Comfort-Aire | Century

COMMERCIAL
MARS MW WATER-SOURCE SERIES

PRODUCT CATALOG

Part#: LC3053 | Created: June 26, 2025

Models: MW 036-120
60Hz - R-454B

Table of Contents

Models:
MW
036-120

3 Introduction
4 Features, Options, and Accessories
5 Intelligent Communicating Controls
6 Internal Variable Water Flow Control
7 Selection Procedure
9 Model Nomenclature
10 Performance Data: AHRI/ASHRAE/ISO 13256-2
11 Performance Data: Selection Notes
12 Performance Data
36 Antifreeze Correction Table
37 Electrical Data
38 Physical Data
39 Dimensional Data
40 Engineering Specifications
45 Revision History

THE MARS (MW) WATER-SOURCE SERIES

The MARS 24 (MW) Water-Source Series presents a combination of high efficiency and capacity, boasting advanced features, quiet operation, and versatile-application flexibility. The MARS MW, MARS' flagship water-to-water unit, caters to diverse HVAC and industrial needs. From radiant-floor heating and snow-/ice-melt systems to chilled water for fan coils and industrial process control, it offers cost-effective solutions for both chilled- and hot-water applications.

The MARS (MW) Water-Source Series exceeds ASHRAE 90.1 efficiencies, and also uses R-454B low Global Warming Potential (GWP) refrigerant, making it an extremely environmentally-friendly product solution for chilled or hot-water generation. The unit is eligible for additional LEED® (Leadership in Energy and Environmental Design) points due to its innovative and environmentally-conscious design.

Available in 3- to 10-ton capacities (10.6 kW and 35.2 kW), the MW Series provides high capacity in a small footprint, which saves mechanical room space. The MARS MW 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. Microprocessor controls, galvanized-steel cabinet, polyester powder-coat paint and TXV refrigerant-metering device are just some of the features of the flexible MARS MW. The uniquely designed brazed-plate heat exchangers (BPHE) are designed for many years of reliable operation.

MARS' double isolation compressor mounting system and heavy-gauge steel cabinet helps make the MARS MW the quietest water-to-water unit on the market. Scroll compressor(s) operate quietly, and provide part-load operation for capacity control. Options such as DDC controls and sound-attenuation package allow customized design solutions. 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.

Our optional, built-in Variable Water Flow system features a high-efficiency, modulating water valve that adjusts automatically based on system needs. This smart design helps save energy and makes installation easier—especially in multi-unit setups. With Variable Water Flow, the system automatically manages water flow for better performance and efficiency.

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

Features, Options, and Accessories

FEATURES

- Size 036 (3 tons, 10.6 kW), 060 (5 tons, 17.6 kW), 120 (10 tons, 35.2 kW)
- Exceeds ASHRAE 90.1 efficiencies
- High-efficiency scroll compressors provide part-load operation significantly lowering annual operating costs
- Refrigerant Detection System (RDS) (optional for all sizes)
- Exclusive single-side service access (front of unit) allows multiple units to be installed side-by-side for large capacity installations
- Heavy-gauge galvanized-steel construction
- Insulated compressor compartment
- Small footprint
- TXV metering devices
- CXM2 Communicating Controls (Standard on unit size 120):
  - Connect directly to the system with a Wireless Service Tool
  - Provides real-time unit operating conditions
  - Reduces startup, commissioning, and service time by providing key system temperatures electronically
  - Captures operating conditions in the event of a safety shutdown
- DXM2.5 Advanced Communicating Controls (Standard on unit sizes 036 and 060):
  - Includes all of the CXM2 features
  - Controls operation of domestic Hot Water Generator (HWG)
  - Precise compressor staging
  - Variable Water Flow unit-integrated modulating water valve option for maximum water-flow control (replaces traditional motorized water valve and autoflow regulator)
- Extended range insulation for geothermal applications
- Six standard safety features

OPTIONS

- BACnet, Modbus, and Johnson Controls N2 compatibility options for Building Management Systems (BMS)
- Sound-attenuation package
- Source side Variable Water Flow unit-integrated modulating water valve

ACCESSORIES

- Wide variety of thermostat options for single-zone in-floor radiant-heating applications
- Braided-hose kits in various lengths with optional water valve, PT plugs, blowdown valve, flow regulator, and strainer
- Externally-mounted manual and motorized-water valves
- Aesthetically pleasing wall sensors for connection to BMS (MPC) controls

AN INFORMATION GATEWAY TO MONITOR, CONTROL, AND DIAGNOSE YOUR SYSTEM

MARS' communicating water-source heat pump offers an information gateway into the system. This allows users to interact with their system in clear language, delivering improved reliability and efficiency by monitoring and controlling the system. This makes MARS water-source heat pumps easy to install and service.

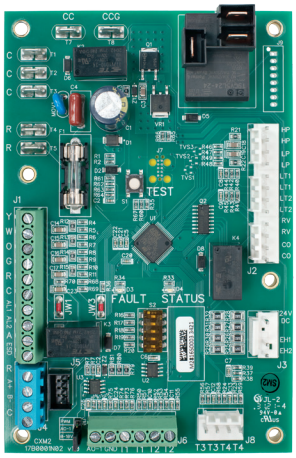
Monitor/Configure – Installers can configure the following from the Wireless Service Tool: unit family, size, accessory configuration, and demand reduction (optional, to limit unit operation during peak times). Users can look up the current system status: temperature sensor readings and operational status of the blower.

Precise Control – DXM2.5 Exclusive - Intelligent, 2-way communication between the DXM2.5 and smart components like the variable water flow components. The DXM2.5 uses information received from the smart components and sensors to precisely control operation of the variable flow modulating valve to deliver higher efficiency, reliability, and increased comfort.

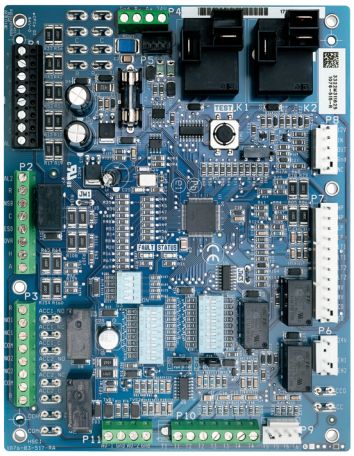
Diagnostics – While in Service Mode, technicians can access fault description, possible causes and most importantly, the conditions (temp, flow, i/o conditions, configuration) at the time of the fault. Manual Operation mode allows technicians to manually command operation for any of the thermostat outputs and modulating valve to help troubleshoot specific components.

With communicating controls, technicians have a gateway to system information never before available to MARS water-source heat pump products.

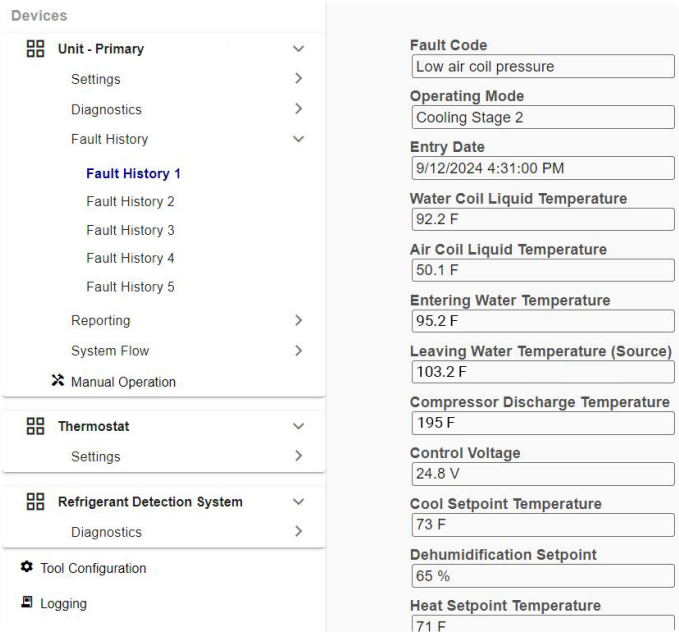
CXM2



DXM2.5



Wireless Service Tool Web Application



INTERNAL VARIABLE WATER FLOW

Industry-first, built-in Variable Water Flow replaces traditionally inefficient, external water control components with a unit-integrated modulating water valve. This enables precise, variable control of water flow based on system demand, improving energy efficiency and performance. Multi-unit installations are simplified, as each unit intelligently modulates its own water flow to maintain optimal system balance. Variable Water Flow is enabled by communicating controls, allowing seamless coordination between the thermostat, sensors, and internal water valve to deliver adaptive, demand-driven water flow management.

- **Low System Pressure Drop Modulating Valve:** High-CV motorized valve for central pumping.

VARIABLE WATER FLOW DELIVERS THREE MAIN BENEFITS:

1. Easier and quicker unit installation as the flow control is built in to the unit.
2. Superior reliability by varying the water flow to deliver more stable operation.
3. Increased cost savings by varying the flow (and pump watt consumption) to match the unit's mode of operation.

INTERNAL COMPONENTS

All MARS products can be installed more easily and compactly than their predecessors because the Variable Water Flow valve is internal to the unit. They also save installing contractors labor and time by eliminating the need for an external flow regulator or a bulky external pumping module.

VARIABLE FLOW

Variable Water Flow technology enables variable water flow through the unit, with the communicating controls adjusting the valve position to maintain an installer-set loop delta T. By controlling the water flow, the system is able to operate at its optimal capacity and efficiency. Variable Water Flow provides a lower flow rate for part load, where units typically operate 80% of the time, and a higher, more normal flow rate for full-load operation.

The motorized modulating valve delivers variable water-flow based on loop water ΔT.

In loop applications, when the motorized modulating valve slows down the water flow during part-load operation, the external pump consumes fewer watts, thus saving more energy.

Reference Calculations

Heating

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

$$LAT = EAT + \frac{HC}{CFM \times 1.08}$$

Cooling

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

$$LC = TC - SC$$

$$LAT\ (DB) = EAT\ (DB) - \frac{SC}{CFM \times 1.08}$$

$$S/T = \frac{SC}{TC}$$

Constant = 500 for water, 485 for antifreeze

Conversion Table - to convert inch-pound (English) to S-I (Metric)

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

Legend and Glossary of Abbreviations

Abbreviations	Descriptions
Btuh	Btu (British Thermal Unit) per hour
BMS	Building Management System
CDT	Compressor discharge temperature
CFM	Airflow, cubic feet per minute
COP	Coefficient of performance = Btuh output/Btuh input
CT EC	Electronically commutated constant torque blower motor
CV EC	Electronically commutated constant volume blower motor
DB	Dry bulb temperature, °F
DT	Delta T
EAT	Entering air temperature
EER	Energy efficient ratio = Btuh output/Watt input
ESP	External static pressure, inches w.g.
EWT	Entering water temperature
FPT	Female pipe thread
GPM	Water flow in U.S., gallons per minute
HC	Air heating capacity, Btuh
HE	Total heat of extraction, Btuh
HGRH	Hot Gas Reheat
HR	Total heat of rejection, Btuh

Abbreviations	Descriptions
HWG	Hot water generator (desuperheater) capacity, MBtuh
kW	Total power unit input, kilowatts
LAT	Leaving air temperature, °F
LC	Latent cooling capacity, Btuh
LOC	Loss of charge
LWT	Leaving water temperature, °F
MBtuh	1,000 Btu per hour
MPT	Male pipe thread
MWV	Motorized water valve
PSC	Permanent split capacitor
RDS	Refrigerant Detection System
SC	Sensible cooling capacity, Btuh
S/T	Sensible to total cooling ratio
TC	Total cooling capacity, Btuh
TD or delta T	Temperature differential
VFD	Variable frequency drive
WB	Wet bulb temperature, °F
WPD	Waterside pressure drop, psi or feet of head
WSE	Waterside economizer

USE THE FOLLOWING SELECTION STEPS

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.
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.
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.
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).
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 for a small commercial warehouse (radiant floor), and that the appropriate heating load at design conditions is as follows:

Total heating ..... 104,500 Btuh

Step 2: Design Conditions

Entering source temperature 40°F (geothermal closed loop):

Source flow rate .....30 GPM

Entering load temperature..... 100°F

Load flow rate .....30 GPM

Steps 3, 4 and 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 MW120 at design conditions supplies 104,829 Btuh, which meets the design heating load requirement:

Model Nomenclature

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
M	W	M	0	3	6	A	G	C	0	0	0	G	B	S

PRODUCT NAME
M = R-454B Refrigerant

MODEL TYPE
W = Water-to-Water Series

APPLICATION
M = Medium Temperature

SIZE
036
060
120

REVISION
A = Current

VOLTAGE

G = 208/230-1-60	J = 208/230-1-60 Refrigerant Detection System
H = 208/230-3-60	K = 208/230-3-60 Refrigerant Detection System
E = 265-1-60	D = 265-1-60 Refrigerant Detection System
F = 460-3-60	L = 460-3-60 Refrigerant Detection System

CONTROLS

Control	Standard	MPC
CXM2[1]	C	N
DXM2.5[2]	D	P
CXM2with Disconnect[1]	W	R
DXM2.5with Disconnect[2]	B	S

CABINET

Cabinet	Sound Attenuation Package	Option
Commercial	No	0
	Yes	5

STANDARD
S = Standard

RESERVED FOR FUTURE
0 = None

EXTENDED OPTIONS
0 = Standard
G = Hot Water Generator (HWG)

LOAD SIDE OPTIONS

Description	Standard
None	0

SOURCE SIDE OPTIONS

Description	Standard
None	0
Modulating Valve	C

1. Size 120 only
2. Sizes 036 and 060 only

Performance Data: AHRI/ASHRAE/ISO 13256-2

Tested in Accordance with ASHRAE/AHRI/ISO 13256-1 English (I-P) Units (Full Load)

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Full Cooling 77°F		Full Heating 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
MW036	30,700	14.5	43,000	4.8	33,300	21.0	34,900	4.0	31,800	16.6	27,500	3.2
MW060	53,100	15.5	71,900	5.0	58,700	23.4	57,900	4.1	55,200	18.0	45,700	3.3
MW120	104,800	14.9	148,500	5.0	116,800	23.5	119,200	4.0	109,000	17.4	91,200	3.1

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Ground Loop Heat Pump ratings based on 15% antifreeze solution.

Tested in Accordance with ASHRAE/AHRI/ISO 13256-1 English (I-P) Units (Part Load)

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 68°F		Heating 41°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
MW036	21,800	14.3	30,000	4.7	24,100	22.8	24,200	3.7	23,500	19.7	21,500	3.3
MW060	34,700	14.1	48,400	4.7	39,300	25.2	38,400	3.7	37,700	21.0	32,800	3.1
MW120	52,500	15.4	73,900	5.0	58,500	24.2	59,000	4.1	56,700	20.9	51,500	3.5

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Ground Loop Heat Pump ratings based on 15% antifreeze solution.

Tested in Accordance with ASHRAE/AHRI/ISO 13256-1 Metric (S-I) Units (Full Load)

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 30°C		Heating 20°C		Cooling 15°C		Heating 10°C		Full Cooling 25°C		Full Heating 0°C	
	Capacity kW	EER kW/W	Capacity kW	COP	Capacity kW	EER kW/W	Capacity kW	COP	Capacity kW	EER kW/W	Capacity kW	COP
MW036	9	4.3	13	4.8	10	6.2	10	4.0	9	4.9	8	3.2
MW060	16	4.5	21	5.0	17	6.9	17	4.1	16	5.3	13	3.3
MW120	31	4.4	44	5.0	34	6.9	35	4.0	32	5.1	27	3.1

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Ground Loop Heat Pump ratings based on 15% antifreeze solution.

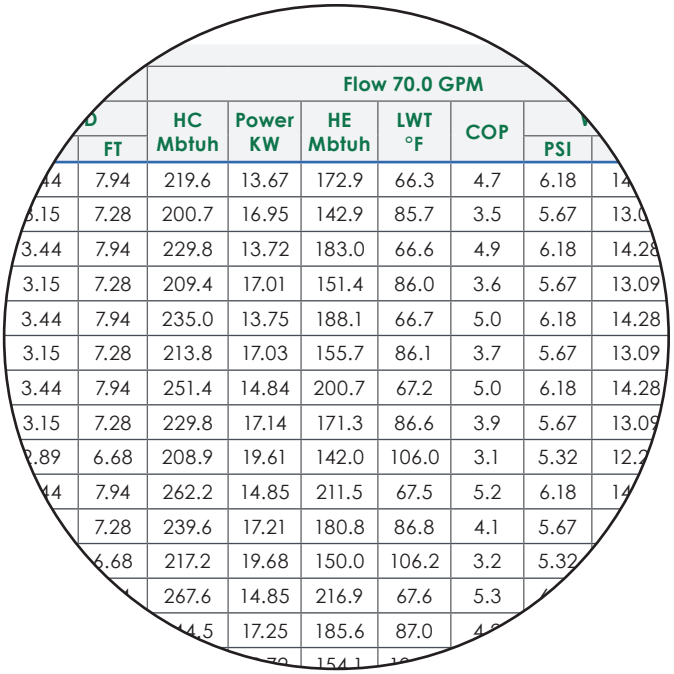
Tested in Accordance with ASHRAE/AHRI/ISO 13256-1 Metric (S-I) Units (Part Load)

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 30°C		Heating 20°C		Cooling 15°C		Heating 10°C		Full Cooling 25°C		Full Heating 0°C	
	Capacity kW	EER kW/W	Capacity kW	COP	Capacity kW	EER kW/W	Capacity kW	COP	Capacity kW	EER kW/W	Capacity kW	COP
MW036	6	4.2	9	4.7	7	6.7	7	3.7	7	5.8	6	3.3
MW060	10	4.1	14	4.7	12	7.4	11	3.7	11	6.2	10	3.1
MW120	15	4.5	22	5.0	17	7.1	17	4.1	17	6.1	15	3.5

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Ground Loop Heat Pump ratings based on 15% antifreeze solution.

Performance Data: Selection Notes

For operation in the shaded area when water is used in lieu of an antifreeze 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). Otherwise, appropriate levels of a proper antifreeze should be used in systems with leaving water temperatures of 40°F (4.4°C) or below and the JW3 jumper should be clipped. 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.



	Flow 70.0 GPM							
D FT	HC Mbtuh	Power KW	HE Mbtuh	LWT °F	COP	PSI	
44	7.94	219.6	13.67	172.9	66.3	4.7	6.18	14
3.15	7.28	200.7	16.95	142.9	85.7	3.5	5.67	13.0
3.44	7.94	229.8	13.72	183.0	66.6	4.9	6.18	14.28
3.15	7.28	209.4	17.01	151.4	86.0	3.6	5.67	13.09
3.44	7.94	235.0	13.75	188.1	66.7	5.0	6.18	14.28
3.15	7.28	213.8	17.03	155.7	86.1	3.7	5.67	13.09
3.44	7.94	251.4	14.84	200.7	67.2	5.0	6.18	14.28
3.15	7.28	229.8	17.14	171.3	86.6	3.9	5.67	13.09
2.89	6.68	208.9	19.61	142.0	106.0	3.1	5.32	12.2
44	7.94	262.2	14.85	211.5	67.5	5.2	6.18	14
	7.28	239.6	17.21	180.8	86.8	4.1	5.67	
	6.68	217.2	19.68	150.0	106.2	3.2	5.32	
		267.6	14.85	216.9	67.6	5.3		
		14.5	17.25	185.6	87.0	4.2		

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

TD = HE / (GPM x 500)

TD = 22,500 / (4.5 x 500)

TD = 10°F

LWT = EWT - TD

LWT = 50 - 10 = 40°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).

Source				Load																							
EWT °F	Flow			EWT °F	Flow 4.5 GPM							Flow 6.8 GPM							Flow 9.0 GPM							
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
50	4.5	1.0	2.2	50	30,069	1,402	35,367	37	21.4	1.3	2.9	31,537	1,418	36,887	41	22.0	2.2	5.1	32,542	1,428	37,776	43	23.0	3.4	7.7
		1.0	2.2	60	33,687	1,447	38,624	45	23.3	1.2	2.8	35,317	1,466	40,319	50	24.1	2.3	5.2	36,946	1,485	42,013	52	24.9	3.3	7.6
		1.0	2.2	70	37,305	1,491	42,810	54	25.0	1.1	2.7	39,327	1,516	44,500	58	25.9	2.2	5.0	41,349	1,541	46,891	61	27.0	3.2	7.4
		1.0	2.2	80	41,699	1,564	47,035	61	26.7	1.1	2.5	44,194	1,593	49,629	67	27.7	2.1	4.9	46,688	1,622	52,222	70	28.8	3.1	7.2
		1.0	2.2	90	46,093	1,636	51,758	70	28.0	1.0	2.3	49,060	1,669	54,755	75	29.4	2.0	4.6	52,026	1,702	57,791	78	31.0	3.0	6.9
	6.80	2.1	4.8	50	29,822	1,334	34,921	37	22.0	1.2	2.9	31,532	1,351	36,577	41	23.0	2.2	5.0	32,398	1,360	37,420	43	24.0	3.4	7.8
		2.1	4.9	60	33,367	1,371	38,045	45	24.3	1.2	2.8	34,991	1,388	39,727	50	25.2	2.3	5.2	36,614	1,405	41,408	52	26.1	3.3	7.6
		2.1	4.9	70	36,912	1,408	42,114	54	26.0	1.2	2.7	38,871	1,429	43,747	58	27.2	2.2	5.1	40,829	1,449	46,099	61	28.0	3.2	7.4
		2.1	4.9	80	41,136	1,465	46,135	62	28.1	1.1	2.5	43,583	1,490	48,667	67	29.3	2.1	4.9	46,030	1,514	51,196	70	30.4	3.1	7.2
		2.1	4.8	90	45,360	1,521	50,599	70	30.0	1.0	2.3	Operation not recommended													
	9.0	3.6	8.4	50	29,760	1,304	34,781	37	23.0	1.3	2.9	31,430	1,318	36,438	41	24.0	2.2	5.1	32,447	1,327	37,397	43	24.0	3.4	7.8
		3.6	8.4	60	33,283	1,338	37,848	45	24.9	1.2	2.8	34,948	1,353	39,564	50	25.8	2.3	5.2	36,613	1,368	41,281	52	26.8	3.3	7.6
		3.6	8.4	70	36,806	1,372	42,013	54	27.0	1.2	2.7	38,792	1,391	43,538	59	27.9	2.2	5.1	40,778	1,409	45,979	61	29.0	3.2	7.4
		3.6	8.4	80	40,900	1,423	45,755	62	28.7	1.1	2.5	43,322	1,445	48,252	67	30.0	2.1	4.9	45,743	1,466	50,745	70	31.2	3.1	7.2
		3.6	8.4	90	44,993	1,473	50,202	70	31.0	1.0	2.4	Operation not recommended													
70	4.5	1.0	2.3	50	28,195	1,784	34,282	37	15.8	1.1	2.4	29,998	1,811	36,177	41	16.6	2.1	4.8	31,801	1,838	38,072	43	17.3	3.1	7.2
		1.0	2.3	60	32,542	1,854	38,868	46	17.6	1.0	2.4	34,295	1,880	40,710	50	18.2	2.1	4.7	36,047	1,906	42,550	52	18.9	3.1	7.1
		1.0	2.3	70	36,890	1,924	43,455	54	19.2	1.1	2.4	38,591	1,948	45,238	59	19.8	2.1	4.7	40,292	1,972	47,020	61	20.4	3.0	7.0
		1.0	2.3	80	41,133	1,995	47,940	62	20.6	1.0	2.4	43,394	2,026	50,307	67	21.4	2.0	4.6	45,654	2,057	52,672	70	22.2	2.9	6.8
		1.0	2.3	90	45,376	2,066	52,425	70	22.0	1.0	2.3	Operation not recommended													
	6.80	2.0	4.6	50	28,111	1,716	33,966	38	16.4	1.0	2.4	29,853	1,739	35,786	41	17.2	2.1	4.9	31,595	1,762	37,607	43	17.9	3.2	7.3
		2.0	4.6	60	32,105	1,770	38,144	46	18.1	1.0	2.3	33,854	1,792	39,968	50	18.9	2.1	4.7	35,603	1,814	41,792	52	19.6	3.1	7.2
		2.0	4.6	70	36,098	1,823	42,318	54	19.8	1.0	2.3	37,855	1,844	44,147	59	20.5	2.0	4.7	39,611	1,864	45,971	61	21.3	3.0	7.0
		2.0	4.6	80	40,583	1,888	47,025	62	21.5	1.0	2.3	42,864	1,916	49,401	67	22.4	2.0	4.6	45,145	1,943	51,775	70	23.2	2.9	6.8
		2.0	4.6	90	45,069	1,953	51,733	70	23.1	1.0	2.3	Operation not recommended													
	9.0	3.0	6.9	50	28,107	1,665	33,788	38	16.9	1.0	2.4	29,790	1,683	35,532	41	17.7	2.1	4.9	31,472	1,701	37,276	43	18.5	3.2	7.4
		3.0	6.9	60	31,768	1,704	37,582	46	18.6	1.0	2.2	33,535	1,722	39,410	50	19.5	2.1	4.7	35,301	1,739	41,234	52	20.3	3.1	7.2
		3.0	6.9	70	35,429	1,743	41,376	54	20.3	1.0	2.2	37,280	1,760	43,285	59	21.2	2.0	4.6	39,130	1,777	45,193	61	22.0	3.0	7.0
		3.0	6.9	80	40,174	1,806	46,336	62	22.2	1.0	2.3	42,485	1,831	48,732	67	23.2	2.0	4.5	44,796	1,855	51,125	70	24.1	2.9	6.8
		3.0	6.9	90	44,918	1,868	51,292	70	24.0	1.0	2.3	Operation not recommended													
90	4.5	0.9	2.0	50	25,905	2,229	33,510	38	11.6	0.9	2.1	28,044	2,273	35,799	42	12.3	1.9	4.4	30,183	2,317	38,089	43	13.0	2.9	6.8
		0.9	2.1	60	30,726	2,329	38,673	46	13.2	0.9	2.1	32,540	2,362	40,599	50	13.8	1.9	4.4	34,353	2,394	42,521	52	14.3	2.9	6.7
		0.9	2.1	70	35,547	2,428	43,831	54	14.6	1.0	2.2	37,036	2,450	45,395	59	15.1	1.9	4.5	38,524	2,471	46,955	61	15.6	2.9	6.7
		0.9	2.1	80	39,646	2,499	48,173	62	15.9	1.0	2.3	41,692	2,530	50,324	68	16.5	1.9	4.4	43,738	2,561	52,476	70	17.1	2.8	6.5
		0.9	2.0	90	43,743	2,570	52,512	71	17.0	0.9	2.2	Operation not recommended													
	6.80	2.0	4.6	50	25,954	2,155	33,307	38	12.0	0.9	2.1	27,916	2,187	35,378	42	12.8	1.9	4.5	29,877	2,219	37,448	43	13.5	3.0	6.9
		2.0	4.6	60	30,302	2,232	37,918	47	13.6	0.9	2.0	31,934	2,256	39,631	51	14.2	1.9	4.4	33,566	2,279	41,342	53	14.7	3.0	6.8
		2.0	4.6	70	34,651	2,310	42,533	55	15.0	0.9	2.1	35,953	2,325	43,886	59	15.5	1.9	4.4	37,255	2,339	45,236	62	15.9	2.9	6.7
		2.0	4.6	80	39,211	2,379	47,328	63	16.5	0.9	2.2	40,899	2,404	49,101	68	17.0	1.9	4.3	42,587	2,429	50,875	71	17.5	2.8	6.5
		2.0	4.6	90	43,772	2,449	52,128	71	17.9	0.9	2.2	Operation not recommended													
	9.0	3.3	7.7	50	26,003	2,081	33,103	38	12.5	0.9	2.0	27,787	2,101	34,956	42	13.2	2.0	4.6	29,570	2,120	36,803	43	13.9	3.1	7.1
		3.3	7.7	60	29,879	2,136	37,167	47	14.0	0.8	1.9	31,329	2,150	38,665	51	14.6	1.9	4.4	32,778	2,163	40,158	53	15.2	3.0	6.9
		3.3	7.7	70	33,754	2,191	41,230	55	15.4	0.8	1.9	34,870	2,199	42,373	60	15.9	1.9	4.3	35,985	2,206	43,512	62	16.3	2.9	6.7
		3.3	7.7	80	38,777	2,259	46,485	63	17.2	0.9	2.1	40,106	2,278	47,879	68	17.6	1.9	4.3	41,435	2,297	49,272	71	18.0	2.8	6.5
		3.3	7.7	90	43,799	2,327	51,739	71	18.8	0.9	2.2	Operation not recommended													

