26.0	2.5	49.5	57.9	475.0	17.52	534.8	27.1	5.3	50.2	60.6	495.0	18.11	556.8	27.3	8.8	50.6
		9.3	80	61.1	495.0	17.59	555.0	28.1	2.5	50.6	66.3	540.0	18.32	602.5	29.5	5.1	51.5	69.3	560.0	18.98	624.8	29.5	8.6	51.9
		9.3	90	68.9	555.0	18.37	617.7	30.2	2.4	51.8	74.6	605.0	19.23	670.6	31.5	5.0	52.8	78.0	630.0	19.96	698.1	31.6	8.5	53.3
50	52.5	2.6	50	38.0	316.0	16.06	377.7	17.5	2.7	64.4	41.5	336.0	18.56	399.3	18.1	5.5	65.2	43.4	348.0	19.11	413.2	18.2	9.3	65.7
		2.5	60	46.2	362.0	18.74	425.9	19.3	2.6	66.2	50.2	386.0	19.34	452.0	20.0	5.4	67.2	52.4	400.0	19.93	468.0	20.1	9.1	67.8
		2.5	70	54.4	410.0	19.52	476.6	21.0	2.5	68.2	58.8	440.0	20.23	509.0	21.7	5.2	69.4	61.2	460.0	20.88	531.3	22.0	8.8	70.2
		2.5	80	62.3	465.0	20.42	534.7	22.8	2.5	70.4	67.3	500.0	21.24	572.5	23.5	5.1	71.8	70.1	520.0	21.97	595.0	23.7	8.6	72.7
		2.5	90	70.4	515.0	21.42	588.1	24.0	2.4	72.4	75.8	560.0	22.39	636.4	25.0	5.0	74.2	79.0	580.0	23.21	659.2	25.0	8.5	75.1
	78.75	5.4	50	37.7	322.0	17.35	381.2	18.6	2.7	59.7	41.3	344.0	17.83	404.9	19.3	5.5	60.3	43.2	356.0	18.33	418.6	19.4	9.3	60.6
		5.4	60	46.0	368.0	17.94	429.2	20.5	2.6	60.9	49.9	396.0	18.47	459.0	21.4	5.4	61.7	52.2	410.0	19.02	474.9	21.6	9.1	62.1
		5.4	70	54.0	420.0	18.59	483.5	22.6	2.5	62.3	58.6	450.0	19.22	515.6	23.4	5.2	63.1	61.0	470.0	19.83	537.7	23.7	8.8	63.7
		5.3	80	61.9	475.0	19.34	541.0	24.6	2.5	63.7	66.9	515.0	20.09	583.6	25.6	5.1	64.8	69.8	535.0	20.76	605.8	25.8	8.6	65.4
		5.3	90	69.8	530.0	20.19	598.9	26.3	2.4	65.2	75.4	575.0	21.07	646.9	27.3	5.0	66.4	78.6	600.0	21.82	674.5	27.5	8.5	67.1
	105.0	9.1	50	37.7	324.0	17.25	382.9	18.8	2.7	57.3	41.2	348.0	17.71	408.4	19.7	5.5	57.8	43.1	360.0	18.19	422.1	19.8	9.3	58.0
		9.1	60	45.8	372.0	17.78	432.7	20.9	2.6	58.2	49.8	400.0	18.28	462.4	21.9	5.4	58.8	52.1	415.0	18.81	479.2	22.1	9.1	59.1
		9.1	70	53.8	425.0	18.37	487.7	23.1	2.5	59.3	58.3	460.0	18.97	524.7	24.3	5.2	60.0	60.9	480.0	19.54	546.7	24.6	8.8	60.4
		9.1	80	61.7	480.0	19.05	545.0	25.2	2.5	60.4	66.8	520.0	19.75	587.4	26.3	5.1	61.2	69.6	545.0	20.40	614.6	26.7	8.6	61.7
		9.1	90	69.4	540.0	19.82	607.6	27.2	2.4	61.6	75.1	585.0	20.65	655.5	28.3	5.0	62.5	78.4	610.0	21.38	683.0	28.5	8.5	63.0
70	52.5	2.4	50	39.0	290.0	22.01	365.1	13.2	2.7	83.9	42.2	308.0	22.45	384.6	13.7	5.5	84.7	43.9	318.0	22.97	396.4	13.8	9.3	85.1
		2.4	60	47.3	334.0	22.66	411.3	14.7	2.6	85.7	51.0	356.0	23.21	435.2	15.3	5.4	86.6	53.0	370.0	23.76	451.1	15.6	9.1	87.2
		2.4	70	55.4	382.0	23.42	461.9	16.3	2.5	87.6	59.6	410.0	24.07	492.2	17.0	5.2	88.7	61.9	425.0	24.71	509.3	17.2	8.8	89.4
		2.4	80	63.6	430.0	24.31	513.0	17.7	2.5	89.5	68.3	460.0	25.07	545.6	18.3	5.1	90.8	70.9	480.0	25.78	568.0	18.6	8.6	91.6
		2.4	90	71.5	485.0	25.32	571.4	19.2	2.4	91.8	76.8	520.0	26.24	609.5	19.8	5.0	93.2	79.7	540.0	27.03	632.2	20.0	8.4	94.1
	78.75	5.1	50	38.7	296.0	21.19	368.3	14.0	2.7	79.4	42.0	314.0	21.57	387.6	14.6	5.5	79.8	43.8	326.0	22.09	401.4	14.8	9.3	80.2
		5.1	60	47.0	342.0	21.70	416.1	15.8	2.6	80.6	50.8	364.0	22.20	439.8	16.4	5.4	81.2	52.8	378.0	22.72	455.6	16.6	9.1	81.6
		5.1	70	55.1	390.0	22.32	466.2	17.5	2.5	81.8	59.3	420.0	22.91	498.2	18.3	5.2	82.7	61.7	435.0	23.48	515.2	18.5	8.8	83.1
		5.1	80	63.2	440.0	23.05	518.7	19.1	2.5	83.2	67.9	475.0	23.74	556.0	20.0	5.1	84.1	70.6	495.0	24.39	578.2	20.3	8.6	84.7
		5.1	90	71.1	495.0	23.89	576.5	20.7	2.4	84.6	76.4	535.0	24.72	619.4	21.6	5.0	85.7	79.3	560.0	25.43	646.8	22.0	8.4	86.4
	105.0	8.7	50	38.6	298.0	21.02	369.7	14.2	2.7	77.0	41.9	318.0	21.40	391.0	14.9	5.5	77.4	43.7	330.0	21.88	404.7	15.1	9.3	77.7
		8.7	60	46.9	344.0	21.46	417.2	16.0	2.6	77.9	50.6	370.0	21.93	444.8	16.9	5.4	78.5	52.7	384.0	22.43	460.5	17.1	9.1	78.8
		8.6	70	55.0	394.0	22.02	469.2	17.9	2.5	78.9	59.2	425.0	22.56	502.0	18.8	5.2	79.6	61.6	440.0	23.11	518.9	19.0	8.8	79.9
		8.6	80	62.9	450.0	22.66	527.4	19.9	2.5	80.0	67.7	485.0	23.31	564.6	20.8	5.1	80.8	70.4	505.0					

