



## Geothermal Heat Pump Systems



**Model HWW**  
**036 - 120**  
**60 Hz      R-410A**

*Due to ongoing product improvements, design, specifications, performance data and material subject to change without notice.*

### SUBMITTAL DATA

Unit Designation \_\_\_\_\_

Job Name \_\_\_\_\_

Architect \_\_\_\_\_

Engineer \_\_\_\_\_

Contractor \_\_\_\_\_

### PERFORMANCE DATA

Cooling Capacity \_\_\_\_\_ BTUH

EER \_\_\_\_\_

Heating Capacity \_\_\_\_\_ BTUH

COP \_\_\_\_\_

Ambient Air \_\_\_\_\_ °F

Entering Water Temp (Cooling) \_\_\_\_\_ °F

Entering Air Temp (Cooling) \_\_\_\_\_ °F

Entering Water Temp (Heating) \_\_\_\_\_ °F

Entering Air Temp (Heating) \_\_\_\_\_ °F

Airflow \_\_\_\_\_ CFM

Fan Speed or Motor RPM/Turns \_\_\_\_\_

Operating Weight \_\_\_\_\_ lb.

### ELECTRICAL DATA

Power Supply \_\_\_\_\_ Volts      Phase      Hz

Minimum Circuit Ampacity \_\_\_\_\_

Maximum Overcurrent Protection \_\_\_\_\_

# HEAT CONTROLLER, INC.

1900 Wellworth Ave., Jackson MI 49203 • Ph. 517-787-2100 • [www.heatcontroller.com](http://www.heatcontroller.com)

THE QUALITY LEADER IN CONDITIONING AIR



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**THE MODULAR WATER-TO-WATER  
(HWW) SERIES**

The HWW water-to-water series offers high efficiency and high capacity with advanced features, quiet operation and application flexibility at competitive prices. The HWW series can be used for radiant floor heating, snow/ice melt, chilled water for fan coils, industrial process control, potable hot water generation\*, hot/chilled water for make-up air, and many other types of HVAC and industrial applications that require cost effective heated or chilled water.

The (HWW) series exceeds ASHRAE 90.1 efficiencies, and also uses R-410A zero ozone depletion refrigerant, making it an extremely environmentally-friendly option.

The HWW series provides high capacity in a small footprint, which saves mechanical room space. The HWW has an extended range refrigerant circuit (refrigerant and water circuit insulation is standard), capable of ground loop (geothermal) applications as well as water loop (boiler-tower) applications. Standard features are many. Microprocessor controls, galvanized steel cabinet, polyester powder coat paint and TXV refrigerant metering device are just some of the features of the flexible HWW series. The uniquely-designed coaxial heat exchangers are designed for many years of reliable operation.

Heat Controller's dual-isolated compressor mounting and heavy gauge steel cabinet helps make the HWW series the quietest water-to-water units on the market. Scroll compressor(s) operate quietly, and provide part load operation (size 100) for capacity control. For ease of installation and service, access to the refrigeration service and electrical control panel is located at the front of the unit, allowing units to be installed side-by-side for large capacity applications (see below).

The HWW Series water-to-water heat pumps are designed to meet the challenges of today's HVAC demands with a high efficiency, high value solution.

\*Requires field supplied secondary heat exchanger.

**UNIT FEATURES**

- Size 036, 060 and 120
- Copeland scroll compressor(s)
- Exclusive single side service access (front of unit) allows multiple units to be installed side-by-side for large capacity installations
- Top water connections, staggered for ease of manifolding multiple units
- Exceeds ASHRAE 90.1 efficiencies
- Heavy gauge galvanized steel construction with polyester powder coat paint and front access panel
- Insulated compressor compartment
- Small footprint
- TXV metering devices
- Extended range (20 to 110°F, -6.7 to 43.3°C) operation
- Compressor "run" and "fault" lights on the front of the cabinet
- Seven safeties standard
- Copper or Cupro-Nickel heat exchanger options

\*Requires field supplied secondary heat exchanger.

## Selection Procedure

### Reference Calculations

#### Heating

$$LWT = EWT - \frac{HE}{GPM \times 500}$$

#### Cooling

$$LWT = EWT + \frac{HR}{GPM \times 500}$$

### Legend and Glossary of Abbreviations

BTUH = BTU( British Thermal Unit) per hour

CFM = airflow, cubic feet/minute

COP = coefficient of performance = BTUH output/BTUH input

DB = dry bulb temperature (°F)

EAT = entering air temperature, Fahrenheit (dry bulb/wet bulb)

EER = energy efficiency ratio = BTUH output/Watt input

EPT = external pipe thread

ESP = external static pressure (inches w.g.)

EWT = entering water temperature

GPM = water flow in U.S. gallons/minute

HE = total heat of extraction, BTUH

HC = air heating capacity, BTUH

HR = total heat of rejection, BTUH

HWC = hot water generator (desuperheater) capacity, Mbtuh

IPT = internal pipe thread

KW = total power unit input, kilowatts

LAT = leaving air temperature, °F

LC = latent cooling capacity, BTUH

LWT = leaving water temperature, °F

MBTUH = 1000 BTU per hour

S/T = sensible to total cooling ratio

SC = sensible cooling capacity, BTUH

TC = total cooling capacity, BTUH

WB = wet bulb temperature (°F)

WPD = waterside pressure drop (psi & ft. of hd.)

### Conversion Table - to convert inch-pound (English) to SI (Metric)

Water Flow	Water Pressure Drop
Water Flow (L/s) = gpm x 0.0631	PD (kPa) = PD (ft of hd) x 2.99

## Selection Procedure

Step 1: Determine the actual heating and/or cooling loads at the applicable source (building loop) water temperature/flow rate and load water temperature/flow rate. The source heat exchanger is the condenser in cooling/evaporator in heating; the load heat exchanger is the evaporator in cooling/condenser in heating.

Step 2: Obtain the following design parameters: Entering source/load water temperature, source/load water flow rate in GPM and water flow pressure drop. Water flow rate is generally between 2.25 and 3.00 GPM/ton for closed loop (boiler/tower and geothermal) systems, and between 1.5 and 2.0 GPM/ton for open loop (well water) systems. Unit water pressure drop should be kept as close as possible to each other to make water balancing easier. Go to the appropriate tables and find the proper indicated water flow and water temperature.

Step 3: Determine application requirements. Water-to-water applications are almost always designed for a particular installation, which will change how the data tables are used for unit selection. For example, a water-to-water unit used for radiant floor heating on a geothermal closed loop is significantly different in unit selection from a water-to-water unit on a boiler/tower application used for generating chilled water for fan coil units. It is especially important to note that the load water flow rate must be maintained above minimum flow rates as shown in the data tables for proper refrigerant circuit operation and unit longevity. For example, most radiant floor applications require buffer (storage) tanks because the flow rate through the floor is usually lower than the minimum flow rate for the water-to-water unit. Therefore, selection of the heat pump is dependent upon maintaining a certain tank temperature and unit load flow rate. There would be a pump between the heat pump and the buffer tank, and a pump(s) between the buffer tank and radiant floor to maintain design flow rate on both sides.

Step 4: Enter tables at the design source water temperature and flow rate. Choose the appropriate load water temperature and flow rate. Read the total heating or cooling capacities (Note: interpolation is permissible; extrapolation is not).

Step 5: If the units selected are not within 10% of the load calculations, then review what effect changing the GPM and water temperature would have on the capacities. If the desired capacity cannot be achieved, select the next larger or smaller unit and repeat the procedure.

### Example Equipment Selection for Heating

#### Step 1 Load Determination:

Assume we have determined that the application will be heating only (radiant floor) for a large commercial warehouse, and that the appropriate heating load at design conditions is as follows:

Total heating ..... 210,000 BTUH

#### Step 2 Design Conditions:

Entering source temperature .... 30°F (geothermal closed loop)

Source flow rate..... 53 GPM

Entering load temperature ..... 100°F

Load flow rate ..... 53 GPM

#### Steps 3, 4, 5 HP Selection:

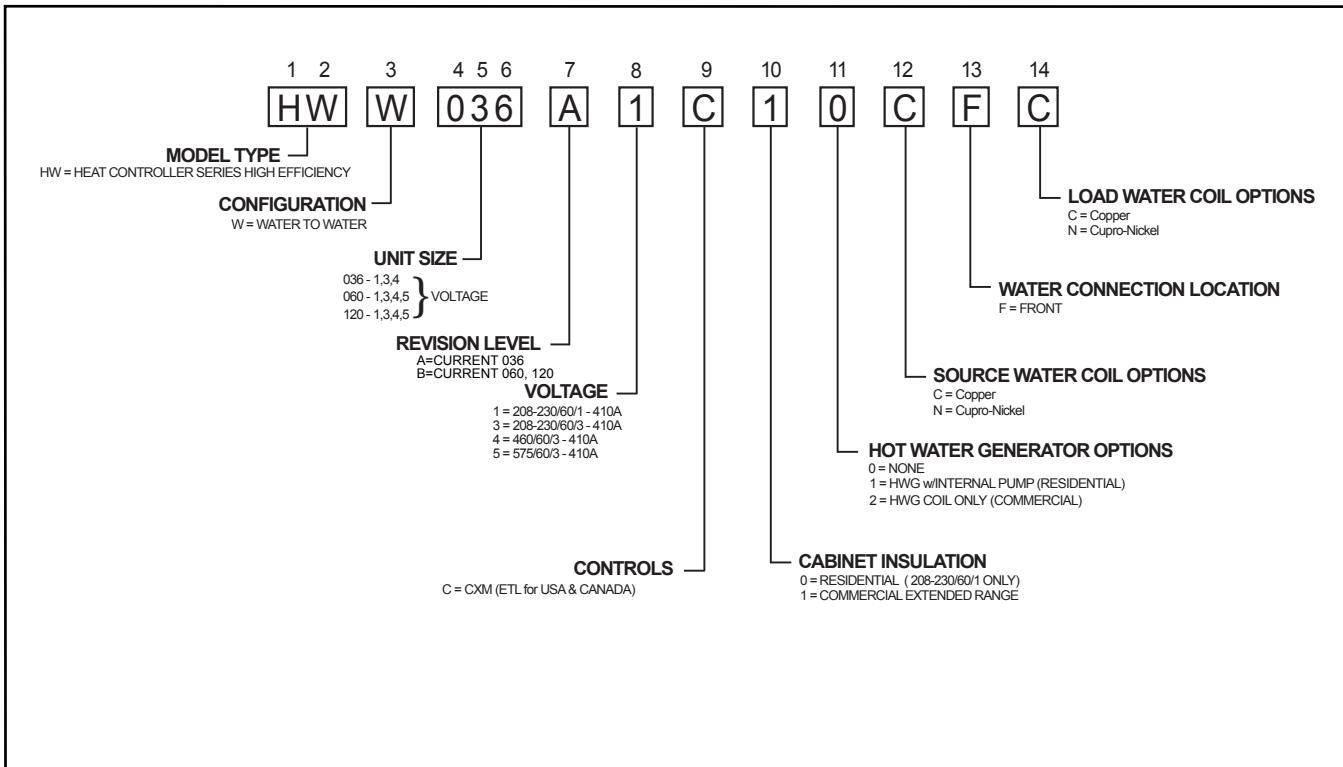
We enter the tables at design source water temperature and flow rate, and select the appropriate load water temperature and flow rate. A HWW120 at design conditions supplies 211,100 BTUH, which meets the design heating load requirement.

## HWW HIGH EFFICIENCY Water-to-Water R-410A Heat Pumps

Entering Water Temperature Range: 20 - 110°F (-6.7 - 43.3°C)

Sizes 036, 060 & 120

### HWW Model Structure



### Basic Unit Description:

The basic unit price includes sealed heat pump refrigerant circuit.

- **Cabinet-** Heavy gauge galvanized steel with polyester powder coat paint – multiple removable panels for service access – interior surfaces lined with 1/2 inch dual density acoustic type glass fiber insulation – IPT water connections – high and low voltage knockouts.

- **Controls** - Solid state control system with seven standard safeties including anti-short cycle, over voltage, under voltage, high refrigerant pressure, loss of refrigerant charge, low source water temperature, low load water temperature – run and fault lights on cabinet exterior – alarm contact for remote monitoring of fault condition (field selectable for dry contact or 24vac).

- **Refrigerant Circuit** - Compressor(s) – coaxial source and load heat exchangers – reversing valve(s) – filter driers(s) – thermal expansion valve(s) – high pressure and low pressure switches – high and low side Schrader ports for service – non-ozone depleting R-410A refrigerant.

- **Compressor(s)** - High efficiency scroll compressor - internally sprung and externally isolated using dual vibration isolation system for quiet operation. Mounting system includes rubber grommet mounts between the compressor and a mounting tray then another set of rubber mounts between the mounting tray and unit base pan.
- **Reversing Valve** - 4-way pilot operated, solenoid activated in cooling mode.
- **Safety Agency Listing** - Product is ETL Listed.
- **Application** - May be applied in water loop heat pump, ground water heat pump, and ground loop heat pump applications.

**Performance Data**  
**ARI/ASHRAE/ISO 13256-2**

**HWW 036-120 Performance Data ASHRAE/ARI/ISO 13256-2 60Hz English (I-P) Units**

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling		Heating		Cooling		Heating		Cooling		Heating	
	Indoor 53.6°F Outdoor 86°F		Indoor 104°F Outdoor 68°F		Indoor 53.6°F Outdoor 59°F		Indoor 104°F Outdoor 50°F		Indoor 53.6°F Outdoor 77°F		Indoor 104°F Outdoor 32°F	
	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
<b>HWW036A</b>	32,300	14.60	43,100	4.90	36,200	23.10	35,300	4.00	33,300	16.40	27,400	3.10
<b>HWW060B</b>	52,800	14.30	72,700	4.70	56,600	20.30	60,300	4.00	55,600	16.20	48,500	3.10
<b>HWW120B</b>	105,600	14.10	145,400	4.60	113,200	20.10	120,600	3.90	111,200	16.00	97,000	3.10

**HWW 036-120 Performance Data ASHRAE/ARI/ISO 13256-2 60Hz Metric (SI) Units**

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling		Heating		Cooling		Heating		Cooling		Heating	
	Indoor 12°C Outdoor 30°C		Indoor 40°C Outdoor 20°C		Indoor 12°C Outdoor 15°C		Indoor 40°C Outdoor 10°C		Indoor 12°C Outdoor 25°C		Indoor 40°C Outdoor 0°C	
	Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP
<b>HWW036A</b>	9,472	4.28	12,639	4.90	10,616	6.77	10,352	4.00	9,765	4.81	8,035	3.10
<b>HWW060B</b>	15,484	4.19	21,320	4.70	16,598	5.95	17,683	4.00	16,305	4.75	14,223	3.10
<b>HWW120B</b>	30,968	4.13	42,639	4.60	33,196	5.89	35,367	3.90	32,610	4.69	28,446	3.10

## Performance Data

### Selection Notes

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

#### Example:

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

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

$$TD = HE / (GPM \times 500)$$

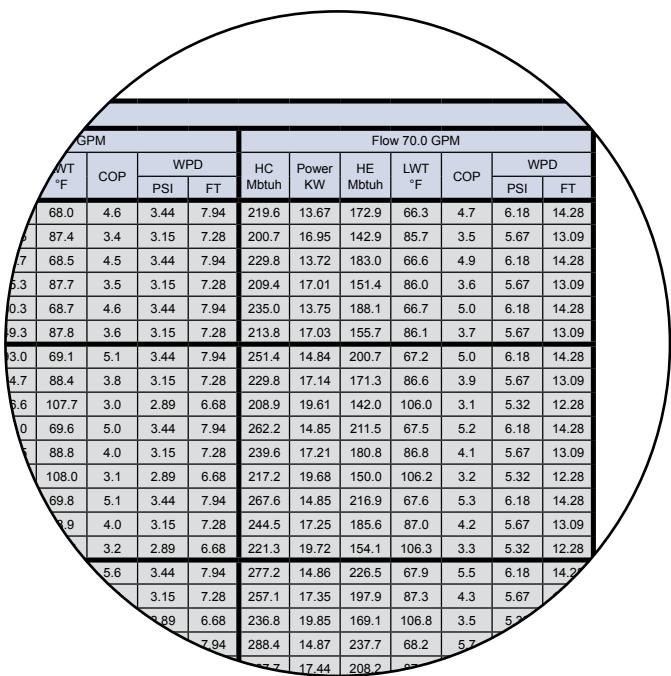
$$TD = 22,500 / (4.5 \times 500)$$

$$TD = 10^{\circ}\text{F}$$

$$LWT = EWT - TD$$

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

In this example, as long as the EWT does not fall below 50°F, the system will operate as designed. For EWTs below 50°F, higher flow rates will be required (open loop systems, for example, require at least 2 gpm/ton when EWT is below 50°F).