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																					
EWT °F	Flow			EWT °F	Flow 4.5 GPM							Flow 6.8 GPM							Flow 9.0 GPM						
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
110	4.5	1.0	2.3	50	22,367	2,860	32,125	40	7.8	0.9	2.0	24,150	2,931	34,151	43	8.2	1.9	4.4	25,933	3,001	36,172	44	8.6	3.0	6.8
		1.0	2.3	60	26,893	3,003	37,139	48	9.0	0.9	2.1	28,586	3,045	38,976	52	9.4	1.9	4.4	30,278	3,087	40,811	53	9.8	2.9	6.7
		1.0	2.3	70	31,418	3,146	42,152	56	10.0	0.9	2.1	33,021	3,159	43,800	60	10.5	1.9	4.3	34,624	3,172	45,447	62	10.9	2.9	6.6
		1.0	2.3	80	35,392	3,222	46,385	64	11.0	0.9	2.1	37,286	3,245	48,358	69	11.5	1.9	4.3	39,179	3,267	50,326	71	12.0	2.8	6.5
		1.0	2.3	90	39,365	3,299	50,621	73	11.9	0.9	2.1	41,550	3,330	52,912	78	12.5	1.9	4.3	43,735	3,361	55,203	80	13.0	2.8	6.6
	6.80	2.0	4.6	50	22,458	2,764	31,889	40	8.1	0.9	2.0	23,935	2,801	33,492	43	8.5	1.9	4.5	25,411	2,838	35,094	44	9.0	3.0	6.9
		2.0	4.6	60	26,879	2,885	36,723	48	9.3	0.9	2.0	27,664	2,901	37,562	52	9.5	1.9	4.4	28,449	2,916	38,398	54	9.8	3.0	6.8
		2.0	4.6	70	31,301	3,008	41,564	56	10.4	0.9	2.1	31,395	3,001	41,634	61	10.5	1.9	4.4	31,488	2,994	41,704	63	10.5	2.9	6.6
		2.0	4.6	80	35,380	3,072	45,862	64	11.5	0.9	2.1	35,193	3,079	45,699	70	11.4	1.9	4.3	35,005	3,085	45,531	72	11.3	2.8	6.5
		2.0	4.6	90	39,459	3,136	50,159	72	12.6	0.9	2.1	39,168	3,171	49,987	78	12.4	1.8	4.3	38,876	3,206	49,815	81	12.1	2.8	6.4
	9.0	3.0	6.9	50	22,549	2,667	31,649	40	8.5	0.9	2.0	23,719	2,671	32,832	43	8.9	2.0	4.5	24,889	2,674	34,013	44	9.3	3.1	7.1
		3.0	6.9	60	26,866	2,768	36,310	48	9.7	0.9	2.0	26,743	2,757	36,150	52	9.7	1.9	4.5	26,620	2,745	35,986	54	9.7	3.0	6.9
		3.0	6.9	70	31,183	2,869	40,972	56	10.9	0.9	2.1	29,767	2,843	39,467	61	10.5	1.9	4.4	28,351	2,816	37,959	64	10.1	2.9	6.7
		3.0	6.9	80	35,368	2,922	45,338	64	12.1	0.9	2.1	33,099	2,913	43,038	70	11.4	1.9	4.3	30,830	2,903	40,735	73	10.6	2.8	6.5
		3.0	6.9	90	39,553	2,974	49,700	72	13.3	0.9	2.1	36,785	3,013	47,065	79	12.2	1.8	4.2	34,017	3,051	44,427	82	11.1	2.7	6.3
120	4.5	0.8	1.9	50	20,598	3,175	30,751	40	6.0	0.9	2.0	21,840	3,191	32,071	43	7.0	1.8	4.2	23,808	3,343	33,747	44	7.0	3.0	6.8
		0.9	2.0	60	24,976	3,340	36,372	49	7.5	0.9	2.1	26,609	3,387	38,165	52	7.9	1.9	4.4	28,241	3,433	39,954	54	8.2	2.9	6.7
		0.9	2.0	70	29,354	3,505	39,560	56	8.0	0.9	2.0	31,014	3,514	43,004	61	8.8	1.9	4.3	32,674	3,522	42,664	62	9.0	2.8	6.5
		0.9	2.0	80	33,265	3,584	45,494	65	9.3	0.9	2.1	35,083	3,602	47,373	70	9.7	1.9	4.3	36,900	3,620	49,251	72	10.2	2.8	6.5
		0.8	1.9	90	37,176	3,663	47,871	73	10.0	0.9	2.0	39,151	3,690	51,741	78	10.6	1.9	4.3	41,126	3,717	51,798	80	11.0	2.9	6.6
	6.80	2.0	4.6	50	20,710	3,068	31,178	41	6.8	0.9	2.0	21,944	3,108	32,548	43	7.1	1.9	4.5	23,178	3,147	33,916	45	7.4	3.0	6.9
		2.0	4.6	60	25,168	3,212	36,127	49	7.8	0.9	2.1	25,530	3,224	36,530	52	7.9	1.9	4.4	25,891	3,235	36,929	54	8.0	3.0	6.8
		2.0	4.6	70	29,626	3,357	41,080	57	8.8	0.9	2.1	29,115	3,340	40,511	61	8.7	1.9	4.4	28,604	3,322	39,939	64	8.6	2.9	6.6
		2.0	4.6	80	33,465	3,419	45,131	65	9.8	0.9	2.1	32,340	3,416	43,995	70	9.5	1.9	4.3	31,214	3,413	42,859	73	9.1	2.8	6.5
		2.0	4.6	90	37,303	3,480	49,177	73	10.7	0.9	2.0	35,812	3,514	47,802	79	10.2	1.8	4.2	34,320	3,547	46,422	82	9.7	2.8	6.4
	9.0	3.2	7.3	50	20,822	2,960	30,294	40	7.0	0.9	2.0	22,020	2,955	31,450	43	7.0	1.8	4.2	22,548	2,951	31,901	45	8.0	3.0	7.0
		3.2	7.3	60	25,360	3,084	35,883	49	8.2	0.9	2.1	24,451	3,060	34,892	53	8.0	2.0	4.5	23,541	3,036	33,900	55	7.8	3.0	6.9
		3.2	7.3	70	29,897	3,208	39,079	56	9.0	0.9	2.2	27,216	3,165	38,015	62	8.6	1.9	4.4	24,534	3,121	34,340	64	8.0	2.9	6.7
		3.2	7.3	80	33,664	3,253	44,763	65	10.3	0.9	2.1	29,596	3,230	40,617	71	9.2	1.9	4.3	25,527	3,206	36,466	74	8.0	2.8	6.6
		3.2	7.3	90	37,430	3,297	46,920	72	11.0	0.9	2.1	32,472	3,337	43,858	80	9.7	1.8	4.1	27,513	3,376	39,032	84	8.1	2.7	6.2

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																						
					Flow 4.5 GPM								Flow 6.8 GPM							Flow 9.0 GPM						
EWT °F	Flow GPM	WPD PSI	WPD FT	EWT °F	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD PSI	WPD FT	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD PSI	WPD FT	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD PSI	WPD FT
20	9.0	4.6	10.6	60	24,644	1,430	19,835	71	5.1	0.9	2.1	24,658	1,403	19,871	67	5.2	1.9	4.5	24,672	1,375	19,826	65	5.3	2.9	6.8
		4.6	10.6	80	23,795	1,799	17,657	91	3.9	0.8	1.8	23,825	1,769	17,789	87	3.9	1.8	4.2	23,855	1,738	17,925	85	4.0	2.8	6.5
		4.6	10.6	100	23,016	2,274	15,257	110	3.0	0.8	1.8	23,032	2,239	15,393	107	3.0	1.8	4.0	23,048	2,203	15,531	105	3.1	2.7	6.2
30	4.5	1.7	3.8	60	26,234	1,446	21,400	71	5.3	0.9	2.1	26,259	1,419	21,417	68	5.4	1.9	4.4	26,284	1,391	21,406	66	5.5	2.9	6.7
		1.6	3.8	80	25,766	1,839	19,491	91	4.1	0.8	1.8	25,790	1,804	19,635	88	4.2	1.8	4.2	25,814	1,768	19,782	86	4.3	2.8	6.5
		1.6	3.8	100	25,181	2,328	17,238	111	3.2	0.8	1.8	25,178	2,286	17,378	107	3.2	1.8	4.0	25,174	2,243	17,521	106	3.3	2.7	6.2
		1.6	3.8	120	24,478	2,913	14,892	131	2.5	0.7	1.7	24,421	2,865	14,646	127	2.5	1.7	3.9	24,363	2,817	14,962	125	2.5	2.6	6.1
	6.80	3.1	7.1	60	27,287	1,459	22,309	72	5.5	0.9	2.1	27,274	1,430	22,395	68	5.6	1.9	4.4	27,260	1,401	22,480	66	5.7	2.9	6.7
		3.1	7.1	80	26,750	1,851	20,434	92	4.2	0.8	1.8	26,750	1,815	20,557	88	4.3	1.8	4.2	26,750	1,778	20,683	86	4.4	2.8	6.5
		3.1	7.1	100	26,046	2,341	18,059	112	3.3	0.8	1.8	26,032	2,298	18,191	108	3.3	1.8	4.0	26,017	2,254	18,326	106	3.4	2.7	6.2
		3.1	7.1	120	25,175	2,931	15,174	131	2.5	0.7	1.6	25,118	2,880	15,291	127	2.6	1.7	3.8	25,061	2,829	15,408	126	2.6	2.6	6.1
	9.0	4.5	10.3	60	28,340	1,471	23,480	72	5.6	0.9	2.1	28,258	1,423	23,406	68	5.8	1.8	4.1	28,235	1,411	23,331	67	5.9	2.9	6.8
		4.5	10.4	80	27,733	1,862	21,380	92	4.4	0.8	1.8	27,710	1,825	21,483	88	4.5	1.8	4.2	27,686	1,788	21,585	86	4.5	2.8	6.5
		4.5	10.4	100	26,910	2,354	18,878	112	3.4	0.8	1.8	26,885	2,309	19,007	108	3.4	1.8	4.0	26,860	2,264	19,135	106	3.5	2.7	6.2
		4.5	10.4	120	25,871	2,948	16,242	131	2.6	0.7	1.6	25,815	2,895	15,937	128	2.6	1.7	3.8	25,758	2,841	16,306	126	2.7	2.6	6.1
40	4.5	1.6	3.7	60	32,883	1,441	27,966	75	6.7	1.9	4.5	31,397	1,425	26,535	69	6.5	2.4	5.6	29,911	1,409	25,103	67	6.2	2.9	6.8
		1.6	3.7	80	30,484	1,871	24,100	94	4.8	1.2	2.8	29,946	1,832	23,695	89	4.8	2.0	4.6	29,407	1,792	23,293	87	4.8	2.8	6.5
		1.6	3.7	100	28,861	2,388	20,713	113	3.5	0.9	2.0	28,776	2,333	20,816	109	3.6	1.8	4.1	28,691	2,277	20,922	106	3.7	2.7	6.2
		1.6	3.7	120	28,013	2,992	17,804	132	2.7	0.8	1.8	27,888	2,928	17,898	128	2.8	1.7	4.0	27,762	2,864	17,990	126	2.8	2.6	6.1
	6.80	3.0	6.9	60	32,752	1,479	27,706	75	6.5	1.4	3.3	31,895	1,449	26,951	69	6.5	2.2	5.0	31,038	1,419	26,196	67	6.4	2.9	6.8
		3.0	6.9	80	31,190	1,891	24,738	94	4.8	1.0	2.4	30,853	1,847	24,551	89	4.9	1.9	4.4	30,515	1,803	24,363	87	5.0	2.8	6.5
		3.0	6.9	100	29,920	2,402	21,724	113	3.7	0.9	2.0	29,823	2,346	21,818	109	3.7	1.8	4.1	29,726	2,290	21,913	107	3.8	2.7	6.2
		3.0	6.9	120	28,942	3,011	18,668	133	2.8	0.8	1.8	28,807	2,946	18,755	129	2.9	1.7	4.0	28,671	2,880	18,844	126	2.9	2.6	6.1
	9.0	4.4	10.2	60	32,622	1,515	27,453	74	6.3	0.9	2.1	32,393	1,472	27,371	70	6.4	1.9	4.5	32,164	1,428	27,292	67	6.6	2.9	6.8
		4.4	10.2	80	31,895	1,911	25,375	94	4.9	0.9	2.0	31,759	1,862	25,406	89	5.0	1.8	4.2	31,622	1,813	25,436	87	5.1	2.8	6.5
		4.4	10.2	100	30,978	2,415	22,738	114	3.8	0.9	2.0	30,870	2,359	22,821	109	3.8	1.8	4.1	30,761	2,302	22,907	107	3.9	2.7	6.2
		4.4	10.2	120	29,870	3,029	19,535	133	2.9	0.8	1.8	29,725	2,962	19,619	129	2.9	1.7	4.0	29,579	2,895	19,701	127	3.0	2.6	6.1
50	4.5	1.5	3.5	60	39,531	1,436	34,771	69	8.1	3.0	6.8	36,535	1,432	31,649	71	7.5	3.0	6.8	33,538	1,427	28,673	67	6.9	2.9	6.8
		1.5	3.5	80	35,202	1,903	28,709	96	5.4	1.6	3.7	34,101	1,860	27,755	90	5.4	2.2	5.1	32,999	1,816	26,803	87	5.3	2.8	6.5
		1.5	3.5	100	32,541	2,448	24,188	114	3.9	0.9	2.1	32,374	2,380	24,253	110	4.0	1.8	4.2	32,207	2,311	24,322	107	4.1	2.7	6.2
		1.5	3.6	120	31,548	3,071	21,527	134	3.0	0.9	2.0	31,354	2,991	21,149	129	3.1	1.8	4.1	31,160	2,911	21,524	127	3.1	2.7	6.2
		1.5	3.5	130	Operation not recommended							30,806	3,422	19,130	139	2.6	1.7	4.0	30,537	3,341	19,524	137	2.7	2.6	6.1
	6.80	2.9	6.7	60	38,217	1,498	33,106	77	7.5	1.9	4.5	36,517	1,467	31,512	71	7.3	2.4	5.7	34,816	1,436	29,916	68	7.1	2.9	6.8
		2.9	6.7	80	35,630	1,931	29,041	96	5.4	1.3	2.9	34,955	1,879	28,544	90	5.5	2.0	4.7	34,279	1,827	28,045	88	5.5	2.8	6.5
		2.9	6.7	100	33,793	2,462	25,393	115	4.0	0.9	2.1	33,614	2,394	25,446	110	4.1	1.8	4.2	33,434	2,325	25,501	107	4.2	2.7	6.2
		2.9	6.7	120	32,708	3,090	22,165	135	3.1	0.9	2.0	32,494	3,010	22,224	130	3.2	1.8	4.1	32,280	2,930	22,283	127	3.2	2.7	6.2
		2.9	6.7	130	Operation not recommended							31,828	3,446	20,070	139	2.7	1.7	4.0	31,590	3,358	20,133	137	2.8	2.6	6.1
	9.0	4.3	9.8	60	36,903	1,559	31,992	76	6.9	0.9	2.2	36,170	1,472	31,368	71	7.2	1.8	4.3	36,093	1,444	31,255	68	7.3	2.9	6.8
		4.3	9.8	80	36,057	1,959	29,373	96	5.4	0.9	2.1	35,808	1,899	29,329	91	5.5	1.9	4.3	35,558	1,838	29,287	88	5.7	2.8	6.5
		4.3	9.8	100	35,045	2,476	26,597	116	4.1	0.9	2.1	34,853	2,408	26,637	110	4.2	1.8	4.2	34,661	2,339	26,680	108	4.3	2.7	6.2
		4.3	9.9	120	33,868	3,109	23,726	135	3.2	0.9	2.0	33,634	3,029	23,299	130	3.3	1.8	4.1	33,400	2,948	23,757	128	3.3	2.7	6.2
		4.3	9.9	130	Operation not recommended							32,850	3,470	21,010	140	2.8	1.7	4.0	32,642	3,375	21,517	137	2.8	2.6	6.1

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																					
	Flow				Flow 4.5 GPM							Flow 6.8 GPM							Flow 9.0 GPM						
EWT °F	GPM	WPD		EWT °F	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
60	4.5	1.5	3.5	60	41,501	1,504	36,369	78	8.1	2.2	5.0	38,519	1,467	33,514	71	7.7	2.6	5.9	35,536	1,430	30,657	68	7.3	3.0	6.8
		1.5	3.5	80	38,681	1,962	31,987	97	5.8	1.3	3.1	37,574	1,903	31,081	91	5.8	2.1	4.8	36,467	1,843	30,179	88	5.8	2.8	6.5
		1.5	3.5	100	36,388	2,308	28,513	116	4.6	1.0	2.3	36,383	2,331	28,430	111	4.6	1.9	4.3	36,377	2,354	28,345	108	4.5	2.7	6.2
		1.5	3.5	120	34,622	2,541	25,952	135	4.0	1.2	2.7	34,943	2,751	25,557	130	3.7	1.9	4.4	35,264	2,961	25,161	128	3.5	2.7	6.2
		1.5	3.5	130	Operation not recommended							34,198	3,045	23,808	140	3.3	1.9	4.4	34,641	3,352	23,204	138	3.0	2.6	6.0
	6.80	2.8	6.5	60	39,787	1,528	34,573	78	7.6	1.5	3.5	38,244	1,484	33,181	71	7.6	2.2	5.2	36,701	1,439	31,791	68	7.5	3.0	6.8
		2.8	6.5	80	39,193	1,982	32,430	97	5.8	1.1	2.6	38,555	1,919	32,007	91	5.9	2.0	4.5	37,917	1,856	31,584	88	6.0	2.8	6.5
		2.8	6.5	100	38,118	2,429	29,830	117	4.6	1.0	2.2	38,010	2,400	29,821	111	4.6	1.8	4.2	37,901	2,370	29,815	108	4.7	2.7	6.2
		2.8	6.5	120	36,562	2,869	26,773	136	3.7	1.0	2.3	36,608	2,924	26,631	131	3.7	1.8	4.2	36,653	2,979	26,489	128	3.6	2.7	6.2
		2.8	6.5	130	Operation not recommended							35,836	3,271	24,675	141	3.2	1.8	4.2	35,954	3,367	24,466	138	3.1	2.6	6.0
	9.0	4.2	9.7	60	38,072	1,552	32,777	77	7.2	0.9	2.1	37,969	1,500	32,851	71	7.4	1.9	4.4	37,865	1,447	32,928	68	7.7	3.0	6.8
		4.2	9.7	80	39,704	2,002	32,873	98	5.8	0.9	2.1	39,535	1,936	32,929	92	6.0	1.9	4.3	39,366	1,869	32,989	89	6.2	2.8	6.5
		4.2	9.7	100	39,847	2,551	31,143	118	4.6	0.9	2.1	39,637	2,468	31,216	112	4.7	1.8	4.2	39,426	2,385	31,288	109	4.8	2.7	6.2
		4.2	9.7	120	38,501	3,196	27,596	137	3.5	0.9	2.0	38,272	3,096	27,708	131	3.6	1.8	4.1	38,043	2,995	27,824	128	3.7	2.7	6.2
		4.2	9.7	130	Operation not recommended														37,266	3,382	25,727	138	3.2	2.6	6.0
70	4.5	1.4	3.2	60	43,470	1,571	38,110	79	8.1	1.0	2.3	40,502	1,502	35,377	72	7.9	2.0	4.6	37,533	1,433	32,644	68	7.7	3.0	6.9
		1.4	3.2	80	42,160	2,022	35,261	99	6.1	1.0	2.3	41,048	1,947	34,405	92	6.2	1.9	4.4	39,935	1,871	33,551	89	6.3	2.8	6.5
		1.4	3.2	100	40,236	2,168	32,839	118	5.4	1.0	2.3	40,391	2,283	32,601	112	5.2	1.9	4.3	40,546	2,397	32,367	109	5.0	2.7	6.2
		1.5	3.5	120	37,697	2,010	30,839	137	5.5	1.0	2.3	38,532	2,511	29,964	131	4.5	1.9	4.3	39,367	3,012	29,090	129	3.8	2.7	6.2
		1.4	3.2	130	Operation not recommended														38,745	3,362	27,274	139	3.4	2.6	6.0
	6.80	2.8	6.5	60	41,356	1,558	36,040	78	7.8	1.0	2.3	39,971	1,500	34,853	72	7.8	2.0	4.6	38,586	1,442	33,666	69	7.8	3.0	6.9
		2.8	6.5	80	42,756	2,034	35,816	99	6.2	1.0	2.3	42,156	1,960	35,468	92	6.3	1.9	4.4	41,555	1,886	35,120	89	6.5	2.8	6.5
		2.8	6.5	100	42,442	2,397	34,263	119	5.2	1.0	2.3	42,406	2,406	34,197	113	5.2	1.9	4.3	42,369	2,414	34,132	109	5.1	2.7	6.2
		2.8	6.5	120	40,415	2,647	31,383	138	4.5	1.0	2.3	40,721	2,837	31,041	132	4.2	1.9	4.3	41,027	3,027	30,699	129	4.0	2.7	6.2
		2.8	6.5	130	Operation not recommended														40,317	3,376	28,798	139	3.5	2.6	6.0
	9.0	4.1	9.5	60	39,242	1,544	33,974	77	7.4	1.0	2.3	39,440	1,497	34,332	72	7.7	2.0	4.6	39,638	1,450	34,691	69	8.0	3.0	6.9
		4.1	9.5	80	43,351	2,046	36,370	99	6.2	1.0	2.3	43,263	1,974	36,528	93	6.4	1.9	4.4	43,175	1,901	36,689	90	6.7	2.8	6.5
		4.1	9.5	100	44,648	2,625	35,692	120	5.0	1.0	2.3	44,420	2,528	35,794	113	5.1	1.9	4.3	44,191	2,431	35,896	110	5.3	2.7	6.2
		4.1	9.5	120	43,133	3,284	31,928	139	3.8	1.0	2.3	42,909	3,164	32,113	133	4.0	1.9	4.3	42,685	3,043	32,302	129	4.1	2.7	6.2
		4.1	9.5	130	Operation not recommended														41,890	3,389	30,327	139	3.6	2.6	6.0
80	4.5	1.4	3.3	60	45,440	1,639	40,228	80	8.1	0.6	1.4	40,339	1,473	35,624	72	8.0	1.8	4.1	39,531	1,436	34,771	69	8.1	3.0	6.8
		1.4	3.3	80	45,639	2,081	38,539	100	6.4	0.8	1.8	44,521	1,990	37,731	93	6.6	1.8	4.2	43,403	1,898	36,927	90	6.7	2.8	6.5
		1.4	3.3	100	44,083	2,028	37,163	120	6.4	1.2	2.8	44,400	2,234	36,778	113	5.8	2.0	4.5	44,716	2,440	36,391	110	5.4	2.7	6.2
		1.4	3.3	120	40,771	1,480	36,069	72	8.1	1.8	4.1	42,121	2,271	34,372	132	5.4	2.2	5.1	43,471	3,062	33,408	130	4.2	2.7	6.2
		1.4	3.3	130	Operation not recommended														42,849	3,373	31,340	140	3.7	2.6	5.9
	6.80	2.7	6.2	60	42,926	1,588	37,508	79	7.9	0.7	1.6	41,699	1,517	36,523	72	8.1	1.8	4.2	40,471	1,445	35,541	69	8.2	3.0	6.8
		2.7	6.2	80	46,319	2,085	39,205	101	6.5	0.9	2.0	45,756	2,000	38,932	94	6.7	1.8	4.2	45,193	1,915	38,659	90	6.9	2.8	6.5
		2.7	6.2	100	46,767	2,364	38,701	121	5.8	1.1	2.4	46,802	2,412	38,572	114	5.7	1.9	4.3	46,836	2,459	38,446	110	5.6	2.7	6.2
		2.7	6.2	120	44,269	2,426	35,991	140	5.3	1.3	3.0	44,835	2,751	35,449	133	4.8	2.0	4.6	45,400	3,076	34,905	130	4.3	2.7	6.2
		2.7	6.2	130	Operation not recommended														44,681	3,385	33,131	140	3.9	2.6	5.9
	9.0	4.0	9.1	60	40,411	1,537	35,681	78	7.7	0.8	1.9	40,771	1,480	36,069	72	8.1	1.8	4.1	41,410	1,453	36,632	69	8.4	3.0	6.8
		4.0	9.1	80	46,998	2,089	39,870	101	6.6	0.9	2.1	46,991	2,011	40,129	94	6.8	1.9	4.3	46,983	1,932	40,391	90	7.1	2.8	6.5
		4.0	9.1	100	49,450	2,700	40,238	122	5.4	0.9	2.1	49,203	2,589	40,369	115	5.6	1.8	4.2	48,956	2,477	40,504	111	5.8	2.7	6.2
		4.0	9.1	120	47,766	3,371	36,830	141	4.2	0.9	2.0	47,547	3,231	36,523	134	4.3	1.8	4.1	47,328	3,090	37,204	130	4.5	2.7	6.2
		4.0	9.1	130	Operation not recommended														46,514	3,397	34,925	140	4.0	2.6	5.9