WRA, WCA 420 – Cooling (continued)

Source			ELT °F	Load Flow 52.5 GPM						Load Flow 78.75 GPM						Load Flow 105.0 GPM								
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	52.5	2.2	50	41.1	234.0	33.68	349.0	6.9	2.6	123.3	43.8	246.0	34.09	362.3	7.2	5.5	123.8	45.2	254.0	34.54	371.9	7.4	9.3	124.2
		2.2	60	49.6	272.0	34.29	389.0	7.9	2.6	124.8	52.6	290.0	34.75	408.6	8.3	5.4	125.6	54.3	298.0	35.24	418.3	8.5	9.0	125.9
		2.2	70	58.0	314.0	35.01	433.5	9.0	2.5	126.5	61.5	334.0	35.57	455.4	9.4	5.2	127.3	63.4	344.0	36.11	467.3	9.5	8.8	127.8
		2.2	80	66.4	358.0	35.88	480.4	10.0	2.5	128.3	70.4	378.0	36.43	502.3	10.4	5.1	129.1	72.5	392.0	37.15	518.8	10.6	8.6	129.8
		2.2	90	74.6	405.0	36.90	530.9	11.0	2.4	130.2	79.2	425.0	37.58	553.3	11.3	5.0	131.1	81.6	440.0	38.37	570.9	11.5	8.4	131.8
	78.75	4.7	50	41.0	236.0	32.73	347.7	7.2	2.6	118.8	43.6	252.0	33.04	364.8	7.6	5.5	119.3	45.0	260.0	33.45	374.2	7.8	9.3	119.5
		4.7	60	49.4	278.0	33.11	391.0	8.4	2.6	119.9	52.5	294.0	33.47	408.2	8.8	5.4	120.4	54.2	306.0	33.95	421.9	9.0	9.0	120.7
		4.7	70	57.7	322.0	33.64	436.8	9.6	2.5	121.1	61.3	342.0	34.10	458.4	10.0	5.2	121.6	63.3	354.0	34.61	472.1	10.2	8.8	122.0
		4.7	80	66.0	368.0	34.29	485.0	10.7	2.5	122.3	70.1	390.0	34.80	508.8	11.2	5.1	122.9	72.3	405.0	35.44	525.9	11.4	8.6	123.4
		4.7	90	74.2	415.0	35.09	534.8	11.8	2.4	123.6	78.8	440.0	35.78	562.1	12.3	5.0	124.3	81.3	455.0	36.41	579.3	12.5	8.4	124.7
	105.0	8.0	50	40.9	240.0	32.44	350.7	7.4	2.6	116.7	43.5	254.0	32.72	365.7	7.8	5.5	117.0	45.0	262.0	33.12	375.0	7.9	9.3	117.1
		8.0	60	49.3	282.0	32.74	393.7	8.6	2.6	117.5	52.4	298.0	33.07	410.9	9.0	5.4	117.8	54.1	310.0	33.51	424.4	9.3	9.0	118.1
		8.0	70	57.6	326.0	33.16	439.2	9.8	2.5	118.4	61.2	348.0	33.58	462.6	10.4	5.2	118.8	63.1	360.0	34.01	476.1	10.6	8.8	119.1
		8.0	80	65.8	372.0	33.66	486.9	11.1	2.5	119.3	69.9	396.0	34.13	512.5	11.6	5.1	119.8	72.2	410.0	34.70	528.4	11.8	8.6	120.1
		7.9	90	74.0	420.0	34.32	537.1	12.2	2.4	120.2	78.6	450.0	34.92	569.2	12.9	5.0	120.8	81.1	465.0	35.54	586.3	13.1	8.4	121.2
120	52.5	2.2	50	41.6	220.0	37.28	347.2	5.9	2.6	133.2	44.1	232.0	37.72	360.7	6.2	5.5	133.7	45.5	236.0	38.19	366.3	6.2	9.3	134.0
		2.2	60	50.2	256.0	38.04	385.8	6.7	2.6	134.7	53.1	272.0	38.48	403.3	7.1	5.4	135.4	54.7	278.0	38.96	411.0	7.1	9.0	135.7
		2.2	70	58.6	298.0	38.74	430.2	7.7	2.5	136.4	62.0	314.0	39.29	448.1	8.0	5.2	137.1	63.9	322.0	39.82	457.9	8.1	8.8	137.4
		2.2	80	67.1	338.0	39.62	473.2	8.5	2.5	138.0	70.9	358.0	40.26	495.4	8.9	5.1	138.9	73.0	368.0	40.86	507.4	9.0	8.6	139.3
		2.2	90	75.5	380.0	40.64	518.7	9.3	2.4	139.8	79.7	405.0	41.42	546.4	9.8	5.0	140.8	82.1	415.0	42.09	558.7	9.9	8.4	141.3
	78.75	4.6	50	41.5	222.0	36.35	346.0	6.1	2.6	128.8	44.0	236.0	36.72	361.3	6.4	5.5	129.2	45.4	242.0	37.18	368.9	6.5	9.3	129.4
		4.6	60	50.0	262.0	36.86	387.8	7.1	2.6	129.8	52.9	278.0	37.21	405.0	7.5	5.4	130.3	54.6	286.0	37.65	414.5	7.6	9.0	130.5
		4.6	70	58.4	304.0	37.36	431.5	8.1	2.5	131.0	61.8	322.0	37.79	451.0	8.5	5.2	131.5	63.7	332.0	38.28	462.7	8.7	8.8	131.8
		4.6	80	66.7	348.0	37.99	477.7	9.2	2.5	132.1	70.7	368.0	38.53	499.5	9.6	5.1	132.7	72.8	380.0	39.08	513.4	9.7	8.6	133.0
		4.6	90	75.1	392.0	38.77	524.3	10.1	2.4	133.3	79.5	415.0	39.43	549.6	10.5	5.0	134.0	81.8	430.0	40.03	566.6	10.7	8.4	134.4
	105.0	7.8	50	41.5	224.0	36.08	347.1	6.2	2.6	126.6	44.0	238.0	36.44	362.4	6.5	5.5	126.9	45.4	244.0	36.86	369.8	6.6	9.3	127.0
		7.8	60	49.9	266.0	36.47	390.5	7.3	2.6	127.4	52.9	280.0	36.78	405.5	7.6	5.4	127.7	54.5	290.0	37.22	417.0	7.8	9.0	127.9
		7.8	70	58.3	308.0	36.88	433.9	8.4	2.5	128.3	61.7	326.0	37.26	453.2	8.7	5.2	128.6	63.6	338.0	37.73	466.8	9.0	8.8	128.9
		7.8	80	66.6	352.0	37.39	479.6	9.4	2.5	129.1	70.5	374.0	37.87	503.3	9.9	5.1	129.6	72.6	386.0	38.40	517.1	10.1	8.6	129.8
		7.8	90	74.8	398.0	38.05	527.9	10.5	2.4	130.1	79.2	425.0	38.65	556.9	11.0	5.0	130.6	81.6	440.0	39.21	573.8	11.2	8.4	130.9