## Performance Data

### HWW036 (60Hz I-P) - Cooling

Source			Load																										
EWT °F	Flow		EWT °F	Flow 4.5 GPM						Flow 6.8 GPM						Flow 9.0 GPM													
	GPM	WPD		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD						
									PSI	FT												PSI	FT						
50	4.5	1.3	3.1	50	32.5	1.49	37.6	35.6	21.8	0.6	1.4	34.5	1.52	39.7	39.8	22.7	1.4	3.2	35.3	1.5	40.5	42.1	23.2	2.6	5.9				
				60	36.8	1.53	42.0	43.6	24.1	0.5	1.2	38.4	1.54	43.6	48.6	24.9	1.3	3.1	39.2	1.5	44.5	51.3	25.3	2.5	5.8				
				70	40.4	1.55	45.7	52.0	26.0	0.5	1.1	41.6	1.56	47.0	57.7	26.6	1.3	2.9	42.4	1.6	47.8	60.6	27.0	2.4	5.6				
				80	43.2	1.57	48.6	60.8	27.5	0.4	0.9	44.2	1.58	49.6	66.9	28.0	1.2	2.8	44.8	1.6	50.3	70.0	28.1	2.3	5.4				
				90	45.1	1.58	50.5	69.9	28.6	0.3	0.8	46.2	1.60	51.7	76.3	28.9	1.1	2.6	46.6	1.6	52.1	79.7	28.9	2.2	5.1				
	6.8	3.4	7.8	50	32.9	1.41	37.7	35.4	23.3	0.6	1.4	34.9	1.44	39.8	39.7	24.2	1.4	3.2	35.8	1.4	40.7	42.0	24.8	2.6	5.9				
				60	37.3	1.45	42.2	43.4	25.7	0.5	1.2	38.9	1.46	43.9	48.5	26.6	1.3	3.1	39.7	1.5	44.7	51.2	27.1	2.5	5.8				
				70	40.9	1.47	46.0	51.8	27.8	0.5	1.1	42.2	1.48	47.2	57.5	28.4	1.3	2.9	42.9	1.5	48.0	60.5	28.8	2.4	5.6				
				80	43.8	1.49	48.9	60.5	29.4	0.4	0.9	44.8	1.50	49.9	66.7	29.9	1.2	2.8	45.4	1.5	50.6	69.9	30.0	2.3	5.4				
	9.0	6.0	13.9	50	32.9	1.50	50.8	69.7	30.5	0.3	0.8	OPERATION NOT RECOMMENDED																	
				60	33.3	1.33	37.8	35.2	25.1	0.6	1.4	35.4	1.35	40.0	39.5	26.1	1.4	3.2	36.2	1.4	40.9	41.9	26.8	2.6	5.9				
				70	37.8	1.36	42.4	43.2	27.8	0.5	1.2	39.4	1.37	44.0	48.3	28.7	1.3	3.1	40.2	1.4	44.9	51.1	29.2	2.5	5.8				
				80	41.5	1.38	46.2	51.6	30.0	0.5	1.1	42.7	1.39	47.5	57.3	30.7	1.3	2.9	43.5	1.4	48.3	60.3	31.1	2.4	5.6				
				90	46.3	1.41	51.1	69.4	33.0	0.3	0.8	45.4	1.41	50.2	66.6	32.3	1.2	2.8	46.0	1.4	50.8	69.8	32.5	2.3	5.4				
70	4.5	1.0	2.3	50	30.1	1.96	36.8	36.6	15.3	0.6	1.4	32.1	1.95	38.8	40.5	16.4	1.4	3.2	33.0	2.0	39.7	42.7	16.7	2.6	5.9				
				60	34.1	1.98	40.9	44.8	17.2	0.5	1.2	37.6	1.96	44.3	48.9	19.2	1.3	3.1	36.6	2.0	43.3	51.9	18.7	2.5	5.8				
				70	39.0	2.01	45.9	52.7	19.4	0.5	1.1	41.7	1.98	48.5	57.6	21.0	1.3	2.9	46.7	1.6	61.1	19.9	24	5.6					
				80	42.7	2.03	49.7	61.0	21.1	0.4	1.0	45.4	2.01	52.3	66.5	22.5	1.2	2.8	42.9	2.0	49.8	70.5	21.1	2.3	5.4				
				90	46.2	2.05	53.2	69.5	22.5	0.3	0.8	OPERATION NOT RECOMMENDED																	
	6.8	2.8	6.5	50	30.5	1.86	36.8	36.5	16.4	0.6	1.4	32.5	1.85	38.8	40.4	17.5	1.4	3.2	33.4	1.9	39.8	42.6	17.8	2.6	5.9				
				60	34.6	1.88	41.0	44.6	18.4	0.5	1.2	38.1	1.86	44.4	48.7	20.4	1.3	3.1	37.1	1.9	43.4	51.8	19.9	2.5	5.8				
				70	39.5	1.90	46.0	52.4	20.8	0.5	1.1	42.3	1.88	48.7	57.5	22.4	1.3	2.9	40.4	1.9	46.9	61.0	21.3	2.4	5.6				
				80	43.3	1.93	49.9	60.8	22.5	0.4	0.9	46.0	1.91	52.5	66.4	24.1	1.2	2.8	43.4	1.9	50.0	70.3	22.5	2.3	5.4				
	9.0	5.1	11.9	50	30.8	1.74	36.8	36.3	17.7	0.6	1.4	32.9	1.74	38.8	40.2	19.0	1.4	3.2	33.8	1.8	39.8	42.5	19.3	2.6	5.9				
				60	35.0	1.76	41.0	44.4	19.9	0.5	1.2	38.6	1.75	44.5	48.6	22.1	1.3	3.1	37.5	1.7	43.5	51.7	21.5	2.5	5.8				
				70	40.0	1.78	46.1	52.2	22.4	0.5	1.1	42.8	1.77	48.8	57.3	24.2	1.3	2.9	40.9	1.8	47.0	60.9	23.0	2.4	5.6				
				80	43.8	1.81	50.0	60.5	24.3	0.4	0.9	46.6	1.79	52.7	66.2	26.0	1.2	2.8	44.0	1.8	50.2	70.2	24.3	2.3	5.4				
				90	47.4	1.83	53.6	68.9	26.0	0.3	0.8	OPERATION NOT RECOMMENDED																	
90	4.5	0.8	1.8	50	27.0	2.55	35.7	38.0	10.6	0.6	1.4	28.9	2.59	37.7	41.4	11.1	1.4	3.2	29.7	2.6	38.4	43.4	11.5	2.6	5.9				
				60	31.1	2.58	39.9	46.2	12.1	0.5	1.2	34.0	2.60	42.8	49.9	13.1	1.3	3.1	33.6	2.6	42.3	52.5	13.1	2.5	5.8				
				70	36.2	2.60	45.1	53.9	13.9	0.5	1.1	38.9	2.62	47.8	58.5	14.9	1.3	2.9	37.4	2.6	46.2	61.7	14.4	2.4	5.6				
				80	40.5	2.62	49.4	62.0	15.5	0.4	0.9	42.9	2.65	52.0	67.3	16.2	1.2	2.8	41.1	2.6	50.0	70.9	15.6	2.3	5.4				
				90	44.2	2.64	53.2	70.4	16.7	0.3	0.8	OPERATION NOT RECOMMENDED																	
	6.8	2.4	5.4	50	27.3	2.42	35.6	37.9	11.3	0.6	1.4	29.3	2.46	37.7	41.3	11.9	1.4	3.2	30.0	2.4	38.4	43.3	12.3	2.6	5.9				
				60	31.5	2.44	39.8	46.0	12.9	0.5	1.2	34.4	2.46	42.8	49.8	14.0	1.3	3.1	34.0	2.4	42.3	52.4	14.0	2.5	5.8				
				70	36.7	2.47	45.1	53.7	14.9	0.5	1.1	39.4	2.48	47.9	58.3	15.9	1.3	2.9	37.8	2.5	46.2	61.6	15.4	2.4	5.6				
				80	41.0	2.49	49.5	61.8	16.5	0.4	0.9	43.5	2.51	52.1	67.1	17.3	1.2	2.8	41.6	2.5	50.1	70.8	16.7	2.3	5.4				
	9.0	4.5	10.3	50	27.7	2.27	35.4	37.7	12.2	0.6	1.4	29.6	2.31	37.5	41.2	12.9	1.4	3.2	30.4	2.3	38.2	43.2	13.3	2.6	5.9				
				60	31.9	2.29	39.7	45.8	13.9	0.5	1.2	34.8	2.31	42.7	49.7	15.1	1.3	3.1	34.4	2.3	42.2	52.3	15.1	2.5	5.8				
				70	37.2	2.31	45.1	53.5	16.1	0.5	1.1	39.9	2.33	47.8	58.2	17.1	1.3	2.9	38.3	2.3	46.2	61.5	16.6	2.4	5.6				
				80	41.5	2.33	49.5	61.5	17.8	0.4	0.9	44.0	2.35	52															

## Performance Data

### HWW036 (60Hz I-P) - Heating

SOURCE				LOAD																								
EWT F	Flow			EWT	Flow 4.5 GPM						Flow 6.8 GPM						Flow 9.0 GPM											
	GPM	WPD			PSI	FT	HC Mbtuh	Power KW	HE Mbtuh	LWT F	COP	WPD		HC Mbtuh	Power KW	HE Mbtuh	LWT F	COP	WPD		HC Mbtuh	Power KW	HE Mbtuh	LWT F	COP	WPD		
		PSI	FT									PSI	FT												PSI	FT		
20	9.0	7.7	17.9	60	26.1	1.53	20.9	71.6	5.0	0.5	1.2	26.4	1.45	21.5	67.8	5.3	1.3	3.1	26.5	1.41	21.7	65.9	5.5	2.5	5.8			
				80	25.7	1.96	19.0	91.4	3.8	0.4	0.9	25.9	1.86	19.6	87.7	4.1	1.2	2.8	25.9	1.81	19.8	85.8	4.2	2.3	5.4			
				100	25.0	2.56	16.3	111.1	2.9	0.3	0.7	25.0	2.42	16.7	107.4	3.0	1.1	2.5	24.9	2.36	16.9	105.5	3.1	2.1	4.9			
30	4.5	1.7	4.0	60	27.1	1.54	21.9	72.1	5.2	0.5	1.2	27.5	1.45	22.5	68.1	5.5	1.3	3.1	27.6	1.42	22.7	66.1	5.7	2.5	5.8			
				80	26.7	1.97	20.0	91.9	4.0	0.4	0.9	27.0	1.86	20.6	88.0	4.2	1.2	2.8	27.0	1.81	20.8	86.0	4.4	2.3	5.4			
				100	26.1	2.56	17.3	111.6	3.0	0.3	0.7	26.1	2.43	17.8	107.7	3.2	1.1	2.5	26.0	2.36	18.0	105.8	3.2	2.1	4.9			
				120	25.1	3.32	13.8	131.2	2.2	0.2	0.5	24.9	3.14	14.2	127.4	2.3	0.9	2.1	24.7	3.06	14.3	125.5	2.4	1.8	4.3			
	6.8	4.1	9.4	60	28.4	1.54	23.2	72.6	5.4	0.5	1.2	28.8	1.46	23.8	68.5	5.8	1.3	3.1	28.9	1.42	24.1	66.4	6.0	2.5	5.8			
				80	27.9	1.97	21.2	92.4	4.2	0.4	0.9	28.2	1.87	21.8	88.4	4.4	1.2	2.8	28.2	1.82	22.0	86.3	4.6	2.3	5.4			
				100	27.1	2.57	18.3	112.0	3.1	0.3	0.7	27.2	2.43	18.9	108.0	3.3	1.1	2.5	27.1	2.37	19.0	106.0	3.4	2.1	4.9			
				120	25.9	3.33	14.6	131.5	2.3	0.2	0.5	25.7	3.15	15.0	127.6	2.4	0.9	2.1	25.6	3.07	15.1	125.7	2.4	1.8	4.3			
	9.0	7.1	16.4	60	29.2	1.54	23.9	73.0	5.5	0.5	1.2	29.6	1.46	24.6	68.8	5.9	1.3	3.1	29.7	1.42	24.8	66.6	6.1	2.5	5.8			
				80	28.6	1.98	21.9	92.7	4.2	0.4	0.9	28.9	1.87	22.5	88.6	4.5	1.2	2.8	28.9	1.82	22.7	86.4	4.7	2.3	5.4			
				100	27.7	2.58	18.9	112.3	3.2	0.3	0.7	27.8	2.44	19.5	108.2	3.3	1.1	2.5	27.7	2.37	19.6	106.2	3.4	2.1	4.9			
				120	26.4	3.34	15.0	131.7	2.3	0.2	0.5	26.2	3.16	15.4	127.8	2.4	0.9	2.1	26.1	3.08	15.6	125.8	2.5	1.8	4.3			
40	4.5	1.5	3.5	60	30.0	1.55	24.7	93.3	5.7	0.4	0.9	30.4	1.46	25.4	89.0	6.1	1.2	2.8	30.5	1.42	25.7	86.8	6.3	2.3	5.4			
				80	29.0	2.26	21.3	112.9	3.8	0.3	0.7	29.2	2.14	21.9	108.7	4.0	1.1	2.5	29.3	2.08	22.2	106.5	4.1	2.1	4.9			
				100	28.6	2.58	19.8	132.7	3.2	0.2	0.5	28.7	2.44	20.3	128.5	3.4	0.9	2.1	28.6	2.38	20.5	126.4	3.5	1.8	4.3			
				120	31.4	1.55	26.1	74.0	5.9	0.5	1.2	31.9	1.47	26.9	69.5	6.4	1.3	3.1	32.0	1.43	27.2	67.1	6.6	2.5	5.8			
	6.8	3.7	8.6	60	30.8	1.99	24.0	93.7	4.5	0.4	0.9	31.1	1.88	24.7	89.2	4.8	1.2	2.8	31.2	1.83	24.9	86.9	5.0	2.3	5.4			
				80	29.7	2.59	20.9	113.2	3.4	0.3	0.7	29.9	2.45	21.5	108.9	3.6	1.1	2.5	29.8	2.38	21.7	106.6	3.7	2.1	4.9			
				100	28.3	3.35	16.9	132.6	2.5	0.2	0.5	28.2	3.17	17.4	128.4	2.6	0.9	2.1	28.1	3.09	17.6	126.2	2.7	1.8	4.3			
				120	32.2	1.55	26.9	74.3	6.1	0.5	1.2	32.7	1.47	27.7	69.7	6.5	1.3	3.1	32.9	1.43	28.0	67.3	6.7	2.5	5.8			
	9.0	6.5	15.1	60	31.5	1.99	24.7	94.0	4.6	0.4	0.9	31.9	1.89	25.4	89.4	5.0	1.2	2.8	31.9	1.84	25.7	87.1	5.1	2.3	5.4			
				80	30.4	2.59	21.5	113.5	3.4	0.3	0.7	30.5	2.45	22.2	109.0	3.6	1.1	2.5	30.5	2.39	22.4	106.8	3.7	2.1	4.9			
				100	28.9	3.36	17.4	132.8	2.5	0.2	0.5	28.8	3.18	17.9	128.5	2.7	0.9	2.1	28.7	3.09	18.1	126.4	2.7	1.8	4.3			
				120	28.9	3.36	17.4	127.7	2.5	0.2	0.5	28.8	3.18	17.9	125.3	2.7	0.9	2.1	28.7	3.09	18.1	124.0	2.7	1.8	4.3			
50	4.5	1.5	3.1	60	35.9	1.55	30.6	76.0	6.8	0.5	1.2	36.5	1.47	31.5	70.8	7.3	1.3	3.1	36.7	1.43	31.8	68.2	7.5	2.5	5.8			
				80	35.0	2.00	28.2	95.6	5.1	0.4	0.9	35.5	1.89	29.0	90.5	5.5	1.2	2.8	35.6	1.84	29.3	87.9	5.7	2.3	5.4			
				100	33.8	2.60	24.9	115.0	3.8	0.3	0.7	34.0	2.46	25.6	110.1	4.1	1.1	2.5	34.0	2.39	25.9	107.6	4.2	2.1	4.9			
				120	32.2	3.36	20.7	134.3	2.8	0.2	0.5	32.1	3.18	21.3	129.5	3.0	0.9	2.1	32.1	3.09	21.5	127.1	3.0	1.8	4.3			
	6.75	3.4	7.8	130	OPERATION NOT RECOMMENDED						31.1	3.59	18.8	139.2	2.5	0.8	1.9	30.9	3.50	19.0	136.9	2.6	1.7	3.9				
				60	37.7	1.56	32.4	76.8	7.1	0.5	1.2	38.4	1.48	33.3	71.4	7.6	1.3	3.1	38.5	1.44	33.6	68.6	7.9	2.5	5.8			
				80	36.6	2.00	29.8	96.3	5.4	0.4	0.9	37.1	1.89	30.7	91.0	5.7	1.2	2.8	37.3	1.84	31.0	88.3	5.9	2.3	5.4			
				100	35.2	2.60	26.3	115.6	4.0	0.3	0.7	35.5	2.46	27.1	110.5	4.2	1.1	2.5	35.5	2.40	27.3	107.9	4.3	2.1	4.9			
	9.0	6.0	13.9	120	33.4	3.37	21.9	134.8	2.9	0.2	0.5	33.4	3.19	22.5	129.9	3.1	0.9	2.1	33.3	3.10	22.7	127.4	3.1	1.8	4.3			
				130	OPERATION NOT RECOMMENDED						32.2	3.60	19.9	139.5	2.6	0.8	1.9	32.0	3.51	20.1	137.1	2.7	1.7	3.9				
				60	38.6	1.56	33.3	77.2	7.2	0.5	1.2	39.3	1.48	34.3	71.7	7.8	1.3	3.1	39.5	1.44	34.6	68.8	8.0	2.5	5.8			
				80	37.5	2.01	30.7	96.7	5.5	0.4	0.9	38.0	1.90	31.6	91.3	5.9	1.2	2.8	38.2	1.85	31.9	88.5	6.1	2.3	5.4			
				100	36.0	2.61	27.1	116.0	4.0	0.3	0.7	36.3	2.47	27.9	110.8	4.3	1.1	2.5	36.3	2.40	28.1	108.1	4.4	2.1	4.9			
				120	34.0	3.37	22.5	135.1	3.0	0.2	0.5	34.1	3.19	23.2	130.1	3.1	0.9	2.1	34.0	3.11	23.4	127.6	3.2	1.8	4.3			