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																							
EWT °F	Flow			EWT °F	Flow 3.3 GPM							Flow 4.9 GPM							Flow 6.5 GPM							
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
50	3.3	0.5	1.1	50	20991	985	24175	37	21.3	1.0	2.4	22123	995	25518	41	22.2	1.5	3.4	23254	1004	26409	43	23.2	1.9	4.4
		0.5	1.1	60	23877	982	27228	45	24.3	1.0	2.3	25223	989	28597	50	25.5	1.5	3.4	26568	996	29966	52	26.7	1.9	4.4
		0.5	1.1	70	29649	977	32983	52	30.3	1.0	2.3	29766	982	33117	58	30.3	1.4	3.3	29882	987	32942	61	30.3	1.8	4.3
		0.5	1.1	80	29649	977	32694	61	30.3	1.0	2.3	31654	978	34991	67	32.4	1.4	3.2	33659	978	36996	70	34.4	1.8	4.2
		0.5	1.1	90	33978	973	37298	69	34.9	1.0	2.2	35707	971	39020	75	36.8	1.4	3.2	37435	968	40364	78	38.7	1.8	4.1
	4.90	1.0	2.4	50	21099	944	24320	37	22.4	1.0	2.4	22229	950	25470	41	23.4	1.5	3.5	23358	955	26616	43	24.5	2.0	4.6
		1.0	2.4	60	23985	941	27196	45	25.5	1.0	2.3	25261	944	28482	50	26.8	1.5	3.5	26537	946	29765	52	28.1	2.0	4.6
		1.0	2.4	70	29757	936	32951	52	31.8	1.0	2.3	29736	937	32933	58	31.7	1.5	3.4	29715	937	32912	61	31.7	2.0	4.6
		1.0	2.4	80	29569	917	32698	62	32.2	1.0	2.3	31481	917	34610	67	34.3	1.5	3.4	33393	916	36518	70	36.5	2.0	4.6
		1.0	2.4	90	33898	913	37013	69	37.1	1.0	2.2	Operation not recommended													
	6.5	1.6	3.7	50	21207	902	24350	37	23.5	1.0	2.4	22334	904	25418	41	24.7	1.5	3.4	23461	905	26482	43	25.9	1.9	4.4
		1.6	3.7	60	24093	899	27160	45	26.8	1.0	2.3	25299	898	28363	50	28.2	1.5	3.4	26505	896	29562	52	29.6	1.9	4.4
		1.6	3.7	70	29865	894	32915	52	33.4	1.0	2.3	29707	890	32744	58	33.4	1.4	3.3	29548	886	32533	61	33.3	1.8	4.3
		1.6	3.7	80	29488	857	32349	62	34.4	1.0	2.3	31308	856	34229	67	36.6	1.4	3.2	33127	854	36041	70	38.8	1.8	4.2
		1.6	3.7	90	33817	853	36727	69	39.6	1.0	2.2	Operation not recommended													
70	3.3	0.5	1.1	50	18987	1443	23911	38	13.2	1.0	2.3	20074	1451	25025	42	13.8	1.5	3.5	21160	1458	26135	43	14.5	2.0	4.6
		0.5	1.1	60	21839	1446	26773	47	15.1	1.0	2.3	23125	1453	28083	51	15.9	1.5	3.5	24411	1459	29389	52	16.7	2.0	4.6
		0.5	1.1	70	26751	1447	31688	54	18.5	1.0	2.3	27207	1453	32165	59	18.7	1.5	3.5	27663	1459	32641	61	19.0	2.0	4.6
		0.5	1.1	80	27541	1415	32369	63	19.5	1.0	2.3	29456	1434	34349	68	20.5	1.5	3.5	31370	1453	36328	70	21.6	2.0	4.6
		0.5	1.1	90	31423	1412	36241	71	22.3	1.0	2.3	Operation not recommended													
	4.90	1.0	2.4	50	19157	1391	23903	38	13.8	1.0	2.3	20247	1395	25007	42	14.5	1.5	3.5	21337	1399	26110	43	15.3	2.0	4.6
		1.0	2.4	60	21998	1391	26744	46	15.8	1.0	2.3	23245	1393	27998	50	16.7	1.5	3.5	24492	1394	29248	52	17.6	2.0	4.6
		1.0	2.4	70	26900	1389	31639	53	19.4	1.0	2.3	27273	1390	32016	59	19.6	1.5	3.5	27646	1390	32389	61	19.9	2.0	4.6
		1.0	2.4	80	27544	1359	32181	63	20.3	1.0	2.3	29382	1367	34046	68	21.5	1.5	3.5	31219	1374	35907	70	22.7	2.0	4.6
		1.0	2.4	90	31415	1355	36038	71	23.2	1.0	2.3	Operation not recommended													
	6.5	1.6	3.6	50	19327	1339	23896	38	14.4	1.0	2.3	20421	1339	24990	42	15.3	1.5	3.5	21514	1339	26083	43	16.1	2.0	4.6
		1.6	3.6	60	22156	1335	26711	46	16.6	1.0	2.3	23364	1333	27912	50	17.5	1.5	3.5	24572	1330	29110	52	18.5	2.0	4.6
		1.6	3.6	70	27048	1330	31586	53	20.3	1.0	2.3	27338	1325	31859	59	20.6	1.5	3.5	27628	1320	32132	61	20.9	2.0	4.6
		1.6	3.6	80	27547	1302	31989	63	21.2	1.0	2.3	29308	1299	33740	68	22.6	1.5	3.5	31068	1295	35487	70	24.0	2.0	4.6
		1.6	3.6	90	31407	1298	35836	71	24.2	1.0	2.3	Operation not recommended													
90	3.3	0.5	1.1	50	16984	1902	23474	40	8.9	1.0	2.3	18025	1907	24532	43	9.5	1.5	3.5	19065	1912	25589	44	10.0	2.0	4.6
		0.5	1.1	60	19800	1909	26314	48	10.4	1.0	2.3	21028	1916	27565	51	11.0	1.5	3.5	22255	1922	28813	53	11.6	2.0	4.6
		0.5	1.1	70	23854	1916	30391	55	12.4	1.0	2.3	24649	1924	31214	60	12.8	1.5	3.5	25444	1931	32033	62	13.2	2.0	4.6
		0.5	1.1	80	25433	1852	31752	64	13.7	1.0	2.3	27257	1891	33709	69	14.4	1.5	3.5	29081	1929	35663	71	15.1	2.0	4.6
		0.5	1.1	90	28868	1851	35184	72	15.6	1.0	2.3	Operation not recommended													
	4.90	1.0	2.4	50	17215	1839	23490	39	9.4	1.0	2.3	18266	1841	24547	43	9.9	1.5	3.5	19316	1842	25601	44	10.5	2.0	4.6
		1.0	2.4	60	20010	1841	26291	48	10.9	1.0	2.3	21229	1842	27514	51	11.5	1.5	3.5	22447	1843	28735	53	12.2	2.0	4.6
		1.0	2.4	70	24042	1842	30327	55	13.1	1.0	2.3	24810	1843	31098	60	13.5	1.5	3.5	25577	1843	31865	62	13.9	2.0	4.6
		1.0	2.3	80	25519	1800	31661	64	14.2	1.0	2.3	27282	1816	33478	69	15.0	1.5	3.5	29045	1832	35296	71	15.9	2.0	4.6
		1.0	2.3	90	28933	1797	35064	72	16.1	1.0	2.3	Operation not recommended													
	6.5	1.5	3.5	50	17446	1776	23506	39	9.8	1.0	2.3	18507	1774	24560	42	10.4	1.5	3.5	19567	1772	25613	44	11.0	2.0	4.6
		1.5	3.5	60	20220	1772	26266	48	11.4	1.0	2.3	21429	1768	27461	51	12.1	1.5	3.5	22638	1763	28653	53	12.8	2.0	4.6
		1.5	3.5	70	24230	1767	30259	55	13.7	1.0	2.3	24970	1761	30979	60	14.2	1.5	3.5	25709	1754	31694	62	14.7	2.0	4.6
		1.5	3.5	80	25605	1748	31569	64	14.6	1.0	2.3	27307	1742	33251	69	15.7	1.5	3.5	29009	1735	34929	71	16.7	2.0	4.6
		1.5	3.5	90	28997	1743	34944	72	16.6	1.0	2.3	Operation not recommended													

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																					
EWT °F	Flow			EWT °F	Flow 3.3 GPM							Flow 4.9 GPM							Flow 6.5 GPM						
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
110	3.3	0.5	1.1	50	14980	2360	23032	41	6.3	1.0	2.3	15976	2363	24039	43	6.8	1.5	3.4	16971	2366	25044	45	7.2	1.9	4.4
		0.5	1.1	60	17762	2373	25859	49	7.5	1.0	2.3	18930	2379	27047	52	8.0	1.5	3.4	20098	2385	28236	54	8.4	1.9	4.5
		0.5	1.1	70	20956	2386	29097	57	8.8	1.0	2.2	22091	2395	30263	61	9.2	1.4	3.3	23225	2403	31424	63	9.7	1.9	4.3
		0.5	1.1	80	23325	2290	31138	66	10.2	1.0	2.3	25059	2347	33067	70	10.7	1.4	3.3	26792	2404	34994	72	11.1	1.9	4.3
		0.5	1.1	90	26313	2290	34126	74	11.5	1.0	2.3	28336	2348	36347	78	12.1	1.4	3.2	30358	2405	38564	81	12.6	1.8	4.2
	4.90	1.0	2.3	50	15273	2286	23073	41	6.7	1.0	2.3	16284	2286	24084	43	7.1	1.5	3.4	17295	2286	25095	45	7.6	1.9	4.4
		1.0	2.3	60	18023	2291	25840	49	7.9	1.0	2.3	19213	2291	27030	52	8.4	1.5	3.3	20402	2291	28219	54	8.9	1.9	4.4
		1.0	2.3	70	21185	2295	29016	57	9.2	1.0	2.2	22347	2296	30181	61	9.7	1.4	3.3	23508	2296	31342	63	10.2	1.9	4.3
		1.0	2.3	80	23494	2242	31144	66	10.5	1.0	2.3	25183	2266	32915	70	11.1	1.4	3.3	26871	2290	34684	72	11.7	1.9	4.3
		1.0	2.3	90	26450	2239	34089	74	11.8	1.0	2.2	28531	2261	36246	78	12.6	1.4	3.2	30612	2282	38398	81	13.4	1.8	4.3
	6.5	1.5	3.4	50	15566	2213	23117	40	7.0	1.0	2.3	16593	2210	24134	43	7.5	1.5	3.4	17620	2206	25147	45	8.0	1.9	4.4
		1.5	3.4	60	18283	2208	25817	49	8.3	1.0	2.3	19494	2203	27011	52	8.8	1.4	3.3	20705	2197	28201	54	9.4	1.9	4.3
		1.5	3.4	70	21413	2203	28930	57	9.7	1.0	2.2	22601	2196	30094	61	10.3	1.4	3.3	23789	2188	31254	63	10.9	1.9	4.3
		1.5	3.4	80	23664	2193	31147	65	10.8	1.0	2.2	25307	2185	32762	70	11.6	1.4	3.2	26950	2176	34375	72	12.4	1.8	4.3
		1.5	3.4	90	26587	2188	34052	74	12.2	1.0	2.2	28726	2173	36140	78	13.2	1.4	3.2	30864	2158	38227	81	14.3	1.8	4.3
120	3.3	0.5	1.1	50	13978	2589	21933	41	5.4	1.0	2.3	14951	2591	23791	44	5.8	1.4	3.3	15924	2593	23891	45	6.1	1.9	4.3
		0.5	1.1	60	16743	2605	25631	50	6.4	1.0	2.3	17882	2611	26791	53	6.8	1.5	3.3	19020	2616	27946	54	7.3	1.9	4.4
		0.5	1.1	70	19507	2621	27572	58	7.4	1.0	2.2	20812	2630	29786	61	7.9	1.4	3.2	22116	2639	30157	63	8.4	1.8	4.2
		0.5	1.1	80	22272	2509	30832	66	8.9	1.0	2.2	23960	2576	32749	70	9.3	1.4	3.2	25648	2642	34663	72	9.7	1.8	4.2
		0.5	1.1	90	25036	2509	33597	75	10.0	1.0	2.2	27108	2577	35901	79	10.5	1.4	3.1	29179	2644	36974	81	11.0	1.8	4.1
	4.90	1.0	2.3	50	14302	2510	22866	41	5.7	1.0	2.3	15294	2509	23855	44	6.1	1.4	3.3	16285	2508	24842	45	6.5	1.9	4.3
		1.0	2.3	60	17029	2516	25614	50	6.8	1.0	2.3	18204	2516	26789	53	7.2	1.4	3.3	19379	2515	27960	54	7.7	1.9	4.3
		1.0	2.3	70	19756	2521	28358	58	7.8	1.0	2.2	21115	2522	29720	61	8.4	1.4	3.2	22473	2522	31078	63	8.9	1.8	4.2
		1.0	2.2	80	22482	2463	30886	66	9.1	1.0	2.2	24133	2491	32632	70	9.7	1.4	3.2	25784	2519	34379	72	10.2	1.8	4.1
		1.0	2.2	90	25209	2460	33603	74	10.2	0.9	2.2	27372	2487	35858	79	11.0	1.4	3.1	29535	2513	38109	81	11.8	1.8	4.1
	6.5	1.5	3.4	50	14626	2431	22412	41	6.0	1.0	2.3	15636	2427	23917	44	6.4	1.4	3.3	16646	2423	24330	45	6.9	1.9	4.3
		1.5	3.4	60	17315	2426	25593	49	7.1	1.0	2.3	18527	2420	26784	52	7.7	1.4	3.2	19738	2414	27975	54	8.2	1.8	4.2
		1.5	3.4	70	20004	2421	27700	57	8.3	1.0	2.2	21417	2413	29650	61	8.9	1.4	3.2	22829	2405	30409	63	9.5	1.8	4.2
		1.5	3.4	80	22693	2416	30936	66	9.4	1.0	2.2	24307	2406	32516	70	10.1	1.4	3.1	25921	2396	34096	72	10.8	1.8	4.1
		1.5	3.4	90	25382	2411	33608	74	10.5	0.9	2.2	27636	2396	35811	79	11.5	1.3	3.1	29890	2381	37152	80	12.6	1.8	4.1

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																					
EWT °F	Flow			EWT °F	Flow 3.3 GPM							Flow 4.9 GPM							Flow 6.5 GPM						
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
20	6.5	1.9	4.3	60	17,069	1,086	13,370	71	4.6	0.7	1.5	17,063	1,062	13,439	67	4.7	1.2	2.7	17,057	1,037	13,433	65	4.8	1.6	3.8
		1.8	4.2	80	16,624	1,448	11,315	91	3.4	0.9	2.1	16,552	1,400	11,775	87	3.5	1.2	2.9	16,480	1,351	11,894	85	3.6	1.6	3.6
		1.8	4.2	100	15,880	1,902	9,396	110	2.5	0.9	2.1	15,892	1,784	9,805	107	2.6	1.2	2.8	15,903	1,665	10,222	105	2.8	1.5	3.5
30	3.3	0.4	1.0	60	18,122	1,085	14,462	71	4.9	0.7	1.5	26,787	1,012	23,334	71	7.8	1.1	2.6	35,452	938	32,367	71	11.1	1.6	3.7
		0.4	1.0	80	17,687	1,353	13,104	85	3.8	1.6	3.6	26,443	1,332	21,898	91	5.8	1.6	3.6	35,198	1,311	30,959	91	7.9	1.5	3.6
		0.4	1.0	100	17,252	1,621	11,721	111	3.1	2.5	5.7	26,098	1,653	20,458	111	4.6	2.0	4.6	34,944	1,684	29,198	111	6.1	1.5	3.5
		0.4	1.0	120	16,817	1,889	10,372	130	2.6	3.4	7.8	25,754	1,973	19,022	131	3.8	2.4	5.6	34,690	2,057	27,672	131	4.9	1.5	3.4
	4.90	1.1	2.5	60	18,897	1,086	15,192	72	5.1	0.7	1.5	23,221	1,034	19,693	70	6.6	1.1	2.6	27,544	982	24,193	68	8.2	1.6	3.7
		1.1	2.5	80	18,412	1,421	13,564	91	3.8	1.3	3.0	22,739	1,376	18,044	89	4.8	1.4	3.3	27,065	1,331	22,524	88	6.0	1.6	3.6
		1.1	2.5	100	17,927	1,755	11,939	111	3.0	1.7	4.0	22,257	1,718	16,395	109	3.8	1.6	3.7	26,587	1,680	20,855	108	4.6	1.5	3.5
		1.1	2.5	120	17,442	2,090	10,311	131	2.4	2.1	5.0	21,647	2,160	14,277	129	2.9	1.8	4.2	25,851	2,230	18,242	128	3.4	1.5	3.4
	6.5	1.7	4.0	60	19,671	1,087	15,999	72	5.3	0.7	1.5	19,653	1,057	16,047	68	5.4	1.2	2.7	19,635	1,026	16,049	66	5.6	1.6	3.8
		1.7	4.0	80	19,137	1,488	14,060	92	3.8	1.0	2.3	19,035	1,420	14,190	88	3.9	1.3	3.0	18,932	1,351	14,409	86	4.1	1.6	3.6
		1.7	4.0	100	18,602	1,889	11,722	112	9.8	0.9	2.2	18,416	1,783	12,332	108	3.0	1.2	2.8	18,229	1,676	12,510	106	3.2	1.5	3.5
		1.7	4.0	120	18,067	2,290	10,253	131	2.3	0.9	2.1	17,540	2,346	9,535	127	2.2	1.2	2.7	17,012	2,402	9,210	125	2.1	1.4	3.3
40	3.3	0.4	0.9	60	20,962	1,087	17,253	73	5.7	1.0	2.3	27,844	1,016	24,377	71	8.0	1.5	3.5	34,725	945	31,501	71	10.8	2.0	4.6
		0.4	0.9	80	20,544	1,380	15,835	93	4.4	1.0	2.3	27,522	1,349	22,919	91	6.0	1.5	3.5	34,499	1,317	30,005	91	7.7	2.0	4.6
		0.4	0.9	100	20,125	1,674	14,413	112	3.5	2.0	4.6	27,199	1,681	21,463	111	4.7	1.5	3.5	34,273	1,688	28,514	111	6.0	1.0	2.3
		0.4	0.9	120	19,520	2,043	12,549	132	2.8	3.0	6.9	26,651	2,089	19,523	131	3.7	2.0	4.6	33,781	2,134	26,500	130	4.6	1.0	2.3
	4.90	1.1	2.4	60	21,962	1,086	18,257	74	5.9	1.0	2.3	25,362	1,032	21,841	70	7.2	1.5	3.5	28,762	977	25,428	69	8.6	2.0	4.6
		1.1	2.4	80	21,488	1,435	16,592	93	4.4	1.0	2.3	24,915	1,383	20,196	90	5.3	1.5	3.5	28,342	1,330	23,804	89	6.2	2.0	4.6
		1.1	2.4	100	21,014	1,783	14,930	113	3.5	1.0	2.3	24,469	1,733	18,556	110	4.1	1.5	3.5	27,923	1,683	22,181	109	4.9	2.0	4.6
		1.0	2.4	120	20,448	2,169	13,047	133	2.8	2.0	4.6	23,806	2,202	16,293	130	3.2	1.5	3.5	27,164	2,234	19,542	128	3.6	1.0	2.3
	6.5	1.7	3.9	60	22,960	1,084	19,261	74	6.2	1.0	2.3	22,879	1,046	19,310	69	6.4	1.5	3.5	22,798	1,008	19,359	67	6.6	2.0	4.6
		1.7	3.9	80	22,432	1,488	17,355	94	4.4	1.0	2.3	22,309	1,416	17,478	89	4.6	1.5	3.5	22,185	1,343	17,603	87	4.8	2.0	4.6
		1.7	3.9	100	21,903	1,891	15,451	113	3.4	1.0	2.3	21,738	1,785	15,648	109	3.6	1.5	3.5	21,572	1,678	15,847	107	3.8	2.0	4.6
		1.7	3.9	120	21,375	2,295	13,544	133	2.7	1.0	2.3	20,962	2,314	13,067	129	2.7	1.0	2.3	20,548	2,333	12,588	126	2.6	1.0	2.3
50	3.3	0.4	0.9	60	23,802	1,089	20,086	75	6.4	1.0	2.3	28,900	1,021	25,416	72	8.3	1.5	3.5	33,998	952	30,750	70	10.5	2.0	4.6
		0.4	0.9	80	23,401	1,408	18,597	94	4.9	1.0	2.3	28,601	1,366	23,940	92	6.1	1.5	3.5	33,800	1,323	29,286	90	7.5	2.0	4.6
		0.4	0.9	100	22,999	1,727	17,106	114	3.9	2.0	4.6	28,301	1,710	22,466	112	4.9	1.5	3.5	33,602	1,692	27,829	110	5.8	1.0	2.3
		0.4	0.9	120	22,224	2,198	14,724	134	3.0	2.0	4.6	27,548	2,205	20,025	131	3.7	1.5	3.5	32,872	2,211	25,328	130	4.4	1.0	2.3
		0.4	0.9	130	Operation not recommended							27,489	2,347	19,481	141	3.4	1.5	3.5	32,879	2,366	24,806	140	4.1	1.0	2.3
	4.90	1.0	2.4	60	25,027	1,086	21,322	75	6.8	1.0	2.3	27,504	1,029	23,993	71	7.8	1.5	3.5	29,980	972	26,664	69	9.0	2.0	4.6
		1.0	2.4	80	24,564	1,449	19,620	95	5.0	1.0	2.3	27,092	1,389	22,353	91	5.7	1.5	3.5	29,619	1,329	25,084	89	6.5	2.0	4.6
		1.0	2.4	100	24,102	1,811	17,923	115	3.9	1.0	2.3	26,681	1,749	20,713	111	4.5	1.5	3.5	29,259	1,686	23,506	109	5.1	2.0	4.6
		1.0	2.3	120	23,454	2,249	15,780	134	3.1	2.0	4.6	25,966	2,244	18,309	131	3.4	1.5	3.5	28,478	2,238	20,842	129	3.7	1.0	2.3
		1.0	2.3	130	Operation not recommended							25,821	2,397	17,642	141	3.2	1.5	3.5	28,381	2,378	20,267	139	3.5	1.0	2.3
	6.5	1.7	3.8	60	26,249	1,082	22,557	76	7.1	1.0	2.3	26,106	1,037	22,568	71	7.4	1.5	3.5	25,962	991	22,581	68	7.7	2.0	4.6
		1.7	3.8	80	25,727	1,488	20,650	96	5.1	1.0	2.3	25,583	1,412	20,765	90	5.3	1.5	3.5	25,438	1,335	20,883	88	5.6	2.0	4.6
		1.7	3.8	100	25,205	1,893	18,746	116	3.9	1.0	2.3	25,060	1,787	18,963	110	4.1	1.5	3.5	24,915	1,680	19,183	108	4.3	2.0	4.6
		1.6	3.8	120	24,683	2,300	16,835	135	3.1	1.0	2.3	24,384	2,282	16,598	130	3.1	1.0	2.3	24,084	2,264	16,359	127	3.1	1.0	2.3
		1.6	3.8	130	Operation not recommended							24,153	2,445	15,811	140	2.9	1.0	2.3	23,883	2,388	15,735	137	2.9	1.0	2.3

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																					
	Flow				Flow 3.3 GPM							Flow 4.9 GPM							Flow 6.5 GPM						
EWT °F	GPM	WPD		EWT °F	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
60	3.3	0.4	0.9	60	26,643	1,090	22,924	76	7.2	1.0	2.3	29,957	1,025	26,460	72	8.6	1.5	3.5	33,270	959	29,998	70	10.2	2.0	4.6
		0.4	0.9	80	26,257	1,435	21,361	96	5.4	1.0	2.3	29,679	1,382	24,964	92	6.3	1.5	3.5	33,100	1,328	28,569	90	7.3	2.0	4.6
		0.4	0.9	100	25,872	1,781	19,795	116	4.3	1.0	2.3	29,402	1,739	23,469	112	5.0	1.0	2.3	32,931	1,697	27,141	110	5.7	1.0	2.3
		0.4	0.9	120	24,927	2,352	16,902	135	3.1	2.0	4.6	28,445	2,320	20,529	132	3.6	1.5	3.5	31,963	2,288	24,156	130	4.1	1.0	2.3
		0.4	0.9	130	Operation not recommended							28,443	2,454	20,070	142	3.4	1.5	3.5	32,038	2,428	23,754	140	3.9	1.0	2.3
	4.90	1.0	2.3	60	28,091	1,085	24,389	77	7.6	1.0	2.3	29,645	1,026	26,144	72	8.5	1.5	3.5	31,198	966	27,902	70	9.5	2.0	4.6
		1.0	2.3	80	27,640	1,462	22,652	97	5.5	1.0	2.3	29,268	1,395	24,508	92	6.1	1.5	3.5	30,896	1,327	26,368	90	6.8	2.0	4.6
		1.0	2.3	100	27,189	1,838	20,918	117	4.3	1.0	2.3	28,892	1,764	22,873	112	4.8	1.0	2.3	30,595	1,689	24,832	109	5.3	1.0	2.3
		1.0	2.3	120	26,459	2,328	18,516	136	3.3	1.0	2.3	28,125	2,285	20,329	132	3.6	1.0	2.3	29,791	2,242	22,141	129	3.9	1.0	2.3
		1.0	2.3	130	Operation not recommended							28,015	2,439	19,693	141	3.4	1.0	2.3	29,741	2,384	21,607	139	3.7	1.0	2.3
	6.5	1.6	3.7	60	29,539	1,079	25,857	78	8.0	1.0	2.3	29,332	1,026	25,831	72	8.4	1.5	3.5	29,125	973	25,805	69	8.8	2.0	4.6
		1.6	3.7	80	29,023	1,487	23,949	98	5.7	1.0	2.3	28,858	1,407	24,057	92	6.0	1.5	3.5	28,692	1,327	24,164	89	6.3	2.0	4.6
		1.6	3.7	100	28,506	1,896	22,037	118	4.4	1.0	2.3	28,382	1,789	22,278	112	4.6	1.5	3.5	28,258	1,681	22,522	109	4.9	2.0	4.6
		1.6	3.7	120	27,990	2,304	20,129	137	3.6	1.0	2.3	27,805	2,250	20,128	131	3.6	1.0	2.3	27,619	2,195	20,130	128	3.7	1.0	2.3
		1.6	3.7	130	Operation not recommended														27,443	2,340	19,459	138	3.4	1.0	2.3
70	3.3	0.4	0.8	60	29,483	1,091	25,761	78	7.9	1.0	2.3	31,013	1,029	27,502	73	8.8	1.5	3.5	32,542	966	29,246	70	9.9	2.0	4.6
		0.4	0.8	80	29,114	1,463	24,122	98	5.8	1.0	2.3	30,758	1,398	25,988	93	6.4	1.5	3.5	32,401	1,333	27,853	90	7.1	2.0	4.6
		0.4	0.8	100	28,746	1,834	22,488	118	4.6	1.0	2.3	30,503	1,768	24,471	113	5.1	1.0	2.3	32,260	1,701	26,456	110	5.6	1.0	2.3
		0.4	0.8	120	27,631	2,507	19,077	137	3.2	1.0	2.3	29,343	2,436	21,031	132	3.5	1.0	2.3	31,054	2,365	22,985	130	3.8	1.0	2.3
		0.4	0.8	130	Operation not recommended														31,196	2,489	22,704	140	3.7	1.0	2.3
	4.90	1.0	2.2	60	31,155	1,084	27,456	79	8.4	1.0	2.3	31,786	1,023	28,296	73	9.1	1.5	3.5	32,416	961	29,137	70	9.9	2.0	4.6
		1.0	2.2	80	30,716	1,475	25,683	99	6.1	1.0	2.3	31,445	1,401	26,665	93	6.6	1.5	3.5	32,173	1,326	27,649	90	7.1	2.0	4.6
		1.0	2.2	100	30,277	1,866	23,910	119	4.8	1.0	2.3	31,104	1,779	25,034	113	5.1	1.0	2.3	31,931	1,692	26,158	110	5.5	1.0	2.3
		1.0	2.2	120	29,464	2,408	21,248	138	3.6	1.0	2.3	30,285	2,327	22,345	132	3.8	1.0	2.3	31,105	2,246	23,442	130	4.1	1.0	2.3
		1.0	2.2	130	Operation not recommended														31,100	2,390	22,945	140	3.8	1.0	2.3
	6.5	1.6	3.6	60	32,828	1,077	29,153	80	8.9	1.0	2.3	32,559	1,017	29,089	73	9.4	1.5	3.5	32,289	956	29,027	70	9.9	2.0	4.6
		1.6	3.6	80	32,318	1,487	27,244	100	6.4	1.0	2.3	32,132	1,403	27,345	93	6.7	1.5	3.5	31,945	1,319	27,445	90	7.1	2.0	4.6
		1.6	3.6	100	31,808	1,898	25,332	120	4.9	1.0	2.3	31,705	1,790	25,598	113	5.2	1.5	3.5	31,601	1,682	25,862	110	5.5	2.0	4.6
		1.6	3.6	120	31,297	2,308	23,422	139	4.0	1.0	2.3	31,226	2,217	23,662	133	4.1	1.0	2.3	31,154	2,126	23,900	130	4.3	1.0	2.3
		1.6	3.6	130	Operation not recommended														31,003	2,292	23,183	140	4.0	1.0	2.3
80	3.3	0.3	0.8	60	32,323	1,093	28,908	80	8.7	0.6	1.4	32,069	1,033	28,544	73	9.1	1.1	2.5	31,815	973	28,666	70	9.6	1.6	3.7
		0.3	0.8	80	31,971	1,490	27,355	99	6.3	0.6	1.3	31,837	1,415	27,009	93	6.6	1.1	2.4	31,702	1,339	27,414	90	6.9	1.5	3.5
		0.3	0.8	100	31,619	1,887	25,181	119	4.9	0.5	1.2	31,604	1,796	25,476	113	5.2	1.0	2.3	31,589	1,705	25,772	110	5.4	1.5	3.4
		0.3	0.8	120	30,334	2,661	22,082	139	3.3	0.5	1.2	30,240	2,552	21,533	132	3.5	1.0	2.2	30,145	2,442	22,322	129	3.6	1.4	3.3
		0.3	0.8	130	Operation not recommended														30,355	2,551	21,651	139	3.5	1.4	3.2
	4.90	0.9	2.1	60	34,220	1,084	30,521	81	9.3	0.6	1.4	33,927	1,020	30,447	74	9.7	1.1	2.5	33,634	956	30,372	70	10.3	1.6	3.7
		0.9	2.1	80	33,792	1,489	28,712	101	6.7	0.6	1.4	33,621	1,407	28,820	94	7.0	1.1	2.5	33,450	1,325	28,929	90	7.4	1.5	3.6
		0.9	2.1	100	33,364	1,894	26,902	121	5.2	0.6	1.3	33,316	1,795	27,191	114	5.4	1.0	2.4	33,267	1,695	27,484	110	5.8	1.5	3.4
		0.9	2.1	120	32,470	2,487	23,984	140	3.8	0.6	1.3	32,444	2,369	24,361	133	4.0	1.0	2.3	32,418	2,250	24,741	130	4.2	1.4	3.3
		0.9	2.1	130	Operation not recommended														32,459	2,397	24,280	140	4.0	1.4	3.3
	6.5	1.5	3.5	60	36,117	1,074	32,703	82	9.9	0.6	1.4	35,785	1,006	32,353	75	10.4	1.1	2.5	35,452	938	32,367	71	11.1	1.6	3.7
		1.5	3.5	80	35,613	1,487	30,982	102	7.0	0.6	1.4	35,406	1,399	30,633	95	7.4	1.1	2.5	35,198	1,311	30,959	91	7.9	1.5	3.6
		1.5	3.5	100	35,109	1,900	28,626	122	5.4	0.6	1.4	35,027	1,792	28,913	114	5.7	1.1	2.4	34,944	1,684	29,198	111	6.1	1.5	3.5
		1.5	3.5	120	34,605	2,313	26,713	141	4.4	0.6	1.4	34,648	2,185	27,193	134	4.6	1.0	2.4	34,690	2,057	27,672	131	4.9	1.5	3.4
			3.5	130	Operation not recommended														34,563	2,244	26,908	141	4.5	1.4	3.3