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Terperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 420 – Heating

Source			ELT °F	Load Flow 52.5 GPM							Load Flow 78.75 GPM							Load Flow 105.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	52.5	2.8	60	70.6	278.0	18.69	214.2	4.4	2.5	21.8	67.1	280.0	18.19	217.9	4.5	5.3	21.7	65.4	282.0	18.19	219.9	4.5	8.9	21.6
		2.8	80	90.2	268.0	23.18	188.9	3.4	2.4	22.8	86.9	270.0	22.62	192.8	3.5	5.0	22.7	85.2	272.0	22.57	195.0	3.5	8.5	22.6
		2.8	100	109.9	260.0	28.97	161.1	2.6	2.3	23.9	106.7	262.0	28.40	165.1	2.7	4.8	23.7	105.0	262.0	28.36	165.2	2.7	8.2	23.7
		2.8	120	129.8	256.0	35.89	133.5	2.1	2.2	24.9	126.5	256.0	35.29	135.6	2.1	4.6	24.8	124.9	258.0	35.19	137.9	2.1	7.9	24.7
	78.75	5.9	60	71.0	290.0	19.17	224.6	4.4	2.5	24.3	67.5	294.0	18.60	230.5	4.6	5.3	24.1	65.6	296.0	18.56	232.7	4.7	8.9	24.1
		5.9	80	90.6	278.0	23.65	197.3	3.4	2.4	25.0	87.1	280.0	23.05	201.3	3.6	5.0	24.9	85.4	282.0	22.98	203.6	3.6	8.5	24.8
		5.9	100	110.3	270.0	29.33	169.9	2.7	2.3	25.7	106.9	272.0	28.72	174.0	2.8	4.8	25.6	105.2	272.0	28.63	174.3	2.8	8.1	25.6
		5.9	120	130.1	264.0	36.12	140.7	2.1	2.2	26.4	126.8	266.0	35.52	144.8	2.2	4.6	26.3	125.1	266.0	35.42	145.1	2.2	7.9	26.3
	105.0	9.9	60	71.4	298.0	19.58	231.2	4.5	2.5	25.6	67.7	302.0	19.02	237.1	4.7	5.3	25.5	65.8	304.0	18.98	239.2	4.7	8.9	25.4
		9.9	80	90.9	286.0	24.11	203.7	3.5	2.4	26.1	87.3	288.0	23.48	207.8	3.6	5.0	26.0	85.5	290.0	23.38	210.2	3.6	8.5	26.0
		9.9	100	110.4	274.0	29.78	172.4	2.7	2.3	26.7	107.0	276.0	29.15	176.5	2.8	4.8	26.6	105.3	278.0	29.06	178.8	2.8	8.1	26.6
		9.9	120	130.3	270.0	36.56	145.2	2.2	2.2	27.2	126.9	270.0	35.94	147.4	2.2	4.6	27.2	125.2	272.0	35.83	149.7	2.2	7.9	27.1
40	52.5	2.7	60	72.0	316.0	19.23	250.4	4.8	2.5	30.5	68.1	318.0	18.62	254.4	5.0	5.3	30.3	66.1	322.0	18.55	258.7	5.1	8.9	30.1
		2.7	80	91.6	304.0	23.75	222.9	3.8	2.4	31.5	87.8	306.0	23.05	227.3	3.9	5.0	31.3	85.9	308.0	22.93	229.7	3.9	8.5	31.2
		2.7	100	111.3	296.0	29.56	195.1	2.9	2.3	32.6	107.6	298.0	28.85	199.5	3.0	4.8	32.4	105.7	298.0	28.71	200.0	3.0	8.1	32.4
		2.7	120	131.1	292.0	36.38	167.8	2.4	2.2	33.6	127.4	292.0	35.65	170.3	2.4	4.6	33.5	125.6	294.0	35.50	172.8	2.4	7.9	33.4
	78.75	5.7	60	72.6	332.0	19.62	265.0	5.0	2.5	33.3	68.5	336.0	18.98	271.2	5.2	5.3	33.1	66.5	340.0	18.89	275.5	5.3	8.9	33.0
		5.7	80	92.1	318.0	24.11	235.7	3.9	2.4	34.0	88.2	322.0	23.36	242.3	4.0	5.0	33.8	86.2	324.0	23.22	244.8	4.1	8.5	33.8
		5.7	100	111.7	308.0	29.97	205.7	3.0	2.3	34.8	107.9	310.0	29.17	210.4	3.1	4.8	34.7	105.9	312.0	28.92	213.3	3.2	8.1	34.6
		5.7	120	131.5	302.0	36.75	176.6	2.4	2.2	35.5	127.7	304.0	35.98	181.2	2.5	4.6	35.4	125.8	304.0	35.80	181.8	2.5	7.9	35.4
	105.0	9.6	60	73.0	342.0	20.10	273.4	5.0	2.5	34.8	68.8	346.0	19.43	279.7	5.2	5.3	34.7	66.7	350.0	19.33	284.0	5.3	8.9	34.6
		9.6	80	92.5	328.0	24.55	244.2	3.9	2.4	35.3	88.4	330.0	23.79	248.8	4.1	5.0	35.3	86.4	334.0	23.63	253.4	4.1	8.5	35.2
		9.6	100	112.0	316.0	30.41	212.2	3.0	2.3	36.0	108.1	318.0	29.52	217.2	3.2	4.8	35.9	106.1	320.0	29.31	220.0	3.2	8.1	35.8
		9.6	120	131.7	308.0	37.20	181.0	2.4	2.2	36.6	127.9	310.0	36.41	185.7	2.5	4.6	36.5	125.9	310.0	36.22	186.4	2.5	7.9	36.4
50	52.5	2.7	60	73.6	358.0	19.76	290.6	5.3	2.5	38.9	69.2	362.0	19.05	297.0	5.6	5.2	38.7	67.0	366.0	18.93	301.4	5.7	8.9	38.5
		2.7	80	93.2	346.0	24.24	263.3	4.2	2.4	40.0	88.8	348.0	23.40	268.1	4.4	5.0	39.8	86.7	350.0	23.22	270.8	4.4	8.5	39.7
		2.6	100	112.7	334.0	30.15	231.1	3.2	2.3	41.2	108.6	338.0	29.14	238.5	3.4	4.8	40.9	106.5	340.0	28.86	241.5	3.5	8.1	40.8
		2.6	120	132.6	330.0	37.04	203.6	2.6	2.2	42.2	128.4	330.0	36.15	206.6	2.7	4.6	42.1	126.3	332.0	35.91	209.4	2.7	7.8	42.0
	78.75	5.5	60	74.5	380.0	20.24	310.9	5.5	2.5	42.1	69.8	384.0	19.47	317.5	5.8	5.2	41.9	67.4	388.0	19.32	322.0	5.9	8.9	41.8
		5.5	80	93.9	364.0	24.67	279.8	4.3	2.4	42.9	89.3	368.0	23.78	286.8	4.5	5.0	42.7	87.0	370.0	23.56	289.6	4.6	8.5	42.6
		5.5	100	113.4	352.0	30.50	247.9	3.4	2.3	43.7	109.0	354.0	29.44	253.5	3.5	4.8	43.6	106.8	356.0	29.15	256.5	3.6	8.1	43.5
		5.5	120	133.0	342.0	37.47	214.1	2.7	2.2	44.6	128.7	344.0	36.52	219.4	2.8	4.6	44.4	126.6	346.0	36.25	222.3	2.8	7.8	44.4
	105.0	9.3	60	74.9	392.0	20.75	321.2	5.5	2.5	43.9	70.1	398.0	19.95	329.9	5.8	5.2	43.7	67.6	400.0	19.79	332.4	5.9	8.9	43.7
		9.3	80	94.3	376.0	25.16	290.1	4.4	2.4	44.5	89.7	380.0	24.23	297.3	4.6	5.0	44.3	87.3	382.0	24.00	300.1	4.7	8.5	44.3
		9.3	100	113.7	360.0	30.93	254.4	3.4	2.3	45.2	109.2	364.0	29.86	262.1	3.6	4.8	45.0	107.0	366.0	29.55	265.1	3.6	8.1	44.9
		9.3	120	133.3	350.0	37.94	220.5	2.7	2.2	45.8	128.9	352.0	36.96	225.9	2.8	4.6	45.7	126.7	354.0	36.68	228.8	2.8	7.8	45.6