**Performance Data****HWW036 (60Hz I-P) - Heating**

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SOURCE			LOAD																						
EWT F	Flow		EWT	Flow 4.5 GPM						Flow 6.8 GPM						Flow 9.0 GPM									
	GPM	WPD		HC Mbtuh	Power KW	HE Mbtuh	LWT F	COP	WPD		HC Mbtuh	Power KW	HE Mbtuh	LWT F	COP	WPD		HC Mbtuh	Power KW	HE Mbtuh	LWT F	COP	WPD		
									PSI	FT						PSI	FT						PSI	FT	
20	9.0	7.7	17.9	60	26.1	1.53	20.9	71.6	5.0	0.5	1.2	26.4	1.45	21.5	67.8	5.3	1.3	3.1	26.5	1.41	21.7	65.9	5.5	2.5	5.8
				80	25.7	1.96	19.0	91.4	3.8	0.4	0.9	25.9	1.86	19.6	87.7	4.1	1.2	2.8	25.9	1.81	19.8	85.8	4.2	2.3	5.4
				100	25.0	2.56	16.3	111.1	2.9	0.3	0.7	25.0	2.42	16.7	107.4	3.0	1.1	2.5	24.9	2.36	16.9	105.5	3.1	2.1	4.9
	4.5	1.7	4.0	60	27.1	1.54	21.9	72.1	5.2	0.5	1.2	27.5	1.45	22.5	68.1	5.5	1.3	3.1	27.6	1.42	22.7	66.1	5.7	2.5	5.8
				80	26.7	1.97	20.0	91.9	4.0	0.4	0.9	27.0	1.86	20.6	88.0	4.2	1.2	2.8	27.0	1.81	20.8	86.0	4.4	2.3	5.4
				100	26.1	2.56	17.3	111.6	3.0	0.3	0.7	26.1	1.43	17.8	107.7	3.2	1.1	2.5	26.0	2.36	18.0	105.8	3.2	2.1	4.9
				120	25.1	3.32	13.8	131.2	2.2	0.2	0.5	24.9	3.14	14.2	127.4	2.3	0.9	2.1	24.7	3.06	14.3	125.5	2.4	1.8	4.3
30	6.8	4.1	9.4	60	28.4	1.54	23.2	72.6	5.4	0.5	1.2	28.8	1.46	23.8	68.5	5.8	1.3	3.1	28.9	1.42	24.1	66.4	6.0	2.5	5.8
				80	27.9	1.97	21.2	92.4	4.2	0.4	0.9	28.2	1.87	21.8	88.4	4.4	1.2	2.8	28.2	1.82	22.0	86.3	4.6	2.3	5.4
				100	27.1	2.57	18.3	112.0	3.1	0.3	0.7	27.2	2.43	18.9	108.0	3.3	1.1	2.5	27.1	2.37	19.0	106.0	3.4	2.1	4.9
				120	25.9	3.33	14.6	131.5	2.3	0.2	0.5	25.7	3.15	15.0	127.6	2.4	0.9	2.1	25.6	3.07	15.1	125.7	2.4	1.8	4.3
	9.0	7.1	16.4	60	29.2	1.54	23.9	73.0	5.5	0.5	1.2	29.6	1.46	24.6	68.8	5.9	1.3	3.1	29.7	1.42	24.8	66.6	6.1	2.5	5.8
				80	28.6	1.98	21.9	92.7	4.2	0.4	0.9	28.9	1.87	22.5	88.6	4.5	1.2	2.8	28.9	1.82	22.7	86.4	4.7	2.3	5.4
				100	27.7	2.58	18.9	112.3	3.2	0.3	0.7	27.8	2.44	19.5	108.2	3.3	1.1	2.5	27.7	2.37	19.6	106.2	3.4	2.1	4.9
				120	26.4	3.34	15.0	131.7	2.3	0.2	0.5	26.2	3.16	15.4	127.8	2.4	0.9	2.1	26.1	3.08	15.6	125.8	2.5	1.8	4.3
40	4.5	1.5	3.5	60	30.0	1.55	24.7	93.3	5.7	0.4	0.9	30.4	1.46	25.4	89.0	6.1	1.2	2.8	30.5	1.42	25.7	86.8	6.3	2.3	5.4
				80	29.0	2.26	21.3	112.9	3.8	0.3	0.7	29.2	2.14	21.9	108.7	4.0	1.1	2.5	29.3	2.08	22.2	106.5	4.1	2.1	4.9
				100	28.6	2.58	19.8	132.7	3.2	0.2	0.5	28.7	2.44	20.3	128.5	3.4	0.9	2.1	28.6	2.38	20.5	126.4	3.5	1.8	4.3
				120	31.4	1.55	26.1	74.0	5.9	0.5	1.2	31.9	1.47	26.9	69.5	6.4	1.3	3.1	32.0	1.43	27.2	67.1	6.6	2.5	5.8
	6.8	3.7	8.6	60	30.8	1.99	24.0	93.7	4.5	0.4	0.9	31.1	1.88	24.7	89.2	4.8	1.2	2.8	31.2	1.83	24.9	86.9	5.0	2.3	5.4
				80	29.7	2.59	20.9	113.2	3.4	0.3	0.7	29.9	2.45	21.5	108.9	3.6	1.1	2.5	29.8	2.38	21.7	106.6	3.7	2.1	4.9
				100	28.3	3.35	16.9	132.6	2.5	0.2	0.5	28.2	3.17	17.4	128.4	2.6	0.9	2.1	28.1	3.09	17.6	126.2	2.7	1.8	4.3
				120	32.2	1.55	26.9	74.3	6.1	0.5	1.2	32.7	1.47	27.7	69.7	6.5	1.3	3.1	32.9	1.43	28.0	67.3	6.7	2.5	5.8
50	9.0	6.5	15.1	60	31.5	1.99	24.7	94.0	4.6	0.4	0.9	31.9	1.89	25.4	89.4	5.0	1.2	2.8	31.9	1.84	25.7	87.1	5.1	2.3	5.4
				80	30.4	2.59	21.5	113.5	3.4	0.3	0.7	30.5	2.45	22.2	109.0	3.6	1.1	2.5	30.5	2.39	22.4	106.8	3.7	2.1	4.9
				100	28.9	3.36	17.4	132.8	2.5	0.2	0.5	28.8	3.18	17.9	128.5	2.7	0.9	2.1	28.7	3.09	18.1	126.4	2.7	1.8	4.3
				120	28.9	3.36	17.4	127.7	2.5	0.2	0.5	28.8	3.18	17.9	125.3	2.7	0.9	2.1	28.7	3.09	18.1	124.0	2.7	1.8	4.3
	6.75	3.4	7.8	60	35.9	1.55	30.6	76.0	6.8	0.5	1.2	36.5	1.47	31.5	70.8	7.3	1.3	3.1	36.7	1.43	31.8	68.2	7.5	2.5	5.8
				80	35.0	2.00	28.2	95.6	5.1	0.4	0.9	35.5	1.89	29.0	90.5	5.5	1.2	2.8	35.6	1.84	29.3	87.9	5.7	2.3	5.4
				100	33.8	2.60	24.9	115.0	3.8	0.3	0.7	34.0	2.46	25.6	110.1	4.1	1.1	2.5	34.0	2.39	25.9	107.6	4.2	2.1	4.9
				120	32.2	3.36	20.7	134.3	2.8	0.2	0.5	32.1	3.18	21.3	129.5	3.0	0.9	2.1	32.1	3.09	21.5	127.1	3.0	1.8	4.3
50	9.0	6.0	13.9	60	37.7	1.56	32.4	76.8	7.1	0.5	1.2	38.4	1.48	33.3	71.4	7.6	1.3	3.1	38.5	1.44	33.6	68.6	7.9	2.5	5.8
				80	36.6	2.00	29.8	96.3	5.4	0.4	0.9	37.1	1.89	30.7	91.0	5.7	1.2	2.8	37.3	1.84	31.0	88.3	5.9	2.3	5.4
				100	35.2	2.60	26.3	115.6	4.0	0.3	0.7	35.5	2.46	27.1	110.5	4.2	1.1	2.5	35.5	2.40	27.3	107.9	4.3	2.1	4.9
				120	33.4	3.37	21.9	134.8	2.9	0.2	0.5	33.4	3.19	22.5	129.9	3.1	0.9	2.1	33.3	3.10	22.7	127.4	3.1	1.8	4.3
	9.0	6.0	13.9	60	38.6	1.56	33.3	77.2	7.2	0.5	1.2	39.3	1.48	34.3	71.7	7.8	1.3	3.1	39.5	1.44	34.6	68.8	8.0	2.5	5.8
				80	37.5	2.01	30.7	96.7	5.5	0.4	0.9	38.0	1.90	31.6	91.3	5.9	1.2	2.8	38.2	1.85	31.9	88.5	6.1	2.3	5.4
				100	36.0	2.61	27.1	116.0	4.0	0.3	0.7	36.3	2.47	27.9	110.8	4.3	1.1	2.5	36.3	2.40	28.1	108.1	4.4	2.1	4.9
				120	34.0	3.37	22.5	135.1	3.0	0.2	0.5	34.1	3.19	23.2	130.1	3.1	0.9	2.1	34.0	3.11	23.4	127.6	3.2	1.8	4.3
SOURCE	OPERATION NOT RECOMMENDED		EWT	60	32.8	3.61	20.5	139.7	2.7	0.8	1.9	32.0	3.51	19.0	136.9	2.6	1.7	3.9	LOAD						