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																								
EWT °F	Flow			EWT °F	Flow 7.5 GPM							Flow 11.3 GPM							Flow 15.0 GPM									
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
50	7.5	1.6	3.7	50	50,704	2,220	58,719	37	22.8	1.2	2.8	54,880	2,264	62,914	40	24.0	2.2	5.2	55,985	2,280	64,247	43	25.0	3.3	7.7
		1.6	3.7	60	57,936	2,302	65,790	45	25.2	1.2	2.8	60,796	2,327	68,736	49	26.1	2.4	5.4	63,655	2,352	71,680	52	27.1	3.5	8.1
		1.6	3.7	70	65,168	2,383	73,730	53	27.0	1.2	2.8	68,247	2,404	76,449	58	28.4	2.5	5.7	71,325	2,424	79,817	61	29.0	3.7	8.5
		1.6	3.7	80	71,503	2,435	79,811	61	29.4	1.2	2.8	74,928	2,459	83,318	67	30.5	2.4	5.5	78,353	2,482	86,822	70	31.6	3.6	8.3
		1.6	3.7	90	77,838	2,487	86,596	69	31.0	1.2	2.7	81,609	2,514	90,187	75	32.5	2.4	5.5	85,380	2,540	94,323	79	34.0	3.6	8.2
	11.25	3.4	8.0	50	50,636	2,112	58,464	37	24.0	1.3	3.0	54,884	2,153	62,725	40	25.0	2.4	5.6	56,678	2,161	64,552	43	26.0	3.9	8.9
		3.5	8.0	60	57,874	2,172	65,285	45	26.6	1.3	3.0	60,879	2,191	68,355	49	27.8	2.6	5.9	63,884	2,209	71,421	51	28.9	3.8	8.8
		3.5	8.0	70	65,111	2,231	73,273	53	29.0	1.2	2.8	68,101	2,244	75,758	58	30.3	2.5	5.7	71,090	2,256	79,191	61	32.0	3.7	8.5
		3.4	8.0	80	71,250	2,265	78,978	61	31.5	1.2	2.8	72,240	2,227	79,839	67	32.4	2.4	5.5	73,230	2,189	80,699	70	33.5	3.6	8.3
		3.4	7.9	90	77,388	2,299	85,749	69	34.0	1.2	2.7	76,379	2,211	83,923	76	34.5	2.4	5.4	75,369	2,122	82,999	80	36.0	3.6	8.2
	15.0	6.0	13.9	50	50,729	2,062	58,382	37	25.0	1.3	3.0	54,983	2,071	62,614	40	27.0	2.4	5.6	56,817	2,099	64,469	43	27.0	3.9	8.9
		6.0	13.9	60	57,841	2,112	65,047	45	27.4	1.3	3.0	60,835	2,126	68,089	49	28.6	2.6	5.9	63,828	2,139	71,126	51	29.8	3.8	8.8
		6.0	13.9	70	64,953	2,161	72,964	53	30.0	1.2	2.8	67,896	2,170	75,300	58	31.3	2.5	5.7	70,839	2,178	78,774	61	33.0	3.7	8.5
		6.0	13.9	80	70,258	2,184	77,710	61	32.2	1.2	2.8	70,642	2,118	77,869	67	33.4	2.4	5.5	71,025	2,052	78,026	71	34.6	3.6	8.3
		6.0	13.9	90	75,562	2,206	83,585	70	34.0	1.2	2.7	73,387	2,066	80,436	77	35.5	2.4	5.5	71,211	1,926	78,104	80	37.0	3.6	8.2
70	7.5	1.5	3.6	50	46,906	2,909	56,832	37	16.1	1.2	2.9	49,306	2,928	59,296	41	16.8	2.4	5.6	51,706	2,946	61,758	43	17.6	3.6	8.4
		1.5	3.6	60	54,134	2,981	64,305	46	18.2	1.2	2.8	56,710	2,995	66,929	50	18.9	2.4	5.6	59,285	3,009	69,552	52	19.7	3.6	8.3
		1.5	3.6	70	61,361	3,052	71,774	54	20.1	1.2	2.7	64,113	3,062	74,561	59	20.9	2.4	5.6	66,864	3,071	77,342	61	21.8	3.7	8.5
		1.5	3.5	80	68,093	3,112	78,711	62	21.9	1.1	2.6	71,203	3,130	81,883	67	22.7	2.4	5.5	74,313	3,148	85,054	70	23.6	3.6	8.3
		1.5	3.5	90	74,826	3,170	85,642	70	23.6	1.1	2.6	78,294	3,198	89,206	76	24.5	2.3	5.4	81,761	3,226	92,768	79	25.3	3.5	8.2
	11.25	3.5	8.1	50	47,018	2,797	56,561	37	16.8	1.3	2.9	49,667	2,811	59,258	41	17.7	2.6	5.9	52,316	2,824	61,951	43	18.5	3.8	8.9
		3.5	8.1	60	54,286	2,851	64,014	46	19.0	1.2	2.9	56,969	2,860	66,727	50	19.9	2.5	5.8	59,651	2,868	69,437	52	20.8	3.7	8.6
		3.5	8.1	70	61,553	2,904	71,461	54	21.2	1.2	2.8	64,269	2,909	74,195	59	22.1	2.4	5.6	66,985	2,913	76,924	61	23.0	3.7	8.5
		3.5	8.1	80	68,205	2,947	78,260	62	23.1	1.1	2.6	70,309	2,937	80,330	68	23.9	2.4	5.5	72,412	2,927	82,399	70	24.7	3.6	8.3
		3.5	8.1	90	74,856	2,990	85,058	70	25.0	1.1	2.6	76,347	2,966	86,467	76	25.7	2.3	5.4	77,837	2,942	87,875	80	26.5	3.5	8.2
	15.0	5.8	13.4	50	47,199	2,709	56,442	37	17.4	1.3	2.9	49,943	2,718	59,217	41	18.4	2.6	5.9	52,687	2,726	61,988	43	19.3	3.8	8.9
		5.8	13.4	60	54,451	2,750	63,834	45	19.8	1.2	2.9	57,173	2,755	66,573	50	20.8	2.5	5.8	59,894	2,760	69,311	52	21.7	3.7	8.6
		5.8	13.4	70	61,703	2,791	71,226	54	22.1	1.2	2.8	64,402	2,792	73,928	59	23.1	2.4	5.6	67,100	2,793	76,630	61	24.0	3.7	8.5
		5.8	13.4	80	68,000	2,821	77,625	62	24.1	1.1	2.6	69,880	2,797	79,423	68	25.0	2.4	5.5	71,760	2,773	81,221	70	25.9	3.6	8.3
		5.8	13.4	90	74,296	2,851	84,024	70	26.1	1.1	2.6	75,359	2,802	84,919	77	26.9	2.3	5.4	76,421	2,753	85,814	80	27.8	3.6	8.2
90	7.5	1.5	3.5	50	42,894	3,669	55,413	39	11.7	1.2	2.9	45,025	3,681	57,585	42	12.2	2.5	5.8	47,155	3,692	59,752	44	12.8	3.8	8.8
		1.5	3.4	60	49,967	3,735	62,711	47	13.4	1.2	2.8	52,274	3,742	65,042	51	14.0	2.5	5.7	54,581	3,748	67,369	53	14.6	3.7	8.5
		1.5	3.4	70	57,039	3,801	70,008	55	15.0	1.2	2.7	59,523	3,802	72,495	59	15.7	2.4	5.5	62,007	3,803	74,983	62	16.3	3.6	8.4
		1.5	3.4	80	64,015	3,862	77,192	63	16.6	1.1	2.5	66,805	3,876	80,030	68	17.2	2.3	5.4	69,595	3,889	82,864	71	17.9	3.6	8.3
		1.5	3.4	90	70,990	3,923	84,375	71	18.1	1.1	2.6	74,086	3,950	87,563	77	18.8	2.3	5.4	77,182	3,976	90,748	80	19.4	3.5	8.2
	11.25	3.6	8.2	50	43,115	3,551	55,231	39	12.1	1.2	2.9	45,371	3,558	57,511	42	12.8	2.5	5.8	47,627	3,564	59,787	44	13.4	3.8	8.8
		3.5	8.2	60	50,275	3,601	62,562	47	14.0	1.2	2.8	52,639	3,603	64,932	51	14.6	2.5	5.7	55,003	3,604	67,300	53	15.3	3.7	8.5
		3.5	8.2	70	57,435	3,650	69,889	55	15.7	1.2	2.7	59,907	3,648	72,354	59	16.4	2.4	5.6	62,378	3,645	74,815	62	17.1	3.6	8.4
		3.5	8.1	80	64,419	3,696	77,030	63	17.4	1.1	2.5	67,270	3,706	79,915	68	18.2	2.3	5.4	70,120	3,715	82,796	71	18.9	3.6	8.3
		3.5	8.1	90	71,403	3,741	84,167	71	19.1	1.1	2.6	74,620	3,763	87,459	77	19.8	2.3	5.4	77,836	3,785	90,750	80	20.6	3.5	8.2
	15.0	5.6	12.9	50	43,335	3,434	55,052	38	12.6	1.2	2.9	45,717	3,435	57,437	42	13.3	2.5	5.8	48,098	3,435	59,818	44	14.0	3.8	8.8
		5.6	12.9	60	50,583	3,466	62,409	47	14.6	1.2	2.8	53,004	3,464	64,823	51	15.3	2.5	5.7	55,424	3,461	67,233	53	16.0	3.7	8.5
		5.6	12.9	70	57,831	3,499	69,770	55	16.5	1.2	2.7	60,290	3,493	72,208	59	17.3	2.4	5.6	62,749	3,487	74,647	62	18.0	3.6	8.4
		5.6	12.9	80	64,823	3,529	76,864	63	18.4	1.1	2.5	67,734	3,535	79,795	68	19.2	2.3	5.4	70,645	3,540	82,723	71	20.0	3.6	8.3
		5.6	12.9	90	71,815	3,559	83,958	71	20.2	1.1	2.6	75,152	3,577	87,357	77	21.0	2.3	5.4	78,489	3,595	90,755	80	21.8	3.5	8.2

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																								
EWT °F	Flow			EWT °F	Flow 7.5 GPM							Flow 11.3 GPM							Flow 15.0 GPM									
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
110	7.5	1.4	3.3	50	38,2400	4,6444	54,0855	40	8.2	1.2	2.8	40,0133	4,6622	55,9200	43	8.6	2.5	5.8	41,7866	4,6799	57,7511	44	8.9	3.8	8.8
		1.4	3.3	60	44,7088	4,7166	60,7999	48	9.5	1.2	2.8	46,7911	4,7266	62,9166	52	9.9	2.5	5.7	48,8744	4,7355	65,0300	53	10.3	3.7	8.5
		1.4	3.3	70	51,1766	4,7888	67,5133	56	10.7	1.2	2.7	53,5699	4,7899	69,9099	60	11.2	2.4	5.4	55,9611	4,7900	72,3044	63	11.7	3.6	8.2
		1.4	3.3	80	57,9300	4,8355	74,4277	65	12.0	1.1	2.5	60,3888	4,8455	76,9199	69	12.5	2.3	5.3	62,8455	4,8555	79,4100	72	12.9	3.5	8.2
		1.4	3.3	90	64,6844	4,8822	81,3411	73	13.2	1.1	2.5	67,2066	4,9011	83,9288	78	13.7	2.3	5.3	69,7288	4,9200	86,5155	81	14.2	3.5	8.1
	11.25	3.4	7.9	50	38,3555	4,5177	53,7677	40	8.5	1.2	2.8	40,1577	4,5266	55,6000	43	8.9	2.5	5.8	41,9588	4,5344	57,4288	44	9.3	3.8	8.8
		3.4	7.9	60	44,9955	4,5666	60,5744	48	9.9	1.2	2.8	47,0544	4,5688	62,6400	52	10.3	2.5	5.7	49,1122	4,5700	64,7055	53	10.7	3.7	8.5
		3.4	7.9	70	51,6366	4,6155	67,3822	56	11.2	1.2	2.7	53,9500	4,6111	69,6833	60	11.7	2.4	5.5	56,2644	4,6066	71,9800	62	12.2	3.6	8.3
		3.4	7.9	80	58,4111	4,6433	74,2533	64	12.6	1.1	2.5	60,9111	4,6477	76,7677	69	13.1	2.3	5.4	63,4100	4,6511	79,2799	72	13.6	3.5	8.2
		3.4	7.9	90	65,1877	4,6700	81,1211	73	14.0	1.1	2.5	67,8099	4,6844	83,7911	78	14.5	2.3	5.3	70,4300	4,6988	86,4600	81	15.0	3.5	8.1
	15.0	5.4	12.5	50	38,4699	4,3899	53,4444	40	8.8	1.2	2.8	40,3000	4,3899	55,2755	43	9.2	2.5	5.8	42,1311	4,3899	57,1066	44	9.6	3.8	8.8
		5.4	12.6	60	45,2822	4,4155	60,3466	48	10.3	1.2	2.8	47,3166	4,4100	62,3633	52	10.7	2.5	5.7	49,3499	4,4055	64,3799	53	11.2	3.7	8.5
		5.4	12.6	70	52,0944	4,4411	67,2477	56	11.7	1.2	2.7	54,3311	4,4311	69,4500	60	12.3	2.4	5.5	56,5677	4,4211	71,6511	62	12.8	3.6	8.4
		5.4	12.6	80	58,8922	4,4500	74,0755	64	13.2	1.1	2.5	61,4344	4,4488	76,6111	69	13.8	2.3	5.4	63,9755	4,4466	79,1455	71	14.4	3.6	8.2
		5.4	12.5	90	65,6899	4,4588	80,9000	72	14.7	1.1	2.5	68,4100	4,4688	83,6555	78	15.3	2.3	5.3	71,1311	4,4777	86,4077	81	15.9	3.5	8.1
120	7.5	1.4	3.3	50	35,9133	5,1322	52,6600	40	7.0	1.2	2.8	37,5455	5,1833	54,3855	43	7.0	2.3	5.4	39,1011	5,1722	56,0644	45	8.0	3.8	8.8
		1.4	3.3	60	42,0799	5,2077	59,8455	49	8.1	1.2	2.8	44,0500	5,2188	61,8544	52	8.4	2.5	5.7	46,0200	5,2288	63,8588	54	8.8	3.7	8.5
		1.4	3.3	70	48,2455	5,2811	65,2933	57	9.0	1.1	2.6	50,5922	5,2822	68,6144	61	9.6	2.3	5.4	52,9388	5,2833	69,6144	63	10.0	3.5	8.2
		1.4	3.3	80	54,8888	5,3211	73,0433	65	10.3	1.1	2.5	57,1799	5,3300	75,3655	70	10.7	2.3	5.3	59,4700	5,3388	77,6833	72	11.1	3.5	8.1
		1.4	3.3	90	61,5311	5,3611	78,5088	73	11.0	1.1	2.5	63,7666	5,3777	82,1122	79	11.9	2.3	5.3	66,0011	5,3922	83,0133	81	12.0	3.5	8.1
	11.25	3.4	7.8	50	35,9755	5,0000	53,0355	40	7.2	1.2	2.8	37,5500	5,0100	54,6444	43	7.5	2.5	5.8	39,1244	5,0199	56,2499	45	7.8	3.8	8.8
		3.4	7.8	60	42,3555	5,0499	59,5822	49	8.4	1.2	2.8	44,2611	5,0511	61,4955	52	8.8	2.5	5.7	46,1666	5,0533	63,4077	54	9.1	3.7	8.5
		3.4	7.8	70	48,7366	5,0977	66,1277	57	9.6	1.1	2.7	50,9722	5,0922	68,3466	61	10.0	2.4	5.5	53,2077	5,0866	70,5600	63	10.5	3.6	8.3
		3.4	7.8	80	55,4077	5,1166	72,8633	65	10.8	1.1	2.5	57,7311	5,1188	75,1944	70	11.3	2.3	5.3	60,0555	5,1199	77,5211	72	11.7	3.5	8.1
		3.4	7.8	90	62,0799	5,1355	79,6000	73	12.1	1.1	2.5	64,4033	5,1455	81,9588	79	12.5	2.3	5.3	66,7277	5,1555	84,3166	81	12.9	3.5	8.1
	15.0	5.3	12.3	50	36,0366	4,8677	51,7900	40	7.0	1.2	2.8	37,9188	4,8800	53,7699	43	8.0	2.3	5.4	39,1477	4,8666	55,0522	45	8.0	3.8	8.8
		5.4	12.4	60	42,6311	4,8900	59,3166	49	8.7	1.2	2.8	44,4722	4,8844	61,1366	52	9.1	2.5	5.7	46,3122	4,8777	62,9522	54	9.5	3.7	8.5
		5.4	12.4	70	49,2266	4,9122	65,0300	57	10.0	1.2	2.7	51,3511	4,9000	68,0700	61	10.5	2.4	5.5	53,4766	4,8888	69,3011	63	11.0	3.6	8.4
		5.4	12.4	80	55,9266	4,9100	72,6799	65	11.4	1.1	2.5	58,2833	4,9055	75,0199	70	11.9	2.3	5.4	60,6411	4,8999	77,3566	72	12.4	3.5	8.2
		5.4	12.4	90	62,6266	4,9088	78,1922	73	13.0	1.1	2.5	65,0399	4,9133	81,8022	78	13.2	2.3	5.3	67,4522	4,9188	83,0366	81	14.0	3.5	8.1

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																							
EWT °F	Flow			EWT °F	Flow 7.5 GPM							Flow 11.3 GPM							Flow 15.0 GPM								
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT		
20	15.0	6.9	16.1	60	41,202	2,268	33,585	71	5.3	1.2	2.9	41,373	2,201	33,764	67	5.5	2.3	5.4	41,182	2,166	33,561	65	5.6	3.7	8.7
		6.9	16.1	80	39,819	2,951	29,750	91	4.0	1.2	2.8	39,906	2,896	30,025	87	4.0	2.4	5.5	39,993	2,841	30,300	85	4.1	3.6	8.3
		6.9	16.0	100	38,519	3,753	25,714	110	3.0	1.1	2.5	38,497	3,700	25,873	107	3.0	2.3	5.2	38,475	3,647	26,031	105	3.1	3.4	7.9
30	7.5	2.0	4.6	60	43,852	2,306	36,293	72	5.6	1.2	2.8	43,897	2,215	36,251	68	5.8	2.3	5.3	43,769	2,179	36,128	66	5.9	3.7	8.6
		2.0	4.6	80	42,888	2,991	32,683	91	4.2	1.1	2.5	42,904	2,925	32,924	88	4.3	2.4	5.4	42,920	2,859	33,165	86	4.4	3.6	8.3
		2.0	4.5	100	41,543	3,815	28,526	111	3.2	1.1	2.5	41,584	3,744	28,809	107	3.3	2.3	5.3	41,625	3,672	29,096	106	3.3	3.5	8.1
		2.0	4.5	120	39,817	4,776	24,003	131	2.4	1.0	2.4	39,850	4,698	23,820	127	2.5	2.2	5.1	39,883	4,619	24,269	125	2.5	3.4	7.8
	11.25	4.3	10.0	60	45,799	2,307	37,928	72	5.8	1.2	2.8	45,765	2,245	38,105	68	6.0	2.5	5.7	45,730	2,183	38,282	66	6.1	3.7	8.6
		4.3	10.0	80	44,620	3,002	34,377	92	4.4	1.2	2.7	44,640	2,935	34,626	88	4.5	2.4	5.4	44,659	2,867	34,877	86	4.6	3.6	8.2
		4.3	10.0	100	43,088	3,831	30,017	111	3.3	1.1	2.5	43,126	3,758	30,304	108	3.4	2.3	5.3	43,163	3,684	30,593	106	3.4	3.5	8.0
		4.3	10.0	120	41,201	4,794	24,844	131	2.5	1.0	2.4	41,223	4,714	25,139	127	2.6	2.2	5.1	41,244	4,634	25,433	125	2.6	3.4	7.8
	15.0	6.7	15.5	60	47,745	2,308	40,034	73	6.1	1.2	2.8	47,625	2,225	39,997	68	6.3	2.3	5.3	47,690	2,186	40,004	66	6.4	3.7	8.6
		6.7	15.5	80	46,352	3,013	36,072	92	4.5	1.2	2.8	46,375	2,944	36,330	88	4.6	2.4	5.4	46,397	2,875	36,588	86	4.7	3.5	8.1
		6.7	15.6	100	44,632	3,847	31,506	112	3.4	1.1	2.5	44,667	3,771	31,800	108	3.5	2.3	5.2	44,701	3,695	32,094	106	3.5	3.4	7.9
		6.7	15.5	120	42,585	4,811	26,605	131	2.6	1.1	2.4	42,595	4,730	26,456	128	2.6	2.2	5.1	42,604	4,648	26,787	126	2.7	3.4	7.8
40	7.5	1.9	4.4	60	50,856	2,355	42,821	74	6.3	1.2	2.7	50,823	2,286	43,023	69	6.5	2.4	5.6	50,790	2,216	43,229	67	6.7	3.7	8.6
		1.9	4.4	80	49,513	3,054	39,093	93	4.8	1.1	2.5	49,527	2,977	39,369	89	4.9	2.4	5.4	49,541	2,899	39,650	87	5.0	3.6	8.3
		1.9	4.4	100	47,881	3,898	34,581	113	3.6	1.1	2.5	47,894	3,812	34,887	109	3.7	2.3	5.3	47,906	3,725	35,196	106	3.8	3.5	8.0
		1.9	4.4	120	45,962	4,885	29,294	132	2.8	1.0	2.4	45,924	4,790	29,581	128	2.8	2.2	5.1	45,885	4,694	29,869	126	2.9	3.4	7.8
	11.25	4.2	9.8	60	53,450	2,365	45,381	74	6.6	1.2	2.8	53,461	2,295	45,630	70	6.8	2.4	5.6	53,472	2,225	45,880	67	7.0	3.7	8.5
		4.2	9.8	80	51,742	3,068	41,274	94	4.9	1.1	2.6	51,770	2,987	41,578	89	5.1	2.3	5.4	51,798	2,906	41,883	87	5.2	3.6	8.2
		4.2	9.7	100	49,824	3,916	36,463	113	3.7	1.1	2.5	49,840	3,825	36,789	109	3.8	2.3	5.2	49,855	3,733	37,118	107	3.9	3.4	7.9
		4.2	9.7	120	47,696	4,907	30,953	133	2.8	1.0	2.4	47,670	4,807	31,269	128	2.9	2.2	5.1	47,644	4,706	31,587	126	3.0	3.4	7.8
	15.0	6.5	15.1	60	56,043	2,376	47,936	75	6.9	1.2	2.8	56,099	2,305	48,234	70	7.1	2.4	5.7	56,154	2,234	48,532	67	7.4	3.7	8.5
		6.5	15.1	80	53,971	3,082	43,455	94	5.1	1.2	2.7	54,013	2,997	43,787	90	5.3	2.3	5.4	54,054	2,912	44,118	87	5.4	3.5	8.1
		6.5	15.1	100	51,767	3,933	38,348	114	3.9	1.1	2.5	51,785	3,837	38,693	109	4.0	2.3	5.2	51,803	3,740	39,042	107	4.1	3.4	7.9
		6.5	15.1	120	49,430	4,929	32,612	133	2.9	1.0	2.4	49,416	4,824	32,957	129	3.0	2.2	5.1	49,402	4,718	33,304	127	3.1	3.4	7.8
50	7.5	1.8	4.2	60	57,860	2,403	49,934	75	7.1	1.2	2.7	57,795	2,299	49,830	70	7.4	2.3	5.2	57,810	2,252	49,851	68	7.5	3.7	8.5
		1.8	4.2	80	56,137	3,116	45,505	95	5.3	1.1	2.5	56,149	3,027	45,821	90	5.4	2.4	5.4	56,161	2,938	46,137	87	5.6	3.6	8.3
		1.8	4.2	100	54,219	3,980	40,639	114	4.0	1.1	2.5	54,203	3,879	40,968	110	4.1	2.3	5.2	54,186	3,777	41,299	107	4.2	3.4	7.9
		1.8	4.2	120	52,106	4,993	35,588	134	3.1	1.0	2.4	51,996	4,881	35,342	129	3.1	2.2	5.1	51,886	4,768	35,694	127	3.2	3.4	7.8
		1.8	4.2	130	Operation not recommended							50,743	5,455	32,131	139	2.7	2.2	5.0	50,697	5,347	32,474	137	2.8	3.3	7.7
	11.25	4.1	9.5	60	61,100	2,423	52,833	76	7.4	1.2	2.7	61,157	2,345	53,156	71	7.6	2.4	5.6	61,214	2,267	53,479	68	7.9	3.7	8.5
		4.1	9.5	80	58,863	3,134	48,170	96	5.5	1.1	2.5	58,900	3,039	48,531	90	5.7	2.3	5.4	58,936	2,944	48,891	88	5.9	3.6	8.2
		4.1	9.4	100	56,560	4,000	42,912	115	4.1	1.1	2.5	56,553	3,891	43,277	110	4.3	2.3	5.2	56,546	3,781	43,645	108	4.4	3.4	7.9
		4.1	9.4	120	54,191	5,020	37,063	134	3.2	1.0	2.4	54,117	4,899	37,402	130	3.2	2.2	5.1	54,043	4,778	37,740	127	3.3	3.4	7.8
		4.1	9.4	130	Operation not recommended							52,605	5,476	33,921	139	2.8	2.1	5.0	52,562	5,360	34,274	137	2.9	3.3	7.6
	15.0	6.4	14.7	60	64,340	2,443	56,243	77	7.7	1.2	2.7	64,493	2,331	56,403	71	8.1	2.2	5.2	64,618	2,281	56,429	69	8.3	3.7	8.5
		6.4	14.7	80	61,589	3,151	50,838	96	5.7	1.1	2.5	61,650	3,050	51,243	91	5.9	2.3	5.3	61,711	2,949	51,649	88	6.1	3.5	8.1
		6.3	14.6	100	58,901	4,019	45,188	116	4.3	1.1	2.5	58,903	3,902	45,589	110	4.4	2.3	5.2	58,905	3,785	45,991	108	4.6	3.4	7.9
		6.3	14.6	120	56,275	5,047	39,503	135	3.3	1.0	2.4	56,238	4,918	39,458	130	3.4	2.2	5.0	56,200	4,788	39,861	128	3.4	3.4	7.7
		6.3	14.6	130	Operation not recommended							54,467	5,497	35,711	140	2.9	2.1	5.0	54,426	5,372	36,120	137	3.0	3.3	7.6