WRA, WHA 420 – Heating (continued)

Source			ELT °F	Load Flow 52.5 GPM							Load Flow 78.75 GPM							Load Flow 105.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	52.5	2.6	60	75.4	405.0	20.42	335.3	5.8	2.5	47.2	70.4	410.0	19.57	343.2	6.1	5.2	46.9	67.9	415.0	19.39	348.8	6.3	8.9	46.7
		2.6	80	94.9	390.0	24.86	305.2	4.6	2.4	48.4	90.0	394.0	23.87	312.5	4.8	5.0	48.1	87.6	398.0	23.61	317.4	4.9	8.5	47.9
		2.6	100	114.4	378.0	30.66	273.4	3.6	2.3	49.6	109.7	382.0	29.50	281.3	3.8	4.8	49.3	107.3	384.0	29.16	284.5	3.9	8.1	49.2
		2.6	120	134.1	370.0	37.79	241.0	2.9	2.2	50.8	129.4	372.0	36.66	246.9	3.0	4.6	50.6	127.1	372.0	36.31	248.1	3.0	7.8	50.5
	78.75	5.4	60	76.4	430.0	20.98	358.4	6.0	2.5	50.9	71.0	435.0	20.07	366.5	6.4	5.2	50.7	68.4	440.0	19.86	372.2	6.5	8.9	50.5
		5.4	80	95.8	415.0	25.37	328.4	4.8	2.4	51.7	90.7	420.0	24.32	337.0	5.1	5.0	51.4	88.0	420.0	24.03	338.0	5.1	8.5	51.4
		5.4	100	115.2	398.0	31.10	291.8	3.7	2.3	52.6	110.2	400.0	29.90	298.0	3.9	4.8	52.4	107.7	405.0	29.52	304.2	4.0	8.1	52.3
		5.4	120	134.7	386.0	38.22	255.5	3.0	2.2	53.5	129.9	388.0	37.02	261.7	3.1	4.6	53.4	127.4	390.0	36.63	265.0	3.1	7.8	53.3
	105.0	9.1	60	77.0	445.0	21.54	371.5	6.1	2.5	52.9	71.4	450.0	20.59	379.7	6.4	5.2	52.8	68.7	455.0	20.36	385.5	6.5	8.9	52.7
		9.1	80	96.2	425.0	25.91	336.6	4.8	2.4	53.6	90.9	430.0	24.82	345.3	5.1	5.0	53.4	88.3	435.0	24.50	351.4	5.2	8.5	53.3
		9.0	100	115.6	410.0	31.60	302.2	3.8	2.3	54.2	110.5	415.0	30.36	311.4	4.0	4.8	54.1	107.9	415.0	29.96	312.7	4.1	8.1	54.0
		9.0	120	135.0	394.0	38.69	261.9	3.0	2.2	55.0	130.1	396.0	37.45	268.2	3.1	4.6	54.9	127.6	400.0	37.04	273.6	3.2	7.8	54.8
70	52.5	2.5	60	77.3	455.0	21.18	382.7	6.3	2.5	55.4	71.7	460.0	20.20	391.1	6.7	5.2	55.1	68.9	465.0	19.95	396.9	6.8	8.9	54.9
		2.5	80	96.8	440.0	25.60	352.6	5.0	2.4	56.6	91.3	445.0	24.46	361.5	5.3	5.0	56.2	88.6	450.0	24.12	367.7	5.5	8.5	56.0
		2.5	100	116.2	425.0	31.34	318.0	4.0	2.3	57.9	110.9	430.0	30.03	327.5	4.2	4.8	57.5	108.2	430.0	29.60	329.0	4.3	8.1	57.5
		2.5	120	135.6	410.0	38.49	278.6	3.1	2.2	59.4	130.5	415.0	37.16	288.2	3.3	4.6	59.0	127.9	415.0	36.70	289.7	3.3	7.8	59.0
	78.75	5.2	60	78.5	485.0	21.83	410.5	6.5	2.5	59.6	72.6	495.0	20.78	424.1	7.0	5.2	59.2	69.5	500.0	20.50	430.0	7.1	8.9	59.1
		5.2	80	97.7	465.0	26.19	375.6	5.2	2.4	60.5	91.9	470.0	24.98	384.7	5.5	5.0	60.2	89.0	475.0	24.61	391.0	5.7	8.5	60.1
		5.2	100	117.0	445.0	31.90	336.1	4.1	2.3	61.5	111.4	450.0	30.51	345.9	4.3	4.8	61.2	108.7	455.0	30.02	352.5	4.4	8.1	61.0
		5.2	120	136.4	430.0	39.01	296.9	3.2	2.2	62.5	131.0	435.0	37.59	306.7	3.4	4.6	62.2	128.3	435.0	37.09	308.4	3.4	7.8	62.2
	105.0	8.8	60	79.2	505.0	22.44	428.4	6.6	2.5	61.8	73.1	515.0	21.37	442.1	7.1	5.2	61.6	69.9	520.0	21.06	448.1	7.2	8.9	61.5
		8.8	80	98.3	480.0	26.82	388.5	5.2	2.4	62.6	92.4	490.0	25.54	402.8	5.6	5.0	62.3	89.4	495.0	25.14	409.2	5.8	8.5	62.2
		8.8	100	117.5	460.0	32.46	349.2	4.2	2.3	63.3	111.8	465.0	31.02	359.1	4.4	4.8	63.2	109.0	470.0	30.53	365.8	4.5	8.1	63.0
		8.8	120	136.8	440.0	39.53	305.1	3.3	2.2	64.2	131.3	445.0	38.06	315.1	3.4	4.6	64.0	128.6	450.0	37.54	321.9	3.5	7.8	63.9
80	52.5	2.5	60	79.4	510.0	22.05	434.7	6.8	2.5	63.4	73.1	515.0	20.92	443.6	7.2	5.2	63.1	69.9	520.0	20.60	449.7	7.4	8.9	62.9
		2.5	80	98.7	490.0	26.47	399.7	5.4	2.4	64.8	92.6	495.0	25.15	409.1	5.8	5.0	64.4	89.5	500.0	24.73	415.6	5.9	8.5	64.2
		2.5	100	117.9	470.0	32.18	360.2	4.3	2.3	66.3	112.1	475.0	30.68	370.3	4.5	4.8	65.9	109.1	480.0	30.16	377.1	4.7	8.1	65.6
		2.5	120	137.3	455.0	39.34	320.7	3.4	2.2	67.8	131.7	460.0	37.78	331.1	3.6	4.6	67.4	128.9	465.0	37.21	338.0	3.7	7.8	67.1
	78.75	5.1	60	80.8	545.0	22.85	467.0	7.0	2.5	68.1	74.1	555.0	21.63	481.2	7.5	5.2	67.8	70.7	560.0	21.26	487.4	7.7	8.8	67.6
		5.1	80	99.8	520.0	27.22	427.1	5.6	2.4	69.2	93.5	530.0	25.81	441.9	6.0	5.0	68.8	90.2	535.0	25.34	448.5	6.2	8.4	68.6
		5.1	100	119.0	500.0	32.87	387.8	4.5	2.3	70.2	112.8	505.0	31.27	398.3	4.7	4.8	69.9	109.7	510.0	30.70	405.2	4.9	8.1	69.7
		5.1	120	138.3	480.0	39.96	343.6	3.5	2.2	71.3	132.3	485.0	38.31	354.3	3.7	4.6	71.0	129.2	485.0	37.69	356.4	3.8	7.8	70.9
	105.0	8.6	60	81.5	565.0	23.54	484.7	7.0	2.5	70.8	74.6	575.0	22.27	499.0	7.6	5.2	70.5	71.1	585.0	21.88	510.3	7.8	8.8	70.3
		8.6	80	100.6	540.0	27.87	444.9	5.7	2.4	71.5	94.0	550.0	26.41	459.8	6.1	5.0	71.2	90.6	555.0	25.92	466.5	6.3	8.4	71.1
		8.6	100	119.6	515.0	33.49	400.7	4.5	2.3	72.4	113.2	520.0	31.84	411.3	4.8	4.8	72.2	110.0	525.0	31.24	418.4	4.9	8.1	72.0
		8.6	120	139.8	520.0	41.27	379.2	3.7	2.2	72.8	133.1	515.0	39.15	381.4	3.9	4.6	72.7	129.8	515.0	38.38	384.0	3.9	7.8	72.7