## Performance Data

### HWW060 (60Hz I-P) - Cooling

SOURCE			LOAD																						
EWT °F	Flow		EWT °F	Flow 7.5 GPM						Flow 11.25 GPM						Flow 15.0 GPM									
	GPM	WPD PSI		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI	FT	TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI	FT	TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI	FT	
50	7.5	1.3	2.9	50	52.6	2.20	60.1	38.2	23.9	1.4	3.3	53.5	2.23	61.1	41.0	24.0	3.5	8.0	55.3	2.25	63.0	42.5	24.6	4.8	11.0
				60	53.2	2.22	60.8	47.1	23.9	1.4	3.2	54.1	2.25	61.7	50.5	24.1	3.3	7.7	55.9	2.27	63.7	52.4	24.7	4.6	10.6
				70	53.8	2.24	61.4	56.0	24.0	1.3	3.0	54.7	2.26	62.4	60.0	24.1	3.2	7.4	56.6	2.29	64.4	62.2	24.7	4.4	10.1
				80	55.5	2.24	63.2	64.7	24.7	1.2	2.9	56.4	2.27	64.1	69.4	24.9	3.1	7.1	58.4	2.29	66.2	72.0	25.5	4.3	9.8
				90	57.2	2.25	64.9	73.5	25.5	1.2	2.7	58.1	2.27	65.9	78.9	25.6	3.0	6.9	60.2	2.29	68.0	81.8	26.3	4.1	9.5
	11.25	3.4	7.9	50	53.4	2.23	61.0	38.0	24.0	1.4	3.3	54.1	2.25	61.8	40.8	24.1	3.5	8.0	56.0	2.27	63.8	42.3	24.7	4.8	11.0
				60	55.5	2.25	63.1	46.7	24.7	1.4	3.2	56.2	2.27	64.0	50.1	24.8	3.3	7.7	58.2	2.29	66.0	52.0	25.4	4.6	10.6
				70	57.5	2.26	65.3	55.4	25.4	1.3	3.0	58.3	2.29	66.1	59.4	25.5	3.2	7.4	60.4	2.31	68.3	61.6	26.1	4.4	10.2
				80	58.1	2.27	65.8	64.3	25.6	1.2	2.9	58.9	2.29	66.7	69.0	25.7	3.1	7.1	60.9	2.31	68.8	71.5	26.4	4.3	9.8
				90	58.6	2.27	66.3	73.2	25.8	1.2	2.7	59.4	2.29	67.2	78.5	25.9	3.0	6.9	61.5	2.31	69.4	81.4	26.6	4.1	9.5
15.0	6.2	14.2	14.2	50	55.6	2.25	63.2	35.8	24.7	1.4	3.3	56.5	2.27	64.2	40.3	24.9	3.5	8.0	57.9	2.29	65.8	42.1	25.2	4.8	11.1
				60	57.5	2.27	65.2	45.0	25.3	1.4	3.2	58.7	2.29	66.6	49.8	25.6	3.3	7.7	61.5	2.31	69.4	51.5	26.6	4.6	10.6
				70	59.4	2.29	67.2	54.1	26.0	1.3	3.0	61.0	2.31	68.9	59.3	26.4	3.2	7.4	65.1	2.33	73.1	60.9	27.9	4.4	10.1
				80	60.3	2.29	68.1	63.5	26.4	1.2	2.9	61.8	2.31	69.7	68.7	26.7	3.1	7.1	65.8	2.34	73.8	70.8	28.2	4.2	9.8
				90	61.3	2.29	69.1	72.8	26.7	1.2	2.7	62.6	2.31	70.5	78.1	27.0	3.0	6.9	66.6	2.34	74.6	80.7	28.5	4.1	9.4
	7.5	1.1	2.5	50	49.1	2.82	58.7	38.1	17.4	1.4	3.3	50.3	2.85	60.0	41.1	17.7	3.5	8.0	52.0	2.88	61.8	42.9	18.1	4.7	11.0
				60	53.2	2.84	62.9	46.4	18.7	1.4	3.2	54.5	2.87	64.3	50.0	19.0	3.3	7.7	56.3	2.90	66.2	52.3	19.4	4.6	10.5
				70	57.2	2.86	67.0	54.8	20.0	1.3	3.0	58.7	2.89	68.5	59.1	20.3	3.2	7.4	60.6	2.92	70.6	61.7	20.8	4.4	10.1
				80	59.3	2.92	69.3	63.4	20.3	1.2	2.9	60.8	2.95	70.9	68.3	20.6	3.1	7.1	62.9	2.98	73.0	71.4	21.1	4.3	9.8
				90	61.4	2.98	71.6	71.9	20.6	1.2	2.7	63.0	3.01	73.3	77.6	20.9	3.0	6.9	65.1	3.04	75.5	81.1	21.4	4.1	9.5
70	11.25	3.0	6.9	50	50.2	2.85	59.9	38.0	17.6	1.4	3.3	51.4	2.88	61.2	41.0	17.8	3.5	8.0	53.1	2.91	63.0	42.8	18.3	4.8	11.0
				60	54.5	2.87	64.3	46.2	19.0	1.4	3.2	55.9	2.90	65.8	49.8	19.3	3.3	7.7	57.7	2.93	67.7	52.1	19.7	4.6	10.6
				70	58.9	2.89	68.8	54.5	20.4	1.3	3.0	60.4	2.92	70.3	58.8	20.7	3.2	7.4	62.4	2.94	72.4	61.4	21.2	4.4	10.2
				80	60.8	2.95	70.8	63.1	20.6	1.2	2.9	62.3	2.98	72.4	68.1	20.9	3.1	7.1	64.4	3.01	74.6	71.1	21.4	4.3	9.9
				90	62.6	3.01	72.9	71.7	20.8	1.2	2.7	64.2	3.04	74.5	77.3	21.1	3.0	6.9	66.3	3.07	76.8	80.8	21.6	4.1	9.6
	15.0	5.5	12.8	50	51.2	2.88	61.0	36.9	17.8	1.4	3.3	53.3	2.91	63.2	40.8	18.3	3.5	8.0	54.3	2.94	64.3	42.6	18.5	4.8	11.0
				60	55.6	2.90	65.5	45.4	19.2	1.4	3.2	57.6	2.93	67.6	49.6	19.7	3.3	7.7	59.4	2.96	69.5	51.8	20.1	4.6	10.6
				70	60.1	2.92	70.1	53.9	20.6	1.3	3.0	61.9	2.94	72.0	58.5	21.0	3.2	7.4	64.5	2.97	74.6	61.1	21.7	4.4	10.1
				80	62.3	2.98	72.5	62.7	20.9	1.2	2.9	64.1	3.01	74.4	67.8	21.3	3.1	7.1	67.1	3.04	77.5	70.6	22.1	4.2	9.8
				90	64.6	3.04	74.9	71.5	21.3	1.2	2.7	66.3	3.07	76.8	77.1	21.6	3.0	6.9	69.8	3.10	80.3	80.2	22.5	4.1	9.5
80	7.5	0.9	2.1	50	47.3	3.13	58.0	38.0	15.1	1.4	3.3	48.7	3.16	59.5	41.1	15.4	3.5	8.0	50.3	3.19	61.2	43.1	15.8	4.7	10.9
				60	53.1	3.15	63.9	46.1	16.9	1.4	3.2	54.7	3.18	65.6	49.8	17.2	3.3	7.7	56.5	3.21	67.5	52.3	17.6	4.6	10.5
				70	58.9	3.17	69.7	54.2	18.6	1.3	3.0	60.7	3.20	71.6	58.6	19.0	3.2	7.4	62.7	3.23	73.7	61.5	19.4	4.4	10.1
				80	61.3	3.25	72.4	62.7	18.8	1.2	2.9	63.1	3.29	74.3	67.8	19.2	3.1	7.1	65.1	3.32	76.5	71.1	19.6	4.3	9.8
				90	63.6	3.34	75.0	71.1	19.0	1.2	2.7	65.4	3.38	77.0	76.9	19.4	3.0	6.9	67.6	3.41	79.2	80.7	19.8	4.1	9.6
	11.25	2.7	6.1	50	48.5	3.16	59.3	38.0	15.3	1.4	3.3	50.0	3.19	60.9	41.1	15.6	3.5	8.0	51.6	3.23	62.6	43.0	16.0	4.8	11.1
				60	54.1	3.18	64.9	46.0	17.0	1.4	3.2	55.7	3.21	66.6	49.7	17.3	3.3	7.7	57.5	3.24	68.6	52.2	17.7	4.6	10.6
				70	59.6	3.20	70.5	54.0	18.7	1.3	3.0	61.4	3.23	72.4	58.4	19.0	3.2	7.4	63.4	3.26	74.5	61.3	19.4	4.4	10.2
				80	62.1	3.29	73.4	62.5	18.9	1.2	2.9	64.0	3.32	75.3	67.6	19.3	3.1	7.1	66.1	3.35	77.5	70.9	19.7	4.3	9.9
				90	64.6	3.38	76.2	71.0	19.1	1.2	2.7	66.6	3.41	78.2	76.8	19.5	3.0	6.9	68.7	3.45	80.5	80.6	19.9	4.2	9.6
15.0	5.0	11.6	11.6	50	49.0	3.19	59.9	37.4	15.3	1.4	3.3	51.7	3.23	62.7	41.0	16.0	3.5	8.0	52.4	3.26	63.5	42.9	16.1	4.8	11.0
				60	54.7	3.21	65.7	45.6	17.0	1.4	3.2	57.1	3.24	68.1	49.5	17.6	3.3	7.7	58.3	3.28	69.5	52.0	17.8	4.6	10.6
				70	60.5	3.23	71.5	53.8	18.7	1.3	3.0	62.4	3.26	73.5	58.1</td										

**Performance Data****HWW060 (60Hz I-P) - Heating**

SOURCE		LOAD																							
EWT °F	Flow		EWT °F	Flow 7.5 GPM						Flow 11.25 GPM						Flow 15.0 GPM									
	GPM	WPD PSI FT		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI FT		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI FT		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI FT		
									TC	Mbtuh						TC	Mbtuh						TC	Mbtuh	
50	7.5	1.3	2.9	50	52.6	2.20	60.1	38.2	23.9	1.4	3.3	53.5	2.23	61.1	41.0	24.0	3.5	8.0	55.3	2.25	63.0	42.5	24.6	4.8	11.0
				60	53.2	2.22	60.8	47.1	23.9	1.4	3.2	54.1	2.25	61.7	50.5	24.1	3.3	7.7	55.9	2.27	63.7	52.4	24.7	4.6	10.6
				70	53.8	2.24	61.4	56.0	24.0	1.3	3.0	54.7	2.26	62.4	60.0	24.1	3.2	7.4	56.6	2.29	64.4	62.2	24.7	4.4	10.1
				80	55.5	2.24	63.2	64.7	24.7	1.2	2.9	56.4	2.27	64.1	69.4	24.9	3.1	7.1	58.4	2.29	66.2	72.0	25.5	4.3	9.8
				90	57.2	2.25	64.9	73.5	25.5	1.2	2.7	58.1	2.27	65.9	78.9	25.6	3.0	6.9	60.2	2.29	68.0	81.8	26.3	4.1	9.5
	11.25	3.4	7.9	50	53.4	2.23	61.0	38.0	24.0	1.4	3.3	54.1	2.25	61.8	40.8	24.1	3.5	8.0	56.0	2.27	63.8	42.3	24.7	4.8	11.0
				60	55.5	2.25	63.1	46.7	24.7	1.4	3.2	56.2	2.27	64.0	50.1	24.8	3.3	7.7	58.2	2.29	66.0	52.0	25.4	4.6	10.6
				70	57.5	2.26	65.3	55.4	25.4	1.3	3.0	58.3	2.29	66.1	59.4	25.5	3.2	7.4	60.4	2.31	68.3	61.6	26.1	4.4	10.2
				80	58.1	2.27	65.8	64.3	25.6	1.2	2.9	58.9	2.29	66.7	69.0	25.7	3.1	7.1	60.9	2.31	68.8	71.5	26.4	4.3	9.8
				90	58.6	2.27	66.3	73.2	25.8	1.2	2.7	59.4	2.29	67.2	78.5	25.9	3.0	6.9	61.5	2.31	69.4	81.4	26.6	4.1	9.5
	15.0	6.2	14.2	50	55.6	2.25	63.2	35.8	24.7	1.4	3.3	56.5	2.27	64.2	40.3	24.9	3.5	8.0	57.9	2.29	65.8	42.1	25.2	4.8	11.1
				60	57.5	2.27	65.2	45.0	25.3	1.4	3.2	58.7	2.29	66.6	49.8	25.6	3.3	7.7	61.5	2.31	69.4	51.5	26.6	4.6	10.6
				70	59.4	2.29	67.2	54.1	26.0	1.3	3.0	61.0	2.31	68.9	59.3	26.4	3.2	7.4	65.1	2.33	73.1	60.9	27.9	4.4	10.1
				80	60.3	2.29	68.1	63.5	26.4	1.2	2.9	61.8	2.31	69.7	68.7	26.7	3.1	7.1	65.8	2.34	73.8	70.8	28.2	4.2	9.8
				90	61.3	2.29	69.1	72.8	26.7	1.2	2.7	62.6	2.31	70.5	78.1	27.0	3.0	6.9	66.6	2.34	74.6	80.7	28.5	4.1	9.4
70	7.5	1.1	2.5	50	49.1	2.82	58.7	38.1	17.4	1.4	3.3	50.3	2.85	60.0	41.1	17.7	3.5	8.0	52.0	2.88	61.8	42.9	18.1	4.7	11.0
				60	53.2	2.84	62.9	46.4	18.7	1.4	3.2	54.5	2.87	64.3	50.0	19.0	3.3	7.7	56.3	2.90	66.2	52.3	19.4	4.6	10.5
				70	57.2	2.86	67.0	54.8	20.0	1.3	3.0	58.7	2.89	68.5	59.1	20.3	3.2	7.4	60.6	2.92	70.6	61.7	20.8	4.4	10.1
				80	59.3	2.92	69.3	63.4	20.3	1.2	2.9	60.8	2.95	70.9	68.3	20.6	3.1	7.1	62.9	2.98	73.0	71.4	21.1	4.3	9.8
				90	61.4	2.98	71.6	71.9	20.6	1.2	2.7	63.0	3.01	73.3	77.6	20.9	3.0	6.9	65.1	3.04	75.5	81.1	21.4	4.1	9.5
	11.25	3.0	6.9	50	50.2	2.85	59.9	38.0	17.6	1.4	3.3	51.4	2.88	61.2	41.0	17.8	3.5	8.0	53.1	2.91	63.0	42.8	18.3	4.8	11.0
				60	54.5	2.87	64.3	46.2	19.0	1.4	3.2	55.9	2.90	65.8	49.8	19.3	3.3	7.7	57.7	2.93	67.7	52.1	19.7	4.6	10.6
				70	58.9	2.89	68.8	54.5	20.4	1.3	3.0	60.4	2.92	70.3	58.8	20.7	3.2	7.4	62.4	2.94	72.4	61.4	21.2	4.4	10.2
				80	60.8	2.95	70.8	63.1	20.6	1.2	2.9	62.3	2.98	72.4	68.1	20.9	3.1	7.1	64.4	3.01	74.6	71.1	21.4	4.3	9.9
				90	62.6	3.01	72.9	71.7	20.8	1.2	2.7	64.2	3.04	74.5	77.3	21.1	3.0	6.9	66.3	3.07	76.8	80.8	21.6	4.1	9.6
	15.0	5.5	12.8	50	51.2	2.88	61.0	36.9	17.8	1.4	3.3	53.3	2.91	63.2	40.8	18.3	3.5	8.0	54.3	2.94	64.3	42.6	18.5	4.8	11.0
				60	55.6	2.90	65.5	45.4	19.2	1.4	3.2	57.6	2.93	67.6	49.6	19.7	3.3	7.7	59.4	2.96	69.5	51.8	20.1	4.6	10.6
				70	60.1	2.92	70.1	53.9	20.6	1.3	3.0	61.9	2.94	72.0	58.5	21.0	3.2	7.4	64.5	2.97	74.6	61.1	21.7	4.4	10.1
				80	62.3	2.98	72.5	62.7	20.9	1.2	2.9	64.1	3.01	74.4	67.8	21.3	3.1	7.1	67.1	3.04	77.5	70.6	22.1	4.2	9.8
				90	64.6	3.04	74.9	71.5	21.3	1.2	2.7	66.3	3.07	76.8	77.1	21.6	3.0	6.9	69.8	3.10	80.3	80.2	22.5	4.1	9.5

Table Continued on Next Page

Interpolation is permissible, extrapolation is not

All performance data is based upon the lower voltage of dual voltage rated units

All performance data is based upon a load coaxial heat exchanger of single-walled copper construction. For vented double-wall performance consult the factory

Operation below 40F EWT is based upon 15% antifreeze solution

See performance data notes for operation in the shaded areas

Performance stated is at the rated power supply, performance may vary as the power supply varies from the rated