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																							
					Flow 7.5 GPM								Flow 11.3 GPM							Flow 15.0 GPM							
EWT °F	Flow GPM	WPD PSI	WPD FT	EWT °F	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD PSI	WPD FT	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD PSI	WPD FT	Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD PSI	WPD FT
60	7.5	1.8	4.1	60	65,5255	2,4633	57,1211	77	7.8	1.2	2.7	65,2944	2,3766	57,1877	72	8.1	2.4	5.6	65,0622	2,2888	57,2555	69	8.3	3.7	8.5
		1.8	4.1	80	63,6422	3,1777	52,8022	97	5.9	1.1	2.5	63,5355	3,0733	53,0500	91	6.1	2.4	5.4	63,4277	2,9688	53,3000	88	6.3	3.6	8.3
		1.8	4.1	100	61,4677	4,0455	47,6655	116	4.5	1.1	2.5	61,4055	3,9255	48,0133	111	4.6	2.3	5.2	61,3433	3,8044	48,3644	108	4.7	3.4	7.9
		1.8	4.1	120	59,0022	5,0644	41,7244	136	3.4	1.0	2.4	58,9066	4,9299	42,0888	130	3.5	2.2	5.1	58,8100	4,7933	42,4566	128	3.6	3.4	7.8
		1.8	4.1	130	Operation not recommended							57,4800	5,5200	38,6466	140	3.1	2.1	5.0	57,4022	5,3888	39,0188	138	3.1	3.3	7.7
	11.25	4.1	9.4	60	68,9266	2,4855	60,4477	78	8.1	1.2	2.7	68,7755	2,3933	60,6100	72	8.4	2.4	5.6	68,6244	2,3000	60,7766	69	8.7	3.7	8.5
		4.1	9.4	80	66,7544	3,1999	55,8399	98	6.1	1.1	2.5	66,6877	3,0888	56,1511	92	6.3	2.3	5.4	66,6199	2,9777	56,4611	89	6.6	3.6	8.2
		4.1	9.4	100	64,2499	4,0666	50,3766	117	4.6	1.1	2.5	64,2111	3,9388	50,7755	111	4.8	2.3	5.2	64,1733	3,8100	51,1733	109	4.9	3.4	7.9
		4.1	9.4	120	61,4088	5,0866	44,0555	136	3.5	1.0	2.4	61,3466	4,9433	44,4800	131	3.6	2.2	5.1	61,2844	4,8000	44,9066	128	3.7	3.4	7.8
		4.1	9.4	130	Operation not recommended							59,7466	5,5333	40,8677	141	3.2	2.1	5.0	59,7133	5,3944	41,3099	138	3.2	3.3	7.6
	15.0	6.2	14.3	60	72,3277	2,5088	63,7700	79	8.5	1.2	2.7	72,2577	2,4100	64,0344	73	8.8	2.4	5.6	72,1866	2,3122	64,2977	70	9.2	3.7	8.5
		6.2	14.3	80	69,8677	3,2200	58,8800	99	6.4	1.1	2.5	69,8399	3,1033	59,2522	92	6.6	2.3	5.4	69,8111	2,9855	59,6266	89	6.9	3.5	8.2
		6.2	14.3	100	67,0300	4,0866	53,0899	118	4.8	1.1	2.5	67,0166	3,9522	53,5322	112	5.0	2.3	5.2	67,0022	3,8177	53,9788	109	5.1	3.4	7.9
		6.2	14.3	120	63,8144	5,1088	46,3866	137	3.7	1.0	2.4	63,7877	4,9588	46,8700	131	3.8	2.2	5.1	63,7599	4,8088	47,3544	129	3.9	3.4	7.7
		6.2	14.3	130	Operation not recommended														62,0244	5,3999	43,6033	138	3.4	3.3	7.6
70	7.5	1.7	4.0	60	73,1911	2,5233	64,5833	80	8.5	1.2	2.7	72,7533	2,4244	64,4822	73	8.8	2.4	5.6	72,3155	2,3244	64,3866	70	9.1	3.7	8.5
		1.7	4.0	80	71,1477	3,2388	60,0999	99	6.4	1.1	2.5	70,9200	3,1199	60,2788	93	6.7	2.4	5.4	70,6933	2,9999	60,4600	89	6.9	3.6	8.3
		1.7	4.0	100	68,7166	4,1100	54,6933	118	4.9	1.1	2.5	68,6088	3,9711	55,0599	112	5.1	2.3	5.3	68,5000	3,8311	55,4299	109	5.2	3.5	8.0
		1.7	3.9	120	65,8988	5,1366	48,3744	138	3.8	1.0	2.4	65,8166	4,9777	48,8344	132	3.9	2.2	5.1	65,7344	4,8188	49,2955	129	4.0	3.4	7.8
		1.7	3.9	130	Operation not recommended														64,1088	5,4299	45,5844	139	3.5	3.3	7.6
	11.25	4.0	9.3	60	76,7522	2,5488	68,0588	80	8.8	1.2	2.7	76,3933	2,4411	68,0644	74	9.2	2.4	5.6	76,0344	2,3344	68,0700	70	9.5	3.7	8.5
		4.0	9.3	80	74,6466	3,2644	63,5099	100	6.7	1.1	2.5	74,4744	3,1377	63,7711	93	7.0	2.3	5.4	74,3022	3,0100	64,0322	90	7.2	3.6	8.3
		4.0	9.3	100	71,9388	4,1322	57,8400	119	5.1	1.1	2.5	71,8699	3,9866	58,2699	113	5.3	2.3	5.2	71,8000	3,8400	58,6988	110	5.5	3.4	7.9
		4.0	9.3	120	68,6266	5,1522	51,0477	138	3.9	1.0	2.4	68,5766	4,9888	51,5577	132	4.0	2.2	5.1	68,5266	4,8233	52,0700	129	4.2	3.4	7.8
		4.0	9.3	130	Operation not recommended														66,8655	5,4288	48,3455	139	3.6	3.3	7.6
	15.0	6.1	14.0	60	80,3144	2,5733	71,5355	81	9.1	1.2	2.7	80,0344	2,4599	71,6444	74	9.5	2.4	5.6	79,7544	2,3444	71,7566	71	10.0	3.7	8.5
		6.1	14.0	80	78,1455	3,2899	66,9233	101	7.0	1.1	2.5	78,0288	3,1555	67,2633	94	7.2	2.3	5.4	77,9111	3,0211	67,6033	90	7.6	3.6	8.2
		6.0	14.0	100	75,1599	4,1533	60,9899	120	5.3	1.1	2.5	75,1299	4,0011	61,4788	113	5.5	2.3	5.2	75,0999	3,8499	61,9666	110	5.7	3.4	7.9
		6.0	13.9	120	71,3533	5,1699	53,7166	139	4.0	1.0	2.4	71,3366	4,9999	54,2799	133	4.2	2.2	5.1	71,3188	4,8288	54,8455	130	4.3	3.4	7.7
		6.0	13.9	130	Operation not recommended														69,6222	5,4277	51,1055	139	3.8	3.3	7.6
80	7.5	1.7	3.9	60	80,8566	2,5822	72,3066	81	9.2	1.2	2.7	80,3444	2,4333	71,8600	74	9.7	2.2	5.2	79,5677	2,3599	71,0755	71	9.9	3.7	8.5
		1.7	3.9	80	78,6511	3,2999	67,3955	101	7.0	1.1	2.5	78,3055	3,1644	67,5099	94	7.3	2.4	5.4	77,9599	3,0299	67,6244	90	7.5	3.6	8.3
		1.7	3.9	100	75,9644	4,1744	61,7222	120	5.3	1.1	2.5	75,8100	4,0166	62,1077	113	5.5	2.3	5.3	75,6566	3,8577	62,4966	110	5.7	3.5	8.1
		1.7	3.8	120	72,7944	5,2077	55,5177	140	4.1	1.0	2.4	72,7266	5,0255	55,5811	133	4.2	2.2	5.1	72,6588	4,8433	55,9422	130	4.4	3.4	7.8
		1.6	3.8	130	Operation not recommended														70,8133	5,4700	51,8455	140	3.8	3.3	7.6
	11.25	4.0	9.2	60	84,5788	2,6100	75,6733	83	9.5	1.2	2.7	84,0111	2,4899	75,5199	75	9.9	2.4	5.6	83,4444	2,3677	75,3688	71	10.3	3.7	8.5
		4.0	9.2	80	82,5377	3,3288	71,1822	102	7.3	1.1	2.5	82,2611	3,1866	71,3900	95	7.6	2.4	5.4	81,9855	3,0433	71,6022	91	7.9	3.6	8.3
		4.0	9.2	100	79,6266	4,1977	65,3066	121	5.6	1.1	2.5	79,5266	4,0333	65,7655	114	5.8	2.3	5.3	79,4266	3,8699	66,2255	111	6.0	3.5	8.0
		4.0	9.2	120	75,8433	5,2188	58,0399	140	4.3	1.0	2.4	75,8055	5,0322	58,6366	133	4.4	2.2	5.1	75,7677	4,8455	59,2366	130	4.6	3.4	7.8
		4.0	9.2	130	Operation not recommended														74,0166	5,4622	55,3800	140	4.0	3.3	7.6
	15.0	5.9	13.7	60	88,3000	2,6388	79,6077	83	9.8	1.2	2.7	87,7377	2,4588	79,1111	76	10.5	2.3	5.2	87,3211	2,3755	78,7222	72	10.8	3.7	8.5
		5.9	13.7	80	86,4233	3,3577	74,9699	103	7.5	1.1	2.5	86,2177	3,2077	75,2755	95	7.9	2.4	5.4	86,0111	3,0566	75,5844	91	8.2	3.6	8.3
		5.9	13.6	100	83,2877	4,2200	68,8888	122	5.8	1.1	2.5	83,2422	4,0500	69,4233	115	6.0	2.3	5.2	83,1966	3,8800	69,9577	111	6.3	3.4	7.9
		5.9	13.6	120	78,8911	5,2299	61,5322	141	4.4	1.0	2.4	78,8844	5,0388	61,6944	134	4.6	2.2	5.1	78,8766	4,8477	62,1388	131	4.8	3.4	7.7
		5.9	13.5	130	Operation not recommended														77,2199	5,4544	58,3255	140	4.1	3.3	7.6

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																								
EWT °F	Flow			EWT °F	Flow 4.5 GPM							Flow 6.8 GPM							Flow 9.0 GPM									
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT								PSI	FT
50	4.5	0.4	0.9	50	28,075	1,439	32,985	38	19.5	0.6	1.3	31,537	1,428	36,409	41	22.1	1.1	2.6	34,998	1,416	39,960	42	24.7	1.7	3.9
		0.4	0.9	60	33,309	1,417	38,144	45	23.5	0.5	1.3	36,804	1,401	41,584	49	26.3	1.1	2.6	40,299	1,384	45,021	51	29.1	1.7	3.9
		0.4	0.9	70	38,543	1,395	43,585	53	27.6	0.5	1.2	42,072	1,373	46,757	58	30.6	1.1	2.5	45,600	1,351	50,330	60	33.8	1.6	3.7
		0.4	0.9	80	43,777	1,373	48,462	61	31.9	0.5	1.2	47,189	1,350	51,795	66	35.0	1.1	2.4	50,601	1,327	55,129	69	38.1	1.6	3.7
		0.4	0.9	90	49,011	1,351	53,715	68	36.3	0.5	1.1	52,306	1,327	56,834	75	39.4	1.0	2.3	55,601	1,303	60,037	78	42.7	1.5	3.5
	6.75	0.9	2.1	50	29,066	1,368	33,734	37	21.2	0.6	1.3	32,394	1,349	36,997	40	24.0	1.1	2.6	35,722	1,329	40,257	42	26.9	1.7	3.9
		0.9	2.1	60	34,098	1,335	38,653	45	25.5	0.5	1.3	37,485	1,312	41,962	49	28.6	1.1	2.6	40,872	1,288	45,267	51	31.7	1.7	3.9
		0.9	2.1	70	39,130	1,302	43,572	53	30.1	0.5	1.2	42,576	1,275	46,926	57	33.4	1.1	2.5	46,022	1,247	50,277	60	36.9	1.6	3.7
		0.9	2.1	80	44,162	1,269	48,492	60	34.8	0.5	1.2	47,592	1,240	51,823	66	38.4	1.1	2.4	51,022	1,210	55,151	69	42.2	1.6	3.7
		0.9	2.1	90	49,193	1,236	53,410	68	39.8	0.5	1.1	52,608	1,205	56,719	74	43.7	1.0	2.3	56,022	1,173	60,024	78	47.8	1.5	3.6
	9.0	1.5	3.4	50	30,057	1,297	34,483	37	23.2	0.6	1.3	33,251	1,270	37,584	40	26.2	1.1	2.6	36,445	1,242	41,082	42	29.3	1.7	4.0
		1.5	3.4	60	34,887	1,253	39,162	44	27.8	0.5	1.3	38,166	1,223	42,339	49	31.2	1.1	2.6	41,445	1,192	45,512	51	34.8	1.7	3.9
		1.5	3.4	70	39,716	1,209	44,381	52	32.9	0.5	1.2	43,080	1,176	47,093	57	36.6	1.1	2.5	46,444	1,142	50,792	60	40.7	1.6	3.8
		1.4	3.3	80	44,546	1,165	48,521	60	38.2	0.5	1.2	47,995	1,129	51,847	66	42.5	1.1	2.4	51,444	1,092	55,170	69	47.1	1.6	3.7
		1.4	3.3	90	49,375	1,121	53,694	68	44.0	0.5	1.1	52,909	1,082	56,601	74	48.9	1.0	2.4	56,443	1,042	59,998	77	54.2	1.6	3.6
70	4.5	0.4	0.9	50	25,766	2,135	33,051	39	12.1	0.6	1.3	28,459	2,124	35,706	42	13.4	1.5	3.5	31,151	2,113	38,361	43	14.7	2.0	4.6
		0.4	0.9	60	30,612	2,119	37,842	46	14.4	0.5	1.3	33,458	2,107	40,647	50	15.9	1.5	3.5	36,303	2,094	43,448	52	17.3	2.0	4.6
		0.4	0.9	70	35,459	2,103	42,634	54	16.9	0.5	1.2	38,457	2,089	45,585	59	18.4	1.0	2.3	41,455	2,075	48,535	61	20.0	2.0	4.6
		0.4	0.9	80	40,300	2,085	47,414	62	19.3	0.5	1.2	43,339	2,071	50,405	67	20.9	1.0	2.3	46,377	2,057	53,395	70	22.5	2.0	4.6
		0.4	0.9	90	45,140	2,067	52,193	70	21.8	0.5	1.1	48,220	2,053	55,225	76	23.5	0.5	1.2	51,299	2,039	58,256	79	25.2	1.0	2.3
	6.75	0.9	2.1	50	26,619	2,055	33,631	38	13.0	0.5	1.2	29,277	2,041	36,241	41	14.3	1.5	3.5	31,934	2,026	38,847	43	15.8	2.0	4.6
		0.9	2.0	60	31,331	2,028	38,251	46	15.4	0.5	1.1	34,142	2,010	41,000	50	17.0	1.5	3.5	36,953	1,991	43,746	52	18.6	2.0	4.6
		0.9	2.0	70	36,043	2,000	42,867	54	18.0	0.5	1.1	39,008	1,978	45,757	58	19.7	1.0	2.3	41,972	1,956	48,646	61	21.5	2.0	4.6
		0.9	2.0	80	40,756	1,968	47,471	62	20.7	0.4	1.0	43,817	1,945	50,453	67	22.5	1.0	2.3	46,877	1,922	53,435	70	24.4	2.0	4.6
		0.9	2.0	90	45,467	1,935	52,069	70	23.5	0.4	1.0	48,679	1,912	55,203	76	25.5	0.5	1.2	51,890	1,889	58,335	78	27.5	1.0	2.3
	9.0	1.4	3.2	50	27,472	1,975	34,211	38	13.9	0.5	1.2	30,094	1,957	36,771	41	15.4	1.5	3.5	32,715	1,939	39,331	43	16.9	2.0	4.6
		1.4	3.2	60	32,049	1,936	38,655	46	16.6	0.5	1.1	34,826	1,912	41,350	50	18.2	1.5	3.5	37,603	1,888	44,045	52	19.9	2.0	4.6
		1.4	3.2	70	36,626	1,896	43,095	54	19.3	0.5	1.1	39,558	1,867	45,928	58	21.2	1.0	2.3	42,490	1,837	48,758	61	23.1	2.0	4.6
		1.4	3.2	80	41,211	1,850	47,523	62	22.3	0.4	1.0	44,294	1,818	50,497	67	24.4	1.0	2.3	47,377	1,785	53,467	69	26.5	2.0	4.6
		1.4	3.2	90	45,794	1,804	51,949	70	25.4	0.4	1.0	49,138	1,772	55,184	75	27.7	1.0	2.3	52,481	1,739	58,414	78	30.2	2.0	4.6
90	4.5	0.4	0.9	50	23,456	2,830	33,114	40	8.3	0.5	1.2	25,381	2,820	35,003	42	9.0	1.1	2.5	27,305	2,809	36,890	44	9.7	1.7	3.8
		0.4	0.9	60	27,916	2,821	37,541	48	9.9	0.5	1.1	30,112	2,813	39,710	51	10.7	1.1	2.4	32,308	2,805	41,877	53	11.5	1.6	3.8
		0.4	0.9	70	32,375	2,811	41,966	56	11.5	0.4	1.0	34,843	2,806	44,415	60	12.4	1.0	2.3	37,310	2,800	46,862	62	13.3	1.5	3.5
		0.4	0.9	80	36,823	2,797	46,366	64	13.2	0.4	1.0	39,488	2,792	49,016	68	14.1	1.0	2.2	42,154	2,788	51,665	71	15.1	1.5	3.4
		0.4	0.9	90	41,270	2,783	50,765	72	14.8	0.4	1.0	44,133	2,780	53,617	77	15.9	0.9	2.1	46,996	2,776	56,467	80	16.9	1.4	3.3
	6.75	0.9	2.0	50	24,172	2,742	33,526	39	8.8	0.5	1.2	26,159	2,732	35,482	42	9.6	1.1	2.5	28,145	2,723	37,435	44	10.3	1.6	3.8
		0.9	2.0	60	28,564	2,720	37,845	47	10.5	0.5	1.1	30,799	2,707	40,037	51	11.4	1.1	2.4	33,034	2,694	42,227	53	12.3	1.6	3.7
		0.9	2.0	70	32,956	2,697	42,159	55	12.2	0.5	1.1	35,439	2,682	44,590	59	13.2	1.0	2.3	37,923	2,666	47,018	62	14.2	1.5	3.6
		0.9	2.0	80	37,349	2,666	46,446	63	14.0	0.4	1.0	40,041	2,650	49,083	68	15.1	1.0	2.2	42,732	2,633	51,717	71	16.2	1.5	3.5
		0.8	2.0	90	41,742	2,635	50,732	71	15.8	0.4	1.0	44,750	2,620	53,691	77	17.1	0.9	2.2	47,757	2,606	56,648	79	18.3	1.4	3.3
	9.0	1.3	3.1	50	24,887	2,653	33,939	39	9.4	0.5	1.2	26,936	2,645	35,960	42	10.2	1.1	2.5	28,986	2,636	37,979	44	11.0	1.6	3.7
		1.3	3.1	60	29,211	2,619	38,146	47	11.2	0.5	1.2	31,487	2,601	40,362	51	12.1	1.1	2.4	33,761	2,583	42,576	52	13.1	1.6	3.7
		1.3	3.1	70	33,536	2,584	42,352	55	13.0	0.5	1.1	36,036	2,558	44,763	59	14.1	1.0	2.3	38,535	2,531	47,172	61	15.2	1.6	3.6
		1.3	3.0	80	37,875	2,535	46,526	63	14.9	0.4	1.0	40,593	2,507	49,148	68	16.2	1.0	2.3	43,311	2,479	51,768	70	17.5	1.5	3.5
		1.3	3.0	90	42,213	2,486	50,696	71	17.0	0.4	1.0	45,366	2,461	53,763	77	18.4	0.9	2.2	48,519	2,435	56,827	79	19.9	1.5	3.4

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																								
EWT °F	Flow			EWT °F	Flow 4.5 GPM							Flow 6.8 GPM							Flow 9.0 GPM									
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
110	4.5	0.4	0.9	50	21,147	3,526	33,178	41	6.0	0.5	1.1	22,303	3,516	34,300	43	6.3	1.1	2.4	23,458	3,506	35,420	45	6.7	1.6	3.8
		0.4	0.9	60	25,219	3,523	37,240	49	7.2	0.4	1.0	26,766	3,519	38,773	52	7.6	1.0	2.4	28,312	3,515	40,305	54	8.1	1.6	3.7
		0.4	0.9	70	29,291	3,519	41,298	57	8.3	0.4	0.9	31,228	3,522	43,245	61	8.9	1.0	2.2	33,165	3,524	45,188	63	9.4	1.5	3.5
		0.4	0.9	80	33,346	3,509	45,318	65	9.5	0.4	1.0	35,638	3,513	47,626	69	10.1	0.9	2.1	37,930	3,518	49,933	72	10.8	1.4	3.3
		0.4	0.9	90	37,399	3,499	49,338	73	10.7	0.4	0.9	40,047	3,506	52,009	78	11.4	0.9	2.1	42,694	3,512	54,677	81	12.2	1.4	3.2
	6.75	0.8	1.9	50	21,725	3,429	33,423	40	6.3	0.5	1.2	23,041	3,424	34,724	43	6.7	1.0	2.4	24,357	3,420	36,025	45	7.1	1.6	3.7
		0.8	1.9	60	25,797	3,413	37,441	49	7.6	0.5	1.1	27,456	3,405	39,075	52	8.1	1.0	2.4	29,115	3,397	40,707	54	8.6	1.6	3.6
		0.8	1.9	70	29,869	3,395	41,453	57	8.8	0.4	1.0	31,871	3,385	43,422	61	9.4	1.0	2.2	33,873	3,375	45,389	62	10.0	1.5	3.5
		0.8	1.9	80	33,943	3,365	45,424	65	10.1	0.4	1.0	36,265	3,355	47,714	69	10.8	0.9	2.2	38,587	3,345	50,000	71	11.5	1.5	3.4
		0.8	1.9	90	38,016	3,334	49,392	73	11.4	0.4	0.9	40,821	3,328	52,176	78	12.3	0.9	2.1	43,625	3,322	54,959	80	13.1	1.4	3.2
	9.0	1.3	2.9	50	22,302	3,331	33,667	40	6.7	0.5	1.2	23,779	3,332	35,148	43	7.1	1.0	2.4	25,256	3,333	36,627	44	7.6	1.6	3.6
		1.3	2.9	60	26,374	3,302	37,639	48	8.0	0.5	1.2	28,147	3,290	39,374	52	8.6	1.0	2.4	29,919	3,279	41,107	53	9.1	1.5	3.5
		1.3	2.9	70	30,446	3,271	41,608	56	9.3	0.5	1.0	32,514	3,249	43,598	60	10.0	1.0	2.3	34,581	3,226	45,587	62	10.7	1.5	3.5
		1.3	2.9	80	34,540	3,220	45,528	65	10.7	0.4	1.0	36,892	3,196	47,798	69	11.5	0.9	2.2	39,244	3,172	50,068	71	12.4	1.5	3.4
		1.3	2.9	90	38,632	3,169	49,444	73	12.2	0.4	1.0	41,595	3,150	52,343	78	13.2	0.9	2.1	44,556	3,132	55,242	80	14.2	1.4	3.2
120	4.5	0.4	0.9	50	19,992	3,874	32,224	41	5.2	0.5	1.1	20,764	3,864	33,948	44	5.4	1.0	2.4	21,535	3,854	33,852	45	5.6	1.6	3.7
		0.4	0.9	60	23,871	3,874	37,089	49	6.2	0.4	0.9	25,093	3,872	38,304	53	6.5	1.0	2.3	26,314	3,870	39,518	54	6.8	1.6	3.7
		0.4	0.9	70	27,749	3,873	39,997	57	7.2	0.4	0.9	29,421	3,880	42,660	61	7.6	0.9	2.2	31,092	3,886	43,292	63	8.0	1.5	3.4
		0.4	0.9	80	31,607	3,865	44,794	66	8.2	0.4	0.9	33,713	3,874	46,931	70	8.7	0.9	2.1	35,818	3,883	49,067	72	9.2	1.4	3.2
		0.4	0.9	90	35,464	3,857	47,542	74	9.2	0.4	0.9	38,004	3,869	51,205	79	9.8	0.9	2.0	40,543	3,880	52,516	81	10.4	1.4	3.1
	6.75	0.8	1.9	50	20,501	3,772	33,371	41	5.4	0.5	1.1	21,482	3,770	34,345	44	5.7	1.0	2.4	22,463	3,768	35,319	45	6.0	1.6	3.7
		0.8	1.9	60	24,413	3,759	37,239	49	6.5	0.5	1.0	25,785	3,754	38,594	52	6.9	1.0	2.3	27,156	3,749	39,948	54	7.2	1.6	3.6
		0.8	1.9	70	28,325	3,744	41,100	57	7.6	0.4	1.0	30,087	3,737	42,838	61	8.1	1.0	2.2	31,848	3,730	44,575	63	8.5	1.5	3.4
		0.8	1.9	80	32,240	3,714	44,912	66	8.7	0.4	0.9	34,377	3,708	47,029	70	9.3	0.9	2.1	36,514	3,701	49,142	72	9.9	1.4	3.3
		0.8	1.9	90	36,153	3,684	48,723	74	9.8	0.4	0.9	38,856	3,682	51,419	78	10.6	0.9	2.0	41,559	3,680	54,115	81	11.3	1.4	3.1
	9.0	1.2	2.8	50	21,009	3,670	32,637	40	5.7	0.5	1.2	22,200	3,676	34,743	43	6.0	1.0	2.4	23,391	3,681	35,077	45	6.4	1.5	3.6
		1.2	2.8	60	24,955	3,643	37,385	49	6.9	0.5	1.2	26,477	3,635	38,880	52	7.3	1.0	2.3	27,998	3,627	40,373	54	7.7	1.5	3.5
		1.2	2.8	70	28,901	3,615	40,307	57	8.0	0.4	1.0	30,753	3,594	43,016	61	8.6	1.0	2.2	32,604	3,573	43,748	62	9.1	1.5	3.5
		1.2	2.8	80	32,872	3,563	45,029	65	9.2	0.4	0.9	35,041	3,541	47,123	70	9.9	0.9	2.2	37,211	3,519	49,217	72	10.6	1.5	3.4
		1.2	2.8	90	36,842	3,510	47,796	73	10.5	0.4	0.9	39,709	3,495	51,634	78	11.4	0.9	2.0	42,575	3,480	53,193	80	12.2	1.4	3.2