Legend:

Source - Heat added water loop; geothermal or boiler/tower loop

Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TH - Total Heating

kW - Kilowatts

HA - Heat Added

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

WRA, WHA, WCA 036 – 420

Physical Data

Unit Size	Cabinet Dimensions (in.)			Unit Weight (lb.)		Factory Refrigerant Charge Per Circuit (lb.)	Water Connections (in.)
	Width	Depth	Height	Operating	Shipping		
036	28.125	28.125	19.00	250	259	2.80	0.75
048	28.125	28.125	21.00	297	300	3.50	1.00
060	28.125	28.125	21.00	302	505	4.40	1.00
072	35.125	28.125	21.00	320	370	5.00	1.00
120	34.00	42.00	41.00	570	610	2.75/2.75	1.50
150	34.00	42.00	41.00	735	770	4.25/4.25	1.50
180	34.00	42.00	41.00	900	950	8.00/8.00	2.00
240	34.00	50.00	63.125	1040	1140	10.0/10.0	2.00
300	34.00	50.00	63.125	1130	1230	16.0/16.0	2.00
360	34.00	50.00	63.125	1420	1540	17.5/17.5	2.00
420	34.00	50.00	63.125	1620	1750	20.0/20.0	2.00

Antifreeze Correction

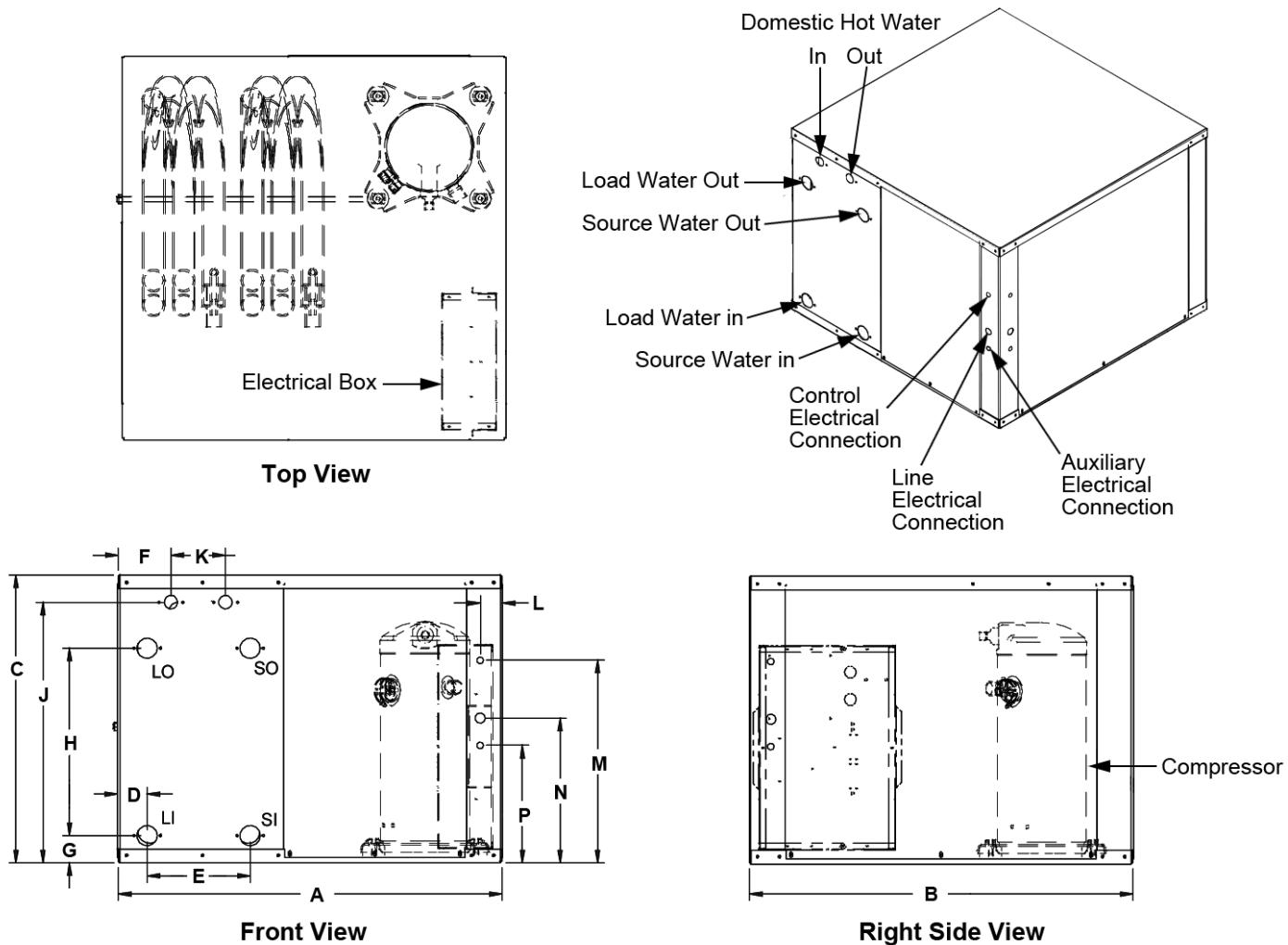
Antifreeze		Heating Capacity		Cooling Capacity		Pressure Drop
		Load	Source	Load	Source	
Type	Percent	90°F EWT	30°F EWT	45°F EWT	90°F EWT	30°F EWT
Water	0	1.000	1.000	1.000	1.000	1.000
Ethylene Glycol	10	0.991	0.973	0.975	0.991	1.075
	20	0.979	0.943	0.946	0.979	1.163
	30	0.965	0.917	0.920	0.965	1.225
	40	0.955	0.890	0.895	0.955	1.324
	50	0.943	0.865	0.870	0.943	1.419
Propylene Glycol	10	0.981	0.958	0.959	0.981	1.130
	20	0.969	0.913	0.919	0.969	1.270
	30	0.950	0.854	0.866	0.950	1.433
	40	0.937	0.813	0.829	0.937	1.614
	50	0.922	0.770	0.789	0.922	1.816
Methanol	10	0.986	0.957	0.961	0.986	1.127
	20	0.970	0.924	0.928	0.970	1.197
	30	0.951	0.895	0.897	0.951	1.235
	40	0.936	0.863	0.865	0.936	1.323
	50	0.920	0.833	0.835	0.920	1.399
Ethanol	10	0.991	0.927	0.941	0.991	1.242
	20	0.972	0.887	0.901	0.972	1.343
	30	0.947	0.856	0.866	0.947	1.383
	40	0.930	0.815	0.826	0.930	1.523
	50	0.911	0.779	0.791	0.911	1.639

= Operation in the shaded areas should be avoided as antifreeze solutions greater than 35% will result in extreme performance reductions.

Waterflow Correction

	Flow	Heating		Cooling	
		GPM/Ton	Tons	kW	Tons
Load	1.2	0.982	1.040	0.970	1.044
	1.8	0.990	1.022	0.983	1.024
	2.4	1.000	1.000	1.000	1.000
Source	1.5	0.973	1.042	0.984	1.038
	2.3	0.987	1.021	0.993	1.019
	3.0	1.000	1.000	1.000	1.000

WRA, WCA, WHA – Size 036-072



Dimensions - Size 036

Dimensions (in.)												Pipe Size (FPT)				Connection Size				
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Control	Electric	Auxiliary Electric	Load Source	Domestic Hot Water		
28 $\frac{1}{8}$	28 $\frac{1}{8}$	19	1 $\frac{1}{4}$	6 $\frac{3}{8}$	3 $\frac{3}{8}$	2	11 $\frac{1}{8}$	17 $\frac{1}{8}$	4	1 $\frac{1}{2}$	14 $\frac{3}{8}$	10 $\frac{5}{8}$	8 $\frac{5}{8}$	1/2" KO	3/4" KO	1/2" KO	3/4" FPT	1/2" FPT		