**Performance Data**  
**HWW060 (60Hz I-P) - Heating**

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SOURCE			LOAD																						
EWT °F	Flow		EWT °F	Flow 7.5 GPM						Flow 11.25 GPM						Flow 15.0 GPM									
	GPM	WPD Mbtuh PSI FT		HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	WPD PSI FT		HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	WPD PSI FT		HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	WPD PSI FT		
									PSI	FT						PSI	FT								
20	15.0	7.3	60	41.1	2.43	32.8	71.5	5.0	1.4	3.2	41.3	2.38	33.2	67.4	5.1	3.3	7.7	41.5	2.33	33.5	65.3	5.2	6.0	13.8	
				40.5	3.17	29.6	91.2	3.7	1.2	2.9	40.6	3.11	30.0	87.2	3.8	3.1	7.1	40.7	3.05	30.3	85.3	3.9	5.6	13.0	
				39.7	4.11	25.6	110.8	2.8	1.1	2.6	39.7	4.03	25.9	106.9	2.9	2.9	6.7	39.7	3.95	26.2	105.1	2.9	5.3	12.3	
	11.25	4.0	7.5	47.8	2.52	39.2	73.3	5.6	1.4	3.2	48.0	2.47	39.6	68.6	5.7	3.3	7.7	48.3	2.42	40.0	66.3	5.8	6.0	13.8	
				46.9	3.28	35.7	92.9	4.2	1.2	2.9	47.1	3.21	36.1	88.4	4.3	3.1	7.1	47.2	3.15	36.5	86.1	4.4	5.6	13.0	
				45.8	4.22	31.4	112.4	3.2	1.1	2.6	45.9	4.14	31.8	108.1	3.3	2.9	6.7	45.9	4.05	32.1	105.9	3.3	5.3	12.3	
				44.6	5.36	26.3	131.9	2.4	1.1	2.4	44.5	5.25	26.6	127.7	2.5	2.8	6.4	44.4	5.14	26.9	125.7	2.5	5.1	11.7	
				50.0	2.56	41.3	73.6	5.7	1.4	3.2	50.3	2.51	41.7	68.9	5.9	3.3	7.7	50.5	2.46	42.1	66.6	6.0	6.0	13.8	
	15.0	6.9	8.0	49.0	3.33	37.6	93.3	4.3	1.2	2.9	49.1	3.26	38.0	88.7	4.4	3.1	7.1	49.3	3.20	38.4	86.5	4.5	5.6	13.0	
				47.8	4.29	33.2	112.8	3.3	1.1	2.6	47.9	4.21	33.5	108.4	3.3	2.9	6.7	47.9	4.12	33.9	106.2	3.4	5.3	12.3	
				46.6	5.45	28.0	132.1	2.5	1.1	2.4	46.5	5.34	28.3	128.0	2.6	2.8	6.4	46.4	5.23	28.6	125.9	2.6	5.1	11.7	
				52.0	2.61	43.1	73.9	5.8	1.4	3.2	52.2	2.55	43.5	69.1	6.0	3.3	7.7	52.5	2.50	43.9	66.8	6.1	6.0	13.8	
				50.9	3.39	39.3	93.4	4.4	1.2	2.9	51.1	3.32	39.7	88.9	4.5	3.1	7.1	51.2	3.25	40.1	86.6	4.6	5.6	13.0	
30	11.25	4.0	8.0	49.6	4.36	34.7	112.9	3.3	1.1	2.6	49.7	4.28	35.1	108.6	3.4	2.9	6.7	49.7	4.19	35.4	106.4	3.5	5.3	12.3	
				48.1	5.54	29.2	132.3	2.5	1.1	2.4	48.0	5.43	29.5	128.2	2.6	2.8	6.4	47.9	5.32	29.8	126.1	2.6	5.1	11.7	
				54.4	2.61	45.5	75.0	6.1	1.4	3.2	54.7	2.56	46.0	69.7	6.3	3.3	7.7	55.1	2.51	46.5	67.2	6.4	6.0	13.8	
				53.4	3.38	41.8	94.6	4.6	1.2	2.9	53.6	3.31	42.3	89.6	4.7	3.1	7.1	53.8	3.25	42.7	87.0	4.9	5.6	13.0	
				52.0	4.33	37.2	114.0	3.5	1.1	2.6	52.1	4.24	37.6	109.2	3.6	2.9	6.7	52.2	4.16	38.0	106.7	3.7	5.3	12.3	
	15.0	6.5	8.0	50.4	5.46	31.8	133.4	2.7	1.1	2.4	50.3	5.35	32.1	128.7	2.8	2.8	6.4	50.3	5.24	32.4	126.4	2.8	5.1	11.7	
				57.4	2.65	48.3	75.5	6.4	1.4	3.2	57.7	2.59	48.8	70.1	6.5	3.3	7.7	58.0	2.54	49.3	67.5	6.7	6.0	13.8	
				55.9	3.42	44.2	95.1	4.8	1.2	2.9	56.1	3.36	44.7	90.0	4.9	3.1	7.1	56.4	3.29	45.1	87.4	5.0	5.6	13.0	
				54.3	4.38	39.4	114.5	3.6	1.1	2.6	54.4	4.30	39.8	109.7	3.7	2.9	6.7	54.5	4.21	40.2	107.1	3.8	5.3	12.3	
				52.6	5.53	33.7	133.8	2.8	1.1	2.4	52.6	5.42	34.1	129.1	2.8	2.8	6.4	52.5	5.31	34.4	126.8	2.9	5.1	11.7	
40	11.25	3.7	8.0	59.2	2.68	50.1	75.9	6.5	1.4	3.2	59.6	2.63	50.6	70.5	6.6	3.3	7.7	59.9	2.58	51.1	67.9	6.8	6.0	13.8	
				57.8	3.47	46.0	95.3	4.9	1.2	2.9	58.0	3.40	46.4	90.3	5.0	3.1	7.1	58.3	3.33	46.9	87.6	5.1	5.6	13.0	
				56.1	4.44	40.9	114.7	3.7	1.1	2.6	56.2	4.35	41.3	109.9	3.8	2.9	6.7	56.3	4.27	41.7	107.3	3.9	5.3	12.3	
				54.0	5.60	34.9	134.0	2.8	1.1	2.4	54.0	5.49	35.2	129.3	2.9	2.8	6.4	54.0	5.38	35.6	127.0	2.9	5.1	11.7	
				61.1	2.70	51.9	76.8	6.6	1.4	3.2	61.5	2.65	52.4	70.8	6.8	3.3	7.7	61.8	2.60	53.0	68.1	7.0	6.0	13.8	
	15.0	6.2	8.0	59.8	3.48	47.9	96.3	5.0	1.2	2.9	60.1	3.41	48.4	90.8	5.2	3.1	7.1	60.3	3.34	48.9	87.8	5.3	5.6	13.0	
				58.2	4.43	43.0	115.6	3.8	1.1	2.6	58.3	4.34	43.5	110.4	3.9	2.9	6.7	58.5	4.26	43.9	107.5	4.0	5.3	12.3	
				56.2	5.55	37.2	134.9	3.0	1.1	2.4	56.2	5.44	37.6	129.7	3.0	2.8	6.4	56.2	5.33	38.0	127.2	3.1	5.1	11.7	
				55.2	6.28	33.8	144.6	2.6	1.0	2.2	55.2	6.16	34.2	139.8	2.6	2.7	6.2	55.1	6.03	34.5	137.2	2.7	5.0	11.5	
				64.7	2.73	55.4	77.4	6.9	1.4	3.2	65.1	2.68	56.0	71.3	7.1	3.3	7.7	65.5	2.62	56.5	68.5	7.3	6.0	13.8	
50	11.25	3.4	8.0	62.8	3.52	50.8	96.9	5.2	1.2	2.9	63.1	3.45	51.4	91.3	5.4	3.1	7.1	63.4	3.38	51.9	88.3	5.5	5.6	13.0	
				60.8	4.48	45.5	116.2	4.0	1.1	2.6	61.0	4.39	46.0	110.9	4.1	2.9	6.7	61.1	4.30	46.5	108.0	4.2	5.3	12.3	
				58.6	5.61	39.4	135.4	3.1	1.1	2.4	58.6	5.50	39.8	130.2	3.1	2.8	6.4	58.6	5.39	40.2	127.7	3.2	5.1	11.7	
				58.0	6.34	36.3	144.8	2.7	1.0	2.2	57.9	6.22	36.7	139.9	2.7	2.7	6.2	57.8	6.09	37.1	137.3	2.8	5.0	11.5	
				66.5	2.76	57.1	78.0	7.1	1.4	3.2	66.9	2.70	57.7	71.9	7.3	3.3	7.7	67.3	2.65	58.3	69.0	7.4	6.0	13.8	
	15.0	6.2	8.0	64.7	3.55	52.6	97.2	5.3	1.2	2.9	65.0	3.48	53.1	91.6	5.5	3.1	7.1	65.3	3.41	53.6	88.6	5.6	5.6	13.0	
				62.5	4.52	47.1	116.4	4.1	1.1	2.6	62.7	4.43	47.6	111.1	4.1	2.9	6.7	62.9	4.34	48.0	108.2	4.2	5.3	12.3	
				60.0	5.67	40.6	135.6	3.1	1.1	2.4	60.0	5.55	41.0	130.5	3.2	2.8	6.4	60.0	5.44	41.4	127.9	3.2	5.1	11.7	
				58.8	6.41	37.0	145.2	2.7	1.1	2.4	58.8	6.28	37.3	140.3	2.7	2.7	6.2	58.7	6.15	37.7	137.7	2.8	5.0	1	

**Performance Data****HWW060 (60Hz I-P) - Heating**

Table Continued from Previous Page

SOURCE			LOAD																							
EWT °F	Flow		EWT °F	Flow 7.5 GPM						Flow 11.25 GPM						Flow 15.0 GPM										
	GPM	WPD		HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	WPD	HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	WPD	HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	WPD					
60	7.5	1.2	2.7	60	64.9	2.76	55.5	78.5	6.9	1.4	3.2	65.2	2.70	56.0	71.7	7.1	3.3	7.7	65.6	2.65	56.6	68.6	7.3	6.0	13.8	
				80	64.8	3.54	52.7	98.1	5.4	1.2	2.9	65.1	3.47	53.3	91.8	5.5	3.1	7.1	65.4	3.40	53.8	88.6	5.6	5.6	13.0	
				100	63.7	4.49	48.3	117.6	4.2	1.1	2.6	63.9	4.40	48.8	111.5	4.3	2.9	6.7	64.1	4.31	49.4	108.4	4.4	5.3	12.3	
				120	61.4	5.60	42.3	136.7	3.2	1.1	2.4	61.5	5.48	42.8	130.9	3.3	2.8	6.4	61.6	5.37	43.2	128.0	3.4	5.1	11.7	
				130	60.5	6.40	38.6	146.5	2.8	1.0	2.2	60.2	6.21	39.1	140.8	2.8	2.7	6.2	60.0	6.02	39.5	137.9	2.9	5.0	11.5	
	60	11.25	3.2	7.3	60	67.7	2.78	58.2	79.0	7.1	1.4	3.2	68.1	2.73	58.8	72.2	7.3	3.3	7.7	68.5	2.67	59.4	69.1	7.5	6.0	13.8
					80	67.7	3.58	55.5	98.7	5.5	1.2	2.9	68.0	3.51	56.0	92.3	5.7	3.1	7.1	68.3	3.44	56.6	89.1	5.8	5.6	13.0
					100	66.4	4.54	50.9	118.1	4.3	1.1	2.6	66.6	4.45	51.5	112.0	4.4	2.9	6.7	66.9	4.36	52.0	108.9	4.5	5.3	12.3
					120	64.0	5.67	44.6	137.2	3.3	1.1	2.4	64.1	5.56	45.1	131.3	3.4	2.8	6.4	64.2	5.45	45.6	128.5	3.5	5.1	11.7
					130	63.4	6.47	41.3	146.7	2.9	1.0	2.2	63.1	6.27	41.7	141.0	3.0	2.7	6.2	62.9	6.08	42.2	138.1	3.0	5.0	11.5
15.0	15.0	5.8	13.5	60	70.0	2.81	60.4	79.4	7.3	1.4	3.2	70.4	2.76	61.0	72.6	7.5	3.3	7.7	70.8	2.70	61.6	69.5	7.7	6.0	13.8	
					80	70.0	3.62	57.7	99.0	5.7	1.2	2.9	70.4	3.54	58.3	92.6	5.8	3.1	7.1	70.7	3.47	58.9	89.4	6.0	5.6	13.0
					100	68.8	4.60	53.1	118.3	4.4	1.1	2.6	69.0	4.50	53.6	112.2	4.5	2.9	6.7	69.2	4.41	54.2	109.1	4.6	5.3	12.3
					120	66.2	5.75	46.6	137.4	3.4	1.1	2.4	66.3	5.63	47.1	131.6	3.4	2.8	6.4	66.4	5.52	47.5	128.7	3.5	5.1	11.7
					130	65.0	6.53	42.7	147.0	2.9	1.1	2.4	64.8	6.34	43.2	141.3	3.0	2.7	6.2	64.6	6.14	43.6	138.4	3.1	5.0	11.5
	7.5	1.1	2.5	60	68.6	2.81	59.0	80.1	7.2	1.4	3.2	69.0	2.76	59.6	72.6	7.3	3.3	7.7	69.5	2.70	60.2	69.2	7.5	6.0	13.8	
					80	69.8	3.61	57.5	100.0	5.7	1.2	2.9	70.2	3.53	58.1	92.8	5.8	3.1	7.1	70.5	3.46	58.7	89.4	6.0	5.6	13.0
					100	69.2	4.55	53.6	119.5	4.5	1.1	2.6	69.4	4.46	54.2	112.6	4.6	2.9	6.7	69.7	4.37	54.8	109.3	4.7	5.3	12.3
					120	66.7	5.64	47.4	138.5	3.5	1.1	2.4	66.8	5.52	47.9	132.0	3.5	2.8	6.4	66.9	5.41	48.5	128.9	3.6	5.1	11.7
					130	65.7	6.53	43.5	148.3	3.0	1.0	2.2	65.3	6.26	44.0	141.8	3.1	2.7	6.2	65.0	6.01	44.5	138.6	3.2	5.0	11.5
70	11.25	3.0	6.9	60	70.7	2.84	61.0	80.7	7.3	1.4	3.2	71.2	2.78	61.7	73.2	7.5	3.3	7.7	71.6	2.73	62.3	69.7	7.7	6.0	13.8	
					80	72.5	3.64	60.1	100.5	5.8	1.2	2.9	72.9	3.57	60.7	93.3	6.0	3.1	7.1	73.2	3.50	61.3	89.9	6.1	5.6	13.0
					100	72.1	4.61	56.3	119.9	4.6	1.1	2.6	72.3	4.52	56.9	113.1	4.7	2.9	6.7	72.6	4.43	57.5	109.7	4.8	5.3	12.3
					120	69.4	5.73	49.9	139.0	3.5	1.1	2.4	69.6	5.62	50.4	132.4	3.6	2.8	6.4	69.7	5.51	50.9	129.3	3.7	5.1	11.7
					130	68.8	6.59	46.3	148.5	3.1	1.0	2.2	68.4	6.33	46.8	142.0	3.2	2.7	6.2	68.0	6.07	47.3	138.9	3.3	5.0	11.5
	15.0	5.5	12.8	60	73.5	2.87	63.7	80.9	7.5	1.4	3.2	73.9	2.81	64.3	73.4	7.7	3.3	7.7	74.4	2.75	65.0	70.0	7.9	6.0	13.8	
					80	75.4	3.68	62.8	100.7	6.0	1.2	2.9	75.8	3.61	63.5	93.5	6.2	3.1	7.1	76.2	3.53	64.1	90.1	6.3	5.6	13.0
					100	75.1	4.67	59.1	120.2	4.7	1.1	2.6	75.3	4.57	59.7	113.3	4.8	2.9	6.7	75.6	4.48	60.3	109.9	4.9	5.3	12.3
					120	72.5	5.83	52.6	139.2	3.6	1.1	2.4	72.6	5.71	53.1	132.7	3.7	2.8	6.4	72.7	5.60	53.6	129.5	3.8	5.1	11.7
					130	71.2	6.66	48.5	148.8	3.1	1.1	2.4	70.8	6.39	49.0	142.3	3.2	2.7	6.2	70.4	6.13	49.5	139.2	3.4	5.0	11.5
80	11.25	2.8	6.5	60	73.7	2.89	63.9	82.3	7.5	1.4	3.2	74.2	2.84	64.5	74.1	7.7	3.3	7.7	74.7	2.78	65.2	70.3	7.9	6.0	13.8	
					80	77.3	3.71	64.7	102.3	6.1	1.2	2.9	77.7	3.63	65.3	94.3	6.3	3.1	7.1	78.2	3.56	66.0	90.6	6.4	5.6	13.0
					100	77.7	4.67	61.8	121.8	4.9	1.1	2.6	78.0	4.58	62.4	114.2	5.0	2.9	6.7	78.4	4.49	63.0	110.6	5.1	5.3	12.3
					120	74.8	5.79	55.1	140.7	3.8	1.1	2.4	75.0	5.68	55.7	133.5	3.9	2.8	6.4	75.2	5.56	56.2	130.1	4.0	5.1	11.7
					130	74.2	6.72	51.3	150.4	3.2	1.0	2.2	73.6	6.38	51.9	143.1	3.4	2.7	6.2	73.1	6.06	52.4	139.7	3.5	5.0	11.5
	15.0	5.3	12.1	60	76.9	2.92	67.0	82.4	7.7	1.4	3.2	77.4	2.87	67.6	74.2	7.9	3.3	7.7	77.9	2.81	68.3	70.4	8.1	6.0	13.8	
					80	80.7	3.74	68.0	102.5	6.3	1.2	2.9	81.2	3.67	68.7	94.5	6.5	3.1	7.1	81.6	3.60	69.3	90.8	6.7	5.6	13.0
					100	81.3	4.74	65.2	122.0	5.0	1.1	2.6	81.7	4.64	65.8	114.4	5.2	2.9	6.7	82.0	4.55	66.5	110.8	5.3	5.3	12.3
					120	78.7	5.91	58.5	141.0	3.9	1.1	2.4	78.9	5.79	59.1	133.8	4.0	2.8	6.4	79.1	5.68	59.7	130.4	4.1	5.1	11.7
					130	77.4	6.79	54.3	150.7	3.3	1.1	2.4														