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																							
EWT °F	Flow			EWT °F	Flow 4.5 GPM							Flow 6.8 GPM							Flow 9.0 GPM							
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
20	9.0	1.7	3.9	60	26,669	1,712	20,943	72	4.6	0.6	1.4	26,666	1,657	21,012	68	4.7	1.2	2.7	26,663	1,601	20,945	66	4.9	1.7	3.9
		1.7	3.9	80	25,855	2,268	18,370	91	3.3	0.6	1.3	25,863	2,209	18,326	88	3.4	1.1	2.5	25,871	2,150	18,413	86	3.5	1.6	3.7
		1.7	3.9	100	25,041	2,824	15,406	111	2.6	0.5	1.3	25,060	2,762	15,636	107	2.7	1.0	2.4	25,079	2,699	15,870	106	2.7	1.5	3.5
30	4.5	0.6	1.3	60	28,056	1,696	22,414	72	4.8	0.6	1.5	27,982	1,644	22,373	68	5.0	1.2	2.7	27,908	1,592	22,267	66	5.1	1.7	3.9
		0.6	1.3	80	27,581	2,265	20,105	92	3.6	0.6	1.4	27,579	2,203	20,062	88	3.7	1.1	2.5	27,576	2,141	20,156	86	3.8	1.6	3.7
		0.6	1.3	100	27,106	2,834	17,436	112	2.8	0.6	1.3	27,175	2,762	17,751	108	2.9	1.0	2.4	27,244	2,690	18,066	106	3.0	1.5	3.5
		0.6	1.3	120	26,631	3,403	15,020	132	2.3	0.5	1.2	26,772	3,321	15,441	128	2.4	1.0	2.3	26,912	3,239	15,861	126	2.4	1.4	3.3
	6.75	1.1	2.5	60	29,495	1,690	23,729	73	5.1	0.6	1.5	29,463	1,634	23,888	69	5.3	1.2	2.7	29,431	1,578	24,047	67	5.5	1.7	3.9
		1.1	2.5	80	28,811	2,264	21,086	93	3.7	0.6	1.4	28,839	2,201	21,329	89	3.8	1.1	2.5	28,866	2,137	21,575	86	4.0	1.6	3.7
		1.1	2.5	100	28,126	2,839	18,439	113	2.9	0.5	1.3	28,214	2,767	18,773	108	3.0	1.0	2.4	28,302	2,695	19,107	106	3.1	1.5	3.5
		1.1	2.5	120	27,442	3,413	15,797	132	2.4	0.5	1.2	27,590	3,334	16,214	128	2.4	1.0	2.3	27,737	3,254	16,634	126	2.5	1.5	3.4
	9.0	1.6	3.7	60	30,934	1,683	25,333	74	5.4	0.6	1.5	30,944	1,624	25,403	69	5.6	1.2	2.7	30,953	1,564	25,505	67	5.8	1.7	3.9
		1.6	3.7	80	30,040	2,263	22,503	93	3.9	0.6	1.3	30,098	2,198	22,598	89	4.0	1.1	2.5	30,156	2,132	22,871	87	4.1	1.6	3.7
		1.6	3.7	100	29,146	2,843	19,446	113	3.0	0.5	1.2	29,253	2,772	19,795	109	3.1	1.0	2.4	29,359	2,700	20,147	107	3.2	1.5	3.5
		1.6	3.7	120	28,252	3,423	16,573	133	2.4	0.5	1.1	28,407	3,346	16,990	128	2.5	1.0	2.2	28,562	3,268	17,412	126	2.6	1.5	3.4
40	4.5	0.5	1.2	60	32,560	1,629	27,002	74	5.9	0.6	1.4	32,575	1,586	27,164	70	6.0	1.1	2.7	32,590	1,543	27,324	67	6.2	1.7	3.9
		0.5	1.3	80	32,030	2,205	24,508	94	4.3	0.6	1.3	32,029	2,154	24,680	89	4.4	1.1	2.5	32,028	2,103	24,852	87	4.5	1.6	3.7
		0.5	1.3	100	31,342	2,780	21,855	114	3.3	0.5	1.2	31,404	2,722	22,117	109	3.4	1.0	2.3	31,465	2,663	22,379	107	3.5	1.5	3.5
		0.5	1.3	120	30,654	3,356	19,203	134	2.7	0.5	1.1	30,779	3,290	19,554	129	2.7	0.9	2.2	30,903	3,223	19,907	127	2.8	1.4	3.3
	6.75	1.1	2.4	60	34,497	1,643	28,892	75	6.2	0.6	1.4	34,522	1,591	29,094	70	6.4	1.1	2.6	34,547	1,538	29,298	68	6.6	1.6	3.8
		1.1	2.4	80	33,661	2,242	26,010	95	4.4	0.5	1.3	33,698	2,184	26,246	90	4.5	1.0	2.4	33,734	2,126	26,479	87	4.6	1.5	3.6
		1.1	2.4	100	32,746	2,843	23,045	115	3.4	0.5	1.1	32,834	2,778	23,355	110	3.5	1.0	2.3	32,921	2,713	23,663	107	3.6	1.5	3.4
		1.1	2.4	120	31,832	3,443	20,084	134	2.7	0.4	1.0	31,957	3,359	20,496	129	2.8	0.9	2.2	32,082	3,275	20,907	127	2.9	1.4	3.3
	9.0	1.6	3.6	60	36,434	1,656	30,785	76	6.4	0.6	1.3	36,469	1,594	31,030	71	6.7	1.1	2.5	36,504	1,533	31,272	68	7.0	1.6	3.6
		1.6	3.6	80	35,292	2,280	27,512	96	4.5	0.5	1.2	35,366	2,214	27,812	90	4.7	1.0	2.3	35,440	2,148	28,109	88	4.8	1.5	3.4
		1.6	3.6	100	34,151	2,905	24,239	115	3.4	0.5	1.1	34,263	2,834	24,593	110	3.5	1.0	2.2	34,375	2,764	24,946	108	3.6	1.4	3.3
		1.6	3.6	120	33,009	3,530	20,966	135	2.7	0.4	1.0	33,135	3,428	21,439	130	2.8	0.9	2.2	33,261	3,327	21,910	127	2.9	1.4	3.3
50	4.5	0.5	1.2	60	37,063	1,562	31,735	76	7.0	0.6	1.3	37,168	1,528	31,954	71	7.1	1.1	2.6	37,272	1,495	32,172	68	7.3	1.7	3.9
		0.5	1.2	80	36,479	2,144	29,163	96	5.0	0.5	1.2	36,479	2,105	29,297	91	5.1	1.1	2.4	36,480	2,065	29,432	88	5.2	1.6	3.7
		0.5	1.2	100	35,578	2,727	26,274	116	3.8	0.5	1.1	35,632	2,681	26,484	111	3.9	1.0	2.3	35,687	2,636	26,693	108	4.0	1.5	3.5
		0.5	1.2	120	34,677	3,309	23,385	135	3.1	0.4	0.9	34,786	3,258	23,670	130	3.1	0.9	2.1	34,894	3,207	23,953	128	3.2	1.4	3.3
		0.5	1.2	130	Operation not recommended							34,362	3,546	22,263	140	2.8	0.9	2.0	34,498	3,492	22,583	138	2.9	1.4	3.2
	6.75	1.0	2.4	60	39,499	1,595	34,056	78	7.3	0.6	1.3	39,581	1,547	34,303	72	7.5	1.1	2.4	39,664	1,499	34,550	69	7.8	1.6	3.6
		1.0	2.4	80	38,512	2,221	30,934	97	5.1	0.5	1.2	38,557	2,168	31,160	91	5.2	1.0	2.3	38,601	2,115	31,383	89	5.3	1.5	3.4
		1.0	2.4	100	37,367	2,847	27,651	117	3.8	0.4	1.0	37,453	2,789	27,937	111	3.9	0.9	2.2	37,540	2,731	28,220	108	4.0	1.4	3.3
		1.0	2.4	120	36,222	3,473	24,372	136	3.1	0.4	0.9	36,324	3,385	24,774	131	3.1	0.9	2.1	36,427	3,296	25,180	128	3.2	1.4	3.3
		1.0	2.4	130	Operation not recommended							35,798	3,721	23,102	141	2.8	0.8	1.9	35,947	3,656	23,472	138	2.9	1.3	3.0
	9.0	1.5	3.5	60	41,934	1,628	36,379	79	7.5	0.5	1.2	41,994	1,565	36,654	72	7.9	1.0	2.3	42,054	1,503	36,927	69	8.2	1.4	3.3
		1.5	3.5	80	40,544	2,297	32,706	98	5.2	0.5	1.1	40,634	2,231	33,022	92	5.3	0.9	2.1	40,723	2,165	33,336	89	5.5	1.4	3.2
		1.5	3.5	100	39,155	2,967	29,032	117	3.9	0.4	1.0	39,274	2,897	29,389	112	4.0	0.9	2.0	39,392	2,827	29,746	109	4.1	1.3	3.0
		1.5	3.5	120	37,766	3,636	25,359	137	3.0	0.4	0.9	37,863	3,511	25,883	131	3.2	0.9	2.1	37,960	3,386	26,408	128	3.3	1.4	3.2
		1.5	3.5	130	Operation not recommended							37,233	3,896	23,940	141	2.8	0.8	1.8	37,395	3,820	24,360	138	2.9	1.2	2.8

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																					
EWT °F	Flow			EWT °F	Flow 4.5 GPM							Flow 6.8 GPM							Flow 9.0 GPM						
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
60	4.5	0.5	1.2	60	41,5677	1,4944	36,4688	78	8.2	0.5	1.3	41,7611	1,4700	36,7455	72	8.3	1.1	2.6	41,9555	1,4466	37,0200	69	8.5	1.7	3.9
		0.5	1.2	80	40,9288	2,0844	33,8188	98	5.8	0.5	1.1	40,9300	2,0566	33,9155	92	5.8	1.0	2.4	40,9311	2,0288	34,0133	89	5.9	1.6	3.7
		0.5	1.2	100	39,8144	2,6733	30,6933	118	4.4	0.4	1.0	39,8611	2,6411	30,8500	112	4.4	1.0	2.2	39,9088	2,6099	31,0066	109	4.5	1.5	3.5
		0.5	1.2	120	38,7000	3,2633	27,5688	137	3.5	0.3	0.8	38,7933	3,2277	27,7822	131	3.5	0.9	2.1	38,8855	3,1900	27,9999	129	3.6	1.4	3.3
		0.5	1.2	130	Operation not recommended							38,2588	3,5199	26,2511	141	3.2	0.9	2.0	38,3733	3,4811	26,4966	139	3.2	1.4	3.2
	6.75	1.0	2.4	60	44,5000	1,5488	39,2199	80	8.4	0.5	1.2	44,6400	1,5044	39,5088	73	8.7	1.0	2.3	44,7800	1,4599	39,8011	70	9.0	1.5	3.4
		1.0	2.4	80	43,3622	2,1999	35,8599	99	5.8	0.5	1.1	43,4166	2,1522	36,0733	93	5.9	0.9	2.2	43,4699	2,1055	36,2888	90	6.1	1.4	3.3
		1.0	2.4	100	41,9877	2,8522	32,2588	119	4.3	0.4	0.9	42,0733	2,8011	32,5166	112	4.4	0.9	2.0	42,1588	2,7500	32,7777	109	4.5	1.4	3.1
		1.0	2.4	120	40,6111	3,5033	28,6599	138	3.4	0.3	0.8	40,6922	3,4100	29,0577	132	3.5	0.9	2.0	40,7722	3,3188	29,4522	129	3.6	1.4	3.2
		1.0	2.4	130	Operation not recommended							40,0588	3,7733	27,1855	142	3.1	0.8	1.8	40,1922	3,7188	27,5077	139	3.2	1.3	2.9
	9.0	1.5	3.4	60	47,4344	1,6011	41,9722	81	8.7	0.5	1.1	47,5199	1,5366	42,2788	74	9.1	0.9	2.1	47,6055	1,4722	42,5822	71	9.5	1.3	3.0
		1.5	3.4	80	45,7977	2,3155	37,8999	100	5.8	0.4	1.0	45,9022	2,2488	38,2322	94	6.0	0.8	1.9	46,0077	2,1811	38,5644	90	6.2	1.3	2.9
		1.5	3.4	100	44,1600	3,0299	33,8255	120	4.3	0.4	0.9	44,2844	2,9600	34,1844	113	4.4	0.8	1.8	44,4088	2,8911	34,5455	110	4.5	1.2	2.8
		1.5	3.4	120	42,5222	3,7433	29,7522	139	3.3	0.4	0.8	42,5900	3,5944	30,3277	133	3.5	0.9	2.0	42,6588	3,4444	30,9066	129	3.6	1.4	3.2
		1.5	3.4	130	Operation not recommended														42,0111	3,9544	28,5188	139	3.1	1.1	2.6
70	4.5	0.5	1.2	60	46,0711	1,4277	41,2011	80	9.5	0.5	1.2	46,3544	1,4122	41,5366	74	9.6	1.1	2.5	46,6377	1,3988	41,8688	70	9.8	1.7	3.9
		0.5	1.2	80	45,3777	2,0233	38,4733	100	6.6	0.4	1.0	45,3800	2,0077	38,5322	93	6.6	1.0	2.3	45,3833	1,9900	38,5944	90	6.7	1.6	3.7
		0.5	1.2	100	44,0500	2,6200	35,1122	120	4.9	0.4	0.8	44,0900	2,6011	35,2155	113	5.0	0.9	2.2	44,1300	2,5822	35,3200	110	5.0	1.5	3.5
		0.5	1.2	120	42,7233	3,2166	31,7511	139	3.9	0.3	0.7	42,8000	3,1955	31,8999	133	3.9	0.9	2.0	42,8766	3,1744	32,0466	130	4.0	1.4	3.3
		0.5	1.2	130	Operation not recommended														42,2499	3,4700	30,4099	139	3.6	1.4	3.2
	6.75	1.0	2.3	60	49,5022	1,5000	44,3833	82	9.7	0.5	1.1	49,6999	1,4600	44,7177	75	10.0	0.9	2.2	49,8977	1,4200	45,0533	71	10.3	1.4	3.3
		1.0	2.3	80	48,2133	2,1788	40,7833	101	6.5	0.4	1.0	48,2755	2,1366	40,9877	94	6.6	0.9	2.0	48,3366	2,0944	41,1922	91	6.8	1.4	3.1
		1.0	2.3	100	46,6088	2,8566	36,8644	121	4.8	0.4	0.8	46,6922	2,8122	37,0977	114	4.9	0.8	1.9	46,7777	2,7688	37,3333	110	5.0	1.3	3.0
		1.0	2.3	120	45,0011	3,5333	32,9477	140	3.7	0.3	0.7	45,0599	3,4366	33,3355	133	3.8	0.8	1.9	45,1177	3,3399	33,7255	130	4.0	1.4	3.2
		1.0	2.3	130	Operation not recommended														44,4388	3,7799	31,5433	140	3.4	1.2	2.8
	9.0	1.5	3.4	60	52,9344	1,5733	47,5666	84	9.9	0.4	1.0	53,0455	1,5077	47,9033	76	10.3	0.8	1.9	53,1566	1,4422	48,2377	72	10.8	1.2	2.7
		1.5	3.4	80	51,0499	2,3322	43,0933	103	6.4	0.4	0.9	51,1699	2,2655	43,4411	95	6.6	0.8	1.8	51,2900	2,1988	43,7911	91	6.8	1.1	2.6
		1.5	3.4	100	49,1644	3,0911	38,6188	122	4.7	0.3	0.8	49,2955	3,0233	38,9811	115	4.8	0.7	1.7	49,4255	2,9544	39,3455	111	4.9	1.1	2.5
		1.5	3.4	120	47,2799	3,8499	34,1455	141	3.6	0.3	0.7	47,3188	3,6766	34,7755	134	3.8	0.8	1.9	47,3577	3,5033	35,4044	131	4.0	1.3	3.1
		1.5	3.4	130	Operation not recommended														46,6266	4,0899	32,6766	140	3.3	1.0	2.4
80	4.5	0.5	1.1	60	50,5755	1,3600	45,9344	82	10.9	0.5	1.1	50,9477	1,3555	46,3244	75	11.0	1.1	2.5	51,3199	1,3499	46,6977	71	11.2	1.7	3.9
		0.5	1.2	80	49,8266	1,9633	43,1288	102	7.4	0.4	0.9	49,8300	1,9588	43,1499	95	7.5	1.0	2.3	49,8355	1,9522	43,2500	91	7.5	1.6	3.7
		0.5	1.2	100	48,2866	2,5666	39,5311	121	5.5	0.3	0.7	48,3199	2,5611	39,5811	114	5.5	0.9	2.1	48,3511	2,5555	39,6333	111	5.5	1.5	3.5
		0.5	1.2	120	46,7466	3,1699	35,9344	141	4.3	0.2	0.5	46,8077	3,1644	36,0111	134	4.3	0.8	1.9	46,8677	3,1588	36,0922	130	4.3	1.4	3.3
		0.5	1.2	130	Operation not recommended														46,1255	3,4600	34,3211	140	3.9	1.4	3.2
	6.75	1.0	2.3	60	54,5044	1,4533	49,5466	84	11.0	0.4	1.0	54,7599	1,4177	49,9244	76	11.3	0.9	2.1	55,0133	1,3800	50,3044	72	11.7	1.4	3.1
		1.0	2.3	80	53,0633	2,1566	45,7077	104	7.2	0.4	0.8	53,1344	2,1200	45,9011	96	7.3	0.8	1.9	53,2044	2,0833	46,0977	92	7.5	1.3	3.0
		1.0	2.3	100	51,2288	2,8600	41,4700	123	5.2	0.3	0.7	51,3122	2,8233	41,6800	115	5.3	0.8	1.8	51,3966	2,7866	41,8900	111	5.4	1.2	2.9
		1.0	2.3	120	49,3911	3,5633	37,2344	142	4.1	0.2	0.6	49,4277	3,4622	37,6155	135	4.2	0.8	1.9	49,4622	3,3600	37,9988	131	4.3	1.4	3.2
		1.0	2.3	130	Operation not recommended														48,6844	3,8411	35,5799	141	3.7	1.1	2.7
	9.0	1.4	3.3	60	58,4344	1,5466	53,4822	86	11.1	0.4	0.9	58,5700	1,4788	53,5277	77	11.6	0.7	1.6	58,7066	1,4111	53,8922	73	12.2	1.0	2.4
		1.4	3.3	80	56,3011	2,3499	48,2866	105	7.0	0.3	0.8	56,4377	2,2822	48,6511	97	7.2	0.7	1.6	56,5744	2,2144	49,0188	93	7.5	1.0	2.3
		1.4	3.3	100	54,1699	3,1533	43,4111	124	5.0	0.3	0.7	54,3055	3,0855	43,7799	116	5.2	0.6	1.5	54,4411	3,0188	44,1444	112	5.3	1.0	2.2
		1.4	3.3	120	52,0366	3,9566	39,2355	143	3.9	0.3	0.6	52,0466	3,7599	39,2200	135	4.1	0.8	1.8	52,0566	3,5622	39,9022	132	4.3	1.3	3.0
		1.4	3.3	130	Operation not recommended														51,2422	4,2233	36,8344	141	3.6	0.9	2.1

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																									
EWT °F	Flow			EWT °F	Flow 15.0 GPM							Flow 22.5 GPM							Flow 30.0 GPM										
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD						
		PSI	FT							PSI	FT						PSI	FT						PSI	FT			PSI	FT
50	15.0	0.4	0.9	50	50,922	2,307	57,390	36.0	22.1	0.5	1.2	54,352	2,311	62,237	40.3	23.5	1.6	3.8	57,781	2,314	64,071	42	25.0	2.8	6.4				
		0.4	0.9	60	58,271	2,341	66,258	44.5	24.9	0.5	1.2	61,836	2,349	69,851	49.0	26.3	1.6	3.7	65,401	2,357	73,443	51	27.7	2.7	6.2				
		1.0	2.4	70	65,619	2,375	71,625	52	27.6	0.5	1.1	69,320	2,387	77,464	57.7	29.0	1.5	3.6	73,020	2,399	78,732	60	30.4	2.6	6.0				
		1.0	2.4	80	72,282	2,402	80,478	60.7	30.1	0.5	1.2	76,383	2,405	84,589	66.4	31.8	1.6	3.6	80,483	2,407	88,696	69	33.4	2.6	6.0				
		1.0	2.4	90	78,945	2,428	84,422	68	32.5	0.4	1.0	83,445	2,421	91,705	75.2	34.5	1.5	3.4	87,945	2,414	93,216	78	36.4	2.5	5.8				
	22.5	2.2	5.2	50	51,290	2,212	58,837	36.3	23.2	0.5	1.2	54,616	2,220	62,191	40.3	24.6	1.6	3.8	57,941	2,228	65,543	42	26.0	2.8	6.4				
		2.2	5.1	60	58,341	2,234	65,963	44.4	26.1	0.5	1.2	61,862	2,247	69,529	49.0	27.5	1.6	3.7	65,382	2,259	73,090	51	28.9	2.7	6.2				
		2.5	5.9	70	65,392	2,256	73,089	53	29.0	0.5	1.1	69,107	2,273	76,862	57.7	30.4	1.5	3.6	72,821	2,289	80,631	60	31.8	2.6	6.0				
		2.5	5.8	80	71,970	2,279	79,746	60.8	31.6	0.5	1.0	75,803	2,280	83,582	66.5	33.2	1.5	3.5	79,635	2,280	87,414	69	34.9	2.6	6.0				
		2.5	5.8	90	78,547	2,302	86,401	69	34.1	0.4	1.0	82,497	2,287	90,300	75.3	36.1	1.5	3.4	86,447	2,271	94,196	78	38.1	2.5	5.8				
	30.0	4.1	9.5	50	51,657	2,117	58,162	36.0	24.4	0.5	1.2	54,879	2,130	62,147	40.2	25.8	1.6	3.8	58,101	2,142	64,281	42	27.1	2.8	6.4				
		4.1	9.4	60	58,411	2,127	65,668	44.4	27.5	0.5	1.2	61,887	2,144	69,202	49.0	28.9	1.6	3.7	65,362	2,160	72,732	51	30.3	2.7	6.2				
		4.0	9.3	70	65,164	2,136	71,227	52	30.5	0.5	1.1	68,893	2,157	76,253	57.8	31.9	1.5	3.5	72,622	2,178	78,372	60	33.3	2.6	6.0				
		4.0	9.2	80	71,657	2,156	79,013	60.9	33.2	0.4	0.9	75,222	2,155	82,575	66.6	34.9	1.5	3.5	78,786	2,153	86,132	70	36.6	2.6	6.0				
		4.0	9.1	90	78,149	2,175	83,676	69	35.9	0.4	1.0	81,549	2,152	88,892	75.5	37.9	1.5	3.4	84,949	2,128	90,307	78	39.9	2.5	5.9				
70	15.0	0.5	1.2	50	46,345	3,232	57,373	37.6	14.3	1.0	2.3	49,420	3,236	60,461	41.2	15.3	2.0	4.6	52,494	3,239	63,545	43	16.2	3.0	6.9				
		0.5	1.2	60	53,560	3,279	64,748	45.7	16.3	1.0	2.3	56,903	3,285	68,111	49.9	17.3	2.0	4.6	60,246	3,290	71,471	52	18.3	3.0	6.9				
		1.0	2.3	70	60,774	3,327	72,126	54	18.3	0.9	2.2	64,386	3,334	75,762	58.6	19.3	1.5	3.5	67,998	3,341	79,397	61	20.4	3.0	6.9				
		1.0	2.3	80	67,716	3,357	79,170	61.9	20.2	0.9	2.1	71,576	3,357	83,030	67.3	21.3	1.5	3.5	75,436	3,357	86,890	69	22.5	3.0	6.9				
		1.0	2.3	90	74,657	3,385	86,207	70	22.1	0.9	2.0	78,766	3,379	90,295	76.0	23.3	1.5	3.5	82,874	3,373	94,383	79	24.6	3.0	6.9				
	22.5	2.2	5.1	50	46,709	3,126	57,375	37.5	14.9	1.0	2.4	49,713	3,131	60,396	41.2	15.9	1.5	3.5	52,717	3,136	63,417	43	16.8	3.0	6.9				
		2.2	5.1	60	53,739	3,157	64,511	45.7	17.0	1.0	2.3	57,065	3,164	67,861	49.9	18.0	2.0	4.6	60,391	3,170	71,207	52	19.1	3.0	6.9				
		2.4	5.6	70	60,769	3,188	71,646	54	19.1	1.0	2.2	64,416	3,196	75,321	58.5	20.2	1.5	3.5	68,062	3,203	78,991	61	21.2	3.0	6.9				
		2.4	5.6	80	67,690	3,207	78,632	61.9	21.1	0.9	2.2	71,380	3,204	82,312	67.3	22.3	1.5	3.5	75,069	3,201	85,991	70	23.5	3.0	6.9				
		2.4	5.6	90	74,610	3,226	85,617	70	23.1	0.9	2.0	78,342	3,212	89,301	76.1	24.4	1.5	3.5	82,074	3,198	92,986	79	25.7	3.0	6.9				
	30.0	3.9	9.1	50	47,072	3,020	57,376	37.4	15.6	1.1	2.5	50,007	3,027	60,335	41.1	16.5	1.5	3.5	52,941	3,033	63,290	43	17.5	3.0	6.9				
		3.9	9.0	60	53,917	3,035	64,272	45.6	17.8	1.0	2.3	57,226	3,042	67,605	49.8	18.8	2.0	4.6	60,534	3,049	70,937	52	19.9	3.0	6.9				
		3.9	8.9	70	60,762	3,048	71,162	54	19.9	1.0	2.3	64,445	3,056	74,872	58.5	21.1	1.5	3.5	68,127	3,064	78,581	61	22.2	3.0	6.9				
		3.8	8.9	80	67,663	3,058	78,097	62.0	22.1	1.0	2.3	71,182	3,051	81,592	67.3	23.3	1.5	3.5	74,701	3,044	85,087	70	24.5	3.0	6.9				
		3.8	8.8	90	74,563	3,066	85,024	70	24.3	0.9	2.0	77,919	3,045	88,309	76.1	25.6	1.5	3.5	81,274	3,023	91,588	79	26.9	3.0	6.9				
90	15.0	1.4	3.2	50	87,566	7,794	114,159	38.3	11.2	1.0	2.3	93,040	7,802	119,660	41.7	11.9	2.8	6.5	98,514	7,809	125,158	43	12.6	4.6	10.7				
		1.4	3.2	60	102,618	7,916	129,627	46.3	13.0	1.0	2.3	108,810	7,921	135,836	50.3	13.7	2.7	6.3	115,002	7,925	142,042	52	14.5	4.5	10.4				
		1.4	3.2	70	117,669	8,037	145,091	54	14.6	0.9	2.2	124,579	8,039	152,008	58.9	15.5	2.7	6.2	131,489	8,040	158,921	61	16.4	4.5	10.3				
		1.4	3.2	80	132,166	8,123	159,882	62.4	16.3	0.9	2.1	139,093	8,088	166,689	67.6	17.2	2.7	6.3	146,020	8,053	173,497	70	18.1	4.6	10.5				
		1.4	3.2	90	146,661	8,208	174,667	70	17.9	0.9	2.0	153,606	8,137	181,369	76.3	18.9	2.8	6.4	160,550	8,065	188,068	79	19.9	4.7	10.8				
	22.5	3.5	8.0	50	88,024	7,520	113,682	38.3	11.7	1.0	2.4	90,636	7,331	115,649	41.9	12.4	2.9	6.7	93,247	7,142	117,616	44	13.1	4.8	11.1				
		3.5	8.0	60	102,968	7,601	128,903	46.3	13.5	1.0	2.3	107,910	7,505	133,517	50.4	14.4	2.8	6.4	112,852	7,408	138,128	53	15.2	4.6	10.6				
		3.5	8.0	70	117,911	7,681	144,119	54	15.4	1.0	2.2	125,184	7,678	151,381	58.9	16.3	2.7	6.2	132,457	7,675	158,644	61	17.3	4.4	10.3				
		3.5	8.0	80	132,560	7,739	158,965	62.3	17.1	0.9	2.2	141,822	7,814	168,483	67.4	18.1	2.6	6.1	151,083	7,889	178,000	70	19.2	4.4	10.1				
		3.4	7.9	90	147,207	7,797	173,810	70	18.9	0.9	2.0	158,447	7,948	185,566	75.9	19.9	2.6	6.0	169,687	8,098	197,317	79	21.0	4.3	9.9				
	30.0	5.6	12.9	50	88,483	7,245	113,203	38.2	12.2	1.1	2.5	88,232	6,860	111,638	42.2	12.9	3.0	7.0	87,981	6,474	110,070	44	13.6	5.0	11.5				
		5.6	12.9	60	103,317	7,285	128,173	46.2	14.2	1.0	2.3	107,010	7,088	131,194	50.5	15.1	2.8	6.5	110,702	6,891	134,214	53	16.1	4.7	10.8				
		5.6	12.9	70	118,151	7,324	143,140	54	16.1	1.0	2.3	125,787	7,316	150,749	58.8	17.2	2.7	6.3	133,423	7,308	158,358	61	18.3	4.4	10.3				
		5.6	12.9	80	132,953	7,355	158,048	62.3	18.1	1.0	2.3	144,549	7,540	170,275	67.2	19.2	2.6	5.9	156,144	7,725	182,502	70	20.2	4.2	9.6				
		5.4	12.6	90	147,754	7,386	172,955	70	20.0	0.9	2.0	163,289	7,758	189,759	75.5	21.0	2.4	5.5	178,824	8,130	206,564	78	22.0	3.9	9.0				