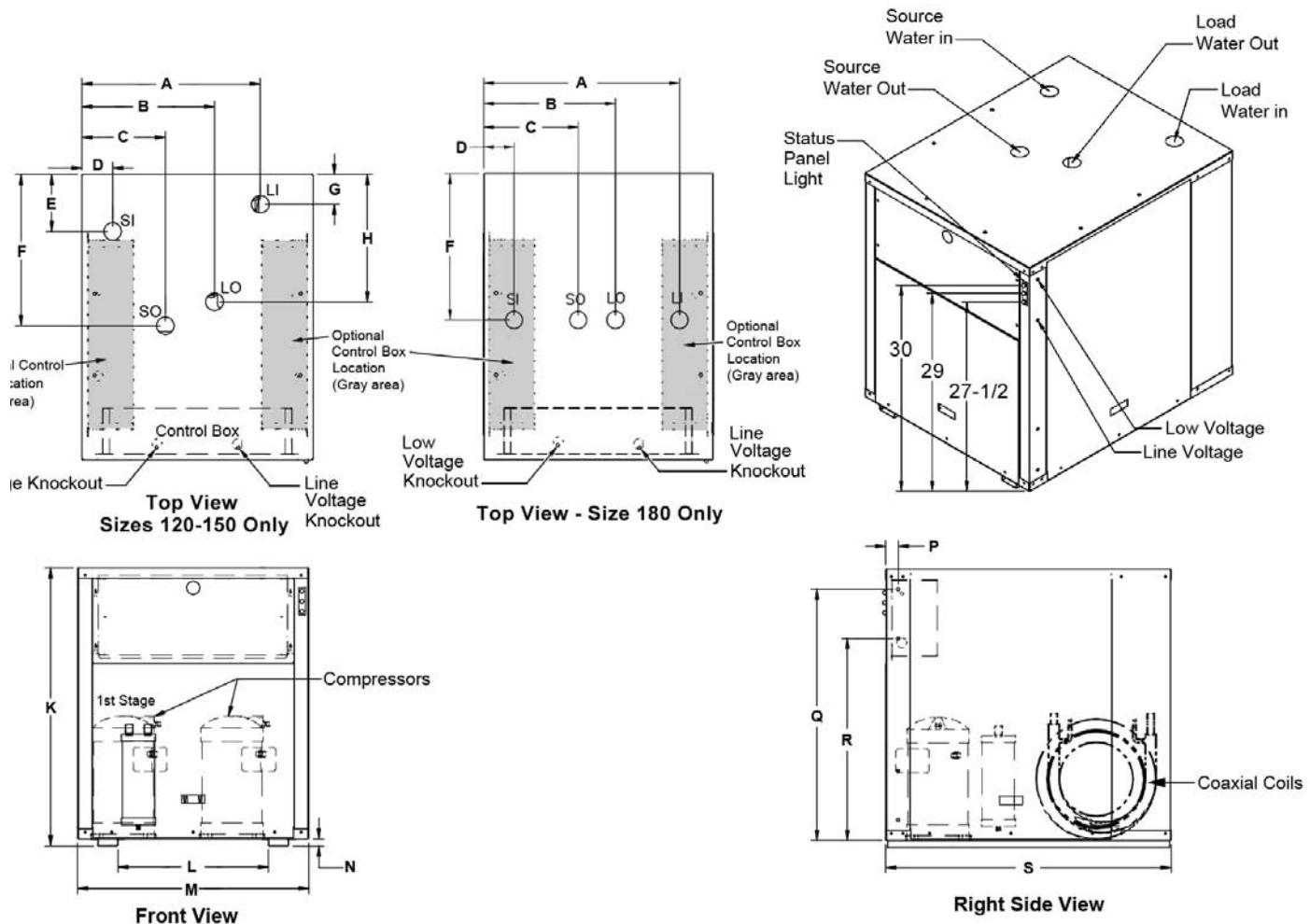
Dimensions - Size 048–060

Dimensions (in.)												Pipe Size (FPT)				Connection Size				
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Control	Electric	Auxiliary Electric	Load Source	Domestic Hot Water		
28 $\frac{1}{8}$	28 $\frac{1}{8}$	21	2 $\frac{1}{4}$	7 $\frac{1}{2}$	3 $\frac{3}{8}$	2	13 $\frac{3}{4}$	19	4	1 $\frac{1}{2}$	14 $\frac{3}{8}$	10 $\frac{5}{8}$	8 $\frac{5}{8}$	1/2" KO	3/4" KO	1/2" KO	1" FPT	1/2" FPT		

Dimensions - Size 072

Dimensions (in.)												Pipe Size (FPT)				Connection Size				