**Performance Data**  
**HWW120 (60Hz I-P) - Cooling**

SOURCE			LOAD																						
EWT °F	Flow		EWT °F	Flow 15.0 GPM						Flow 22.5 GPM						Flow 30.0 GPM									
	GPM	WPD		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD		
									PSI	FT						PSI	FT						PSI	FT	
50	15.0	1.4	3.2	50	105.2	4.41	120.3	38.2	23.9	1.6	3.7	106.9	4.45	122.1	41.0	24.0	3.8	8.8	110.7	4.50	126.0	42.5	24.6	6.8	15.7
				60	106.4	4.45	121.6	47.1	23.9	1.5	3.5	108.1	4.49	123.4	50.5	24.1	3.7	8.4	111.9	4.54	127.4	52.4	24.7	6.6	15.2
				70	107.6	4.48	122.9	56.0	24.0	1.4	3.3	109.3	4.53	124.8	60.0	24.1	3.5	8.1	113.1	4.57	128.7	62.2	24.7	6.4	14.7
				80	111.0	4.49	126.3	64.7	24.7	1.4	3.2	112.8	4.53	128.3	69.4	24.9	3.4	7.9	116.7	4.58	132.4	72.0	25.5	6.2	14.3
				90	114.4	4.49	129.8	73.5	25.5	1.3	3.0	116.3	4.54	131.8	78.9	25.6	3.3	7.6	120.3	4.58	136.0	81.8	26.3	6.0	13.9
	22.5	3.8	8.7	50	106.8	4.45	122.0	38.0	24.0	1.6	3.7	108.3	4.50	123.6	40.8	24.1	3.8	8.8	112.1	4.54	127.6	42.3	24.7	6.8	15.7
				60	110.9	4.49	126.2	46.7	24.7	1.5	3.5	112.5	4.54	128.0	50.1	24.8	3.7	8.4	116.4	4.58	132.0	52.0	25.4	6.6	15.2
				70	115.1	4.53	130.5	55.4	25.4	1.4	3.3	116.7	4.57	132.3	59.4	25.5	3.5	8.1	120.8	4.62	136.5	61.6	26.1	6.4	14.7
				80	116.1	4.53	131.6	64.3	25.6	1.4	3.2	117.7	4.58	133.4	69.0	25.7	3.4	7.9	121.9	4.62	137.6	71.5	26.4	6.2	14.3
				90	117.2	4.54	132.6	73.2	25.8	1.3	3.0	118.8	4.58	134.5	78.5	25.9	3.3	7.6	123.0	4.63	138.8	81.4	26.6	6.0	13.9
	30.0	6.8	15.6	50	111.1	4.50	126.5	35.8	24.7	1.6	3.7	113.0	4.54	128.5	40.3	24.9	3.8	8.8	115.9	4.59	131.5	42.1	25.2	6.8	15.7
				60	114.9	4.54	130.4	45.0	25.3	1.5	3.5	117.5	4.58	133.1	49.8	25.6	3.7	8.4	123.0	4.63	138.8	51.5	26.6	6.6	15.2
				70	118.8	4.57	134.4	54.1	26.0	1.4	3.3	122.0	4.62	137.8	59.3	26.4	3.5	8.1	130.2	4.67	146.1	60.9	27.9	6.4	14.7
				80	120.7	4.58	136.3	63.5	26.4	1.4	3.2	123.6	4.62	139.4	68.7	26.7	3.4	7.9	131.7	4.67	147.6	70.8	28.2	6.2	14.3
				90	122.5	4.58	138.2	72.8	26.7	1.3	3.0	125.2	4.63	141.0	78.1	27.0	3.3	7.6	133.2	4.68	149.1	80.7	28.5	6.0	13.9
70	15.0	1.2	2.7	50	98.2	5.64	117.5	38.1	17.4	1.6	3.7	100.6	5.70	120.1	41.1	17.7	3.8	8.8	104.0	5.76	123.7	42.9	18.1	6.8	15.7
				60	106.3	5.68	125.7	46.4	18.7	1.5	3.5	109.0	5.74	128.6	50.0	19.0	3.7	8.4	112.6	5.79	132.4	52.3	19.4	6.6	15.2
				70	114.4	5.71	133.9	54.8	20.0	1.4	3.3	117.3	5.77	137.0	59.1	20.3	3.5	8.1	121.3	5.83	141.2	61.7	20.8	6.4	14.7
				80	118.7	5.83	138.6	63.4	20.3	1.4	3.2	121.7	5.89	141.8	68.3	20.6	3.4	7.9	125.7	5.95	146.1	71.4	21.1	6.2	14.3
				90	122.9	5.95	143.2	71.9	20.6	1.3	3.0	126.0	6.02	146.5	77.6	20.9	3.3	7.6	130.2	6.08	151.0	81.1	21.4	6.0	13.9
	22.5	3.3	7.6	50	100.3	5.70	119.8	38.0	17.6	1.6	3.7	102.7	5.76	122.4	41.0	17.8	3.8	8.8	106.2	5.82	126.0	42.8	18.3	6.8	15.7
				60	109.1	5.74	128.7	46.2	19.0	1.5	3.5	111.7	5.79	131.5	49.8	19.3	3.7	8.4	115.5	5.85	135.4	52.1	19.7	6.6	15.2
				70	117.9	5.77	137.6	54.5	20.4	1.4	3.3	120.7	5.83	140.6	58.8	20.7	3.5	8.1	124.8	5.89	144.9	61.4	21.2	6.4	14.7
				80	121.6	5.89	141.7	63.1	20.6	1.4	3.2	124.5	5.95	144.9	68.1	20.9	3.4	7.9	128.7	6.01	149.2	71.1	21.4	6.2	14.3
				90	125.2	6.02	145.8	71.7	20.8	1.3	3.0	128.3	6.08	149.1	77.3	21.1	3.3	7.6	132.6	6.14	153.6	80.8	21.6	6.0	13.9
	30.0	6.1	14.1	50	102.4	5.76	122.0	36.9	17.8	1.6	3.7	106.6	5.82	126.4	40.8	18.3	3.8	8.8	108.5	5.88	128.6	42.6	18.5	6.8	15.7
				60	111.3	5.79	131.1	45.4	19.2	1.5	3.5	115.2	5.85	135.2	49.6	19.7	3.7	8.4	118.8	5.91	138.9	51.8	20.1	6.6	15.2
				70	120.2	5.83	140.1	53.9	20.6	1.4	3.3	123.9	5.89	144.0	58.5	21.0	3.5	8.1	129.0	5.95	149.3	61.1	21.7	6.4	14.7
				80	124.7	5.95	145.0	62.7	20.9	1.4	3.2	128.3	6.01	148.8	67.8	21.3	3.4	7.9	134.3	6.07	155.0	70.6	22.1	6.2	14.3
				90	129.1	6.08	149.9	71.5	21.3	1.3	3.0	132.6	6.14	153.6	77.1	21.6	3.3	7.6	139.5	6.20	160.7	80.2	22.5	6.0	13.9
80	15.0	1.1	2.5	50	94.7	6.26	116.1	38.0	15.1	1.6	3.7	97.5	6.33	119.1	41.1	15.4	3.8	8.8	100.7	6.39	122.5	43.1	15.8	6.8	15.7
				60	106.3	6.30	127.8	46.1	16.9	1.5	3.5	109.4	6.36	131.1	49.8	17.2	3.7	8.4	113.0	6.42	134.9	52.3	17.6	6.6	15.2
				70	117.9	6.33	139.5	54.2	18.6	1.4	3.3	121.4	6.42	133.9	49.3	18.0	3.5	8.1	125.3	6.46	147.4	61.5	19.4	6.4	14.7
				80	122.5	6.51	144.7	62.7	18.8	1.4	3.2	126.1	6.57	148.6	67.8	19.2	3.4	7.9	130.3	6.64	152.9	71.1	19.6	6.2	14.3
				90	127.1	6.69	149.9	71.1	19.0	1.3	3.0	130.9	6.75	153.9	76.9	19.4	3.3	7.6	135.2	6.82	158.4	80.7	19.8	6.0	13.9
	22.5	3.1	7.1	50	97.1	6.33	118.7	38.0	15.3	1.6	3.7	99.9	6.39	121.7	41.1	15.6	3.8	8.8	103.2	6.45	125.2	43.0	16.0	6.8	15.7
				60	108.2	6.36	129.9	46.0	17.0	1.5	3.5	111.4	6.42	133.3	49.7	17.3	3.7	8.4	115.0	6.49	137.1	52.2	17.7	6.6	15.2
				70	119.3	6.39	141.1	54.0	18.7	1.4	3.3	122.8	6.46	144.8	58.4	19.0	3.5	8.1	126.8	6.52	149.1	61.3	19.4	6.4	14.7
				80	124.3	6.57	146.7	62.5	18.9	1.4	3.2	127.9	6.64	150.6	67.6	19.3	3.4	7.9	132.1	6.71	155.0	70.9	19.7	6.2	14.3
				90	129.3	6.75	152.3	71.0	19.1	1.3	3.0	133.1	6.82	156.4	76.8	19.5	3.3	7.6	137						

**Performance Data**  
**HWW120 (60Hz I-P) - Cooling**

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SOURCE			LOAD																						
EWT °F	Flow		EWT °F	Flow 15.0 GPM						Flow 22.5 GPM						Flow 30.0 GPM									
	GPM	WPD PSI		TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI	TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI	TC Mbtuh	Power kW	HR Mbtuh	LWT °F	EER	WPD PSI				
90	15.0	1.0	2.3	50	89.7	7.15	114.1	38.7	12.5	1.6	3.7	92.5	7.22	117.2	41.6	12.8	3.8	8.8	95.0	7.29	119.8	43.4	13.0	6.8	15.7
				60	101.4	7.22	126.0	46.8	14.0	1.5	3.5	104.6	7.30	129.5	50.3	14.3	3.7	8.4	107.4	7.37	132.5	52.6	14.6	6.6	15.2
				70	113.1	7.30	138.0	54.9	15.5	1.4	3.3	116.7	7.37	141.9	59.1	15.8	3.5	8.1	119.8	7.45	145.2	61.8	16.1	6.4	14.7
				80	119.3	7.47	144.8	63.4	16.0	1.4	3.2	123.1	7.54	148.8	68.2	16.3	3.4	7.9	126.3	7.62	152.3	71.3	16.6	6.2	14.3
				90	125.4	7.64	151.5	71.9	16.4	1.3	3.0	129.4	7.72	155.8	77.3	16.8	3.3	7.6	132.8	7.80	159.4	80.9	17.0	6.0	13.9
	22.5	2.9	6.7	50	91.8	7.22	116.4	38.6	12.7	1.6	3.7	94.7	7.29	119.6	41.5	13.0	3.8	8.8	97.2	7.37	122.4	43.4	13.2	6.8	15.7
				60	103.6	7.30	128.5	46.7	14.2	1.5	3.5	106.9	7.37	132.1	50.2	14.5	3.7	8.4	109.7	7.44	135.1	52.5	14.7	6.6	15.2
				70	115.4	7.37	140.6	54.8	15.7	1.4	3.3	119.1	7.45	144.5	58.9	16.0	3.5	8.1	122.2	7.52	147.9	61.6	16.2	6.4	14.7
				80	121.4	7.54	147.2	63.2	16.1	1.4	3.2	125.3	7.62	151.3	68.0	16.4	3.4	7.9	128.5	7.70	154.8	71.1	16.7	6.2	14.3
	30.0	5.5	12.7	50	93.0	7.29	117.9	38.1	12.8	1.6	3.7	97.2	7.37	122.3	41.4	13.2	3.8	8.8	99.1	7.44	124.5	43.3	13.3	6.8	15.7
				60	104.7	7.37	129.9	46.2	14.2	1.5	3.5	108.4	7.44	133.8	50.1	14.6	3.7	8.4	111.6	7.52	137.2	52.4	14.8	6.6	15.2
				70	116.4	7.45	141.8	54.3	15.6	1.4	3.3	119.7	7.52	145.3	58.7	15.9	3.5	8.1	124.0	7.60	149.9	61.5	16.3	6.4	14.7
				80	123.3	7.62	149.3	62.9	16.2	1.4	3.2	126.9	7.70	153.1	67.8	16.5	3.4	7.9	131.5	7.78	158.0	70.8	16.9	6.2	14.3
				90	130.2	7.80	156.8	71.6	16.7	1.3	3.0	134.1	7.87	160.9	77.0	17.0	3.3	7.6	139.0	7.95	166.2	80.2	17.5	6.0	13.9
110	15.0	0.8	2.0	50	79.6	8.92	110.0	39.9	8.9	1.6	3.7	82.6	9.01	113.3	42.5	9.2	3.8	8.8	83.5	9.10	114.5	44.1	9.2	6.8	15.7
				60	91.6	9.08	122.6	48.2	10.1	1.5	3.5	95.0	9.17	126.3	51.2	10.4	3.7	8.4	96.1	9.26	127.6	53.2	10.4	6.6	15.2
				70	103.6	9.23	135.1	56.4	11.2	1.4	3.3	107.4	9.32	139.3	60.0	11.5	3.5	8.1	108.6	9.42	140.8	62.4	11.5	6.4	14.7
				80	112.8	9.39	144.8	64.9	12.0	1.4	3.2	117.0	9.48	149.4	69.0	12.3	3.4	7.9	118.3	9.58	151.0	71.7	12.3	6.2	14.3
				90	122.0	9.55	154.6	73.4	12.8	1.3	3.0	126.6	9.64	159.5	78.0	13.1	3.3	7.6	128.0	9.74	161.2	81.1	13.1	6.0	13.9
	22.5	2.7	6.2	50	81.3	9.01	112.0	39.9	9.0	1.6	3.7	84.3	9.10	115.4	42.4	9.3	3.8	8.8	85.2	9.19	116.6	44.1	9.3	6.8	15.7
				60	94.5	9.17	125.8	48.1	10.3	1.5	3.5	98.0	9.26	129.6	51.2	10.6	3.7	8.4	99.1	9.35	131.0	53.2	10.6	6.6	15.2
				70	107.8	9.32	139.6	56.3	11.6	1.4	3.3	111.8	9.42	143.9	59.9	11.9	3.5	8.1	113.0	9.51	145.5	62.2	11.9	6.4	14.7
				80	115.7	9.48	148.1	64.7	12.2	1.4	3.2	120.0	9.58	152.7	68.8	12.5	3.4	7.9	121.3	9.68	154.4	71.5	12.5	6.2	14.3
	30.0	5.1	11.7	50	83.1	9.10	114.1	39.4	9.1	1.6	3.7	84.7	9.19	116.1	42.4	9.2	3.8	8.8	87.6	9.28	119.3	44.0	9.4	6.8	15.7
				60	95.2	9.26	126.8	47.4	10.3	1.5	3.5	97.0	9.35	128.9	51.1	10.4	3.7	8.4	101.4	9.45	133.7	53.1	10.7	6.6	15.2
				70	107.4	9.42	139.5	55.3	11.4	1.4	3.3	109.3	9.51	141.8	59.9	11.5	3.5	8.1	115.2	9.61	148.0	62.2	12.0	6.4	14.7
				80	116.5	9.58	149.2	64.2	12.2	1.4	3.2	119.5	9.68	152.5	68.7	12.3	3.4	7.9	123.4	9.77	156.8	71.4	12.6	6.2	14.3
				90	125.6	9.74	158.9	73.0	12.9	1.3	3.0	129.6	9.84	163.1	77.6	13.2	3.3	7.6	131.7	9.94	165.6	80.7	13.2	6.0	13.9
120	15.0	0.8	1.8	50	74.0	10.08	108.4	40.3	7.3	1.6	3.7	77.0	10.18	111.8	43.2	7.6	3.8	8.8	78.6	10.28	113.7	44.7	7.6	6.8	15.7
				60	85.4	10.25	120.4	48.6	8.3	1.5	3.5	88.9	10.36	124.2	52.0	8.6	3.7	8.4	90.7	10.46	126.4	53.8	8.7	6.6	15.2
				70	96.8	10.42	132.4	56.9	9.3	1.4	3.3	100.8	10.53	136.7	60.8	9.6	3.5	8.1	102.8	10.64	139.1	62.9	9.7	6.4	14.7
				80	105.9	10.62	142.1	65.2	10.0	1.4	3.2	110.2	10.72	146.8	69.7	10.3	3.4	7.9	112.5	10.83	149.4	72.1	10.4	6.2	14.3
				90	115.1	10.81	151.9	73.5	10.6	1.3	3.0	119.7	10.92	157.0	78.6	11.0	3.3	7.6	122.2	11.03	159.8	81.3	11.1	6.0	13.9
	22.5	2.6	6.0	50	74.5	10.18	109.2	40.3	7.3	1.6	3.7	77.5	10.28	112.6	43.1	7.5	3.8	8.8	79.1	10.39	114.6	44.6	7.6	6.8	15.7
				60	86.3	10.36	121.6	48.5	8.3	1.5	3.5	89.8	10.46	125.5	51.9	8.6	3.7	8.4	91.6	10.57	127.7	53.7	8.7	6.6	15.2
				70	98.1	10.53	134.0	56.7	9.3	1.4	3.3	102.1	10.64	138.4	60.6	9.6	3.5	8.1	104.2	10.74	140.8	62.7	9.7	6.4	14.7
				80	107.3	10.72	143.9	65.0	10.0	1.4	3.2	111.7	10.83	148.6	69.6	10.3	3.4	7.9	113.9	10.94	151.3	72.0	10.4	6.2	14.3
	30.0	4.9	11.3	50	76.9	102.83	112.0	40.0	7.5	1.6	3.7	80.2	103.87	115.7	42.9	7.7	3.8	8.8	81.7	104.92	117.5	44.5	7.8	6.8	15.7
				60	88.8	104.60	124.4	48.2	8.5	1.5	3.5	92.8	105.66	128.9	51.7	8.8	3.7	8.4	94.6	106.72	131.0	53.6	8.9	6.6	15.2
				70	100.6	106.36	136.9	56.5	9.5	1.4	3.3	105.5	107.44	142.1	60.5	9.8	3.5	8.1	107.6	108.52	144.6	62.6	9.9	6.4	14.7
				80	109.9	108.32	146.8	64.9	10.1	1.4	3.2	115.1	109.41	152.4	69.5	10.5	3.4	7.9	117.2	110.52	154.9	71.9	10.6	6.2	14.3
				90	119.2	110.28	156.8	73.3	10.8	1.3	3.0	124.7	111												