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

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			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
110	15.0	1.3	3.1	50	78,155	10,004	112,289	39.6	7.8	1.0	2.2	82,713	10,016	116,888	42.6	8.3	2.8	6.4	87,270	10,027	121,482	44	8.7	4.6	10.6
		1.3	3.1	60	92,449	10,162	127,122	47.7	9.1	0.9	2.1	97,714	10,171	132,417	51.3	9.6	2.7	6.3	102,978	10,179	137,709	53	10.1	4.5	10.4
		1.3	3.0	70	106,743	10,319	141,951	56	10.3	0.9	2.1	112,715	10,325	147,944	60.0	10.9	2.7	6.2	118,686	10,330	153,932	62	11.5	4.4	10.2
		1.3	3.0	80	120,784	10,411	156,306	63.9	11.6	0.9	2.1	127,094	10,411	162,616	68.7	12.2	2.6	6.1	133,403	10,411	168,925	71	12.8	4.4	10.1
		1.3	3.0	90	134,824	10,502	170,657	72	12.8	0.9	2.0	141,473	10,497	177,289	77.4	13.5	2.6	6.1	148,121	10,491	183,916	80	14.1	4.4	10.2
	22.5	3.3	7.7	50	78,450	9,721	111,618	39.5	8.1	1.0	2.3	82,273	9,651	115,202	42.7	8.5	2.8	6.5	86,096	9,581	118,786	44	9.0	4.7	10.8
		3.3	7.7	60	92,839	9,825	126,362	47.6	9.4	0.9	2.1	97,825	9,785	131,211	51.3	10.0	2.7	6.3	102,810	9,745	136,060	53	10.6	4.5	10.5
		3.3	7.7	70	107,226	9,928	141,100	56	10.8	0.9	2.2	113,375	9,919	147,219	59.9	11.4	2.7	6.2	119,523	9,910	153,336	62	12.1	4.4	10.2
		3.3	7.7	80	121,406	9,978	155,451	63.8	12.2	0.9	2.1	128,574	10,009	162,725	68.6	12.8	2.6	6.1	135,741	10,039	169,994	71	13.5	4.3	10.0
		3.3	7.7	90	135,585	10,028	169,801	72	13.5	0.9	2.0	143,720	10,083	178,123	77.2	14.3	2.6	5.9	151,855	10,137	186,442	80	15.0	4.3	9.9
	30.0	5.4	12.4	50	78,745	9,437	110,944	39.5	8.3	1.0	2.3	81,834	9,286	113,518	42.7	8.8	2.9	6.6	84,923	9,134	116,088	44	9.3	4.7	10.9
		5.4	12.4	60	93,227	9,487	125,597	47.6	9.8	0.9	2.1	97,934	9,400	130,007	51.3	10.4	2.7	6.3	102,641	9,312	134,414	53	11.0	4.6	10.5
		5.4	12.4	70	107,708	9,536	140,245	56	11.3	0.9	2.2	114,034	9,513	146,492	59.9	12.0	2.7	6.2	120,360	9,489	152,736	62	12.7	4.4	10.2
		5.4	12.4	80	122,028	9,546	154,599	63.7	12.8	0.9	2.1	130,053	9,607	162,832	68.4	13.5	2.6	6.0	138,078	9,667	171,062	71	14.3	4.3	9.9
		5.3	12.3	90	136,346	9,555	168,948	72	14.3	0.9	2.0	145,968	9,668	178,955	77.0	15.1	2.5	5.8	155,589	9,781	188,962	80	15.9	4.2	9.6
120	15.0	1.3	3.0	50	73,449	11,109	108,582	40.0	7.0	1.0	2.2	77,549	11,123	115,501	43.1	7.0	2.8	6.4	81,648	11,136	117,092	44	7.0	4.6	10.6
		1.3	3.0	60	87,365	11,285	125,869	48.4	7.7	0.9	2.1	92,166	11,296	130,708	51.8	8.2	2.7	6.2	96,966	11,306	135,542	54	8.6	4.5	10.4
		1.3	3.0	70	101,280	11,460	137,085	56	9.0	0.9	2.1	106,782	11,468	145,911	60.5	9.3	2.7	6.2	112,284	11,475	148,085	62	10.0	4.4	10.2
		1.3	3.0	80	115,093	11,555	154,519	64.7	10.0	0.9	2.1	121,094	11,573	160,581	69.2	10.5	2.6	6.0	127,095	11,590	166,640	72	11.0	4.3	9.9
		1.3	3.0	90	128,905	11,649	164,508	72	11.0	0.9	2.0	135,406	11,677	175,248	78.0	11.6	2.6	5.9	141,906	11,704	177,625	80	12.0	4.3	9.9
	22.5	3.3	7.6	50	73,663	10,821	110,584	40.2	6.8	1.0	2.2	78,092	10,811	114,979	43.1	7.2	2.8	6.4	82,521	10,800	119,371	44	7.6	4.6	10.6
		3.3	7.6	60	87,774	10,937	125,091	48.3	8.0	0.9	2.1	92,782	10,926	130,062	51.8	8.5	2.7	6.2	97,789	10,914	135,028	54	9.0	4.5	10.4
		3.3	7.6	70	101,884	11,051	139,590	56	9.2	0.9	2.1	107,470	11,040	145,138	60.4	9.7	2.7	6.2	113,056	11,028	150,684	62	10.3	4.4	10.2
		3.3	7.6	80	115,829	11,098	153,695	64.6	10.4	0.9	2.1	121,950	11,106	159,844	69.2	11.0	2.6	6.0	128,070	11,114	165,991	72	11.5	4.3	10.0
		3.3	7.6	90	129,774	11,144	167,797	73	11.6	0.9	2.0	136,357	11,150	174,401	77.9	12.2	2.6	5.9	142,939	11,156	181,003	80	12.8	4.3	9.9
	30.0	5.2	12.1	50	73,876	10,533	107,520	40.0	7.0	1.0	2.2	78,635	10,499	114,458	43.0	7.5	2.8	6.4	83,394	10,464	116,970	44	8.0	4.6	10.6
		5.3	12.1	60	88,182	10,588	124,308	48.2	8.3	0.9	2.1	93,397	10,555	129,411	51.7	8.8	2.7	6.2	98,611	10,522	134,512	53	9.4	4.5	10.4
		5.3	12.2	70	102,487	10,642	135,763	56	10.0	0.9	2.1	108,158	10,611	144,363	60.4	10.2	2.7	6.2	113,828	10,580	147,029	62	11.0	4.4	10.2
		5.3	12.1	80	116,565	10,641	152,872	64.5	11.0	0.9	2.1	122,805	10,640	159,109	69.1	11.5	2.6	6.0	129,045	10,638	165,342	71	12.1	4.3	10.0
		5.3	12.1	90	130,642	10,639	163,186	72	12.0	0.9	2.0	137,307	10,623	173,553	77.8	12.9	2.6	6.0	143,971	10,607	176,277	80	14.0	4.3	9.9

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																							
EWT °F	Flow			EWT °F	Flow 15.0 GPM							Flow 22.5 GPM							Flow 30.0 GPM								
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
20	30.0	6.8	15.7	60	81,563	4,831	65,398	71	4.9	0.9	2.2	80,945	4,668	65,368	67	5.1	2.4	5.6	80,118	4,610	63,734	65	5.1	4.5	10.4
		6.8	15.7	80	79,564	6,326	57,980	91	3.7	0.9	2.1	78,939	6,202	57,778	87	3.7	2.7	6.1	78,313	6,078	57,575	85	3.8	4.4	10.2
		6.8	15.7	100	77,773	8,168	49,904	110	2.8	0.8	1.8	77,306	8,021	49,938	107	2.8	2.5	5.8	76,839	7,873	49,976	105	2.9	4.2	9.7
30	15.0	1.8	4.1	60	85,701	4,890	68,080	72	5.1	1.0	2.2	84,683	4,634	68,548	68	5.4	1.7	4.0	85,014	4,593	69,528	66	5.4	4.5	10.4
		1.8	4.1	80	83,245	6,387	61,453	91	3.8	0.7	1.6	82,977	6,231	61,717	87	3.9	2.2	5.0	82,709	6,074	61,985	86	4.0	3.6	8.3
		1.4	3.3	100	81,722	8,303	53,392	111	2.9	0.6	1.4	81,469	8,117	53,774	107	2.9	2.0	4.6	81,215	7,931	54,154	105	3.0	3.4	7.9
		1.7	4.0	120	81,131	10,638	46,126	131	2.2	0.8	1.8	80,831	10,402	45,339	127	2.3	2.4	5.6	80,531	10,166	46,934	125	2.3	4.1	9.4
	22.5	3.5	8.0	60	90,384	4,862	73,795	72	5.4	0.8	1.8	90,069	4,717	73,975	68	5.6	2.3	5.4	89,754	4,572	74,154	66	5.8	3.9	9.0
		3.5	8.0	80	87,580	6,394	65,764	92	4.0	0.7	1.5	87,318	6,233	66,051	88	4.1	2.0	4.6	87,055	6,071	66,341	86	4.2	3.4	7.7
		3.3	7.6	100	85,464	8,313	57,100	111	3.0	0.6	1.4	85,209	8,122	57,497	108	3.1	2.0	4.6	84,953	7,930	57,896	106	3.1	3.4	7.9
		4.1	9.6	120	84,035	10,617	47,810	131	2.3	0.8	1.8	83,741	10,384	48,311	127	2.4	2.4	5.6	83,447	10,151	48,812	126	2.4	4.1	9.4
	30.0	5.2	12.0	60	95,066	4,834	78,136	73	5.8	0.6	1.4	94,709	4,639	78,714	68	6.0	1.7	4.0	94,493	4,551	78,760	66	6.1	3.3	7.6
		5.2	12.0	80	91,915	6,401	70,075	92	4.2	0.6	1.4	91,658	6,235	70,384	88	4.3	1.9	4.3	91,400	6,068	70,696	86	4.4	3.1	7.2
		5.2	12.0	100	89,206	8,322	60,811	112	3.1	0.6	1.4	88,948	8,126	61,222	108	3.2	2.0	4.6	88,690	7,929	61,636	106	3.3	3.4	7.9
		6.6	15.2	120	86,939	10,595	52,202	132	2.4	0.8	1.8	86,651	10,365	51,286	128	2.5	2.4	5.6	86,362	10,135	53,009	126	2.5	4.1	9.4
40	15.0	1.7	3.9	60	102,376	4,997	85,326	74	6.0	1.0	2.3	101,911	4,820	85,465	69	6.2	2.8	6.5	101,446	4,643	85,604	67	6.4	4.7	10.8
		1.7	3.9	80	99,166	6,564	76,770	93	4.4	0.9	2.0	98,674	6,367	76,950	89	4.5	2.5	5.8	98,182	6,169	77,133	87	4.7	4.2	9.6
		1.5	3.5	100	96,831	8,488	67,870	113	3.3	0.8	1.7	96,314	8,261	68,127	109	3.4	2.4	5.5	95,796	8,033	68,387	106	3.5	4.0	9.2
		1.7	3.8	120	95,372	10,771	58,621	133	2.6	0.8	1.9	94,830	10,504	58,990	128	2.6	2.6	5.9	94,288	10,237	59,359	126	2.7	4.3	9.9
	22.5	3.7	8.5	60	107,852	4,993	90,816	74	6.3	0.9	2.1	107,354	4,812	90,935	70	6.5	2.6	6.1	106,855	4,630	91,057	67	6.8	4.4	10.1
		3.7	8.5	80	104,236	6,582	81,778	94	4.6	0.8	1.9	103,796	6,373	82,051	89	4.8	2.4	5.6	103,355	6,164	82,323	87	4.9	4.0	9.3
		3.6	8.3	100	101,197	8,513	72,151	113	3.5	0.8	1.7	100,755	8,273	72,528	109	3.6	2.4	5.5	100,313	8,032	72,908	107	3.7	4.0	9.2
		4.0	9.2	120	98,735	10,786	61,933	133	2.7	0.8	1.9	98,232	10,510	62,372	129	2.7	2.5	5.9	97,728	10,234	62,810	127	2.8	4.3	9.9
	30.0	5.7	13.1	60	113,327	4,988	96,308	75	6.7	0.8	1.9	112,795	4,803	96,407	70	6.9	2.4	5.6	112,262	4,618	96,505	67	7.1	4.1	9.4
		5.7	13.1	80	109,306	6,599	86,790	95	4.9	0.8	1.8	108,917	6,380	87,148	90	5.0	2.4	5.4	108,527	6,160	87,509	87	5.2	3.9	9.0
		5.6	13.0	100	105,562	8,537	76,434	114	3.6	0.8	1.7	105,196	8,284	76,931	109	3.7	2.4	5.5	104,829	8,030	77,431	107	3.8	4.0	9.2
		6.3	14.6	120	102,097	10,800	65,247	134	2.8	0.8	1.9	101,632	10,515	65,755	129	2.8	2.5	5.9	101,167	10,229	66,266	127	2.9	4.3	9.9
50	15.0	1.6	3.7	60	119,050	5,103	99,359	76	6.8	1.0	2.3	118,464	4,898	101,752	71	7.1	2.9	6.8	117,878	4,692	100,084	68	7.4	4.9	11.2
		1.6	3.7	80	115,086	6,740	92,089	95	5.0	1.0	2.3	114,370	6,502	92,185	90	5.2	2.9	6.6	113,654	6,263	92,285	88	5.3	4.7	10.9
		1.6	3.7	100	111,940	8,673	82,348	115	3.8	0.9	2.1	111,158	8,404	82,484	110	3.9	2.8	6.4	110,376	8,135	82,619	107	4.0	4.6	10.6
		1.6	3.7	120	109,613	10,904	71,987	135	2.9	0.9	2.0	108,829	10,606	72,641	130	3.0	2.7	6.2	108,044	10,308	72,673	127	3.1	4.5	10.3
		1.6	3.7	130	Operation not recommended							106,938	11,663	67,144	140	2.7	2.6	6.1	105,743	11,033	68,098	137	2.8	4.4	10.2
	22.5	3.9	8.9	60	125,319	5,123	107,839	77	7.2	1.0	2.3	124,637	4,906	107,898	71	7.4	2.9	6.8	123,955	4,688	107,960	68	7.7	4.9	11.2
		3.9	8.9	80	120,891	6,769	97,795	96	5.2	1.0	2.3	120,273	6,513	98,051	91	5.4	2.9	6.6	119,654	6,257	98,305	88	5.6	4.7	10.9
		3.8	8.9	100	116,929	8,712	87,204	116	3.9	0.9	2.1	116,301	8,423	87,562	110	4.0	2.8	6.4	115,672	8,133	87,922	108	4.2	4.6	10.6
		3.8	8.8	120	113,434	10,954	76,059	135	3.0	0.9	2.0	112,721	10,635	76,434	130	3.1	2.7	6.2	112,008	10,316	76,810	127	3.2	4.5	10.3
		3.8	8.8	130	Operation not recommended							111,088	11,679	71,239	140	2.8	2.6	6.1	109,794	11,039	72,129	137	2.9	4.4	10.2
	30.0	6.1	14.1	60	131,587	5,142	112,012	78	7.5	1.0	2.3	130,809	4,913	114,046	72	7.8	2.9	6.8	130,031	4,684	112,339	69	8.1	4.9	11.2
		6.1	14.1	80	126,696	6,797	103,505	97	5.5	1.0	2.3	126,175	6,524	103,915	91	5.7	2.9	6.6	125,653	6,251	104,325	88	5.9	4.7	10.9
		6.1	14.0	100	121,918	8,751	92,060	116	4.1	0.9	2.1	121,443	8,441	92,642	111	4.2	2.8	6.4	120,967	8,131	93,224	108	4.4	4.6	10.6
		6.1	14.0	120	117,254	11,004	79,449	136	3.1	0.9	2.0	116,613	10,664	80,227	130	3.2	2.7	6.2	115,972	10,323	80,630	128	3.3	4.5	10.3
		6.1	14.0	130	Operation not recommended							115,236	11,694	75,336	140	2.9	2.6	6.1	113,845	11,044	76,162	138	3.0	4.4	10.2

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

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			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
60	15.0	1.6	3.6	60	134,370	5,184	116,682	78	7.6	1.0	2.3	133,407	4,946	116,531	72	7.9	2.9	6.8	132,444	4,707	116,384	69	8.2	4.9	11.2
		1.6	3.6	80	130,342	6,849	106,973	97	5.6	1.0	2.2	129,447	6,566	107,044	92	5.8	2.8	6.5	128,551	6,283	107,113	89	6.0	4.7	10.9
		1.6	3.6	100	126,573	8,814	96,500	117	4.2	0.9	2.1	125,737	8,494	96,755	111	4.3	2.8	6.4	124,900	8,173	97,014	108	4.5	4.6	10.6
		1.6	3.6	120	123,064	11,080	85,259	136	3.3	0.8	2.0	122,277	10,729	85,670	131	3.3	2.7	6.1	121,490	10,377	86,084	128	3.4	4.5	10.3
		1.6	3.6	130	Operation not recommended							119,970	11,913	79,323	141	3.0	2.6	6.0	118,882	11,333	80,214	138	3.1	4.4	10.1
	22.5	3.9	9.0	60	141,060	5,207	123,294	79	7.9	1.0	2.3	140,022	4,956	123,112	72	8.3	2.9	6.8	138,984	4,705	122,931	69	8.7	4.9	11.2
		3.9	9.0	80	136,823	6,879	113,352	98	5.8	1.0	2.2	135,940	6,578	113,496	92	6.1	2.8	6.5	135,057	6,277	113,640	89	6.3	4.7	10.9
		3.9	9.0	100	132,372	8,851	102,172	118	4.4	0.9	2.1	131,580	8,510	102,544	112	4.5	2.8	6.4	130,788	8,168	102,919	109	4.7	4.6	10.6
		3.9	9.0	120	127,708	11,124	89,753	137	3.4	0.8	2.0	126,942	10,751	90,260	131	3.5	2.6	6.1	126,175	10,378	90,765	128	3.6	4.5	10.3
		3.9	9.0	130	Operation not recommended							124,848	11,870	84,348	141	3.1	2.6	6.0	123,420	11,329	84,765	138	3.2	4.4	10.1
	30.0	6.0	13.8	60	147,749	5,230	129,904	80	8.3	1.0	2.3	146,636	4,967	129,689	73	8.7	2.9	6.8	145,523	4,703	129,476	70	9.1	4.9	11.2
		6.0	13.8	80	143,304	6,909	119,730	99	6.1	1.0	2.2	142,433	6,590	119,948	93	6.3	2.8	6.5	141,562	6,270	120,169	89	6.6	4.7	10.9
		6.0	13.8	100	138,171	8,889	107,842	118	4.6	0.9	2.1	137,423	8,526	108,332	112	4.7	2.8	6.4	136,675	8,162	108,826	109	4.9	4.6	10.6
		6.0	13.8	120	132,351	11,168	94,246	138	3.5	0.8	2.0	131,606	10,773	94,849	132	3.6	2.6	6.1	130,860	10,378	95,450	129	3.7	4.4	10.3
		6.0	13.8	130	Operation not recommended														127,958	11,323	89,324	139	3.3	4.4	10.1
70	15.0	1.5	3.6	60	149,690	5,265	131,726	80	8.3	1.0	2.3	148,350	4,994	131,310	73	8.7	2.9	6.7	147,010	4,723	130,895	70	9.1	4.8	11.2
		1.5	3.6	80	145,599	6,958	121,858	99	6.1	0.9	2.2	144,524	6,631	121,899	93	6.4	2.8	6.5	143,449	6,303	121,943	90	6.7	4.7	10.9
		1.5	3.6	100	141,207	8,955	110,653	119	4.6	0.9	2.1	140,316	8,583	111,031	112	4.8	2.8	6.4	139,424	8,211	111,408	109	5.0	4.6	10.6
		1.5	3.5	120	136,515	11,256	98,110	138	3.6	0.8	1.9	135,726	10,852	98,699	132	3.7	2.6	6.1	134,936	10,447	99,291	129	3.8	4.4	10.3
		1.5	3.5	130	Operation not recommended														132,022	11,634	92,327	139	3.3	4.4	10.1
	22.5	4.0	9.1	60	156,801	5,292	138,745	81	8.7	1.0	2.3	155,407	5,007	138,323	74	9.1	2.9	6.8	154,013	4,722	137,902	70	9.6	4.9	11.2
		4.0	9.1	80	152,755	6,990	128,905	100	6.4	0.9	2.2	151,608	6,644	128,939	93	6.7	2.8	6.5	150,460	6,297	128,975	90	7.0	4.7	10.9
		3.9	9.1	100	147,815	8,991	117,138	120	4.8	0.9	2.1	146,860	8,597	117,527	113	5.0	2.8	6.4	145,904	8,203	117,915	110	5.2	4.6	10.6
		3.9	9.1	120	141,982	11,295	103,443	139	3.7	0.8	1.9	141,163	10,868	104,081	133	3.8	2.6	6.1	140,343	10,440	104,722	129	3.9	4.4	10.2
		3.9	9.1	130	Operation not recommended														137,046	11,619	97,402	139	3.5	4.4	10.1
	30.0	5.9	13.6	60	163,912	5,318	145,767	82	9.0	1.0	2.3	162,464	5,020	145,336	74	9.5	2.9	6.8	161,015	4,722	144,904	71	10.0	4.9	11.2
		5.9	13.6	80	159,912	7,021	135,956	101	6.7	0.9	2.2	158,692	6,656	135,982	94	7.0	2.8	6.5	157,471	6,290	136,010	90	7.3	4.7	10.9
		5.9	13.6	100	154,424	9,027	123,624	121	5.0	0.9	2.1	153,404	8,610	124,027	114	5.2	2.8	6.4	152,383	8,193	124,428	110	5.5	4.6	10.6
		5.9	13.5	120	147,449	11,333	108,781	140	3.8	0.8	1.9	146,599	10,883	109,466	133	3.9	2.6	6.1	145,749	10,433	110,152	130	4.1	4.4	10.2
		5.9	13.5	130	Operation not recommended														142,071	11,603	102,482	139	3.6	4.4	10.1
80	15.0	1.5	3.5	60	165,009	5,346	143,399	82	9.0	1.0	2.3	163,292	5,042	146,089	75	9.5	2.9	6.7	161,575	4,738	142,685	71	10.0	4.8	11.2
		1.5	3.5	80	160,855	7,066	136,746	101	6.7	0.9	2.1	159,601	6,695	136,758	94	7.0	2.8	6.5	158,346	6,323	136,772	91	7.3	4.7	10.9
		1.5	3.5	100	155,840	9,095	124,808	121	5.0	0.9	2.1	154,894	8,672	125,305	114	5.2	2.8	6.4	153,948	8,249	125,802	110	5.5	4.6	10.6
		1.5	3.4	120	149,965	11,432	109,816	140	3.8	0.8	1.9	149,174	10,974	111,731	133	4.0	2.6	6.1	148,382	10,516	111,198	130	4.1	4.4	10.2
		1.5	3.4	130	Operation not recommended														145,161	11,934	103,354	140	3.6	4.3	10.0
	22.5	4.0	9.2	60	172,542	5,376	154,199	83	9.4	1.0	2.3	170,792	5,058	153,534	75	9.9	2.9	6.8	169,041	4,739	152,872	71	10.5	4.9	11.2
		4.0	9.2	80	168,687	7,100	144,462	102	7.0	0.9	2.1	167,275	6,708	144,387	95	7.3	2.8	6.5	165,863	6,316	144,313	91	7.7	4.7	10.9
		4.0	9.2	100	163,258	9,130	132,106	122	5.2	0.9	2.1	162,139	8,684	132,509	114	5.5	2.8	6.4	161,019	8,237	132,914	111	5.7	4.6	10.6
		4.0	9.2	120	156,256	11,465	117,137	141	4.0	0.8	1.9	155,383	10,984	117,906	134	4.1	2.6	6.0	154,510	10,502	118,677	130	4.3	4.4	10.2
		4.0	9.2	130	Operation not recommended														150,672	11,908	110,042	140	3.7	4.3	10.0
	30.0	5.8	13.3	60	180,074	5,406	158,726	84	9.8	1.0	2.3	178,290	5,073	160,981	76	10.3	2.9	6.8	176,506	4,740	158,017	72	10.9	4.9	11.2
		5.8	13.3	80	176,519	7,133	152,181	104	7.3	0.9	2.1	174,949	6,721	152,017	96	7.6	2.8	6.5	173,379	6,309	151,853	92	8.1	4.7	10.9
		5.8	13.3	100	170,676	9,164	139,408	123	5.5	0.9	2.1	169,383	8,694	139,719	115	5.7	2.8	6.4	168,090	8,224	140,030	111	6.0	4.6	10.6
		5.8	13.3	120	162,546	11,497	122,531	142	4.1	0.8	1.9	161,592	10,992	124,087	134	4.3	2.6	6.0	160,637	10,487	123,824	131	4.5	4.4	10.2
		5.8	13.3	130	Operation not recommended														156,183	11,882	114,750	141	3.9	4.3	10.0