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Control	Electric	Auxiliary Electric	Load Source	Domestic Hot Water		
35 $\frac{1}{8}$	28 $\frac{1}{8}$	21	9 $\frac{11}{16}$	10 $\frac{1}{8}$	10 $\frac{1}{8}$	2	12 $\frac{1}{4}$	19	4	1 $\frac{1}{2}$	14 $\frac{3}{8}$	10 $\frac{5}{8}$	8 $\frac{5}{8}$	1/2" KO	3/4" KO	1/2" KO	1" FPT	1/2" FPT		

WRA, WCA, WHA – Size 120-180



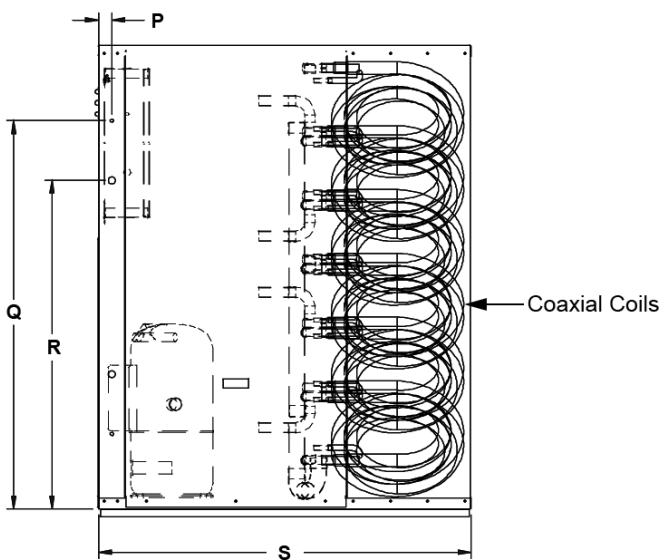
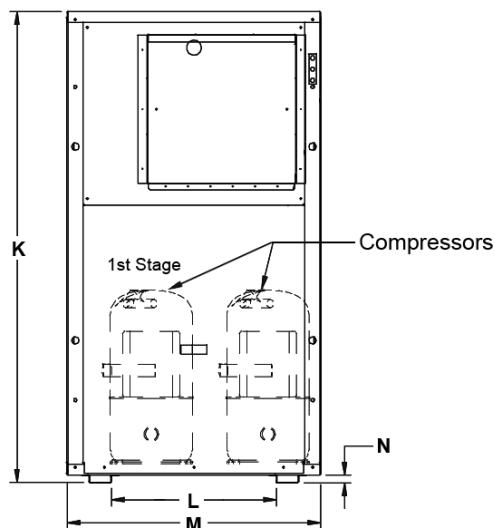
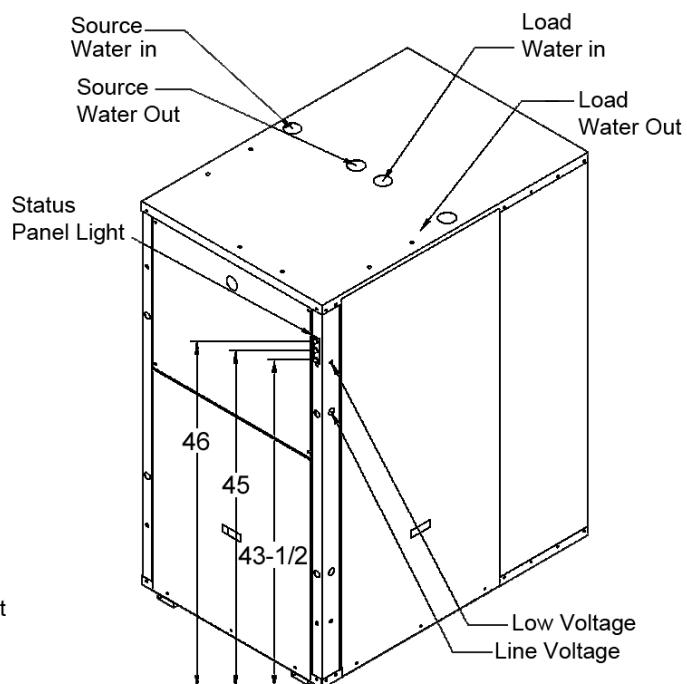
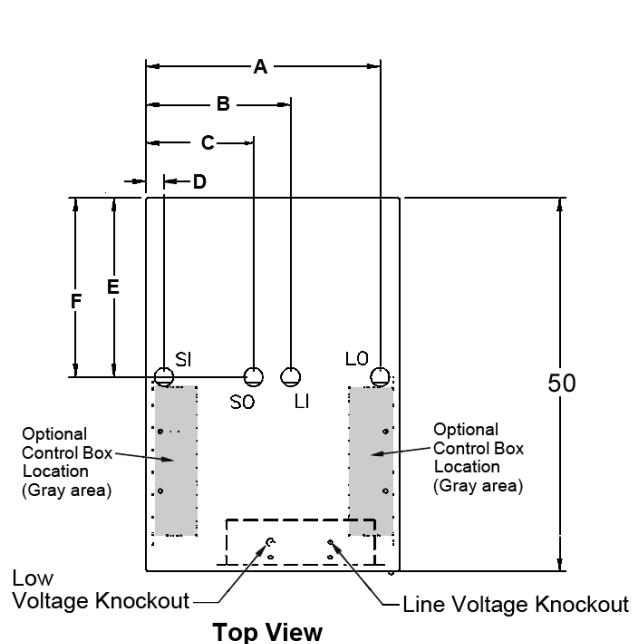
Dimensions - Size 120 – 150