**Performance Data****HWW120 (60Hz I-P) - Heating**

SOURCE			LOAD																							
EWT °F	Flow			Flow 15.0 GPM						Flow 22.5 GPM						Flow 30.0 GPM										
	WPD		EWT °F	HC GPM	Power kW	HE Mbtuh	LWT °F	COP	WPD		HC GPM	Power kW	HE Mbtuh	LWT °F	COP	WPD		HC GPM	Power kW	HE Mbtuh	LWT °F	COP	WPD			
	GPM	PSI	FT						PSI	FT						PSI	FT						PSI	FT		
20	30.0	8.0	18.6	60	82.2	4.86	65.6	71.5	5.0	1.5	3.5	82.6	4.76	66.3	67.4	5.1	3.3	7.7	82.9	46.67	67.0	65.3	5.2	6.0	13.8	
				80	80.9	6.34	59.3	91.2	3.7	1.4	3.2	81.1	6.22	59.9	87.2	3.8	3.1	7.1	81.3	60.92	60.5	85.3	3.9	5.6	13.0	
				100	79.3	8.23	51.3	110.8	2.8	1.3	2.9	79.3	8.06	51.8	106.9	2.9	2.9	6.7	79.3	79.01	52.4	105.1	2.9	5.3	12.3	
	15.0	1.7	3.9	60	95.6	5.04	78.4	73.3	5.6	1.5	3.5	96.0	4.94	79.2	68.6	5.7	3.3	7.7	96.5	48.42	80.0	66.3	5.8	6.0	13.8	
				80	93.8	6.55	71.5	92.9	4.2	1.4	3.2	94.1	6.42	72.2	88.4	4.3	3.1	7.1	94.4	62.91	73.0	86.1	4.4	5.6	13.0	
				100	91.7	8.44	62.9	112.4	3.2	1.3	2.9	91.8	8.27	63.5	108.1	3.3	2.9	6.7	91.9	81.06	64.2	105.9	3.3	5.3	12.3	
				120	89.1	10.71	52.6	131.9	2.4	1.2	2.7	89.0	10.50	53.2	127.7	2.5	2.8	6.4	88.8	102.87	53.7	125.7	2.5	5.1	11.7	
	30.0	22.5	4.4	10.1	60	100.0	5.13	82.5	73.6	5.7	1.5	3.5	100.5	5.02	83.4	68.9	5.9	3.3	7.7	101.0	49.23	84.2	66.6	6.0	6.0	13.8
					80	97.9	6.66	75.2	93.3	4.3	1.4	3.2	98.3	6.53	76.0	88.7	4.4	3.1	7.1	98.6	63.96	76.8	86.5	4.5	5.6	13.0
					100	95.7	8.58	66.4	112.8	3.3	1.3	2.9	95.8	8.41	67.1	108.4	3.3	2.9	6.7	95.9	82.42	67.8	106.2	3.4	5.3	12.3
					120	93.2	10.89	56.0	132.1	2.5	1.2	2.7	93.0	10.67	56.6	128.0	2.6	2.8	6.4	92.9	104.60	57.2	125.9	2.6	5.1	11.7
	30.0	7.6	17.5	17.5	60	103.9	5.21	86.1	73.9	5.8	1.5	3.5	104.4	5.11	87.0	69.1	6.0	3.3	7.7	105.0	50.05	87.9	66.8	6.1	6.0	13.8
					80	101.8	6.77	78.7	93.4	4.4	1.4	3.2	102.1	6.64	79.5	88.9	4.5	3.1	7.1	102.5	65.04	80.3	86.6	4.6	5.6	13.0
					100	99.2	8.73	69.4	112.9	3.3	1.3	2.9	99.3	8.55	70.1	108.6	3.4	2.9	6.7	99.4	83.81	70.8	106.4	3.5	5.3	12.3
					120	96.1	11.08	58.3	132.3	2.5	1.2	2.7	95.9	10.85	58.9	128.2	2.6	2.8	6.4	95.8	106.37	59.5	126.1	2.6	5.1	11.7
	15.0	1.5	3.5	3.5	60	108.9	5.22	91.1	75.0	6.1	1.5	3.5	109.5	5.12	92.0	69.7	6.3	3.3	7.7	110.1	50.16	93.0	67.2	6.4	6.0	13.8
					80	106.7	6.76	83.6	94.6	4.6	1.4	3.2	107.1	6.62	84.5	89.6	4.7	3.1	7.1	107.6	64.90	85.4	87.0	4.9	5.6	13.0
					100	104.0	8.65	74.5	114.0	3.5	1.3	2.9	104.2	8.48	75.3	109.2	3.6	2.9	6.7	104.4	83.11	76.1	106.7	3.7	5.3	12.3
					120	100.7	10.91	63.5	133.4	2.7	1.2	2.7	100.7	10.69	64.2	128.7	2.8	2.8	6.4	100.6	104.78	64.9	126.4	2.8	5.1	11.7
	40	22.5	4.1	9.3	60	114.7	5.29	96.7	75.5	6.4	1.5	3.5	115.4	5.19	97.7	70.1	6.5	3.3	7.7	116.0	50.83	98.7	67.5	6.7	6.0	13.8
					80	111.8	6.85	88.5	95.1	4.8	1.4	3.2	112.3	6.71	89.4	90.0	4.9	3.1	7.1	112.7	65.77	90.3	87.4	5.0	5.6	13.0
					100	108.6	8.77	78.7	114.5	3.6	1.3	2.9	108.8	8.59	79.5	109.7	3.7	2.9	6.7	109.1	84.22	80.3	107.1	3.8	5.3	12.3
					120	105.2	11.06	67.4	133.8	2.8	1.2	2.7	105.1	10.84	68.1	129.1	2.8	2.8	6.4	105.1	106.19	68.8	126.8	2.9	5.1	11.7
	30.0	7.2	16.6	16.6	60	118.5	5.36	100.2	75.9	6.5	1.5	3.5	119.1	5.26	101.2	70.5	6.6	3.3	7.7	119.8	51.51	102.2	67.9	6.8	6.0	13.8
					80	115.6	6.94	91.9	95.3	4.9	1.4	3.2	116.1	6.80	92.8	90.3	5.0	3.1	7.1	116.5	66.65	93.8	87.6	5.1	5.6	13.0
					100	112.1	8.89	81.8	114.7	3.7	1.3	2.9	112.3	8.71	82.6	109.9	3.8	2.9	6.7	112.6	85.35	83.5	107.3	3.9	5.3	12.3
					120	108.0	11.21	69.8	134.0	2.8	1.2	2.7	108.0	10.98	70.5	129.3	2.9	2.8	6.4	107.9	107.61	71.2	127.0	2.9	5.1	11.7
	15.0	1.4	3.2	3.2	60	122.2	5.40	103.8	76.8	6.6	1.5	3.5	122.9	5.30	104.9	70.8	6.8	3.3	7.7	123.7	51.91	106.0	68.1	7.0	6.0	13.8
					80	119.6	6.97	95.8	96.3	5.0	1.4	3.2	120.1	6.83	96.8	90.8	5.2	3.1	7.1	120.7	66.90	97.9	87.8	5.3	5.6	13.0
					100	116.3	8.87	86.1	115.6	3.8	1.3	2.9	116.6	8.69	87.0	110.4	3.9	2.9	6.7	117.0	85.16	87.9	107.5	4.0	5.3	12.3
					120	112.3	11.11	74.4	134.9	3.0	1.2	2.7	112.4	10.89	75.2	129.7	3.0	2.8	6.4	112.5	106.70	76.1	127.2	3.1	5.1	11.7
	50	22.5	3.8	8.7	60	129.4	5.46	110.8	77.4	6.9	1.5	3.5	130.2	5.35	111.9	71.3	7.1	3.3	7.7	131.0	52.43	113.1	68.5	7.3	6.0	13.8
					80	125.7	7.04	101.7	96.9	5.2	1.4	3.2	126.3	6.90	102.7	91.3	5.4	3.1	7.1	126.8	67.57	103.8	88.3	5.5	5.6	13.0
					100	121.6	8.96	91.0	116.2	4.0	1.3	2.9	121.9	8.78	92.0	110.9	4.1	2.9	6.7	122.3	86.02	92.9	108.0	4.2	5.3	12.3
					120	117.2	11.22	78.9	135.4	3.1	1.2	2.7	117.2	11.00	79.7	130.2	3.1	2.8	6.4	117.3	107.77	80.5	127.7	3.2	5.1	11.7
	30.0	6.8	15.6	15.6	60	133.0	5.51	114.2	78.0	7.1	1.5	3.5	133.8	5.40	115.3	71.9	7.3	3.3	7.7	134.6	52.96	116.5	69.0	7.4	6.0	13.8
					80	129.4	7.11	105.1	97.2	5.3	1.4	3.2	130.0	6.97	106.2	91.6	5.5	3.1	7.1	130.6	68.26	107.3	88.6	5.6	5.6	13.0
					100	125.0	9.05	94.2	116.4	4.1	1.3	2.9	125.4	8.87	95.1	111.1	4.1	2.9	6.7	125.7	86.89	96.1	108.2	4.2	5.3	12.3
					120	119.9	11.34	81.2	135.6	3.1	1.2	2.7	120.0	11.11	82.1	130.5	3.2	2.8	6.4	120.0	108.86	82.9	127.9	3.2	5.1	11.7
	130	130	130	130	60	117.5	12.56	74.7	140.3	2.7	2.7	6.2	117.4	12.43	73.4	139.9	2.7	2.7	6.2	117.5						

**Performance Data**  
**HWW120 (60Hz I-P) - Heating**

Table Continued from Previous Page

SOURCE			LOAD																							
EWT °F	Flow		EWT °F	Flow 15.0 GPM						Flow 22.5 GPM						Flow 30.0 GPM										
	GPM	WPD PSI		HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	HC Mbtuh	Power kW	HE Mbtuh	LWT °F	COP	WPD PSI	WPD FT	
				Mbtuh	kW	Mbtuh	°F																			
60	15.0	1.3	3.0	60	129.7	5.51	110.9	78.5	6.9	1.5	3.5	130.5	5.40	112.1	71.7	7.1	3.3	7.7	131.3	52.96	113.2	68.6	7.3	6.0	13.8	
				80	129.6	7.09	105.4	98.1	5.4	1.4	3.2	130.2	6.95	106.5	91.8	5.5	3.1	7.1	130.9	68.09	107.6	88.6	5.6	5.6	13.0	
				100	127.3	8.98	96.7	117.6	4.2	1.3	2.9	127.7	8.80	97.7	111.5	4.3	2.9	6.7	128.2	86.27	98.7	108.4	4.4	5.3	12.3	
				120	122.8	11.19	84.7	136.7	3.2	1.2	2.7	123.0	10.97	85.6	130.9	3.3	2.8	6.4	123.2	107.48	86.5	128.0	3.4	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						120.5	12.42	78.1	140.8	2.8	2.7	6.2	120.1	120.44	79.0	137.9	2.9	5.0	11.5		
	22.5	3.5	8.1	60	135.5	5.57	116.4	79.0	7.1	1.5	3.5	136.3	5.46	117.6	72.2	7.3	3.3	7.7	137.1	53.49	118.8	69.1	7.5	6.0	13.8	
				80	135.3	7.16	110.9	98.7	5.5	1.4	3.2	136.0	7.02	112.1	92.3	5.7	3.1	7.1	136.7	68.78	113.2	89.1	5.8	5.6	13.0	
				100	132.9	9.09	101.9	118.1	4.3	1.3	2.9	133.3	8.90	102.9	112.0	4.4	2.9	6.7	133.7	87.26	104.0	108.9	4.5	5.3	12.3	
				120	128.0	11.34	89.3	137.2	3.3	1.2	2.7	128.2	11.12	90.2	131.3	3.4	2.8	6.4	128.3	108.94	91.2	128.5	3.5	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						126.3	12.54	83.5	141.0	3.0	2.7	6.2	125.9	121.65	84.4	138.1	3.0	5.0	11.5		
70	30.0	6.4	14.8	60	140.0	5.63	120.8	79.4	7.3	1.5	3.5	140.8	5.51	122.0	72.6	7.5	3.3	7.7	141.7	54.03	123.2	69.5	7.7	6.0	13.8	
				80	140.1	7.23	115.4	99.0	5.7	1.4	3.2	140.8	7.09	116.6	92.6	5.8	3.1	7.1	141.5	69.47	117.7	89.4	6.0	5.6	13.0	
				100	137.6	9.19	106.2	118.3	4.4	1.3	2.9	138.0	9.01	107.3	112.2	4.5	2.9	6.7	138.5	88.27	108.4	109.1	4.6	5.3	12.3	
				120	132.4	11.50	93.2	137.4	3.4	1.2	2.7	132.6	11.27	94.1	131.6	3.4	2.8	6.4	132.7	110.42	95.1	128.7	3.5	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						129.1	122.88	87.2	138.4	3.1	5.0	11.5									
	15.0	1.2	2.7	60	137.2	5.62	118.0	80.1	7.2	1.5	3.5	138.1	5.51	119.3	72.6	7.3	3.3	7.7	138.9	54.00	120.5	69.2	7.5	6.0	13.8	
				80	139.6	7.21	115.0	100.0	5.7	1.4	3.2	140.3	7.07	116.2	92.8	5.8	3.1	7.1	141.1	69.28	117.4	89.4	6.0	5.6	13.0	
				100	138.3	9.01	107.3	119.5	4.5	1.3	2.9	138.8	8.92	108.4	112.6	4.6	2.9	6.7	139.4	87.37	109.6	109.3	4.7	5.3	12.3	
				120	133.3	11.27	94.9	138.5	3.5	1.2	2.7	133.6	11.05	95.9	132.0	3.5	2.8	6.4	133.9	108.27	96.9	128.9	3.6	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						130.0	120.24	88.9	138.6	3.2	5.0	11.5									
80	22.5	3.3	7.6	60	141.5	5.68	122.1	80.7	7.3	1.5	3.5	142.3	5.57	123.3	73.2	7.5	3.3	7.7	143.2	54.55	124.6	69.7	7.7	6.0	13.8	
				80	145.0	7.29	120.1	100.5	5.8	1.4	3.2	145.7	7.14	121.4	93.3	6.0	3.1	7.1	145.6	69.98	122.6	89.9	6.1	5.6	13.0	
				100	144.1	9.22	112.7	119.9	4.6	1.3	2.9	144.7	9.03	113.9	113.1	4.7	2.9	6.7	145.2	88.50	115.0	109.7	4.8	5.3	12.3	
				120	138.9	11.46	99.7	139.0	3.5	1.2	2.7	139.1	11.24	100.8	132.4	3.6	2.8	6.4	139.4	110.11	101.8	129.3	3.7	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						136.1	121.45	94.6	138.9	3.3	5.0	11.5									
	30.0	6.1	14.1	60	146.9	5.74	127.3	80.9	7.5	1.5	3.5	147.8	5.62	128.6	73.4	7.7	3.3	7.7	148.7	55.01	129.9	70.0	7.9	6.0	13.8	
				80	150.8	7.36	125.7	100.7	6.0	1.4	3.2	151.6	7.21	126.9	93.5	6.2	3.1	7.1	152.3	70.69	128.2	90.1	6.3	5.6	13.0	
				100	150.1	9.33	118.3	120.2	4.7	1.3	2.9	150.7	9.15	119.5	113.3	4.8	2.9	6.7	151.3	89.65	120.7	109.9	4.9	5.3	12.3	
				120	144.9	11.66	105.1	139.2	3.6	1.2	2.7	145.2	11.43	106.2	132.7	3.7	2.8	6.4	145.5	111.99	107.3	129.5	3.8	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						140.8	122.68	98.9	139.2	3.4	5.0	11.5									
80	15.0	1.1	2.5	60	144.7	5.73	125.2	81.7	7.4	1.5	3.5	145.6	5.62	126.5	73.5	7.6	3.3	7.7	146.5	55.05	127.8	69.8	7.8	6.0	13.8	
				80	149.6	7.34	124.6	101.8	6.0	1.4	3.2	150.4	7.19	125.9	93.9	6.1	3.1	7.1	151.2	70.47	127.2	90.2	6.3	5.6	13.0	
				100	149.3	9.21	117.9	121.4	4.8	1.3	2.9	149.9	9.03	119.1	113.8	4.9	2.9	6.7	150.6	88.47	120.4	110.2	5.0	5.3	12.3	
				120	143.8	11.35	105.1	140.4	3.7	1.2	2.7	144.2	11.13	106.2	133.2	3.8	2.8	6.4	144.5	109.05	107.3	129.8	3.9	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						139.8	120.03	98.9	139.4	3.4	5.0	11.5									
	22.5	3.1	7.1	60	147.5	5.79	127.7	82.3	7.5	1.5	3.5	148.4	5.67	129.0	74.1	7.7	3.3	7.7	149.3	55.61	130.3	70.3	7.9	6.0	13.8	
				80	154.7	7.41	129.4	102.3	6.1	1.4	3.2	155.5	7.26	130.7	94.3	6.3	3.1	7.1	156.3	71.18	132.0	90.6	6.4	5.6	13.0	
				100	155.4	9.34	123.5	121.8	4.9	1.3	2.9	156.0	9.16	124.8	114.2	5.0	2.9	6.7	156.7	89.74	126.1	110.6	5.1	5.3	12.3	
				120	149.7	11.59	110.2	140.7	3.8	1.2	2.7	150.1	11.35	111.3	133.5	3.9	2.8	6.4	150.4	111.28	112.5	130.1	4.0	5.1	11.7	
				130	OPERATION NOT RECOMMENDED						146.2	121.25	104.9	139.7	3.5	5.0	11.5									
30.0	15.0	1.1																								

**Antifreeze Correction Table**

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

## Physical & Electrical Data

### Physical Data

Model		036	060	120
Compressor (qty)		Scroll (1)		Scroll (2)
Factory Charge R410A (lbs) [kg] Per Circuit		4.5 [2.04]	5.5 [2.49]	5.5 [2.49]
<b>Water Connection Size</b>				
Source/Load (in)	Residential	1" Swivel	1" Swivel	1-1/2 IPT
	Commercial	3/4" IPT	1" IPT	
HWG (in)	Residential	1" Swivel	1" Swivel	1/2" IPT
	Commercial	1/2" IPT	1/2" IPT	
Weight - Operating (lbs) [kg]		348 [158]	360 [163]	726 [329]
Weight - Packaged (lbs) [kg]		373 [169]	385 [175]	770 [349]
<b>Water Volume (Source)</b>				
Gallons (Liters)		0.96 (3.64)	1.33 (5.04)	2.65 (10.02)

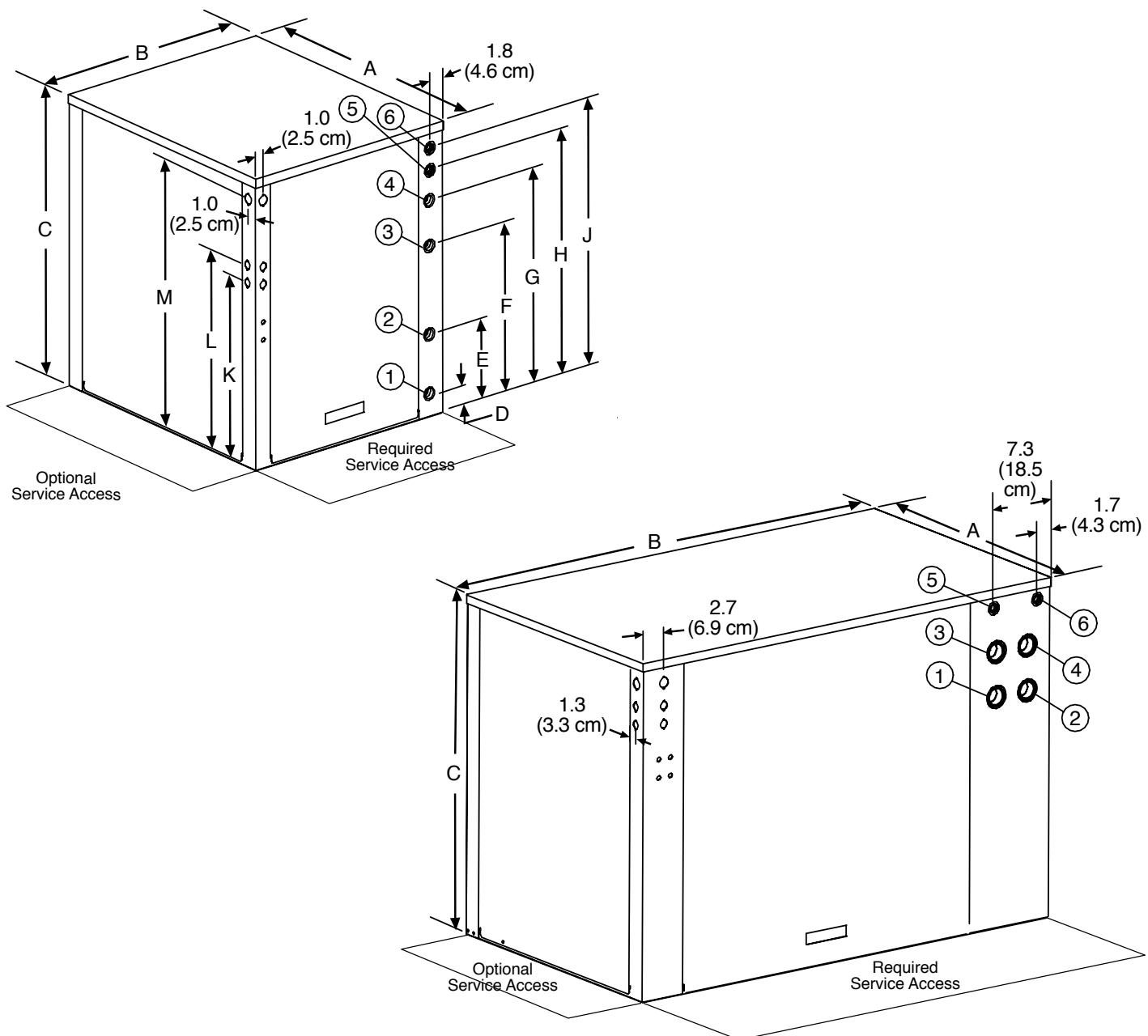
Dual isolated compressor mounting  
Balanced port expansion valve (TXV)  
Insulated Source and Load Water Coils standard  
Insulated Refrigerant Circuit standard  
Compressor on (green) and fault (red) light

<b>Unit Maximum Water Working Pressure</b>	
Options	Max Working Pressure PSIG [kPa]
Base Unit	500 [3,445]

### Electrical Data

Model	Voltage Code	Voltage	Min/Max Voltage	Compressor			HWG Pump FLA	EXT Loop Pump Fla	Total Unit FLA	Min Circuit Amps	Max Fuse/ HACR
				QTY	RLA	LRA					
HWW036	1	208-230/60/1	187/254	1	16.7	79	0.4	4	16.7	20.8	35
	3	208-230/60/3	187/254	1	10.4	73	-	-	10.4	13.1	20
	4	460/60/3	414/506	1	5.8	38	-	-	5.8	7.2	15
	5	575/60/3	518/633	1	3.8	36.5	-	-	3.8	4.7	15
HWW060	1	208-230/60/1	187/254	1	26.3	134	0.4	4	26.3	32.9	50
	3	208-230/60/3	187/254	1	15.6	110	-	-	15.6	19.5	35
	4	460/60/3	414/506	1	7.8	52	-	-	7.8	9.8	15
	5	575/60/3	518/633	1	5.8	38.9	-	-	5.8	7.3	15
HWW120	1	208-230/60/1	187/254	2	26.3	134	0.4	4	52.6	59.2	80
	3	208-230/60/3	187/254	2	15.8	110	-	-	31.2	35.1	50
	4	460/60/3	414/506	2	7.8	52	-	-	15.6	17.6	25
	5	575/60/3	518/633	2	5.8	38.9	-	-	11.6	13.1	15

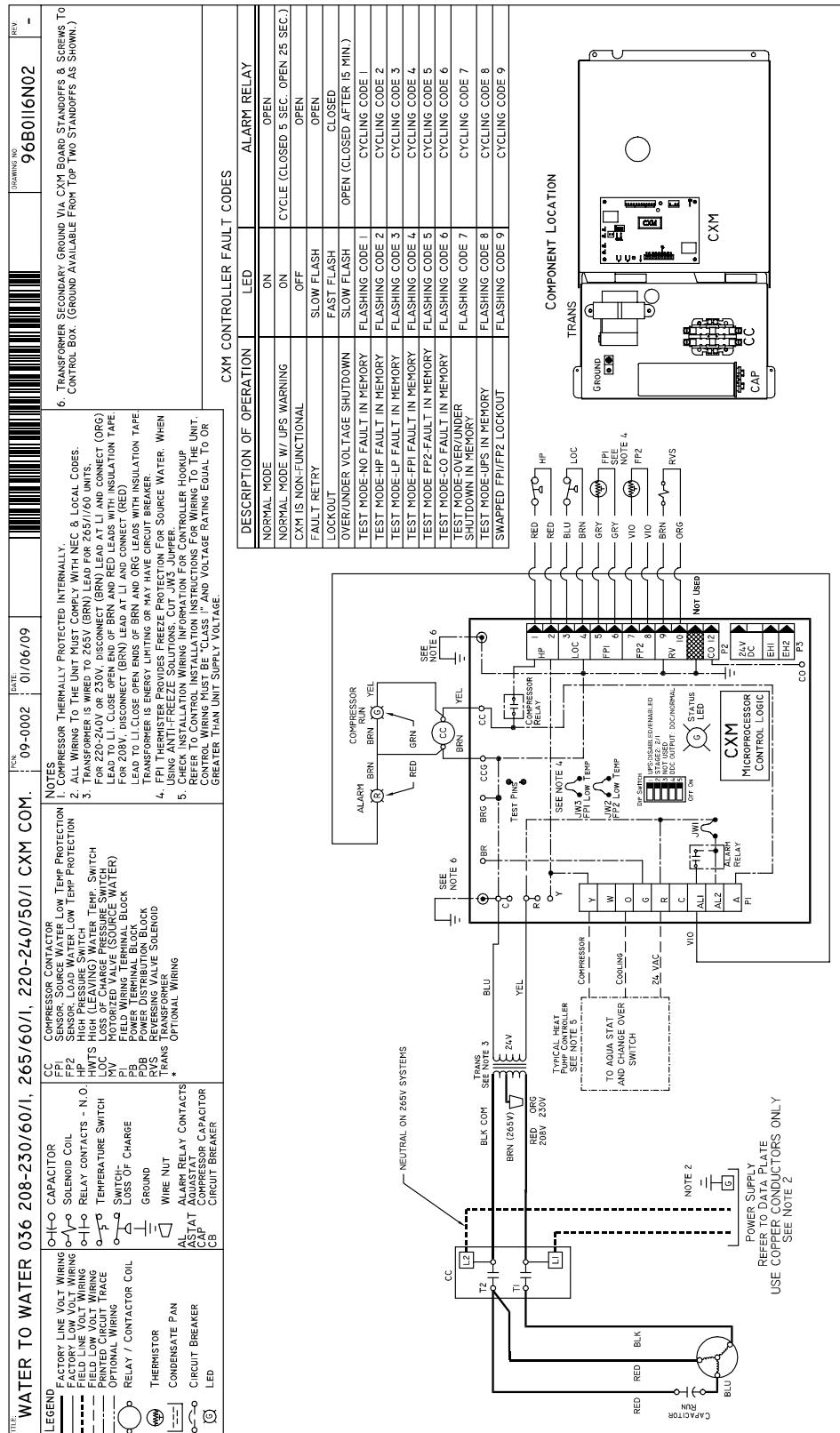
HACR circuit breaker in USA only

**Dimensional Data**  
**HWW036 - 120**


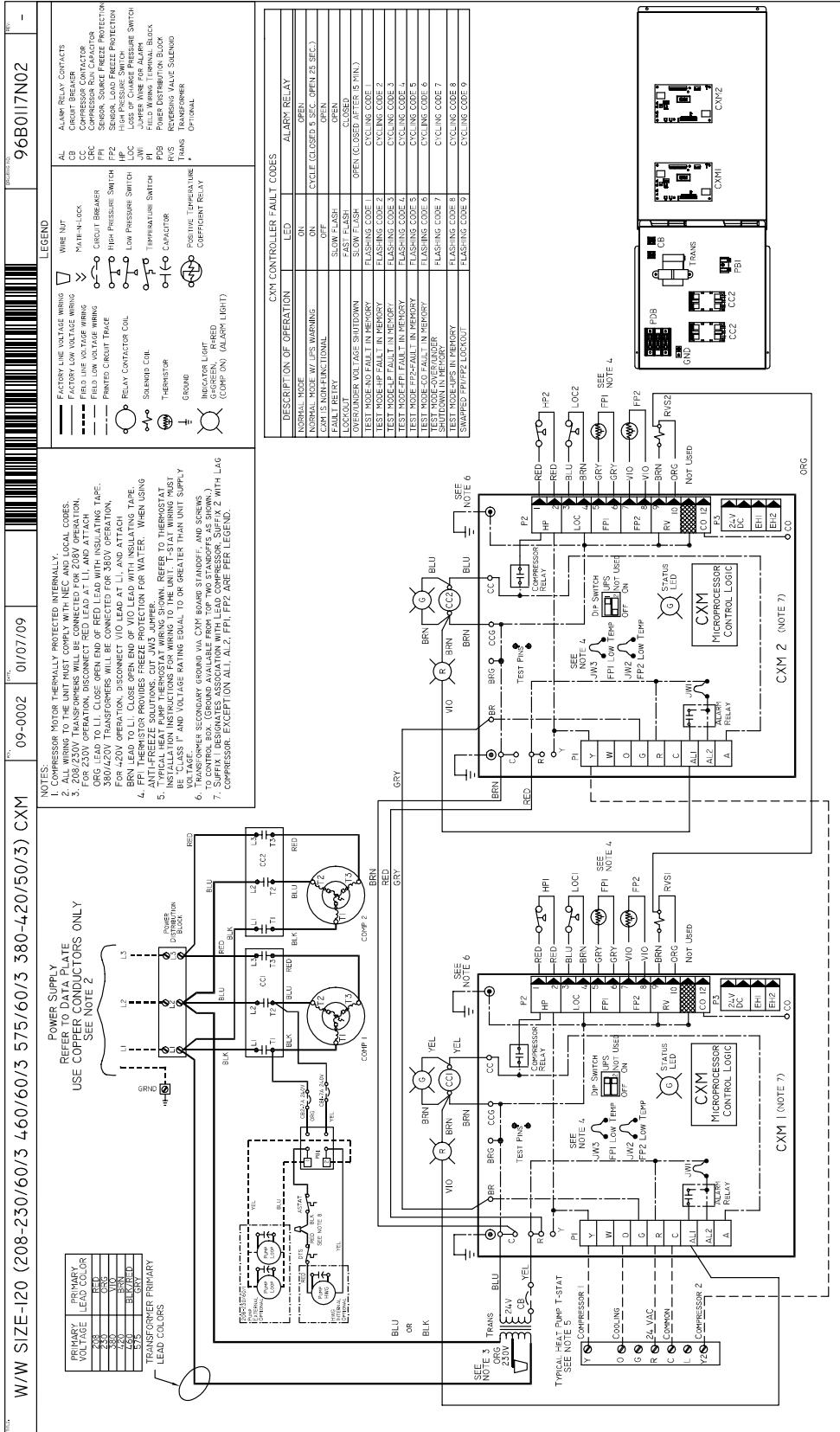
Water to Water		Overall Cabinet			Water Connections						Electric Access Plugs		
					1	2	3	4	5	6			
		A Depth	B Width	C Height	D Source (Outdoor) Water In	E Source (Outdoor) Water Out	F Load (Indoor) Water In	G Load (Indoor) Water Out	H HWG Return In	J HWG Water Out	K Low Voltage	L External Pump	M Power Supply
036-060	in.	30.6	25.4	33	2.7	9.4	19.4	24.5	27.9	30.4	20.9	22.9	30.9
	cm.	77.8	64.5	83.8	6.9	23.9	49.3	62.2	70.9	77.2	53.1	58.2	78.5
120	in.	30.6	52.9	37	25.2	25.2	30.1	30.1	34.9	34.9	29.9	31.9	34.4
	cm.	77.8	134.4	94	64.0	64.0	76.5	76.5	88.6	88.6	75.9	81.0	87.4

HACR circuit breaker in USA only

## Typical Wiring Diagram Single Phase HWW 036 With CXM



## Typical Wiring Diagram Three Phase HWW 120 With CXM



***Design, specifications, performance data and materials subject to change without notice.***

## **HEAT CONTROLLER, INC.**

1900 Wellworth Ave., Jackson, Michigan 49203 • Ph. 517-787-2100 • Fax 517-787-9341

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