Dimensions (in.)															Water Connection Size	
A	B	C	D	E	F	G	H	K	L	M	N	P	Q	R	S	Load Source FPT
26 $\frac{1}{4}$	19 $\frac{1}{2}$	12 $\frac{1}{4}$	4 $\frac{1}{2}$	8 $\frac{3}{8}$	22 $\frac{1}{4}$	4 $\frac{3}{8}$	18 $\frac{3}{4}$	41	22 $\frac{1}{8}$	34	1	1 $\frac{13}{16}$	37	29 $\frac{1}{4}$	42	1 $\frac{1}{2}$ "

Dimensions - Size 180

Dimensions (in.)															Water Connection Size	
A	B	C	D	E	F	G	H	K	L	M	N	P	Q	R	S	Load Source FPT
29	19 $\frac{1}{2}$	14	4 $\frac{1}{2}$	8 $\frac{3}{8}$	21 $\frac{1}{2}$	4 $\frac{3}{8}$	18 $\frac{3}{4}$	41	22 $\frac{1}{8}$	34	1	1 $\frac{13}{16}$	37	29 $\frac{1}{4}$	42	2"

WRA, WCA, WHA – Size 240-420



Dimensions - Size 240 – 420

Dimensions (in.)														Water Connection Size
A	B	C	D	E	F	K	L	M	N	P	Q	R	S	Load Source FPT
31 $\frac{1}{8}$	19 $\frac{1}{8}$	14 $\frac{1}{8}$	2 $\frac{1}{8}$	24	24	63 $\frac{1}{8}$	22 $\frac{1}{8}$	34	1	1 $\frac{13}{16}$	52 $\frac{1}{8}$	44 $\frac{1}{8}$	50	2"

Water-to-Water Source Heat Pump Unit

Models: WRA, WRC, WHA

1.01 System Description

- A. Heat pump units designed to operate with 30 to 110°F entering water temperature range. Units shall consist of high-efficiency scroll compressors and shall have dual independent refrigeration circuits.
- B. Units shall be individually packaged with wooden skid covered with protective corner posts and plastic stretch wrapping for maximum protection.

1.02 Quality Assurance

- A. Basic unit shall be rated in accordance with ISO/ASHRAE Standards and ETL listed.
- B. Units shall have insulation and adhesive which meet NFPA 90A requirements for flame spread and smoke generation, and assembled units shall be ETL listed to UL standard 1995.
- C. Units shall be factory tested under normal operating conditions at nominal water flow rates to assure proper operation of all components and safety devices.
- D. Units shall have ARI/ISO and ETL, US and Canada labels.

2.01 Equipment

A. General:

1. Factory-tested and assembled single-piece water source heat pump units shall be factory wired, charged with HFC-410A, contain refrigerant to-water heat exchanger, 4-way reversing valve, compressor, metering device, and all internal controls and safety devices.
2. Extended Range:
 - a. Unit shall operate at entering water temperature of 30 to 110°F.
 - b. Extended range adds closed cell isolation to internal water lines and provides insulation on suction side refrigeration tubing including refrigerant-to-water heat exchangers.
 - c. Units operating in cooling mode with an entering water temperature of 75°F (23.9°C) or higher do not require water regulating valves. Units operating AT ANY TIME in cooling mode with an entering water temperature less than 75°F (23.9°C) require water regulating valves. Includes valves, bypass refrigeration circuit and check valve

B. Unit Cabinet:

1. Unit shall be constructed of heavy gage, powder-painted, galvanized sheet metal with removable service panels (3).
2. Unit shall have separate entrances for high and low-voltage electrical supplies.
3. Supply and return water connections shall be copper FPT fittings, terminating out the top of the unit to facilitate heading on multiple units side-by-side.
4. All interior surfaces shall be lined with 1/2-in. thick, 1-3/4 lb per cu ft density acoustic type fiberglass

insulation. All fiberglass shall be coated and all edges shall be tucked under flanges.

C. Compressors:

1. Unit shall have heat pump duty, scroll compressors with internal and external isolation.

D. Heat Exchangers:

1. Refrigerant-to-water heat exchanger shall be steel/copper tube-in-tube type rated for coaxial 625 psig refrigerant, 450 psig water-side pressures. Heat exchanger shall be powder coated for extra protection.
2. Optional steel/cupronickel refrigerant-to-water heat exchanger shall be used for open loop applications, or where water quality cannot be maintained as specified by manufacturer.

E. Refrigerant Components:

1. Refrigeration circuit components shall include liquid line service valve, suction line service valve, reversing valve, a full charge of compressor oil, and a holding charge of refrigerant.
2. Thermostatic expansion valves shall be provided for refrigerant metering. Reversing valve shall be 4-way solenoid activated that defaults to heating.

F. Solid-State Controls:

1. Two light-emitting diodes (LEDs) shall be externally mounted to indicate compressor ON status and unit fault modes.

G. Controls and Safeties:

1. Safety devices on all units shall include low pressure sensor, high-pressure switch and low water temperature sensor.
2. Electronic control system(s) shall be a solid-state control system.

Units utilizing electro-mechanical control systems 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.
- 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. Option to reset unit at thermostat or disconnect.
- h. Automatic intelligent reset. Unit shall automatically restart 5 minutes after shutdown if the fault has cleared. Should a fault occur 3 times sequentially, then lockout will occur.
- i. Ability to defeat time delays for servicing.
- j. Light-emitting diode (LED) to indicate high pressure, low pressure, improper voltage, source freeze protection, load freeze.



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