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																								
EWT °F	Flow			EWT °F	Flow 7.5 GPM							Flow 11.3 GPM							Flow 15.0 GPM									
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
50	7.5	0.4	0.9	50	50,922	2,307	57,390	36.0	22.1	0.5	1.2	54,352	2,311	62,237	40.3	23.5	1.6	3.8	57,781	2,314	64,071	42	25.0	2.8	6.4
		0.4	0.9	60	58,271	2,341	66,258	44.5	24.9	0.5	1.2	61,836	2,349	69,851	49.0	26.3	1.6	3.7	65,401	2,357	73,443	51.3	27.7	2.7	6.2
		1.0	2.4	70	65,619	2,375	71,625	52	27.6	0.5	1.1	69,320	2,387	77,464	57.7	29.0	1.5	3.6	73,020	2,399	78,732	60	30.4	2.6	6.0
		1.0	2.4	80	72,282	2,402	80,478	60.7	30.1	0.5	1.2	76,383	2,405	84,589	66.4	31.8	1.6	3.6	80,483	2,407	88,696	69	33.4	2.6	6.0
		1.0	2.4	90	78,945	2,428	84,422	68	32.5	0.4	1.0	83,445	2,421	91,705	75.2	34.5	1.5	3.4	87,945	2,414	93,216	78	36.4	2.5	5.8
	11.3	2.2	5.2	50	51,290	2,212	58,837	36.3	23.2	0.5	1.2	54,616	2,220	62,191	40.3	24.6	1.6	3.8	57,941	2,228	65,543	42	26.0	2.8	6.4
		2.2	5.1	60	58,341	2,234	65,963	44.4	26.1	0.5	1.2	61,862	2,247	69,529	49.0	27.5	1.6	3.7	65,382	2,259	73,090	51	28.9	2.7	6.2
		2.5	5.9	70	65,392	2,256	73,089	53	29.0	0.5	1.1	69,107	2,273	76,862	57.7	30.4	1.5	3.6	72,821	2,289	80,631	60	31.8	2.6	6.0
		2.5	5.8	80	71,970	2,279	79,746	60.8	31.6	0.5	1.0	75,803	2,280	83,582	66.5	33.2	1.5	3.5	79,635	2,280	87,414	69	34.9	2.6	6.0
		2.5	5.8	90	78,547	2,302	86,401	69	34.1	0.4	1.0	82,497	2,287	90,300	75.3	36.1	1.5	3.4	86,447	2,271	94,196	78	38.1	2.5	5.8
	15.0	4.1	9.5	50	51,657	2,117	58,162	36.0	24.4	0.5	1.2	54,879	2,130	62,147	40.2	25.8	1.6	3.8	58,101	2,142	64,281	42	27.1	2.8	6.4
		4.1	9.4	60	58,411	2,127	65,668	44.4	27.5	0.5	1.2	61,887	2,144	69,202	49.0	28.9	1.6	3.7	65,362	2,160	72,732	51	30.3	2.7	6.2
		4.0	9.3	70	65,164	2,136	71,227	52	30.5	0.5	1.1	68,893	2,157	76,253	57.8	31.9	1.5	3.5	72,622	2,178	78,372	60	33.3	2.6	6.0
		4.0	9.2	80	71,657	2,156	79,013	60.9	33.2	0.4	0.9	75,222	2,155	82,575	66.6	34.9	1.5	3.5	78,786	2,153	86,132	70	36.6	2.6	6.0
		4.0	9.1	90	78,149	2,175	83,676	69	35.9	0.4	1.0	81,549	2,152	88,892	75.5	37.9	1.5	3.4	84,949	2,128	90,307	78	39.9	2.5	5.9
70	7.5	0.5	1.2	50	46,345	3,232	57,373	37.6	14.3	0.5	1.1	49,420	3,236	60,461	41.2	15.3	2.0	4.6	52,494	3,239	63,545	43	16.2	3.0	6.9
		0.5	1.2	60	53,560	3,279	64,748	45.7	16.3	0.5	1.2	56,903	3,285	68,111	49.9	17.3	2.0	4.6	60,246	3,290	71,471	52	18.3	3.0	6.9
		1.0	2.3	70	60,774	3,327	72,126	54	18.3	0.5	1.1	64,386	3,334	75,762	58.6	19.3	1.5	3.5	67,998	3,341	79,397	61	20.4	3.0	6.9
		1.0	2.3	80	67,716	3,357	79,170	61.9	20.2	0.4	1.0	71,576	3,357	83,030	67.3	21.3	1.5	3.5	75,436	3,357	86,890	70	22.5	3.0	6.9
		1.0	2.3	90	74,657	3,385	86,207	70	22.1	0.4	1.0	78,766	3,379	90,295	76.0	23.3	1.5	3.5	82,874	3,373	94,383	79	24.6	3.0	6.9
	11.3	2.2	5.1	50	46,709	3,126	57,375	37.5	14.9	0.5	1.1	49,713	3,131	60,396	41.2	15.9	1.5	3.5	52,717	3,136	63,417	43	16.8	3.0	6.9
		2.2	5.1	60	53,739	3,157	64,511	45.7	17.0	0.5	1.2	57,065	3,164	67,861	49.9	18.0	2.0	4.6	60,391	3,170	71,207	52	19.1	3.0	6.9
		2.4	5.6	70	60,769	3,188	71,646	54	19.1	0.5	1.0	64,416	3,196	75,321	58.5	20.2	1.5	3.5	68,062	3,203	78,991	61	21.2	3.0	6.9
		2.4	5.6	80	67,690	3,207	78,632	61.9	21.1	0.4	1.0	71,380	3,204	82,312	67.3	22.3	1.5	3.5	75,069	3,201	85,991	70	23.5	3.0	6.9
		2.4	5.6	90	74,610	3,226	85,617	70	23.1	0.4	1.0	78,342	3,212	89,301	76.1	24.4	1.5	3.5	82,074	3,198	92,986	79	25.7	3.0	6.9
	15.0	3.9	9.1	50	47,072	3,020	57,376	37.4	15.6	0.5	1.1	50,007	3,027	60,335	41.1	16.5	1.5	3.5	52,941	3,033	63,290	43	17.5	3.0	6.9
		3.9	9.0	60	53,917	3,035	64,272	45.6	17.8	0.5	1.2	57,226	3,042	67,605	49.8	18.8	2.0	4.6	60,534	3,049	70,937	52	19.9	3.0	6.9
		3.9	8.9	70	60,762	3,048	71,162	54	19.9	0.4	1.0	64,445	3,056	74,872	58.5	21.1	1.5	3.5	68,127	3,064	78,581	61	22.2	3.0	6.9
		3.8	8.9	80	67,663	3,058	78,097	62.0	22.1	0.4	0.9	71,182	3,051	81,592	67.3	23.3	1.5	3.5	74,701	3,044	85,087	70	24.5	3.0	6.9
		3.8	8.8	90	74,563	3,066	85,024	70	24.3	0.4	1.0	77,919	3,045	88,309	76.1	25.6	1.5	3.5	81,274	3,023	91,588	79	26.9	3.0	6.9
90	7.5	0.7	1.5	50	41,767	4,156	55,948	38.9	10.0	0.5	1.1	44,487	4,161	58,683	42.1	10.7	1.6	3.7	47,206	4,164	61,415	44	11.3	2.7	6.3
		0.7	1.5	60	48,849	4,218	63,239	47.0	11.6	0.5	1.2	51,970	4,221	66,372	50.8	12.3	1.6	3.7	55,091	4,224	69,503	53	13.0	2.7	6.2
		1.0	2.2	70	55,930	4,278	70,528	55	13.1	0.5	1.1	59,453	4,281	74,059	59.4	13.9	1.5	3.5	62,976	4,282	77,588	62	14.7	2.6	6.0
		1.0	2.2	80	63,150	4,311	77,860	63.2	14.6	0.4	1.0	66,770	4,310	81,474	68.1	15.5	1.5	3.5	70,389	4,308	85,087	71	16.3	2.6	6.0
		0.9	2.2	90	70,370	4,343	85,187	71	16.2	0.4	1.0	74,086	4,338	88,886	76.8	17.1	1.5	3.4	77,802	4,332	92,584	80	18.0	2.5	5.8
	11.3	2.2	5.1	50	42,127	4,040	55,912	38.8	10.4	0.5	1.1	44,811	4,042	58,603	42.0	11.1	1.6	3.7	47,494	4,045	61,294	44	11.7	2.7	6.3
		2.2	5.1	60	49,136	4,080	63,058	46.9	12.0	0.5	1.2	52,268	4,081	66,192	50.7	12.8	1.6	3.7	55,399	4,081	69,323	53	13.6	2.7	6.2
		2.3	5.4	70	56,145	4,119	70,201	55	13.6	0.5	1.0	59,725	4,118	73,776	59.4	14.5	1.5	3.5	63,304	4,116	77,349	62	15.4	2.6	6.0
		2.3	5.4	80	63,409	4,136	77,520	63.1	15.3	0.4	1.0	66,957	4,129	81,043	68.1	16.2	1.5	3.5	70,503	4,121	84,564	71	17.1	2.6	6.0
		2.3	5.4	90	70,673	4,151	84,835	71	17.0	0.4	1.0	74,187	4,138	88,308	76.8	17.9	1.5	3.4	77,701	4,125	91,777	80	18.8	2.5	5.8
	15.0	3.8	8.7	50	42,487	3,924	55,875	38.7	10.8	0.5	1.1	45,134	3,924	58,524	42.0	11.5	1.6	3.7	47,780	3,924	61,170	44	12.2	2.7	6.4
		3.7	8.6	60	49,424	3,942	62,875	46.8	12.5	0.5	1.2	52,565	3,940	66,009	50.7	13.3	1.6	3.7	55,706	3,937	69,140	53	14.1	2.7	6.2
		3.7	8.6	70	56,359	3,960	69,871	55	14.2	0.4	1.0	59,995	3,955	73,489	59.3	15.2	1.5	3.5	63,631	3,949	77,107	62	16.1	2.6	6.0
		3.7	8.6	80	63,668	3,959	77,178	63.0	16.1	0.4	0.9	67,143	3,947	80,610	68.1	17.0	1.5	3.5	70,616	3,934	84,039	71	17.9	2.6	6.0
		3.7	8.5	90	70,976	3,958	84,481	71	17.9	0.4	1.0	74,288	3,938	87,726	76.8	18.9	1.5	3.4	77,600	3,918	90,969	80	19.8	2.5	5.8

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																								
EWT °F	Flow			EWT °F	Flow 7.5 GPM							Flow 11.3 GPM							Flow 15.0 GPM									
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Rej (Btuh)	LWT (°F)	EER	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
110	7.5	0.8	1.9	50	37,190	5,081	54,525	40.1	7.3	0.5	1.1	39,554	5,086	56,906	43.0	7.8	1.6	3.7	41,919	5,089	59,284	44	8.2	2.7	6.3
		0.8	1.9	60	44,138	5,156	61,729	48.2	8.6	0.5	1.2	47,037	5,157	64,633	51.6	9.1	1.6	3.7	49,936	5,157	67,533	53	9.7	2.7	6.2
		0.9	2.1	70	51,085	5,230	68,931	56	9.8	0.4	1.0	54,520	5,228	72,356	60.3	10.4	1.5	3.5	57,954	5,224	75,779	62	11.1	2.6	6.0
		0.9	2.1	80	58,584	5,266	76,551	64.4	11.1	0.4	1.0	61,963	5,262	79,917	69.0	11.8	1.5	3.5	65,342	5,258	83,282	71	12.4	2.6	6.0
		0.9	2.1	90	66,082	5,300	84,166	72	12.5	0.4	1.0	69,407	5,296	87,476	77.7	13.1	1.5	3.4	72,731	5,291	90,785	80	13.7	2.5	5.8
	11.3	2.2	5.1	50	37,546	4,954	54,449	40.0	7.6	0.5	1.1	39,908	4,953	56,809	42.9	8.1	1.6	3.7	42,270	4,953	59,169	44	8.5	2.7	6.3
		2.2	5.1	60	44,534	5,003	61,606	48.1	8.9	0.5	1.2	47,471	4,998	64,523	51.6	9.5	1.6	3.7	50,408	4,992	67,439	53	10.1	2.7	6.2
		2.2	5.2	70	51,522	5,051	68,756	56	10.2	0.4	1.0	55,034	5,041	72,232	60.2	10.9	1.5	3.5	58,545	5,030	75,708	62	11.6	2.6	6.0
		2.2	5.2	80	59,129	5,064	76,407	64.2	11.7	0.4	0.9	62,534	5,053	79,774	68.9	12.4	1.5	3.5	65,937	5,042	83,139	71	13.1	2.6	6.0
		2.2	5.1	90	66,736	5,075	84,052	72	13.2	0.4	1.0	70,032	5,064	87,311	77.5	13.8	1.5	3.4	73,328	5,052	90,567	80	14.5	2.5	5.8
	15.0	3.6	8.3	50	37,902	4,827	54,372	39.9	7.9	0.5	1.1	40,261	4,821	56,712	42.8	8.4	1.6	3.7	42,620	4,815	59,050	44	8.9	2.7	6.3
		3.6	8.3	60	44,930	4,850	61,479	48.0	9.3	0.5	1.2	47,904	4,838	64,412	51.5	9.9	1.6	3.7	50,878	4,826	67,343	53	10.5	2.7	6.2
		3.6	8.2	70	51,957	4,872	68,580	56	10.7	0.4	1.0	55,546	4,854	72,107	60.1	11.4	1.5	3.5	59,136	4,835	75,633	62	12.2	2.6	6.0
		3.6	8.2	80	59,674	4,861	76,260	64.1	12.3	0.4	0.9	63,103	4,843	79,627	68.8	13.0	1.5	3.5	66,531	4,825	82,992	71	13.8	2.6	6.0
		3.6	8.2	90	67,390	4,849	83,936	72	13.9	0.4	1.0	70,658	4,831	87,143	77.4	14.6	1.5	3.4	73,925	4,813	90,349	80	15.4	2.5	5.8
120	7.5	0.9	2.0	50	34,901	5,543	52,246	40.0	6.3	0.5	1.1	37,088	5,548	56,018	43.4	6.7	1.6	3.7	39,275	5,552	56,481	45	7.1	2.7	6.3
		0.9	2.0	60	41,782	5,625	60,975	48.9	7.4	0.5	1.2	44,571	5,625	63,764	52.1	7.9	1.6	3.7	47,359	5,624	66,548	54	8.4	2.7	6.2
		0.9	2.0	70	48,663	5,706	66,029	57	8.5	0.4	1.0	52,053	5,701	71,505	60.7	9.1	1.5	3.5	55,443	5,695	72,649	62	9.7	2.6	6.0
		0.9	2.0	80	56,301	5,743	75,896	65.0	9.8	0.4	0.9	59,560	5,738	79,138	69.4	10.4	1.5	3.5	62,819	5,733	82,380	72	11.0	2.6	6.0
		0.9	2.0	90	63,938	5,779	81,041	72	11.1	0.4	1.0	67,067	5,775	86,771	78.1	11.6	1.5	3.4	70,195	5,771	86,921	80	12.2	2.5	5.8
	11.3	2.2	5.1	50	35,255	5,411	53,717	40.6	6.5	0.5	1.1	37,457	5,409	55,913	43.3	6.9	1.6	3.7	39,658	5,407	58,107	45	7.3	2.7	6.3
		2.2	5.1	60	42,233	5,465	60,880	48.7	7.7	0.5	1.2	45,073	5,456	63,689	52.0	8.3	1.6	3.7	47,912	5,447	66,497	54	8.8	2.7	6.2
		2.2	5.0	70	49,210	5,517	68,034	57	8.9	0.4	1.0	52,688	5,502	71,461	60.6	9.6	1.5	3.5	56,166	5,487	74,888	63	10.2	2.6	6.0
		2.2	5.0	80	56,989	5,528	75,851	64.8	10.3	0.4	0.9	60,322	5,515	79,139	69.3	10.9	1.5	3.5	63,654	5,502	82,427	72	11.6	2.6	6.0
		2.2	5.0	90	64,768	5,537	83,660	73	11.7	0.4	1.0	67,955	5,527	86,813	77.9	12.3	1.5	3.4	71,142	5,516	89,963	81	12.9	2.5	5.8
	15.0	3.5	8.1	50	35,609	5,279	52,532	40.0	6.7	0.5	1.1	37,825	5,270	55,806	43.3	7.2	1.6	3.7	40,040	5,261	56,792	45	7.6	2.7	6.3
		3.5	8.1	60	42,683	5,304	60,780	48.6	8.0	0.5	1.2	45,574	5,287	63,613	51.9	8.6	1.6	3.7	48,464	5,270	66,445	54	9.2	2.7	6.2
		3.5	8.1	70	49,756	5,328	66,531	56	9.3	0.4	1.0	53,322	5,303	71,416	60.5	10.1	1.5	3.5	56,888	5,278	73,321	62	10.8	2.6	6.0
		3.5	8.1	80	57,677	5,312	75,802	64.6	10.9	0.4	0.9	61,083	5,291	79,136	69.1	11.5	1.5	3.5	64,488	5,270	82,469	71	12.2	2.6	6.0
		3.5	8.1	90	65,597	5,295	81,772	72	12.4	0.4	1.0	68,843	5,278	86,852	77.8	13.0	1.5	3.4	72,088	5,261	88,052	80	13.7	2.5	5.8

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Source				Load																								
EWT °F	Flow			EWT °F	Flow 7.5 GPM							Flow 11.3 GPM							Flow 15.0 GPM									
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT							PSI	FT
20	15.0	4.6	10.7	60	40,835	2,462	31,925	71	4.9	0.5	1.1	40,665	2,404	32,463	67	5.0	1.5	3.6	40,495	2,346	31,853	65	5.1	2.6	6.1
		4.6	10.7	80	39,666	3,217	28,690	91	3.6	0.4	0.9	39,485	3,150	28,737	87	3.7	1.5	3.3	39,304	3,083	28,785	85	3.7	2.5	5.8
		4.6	10.7	100	38,742	4,145	24,599	110	2.7	0.4	0.9	38,550	4,069	24,667	107	2.8	1.4	3.2	38,357	3,992	24,736	105	2.8	2.4	5.5
30	7.5	1.2	2.8	60	42,808	2,435	33,772	72	5.2	0.5	1.2	42,666	2,371	34,576	68	5.3	1.6	3.6	42,523	2,307	33,857	66	5.4	2.6	6.1
		1.2	2.8	80	41,613	3,195	30,712	91	3.8	0.5	1.2	41,476	3,123	30,820	87	3.9	1.5	3.5	41,338	3,050	30,931	86	4.0	2.5	5.8
		1.2	2.8	100	40,222	4,125	26,148	111	2.9	0.4	0.9	40,116	4,043	26,321	107	2.9	1.4	3.2	40,010	3,960	26,498	105	3.0	2.4	5.5
		1.2	2.8	120	38,634	5,224	21,059	130	2.2	0.4	1.0	38,588	5,131	21,081	127	2.2	1.4	3.2	38,541	5,037	21,478	125	2.2	2.4	5.4
	11.30	2.9	6.6	60	45,254	2,442	36,922	72	5.4	0.5	1.1	45,084	2,375	36,981	68	5.6	1.6	3.6	44,914	2,307	36,336	66	5.7	2.6	6.1
		2.9	6.6	80	43,841	3,210	32,888	92	4.0	0.5	1.2	43,613	3,174	32,783	88	4.0	1.5	3.5	43,384	3,137	32,682	86	4.1	2.5	5.8
		2.9	6.6	100	42,187	4,148	28,034	111	3.0	0.4	0.9	41,985	4,099	27,999	107	3.0	1.4	3.3	41,782	4,050	27,963	106	3.0	2.5	5.7
		2.9	6.6	120	40,291	5,257	22,354	131	2.2	0.4	0.9	40,201	5,152	22,622	127	2.3	1.4	3.2	40,110	5,047	23,020	126	2.3	2.4	5.4
	15.0	4.5	10.4	60	47,699	2,449	38,739	73	5.7	0.5	1.1	47,502	2,378	39,388	68	5.9	1.6	3.6	47,304	2,306	38,814	66	6.0	2.6	6.1
		4.5	10.4	80	46,069	3,224	35,069	92	4.2	0.5	1.2	45,749	3,224	34,749	88	4.2	1.5	3.5	45,429	3,223	34,432	86	4.1	2.5	5.8
		4.5	10.4	100	44,152	4,171	29,921	112	3.1	0.4	0.9	43,853	4,156	29,673	108	3.1	1.5	3.3	43,553	4,140	29,427	106	3.1	2.5	5.6
		4.5	10.4	120	41,947	5,289	24,155	131	2.3	0.4	0.9	41,813	5,173	24,163	127	2.4	1.4	3.2	41,678	5,057	24,562	126	2.4	2.4	5.5
40	7.5	1.2	2.7	60	50,787	2,480	42,326	74	6.0	0.5	1.1	50,493	2,401	42,301	69	6.2	1.6	3.6	50,200	2,322	41,270	67	21.6	2.6	6.1
		1.2	2.7	80	49,399	3,259	38,279	93	4.4	0.5	1.1	49,151	3,167	38,345	89	4.5	1.5	3.4	48,902	3,074	38,412	87	15.9	2.5	5.8
		1.2	2.7	100	47,692	4,203	33,350	113	3.3	0.4	0.9	47,530	4,099	33,544	108	3.4	1.4	3.2	47,367	3,994	33,739	106	11.9	2.4	5.5
		1.2	2.7	120	45,664	5,312	27,538	132	2.5	0.4	0.9	45,630	5,197	27,898	128	2.6	1.4	3.2	45,596	5,081	28,236	126	9.0	2.3	5.4
	11.30	2.7	6.2	60	53,571	2,488	45,081	74	6.3	0.5	1.1	53,248	2,405	45,042	69	6.5	1.6	3.6	52,924	2,322	44,107	67	22.8	2.6	6.1
		2.7	6.2	80	51,986	3,274	40,816	94	4.7	0.5	1.1	51,669	3,209	40,720	89	4.7	1.5	3.4	51,352	3,144	40,627	87	16.3	2.5	5.8
		2.7	6.2	100	50,034	4,225	35,619	113	3.5	0.4	0.9	49,789	4,145	35,646	109	3.5	1.4	3.3	49,544	4,065	35,674	107	12.2	2.4	5.6
		2.7	6.2	120	47,715	5,343	29,483	133	2.6	0.4	0.9	47,609	5,216	29,812	128	2.7	1.4	3.1	47,504	5,088	30,141	127	9.3	2.3	5.4
	15.0	4.4	10.1	60	56,354	2,496	47,836	75	6.6	0.5	1.1	56,001	2,409	47,781	70	6.8	1.6	3.6	55,648	2,321	46,942	67	24.0	2.6	6.1
		4.4	10.1	80	54,573	3,287	43,357	95	4.9	0.5	1.1	54,187	3,250	43,098	90	4.9	1.5	3.4	53,800	3,212	42,842	87	16.8	2.5	5.8
		4.4	10.1	100	52,377	4,247	37,887	114	3.6	0.4	0.9	52,049	4,192	37,746	109	3.6	1.4	3.3	51,721	4,136	37,607	107	12.5	2.5	5.7
		4.4	10.1	120	49,765	5,374	31,430	133	2.7	0.4	0.8	49,588	5,234	31,730	129	2.8	1.4	3.1	49,411	5,095	32,046	127	9.7	2.3	5.4
50	7.5	1.1	2.7	60	58,765	2,525	50,151	76	6.8	0.5	1.1	58,321	2,431	50,026	70	7.0	1.6	3.6	57,877	2,337	48,683	68	24.8	2.6	6.1
		1.1	2.7	80	57,185	3,323	45,847	95	5.0	0.5	1.1	56,826	3,211	45,870	90	5.2	1.5	3.4	56,466	3,099	45,893	88	18.2	2.5	5.8
		1.1	2.7	100	55,162	4,282	40,552	115	3.8	0.4	0.9	54,943	4,155	40,766	110	3.9	1.4	3.2	54,724	4,028	40,980	107	13.6	2.4	5.5
		1.1	2.7	120	52,694	5,401	34,266	134	2.9	0.4	0.9	52,673	5,263	34,716	129	2.9	1.3	3.1	52,651	5,124	34,994	127	10.3	2.3	5.4
		1.1	2.7	130	Operation not recommended							52,003	5,776	32,295	139	2.6	1.3	3.0	52,012	5,592	33,012	137	9.3	2.3	5.2
	11.30	2.5	5.8	60	61,888	2,534	53,240	77	7.2	0.5	1.1	61,411	2,436	53,099	71	7.4	1.5	3.6	60,935	2,337	51,877	68	26.1	2.6	6.1
		2.5	5.8	80	60,131	3,337	48,744	96	5.3	0.5	1.1	59,725	3,244	48,656	91	5.4	1.5	3.4	59,320	3,150	48,572	88	18.8	2.5	5.8
		2.5	5.8	100	57,882	4,302	43,203	115	3.9	0.4	0.9	57,594	4,191	43,294	110	4.0	1.4	3.2	57,307	4,080	43,384	108	14.0	2.4	5.6
		2.5	5.8	120	55,139	5,430	36,613	135	3.0	0.4	0.8	55,018	5,279	37,006	130	3.1	1.3	3.1	54,898	5,129	37,262	128	10.7	2.3	5.4
		2.5	5.8	130	Operation not recommended							54,264	5,772	34,570	140	2.8	1.3	3.0	54,168	5,613	35,059	137	9.7	2.3	5.3
	15.0	4.2	9.8	60	65,009	2,544	56,330	77	7.5	0.5	1.1	64,501	2,440	56,176	71	7.7	1.5	3.6	63,992	2,336	55,071	68	27.4	2.6	6.1
		4.2	9.8	80	63,077	3,350	51,645	97	5.5	0.5	1.1	62,624	3,276	51,446	91	5.6	1.5	3.4	62,172	3,201	51,251	88	19.4	2.5	5.8
		4.2	9.8	100	60,602	4,322	45,854	116	4.1	0.4	0.8	60,245	4,228	45,819	111	4.2	1.4	3.3	59,889	4,133	45,787	108	14.5	2.5	5.7
		4.2	9.8	120	57,583	5,458	38,960	135	3.1	0.3	0.8	57,363	5,296	39,293	130	3.2	1.3	3.1	57,143	5,133	39,529	128	11.1	2.3	5.4
		4.2	9.8	130	Operation not recommended							56,526	5,768	36,846	140	2.9	1.3	3.0	56,326	5,633	37,106	138	10.0	2.3	5.3

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Table continued on next page.

Table continued from previous page.

Source				Load																					
EWT °F	Flow			EWT °F	Flow 7.5 GPM							Flow 11.3 GPM							Flow 15.0 GPM						
	GPM	WPD			Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD		Total Cap (Btuh)	Power Input (Watts)	Heat of Extract (Btuh)	LWT (°F)	COP	WPD	
		PSI	FT							PSI	FT						PSI	FT						PSI	FT
60	7.5	1.1	2.6	60	66,744	2,569	57,977	78	7.6	0.5	1.1	66,149	2,461	57,752	72	7.9	1.5	3.6	65,555	2,352	56,095	69	27.9	2.6	6.1
		1.1	2.6	80	64,972	3,387	53,415	97	5.6	0.4	1.0	64,501	3,255	53,395	91	5.8	1.5	3.4	64,031	3,123	53,374	89	20.5	2.5	5.8
		1.1	2.6	100	62,632	4,360	47,755	117	4.2	0.4	0.9	62,357	4,211	47,989	111	4.3	1.4	3.2	62,081	4,062	48,221	108	15.3	2.4	5.5
		1.1	2.6	120	59,724	5,489	40,995	136	3.2	0.4	0.8	59,715	5,329	41,532	131	3.3	1.3	3.1	59,707	5,168	41,752	128	11.6	2.3	5.3
		1.1	2.6	130	Operation not recommended							58,991	5,827	39,109	140	3.0	1.3	3.0	59,030	5,600	39,975	138	10.5	2.3	5.2
	11.30	2.3	5.4	60	70,204	2,581	61,399	79	8.0	0.5	1.1	69,575	2,466	61,161	72	8.3	1.5	3.6	68,945	2,352	59,648	70	29.3	2.6	6.0
		2.3	5.4	80	68,276	3,401	56,672	98	5.9	0.4	1.0	67,782	3,279	56,594	92	6.1	1.5	3.4	67,287	3,157	56,518	89	21.3	2.5	5.8
		2.3	5.4	100	65,729	4,379	50,788	118	4.4	0.4	0.9	65,399	4,237	50,942	112	4.5	1.4	3.2	65,069	4,096	51,095	109	15.9	2.4	5.6
		2.3	5.4	120	62,563	5,516	43,742	137	3.3	0.3	0.8	62,427	5,343	44,197	131	3.4	1.3	3.1	62,291	5,169	44,382	129	12.1	2.3	5.3
		2.3	5.4	130	Operation not recommended							61,648	5,845	41,705	141	3.1	1.3	3.0	61,574	5,646	42,336	138	10.9	2.3	5.2
	15.0	4.1	9.5	60	73,665	2,591	64,823	80	8.3	0.5	1.1	73,000	2,471	64,569	73	8.7	1.5	3.6	72,335	2,351	63,199	70	30.8	2.6	6.0
		4.1	9.5	80	71,580	3,414	59,933	99	6.1	0.4	1.0	71,062	3,302	59,796	93	6.3	1.5	3.4	70,543	3,189	59,661	89	22.1	2.5	5.8
		4.1	9.5	100	68,826	4,398	53,821	118	4.6	0.3	0.8	68,441	4,264	53,892	112	4.7	1.4	3.2	68,056	4,129	53,968	109	16.5	2.4	5.6
		4.1	9.5	120	65,401	5,543	46,489	137	3.5	0.3	0.7	65,138	5,357	46,860	132	3.6	1.3	3.0	64,876	5,171	47,013	129	12.5	2.3	5.3
		4.1	9.5	130	Operation not recommended														64,118	5,692	44,698	139	11.3	2.3	5.2
70	7.5	1.1	2.5	60	74,722	2,614	65,803	80	8.4	0.5	1.0	73,977	2,491	65,478	73	8.7	1.5	3.5	73,232	2,367	63,508	70	30.9	2.6	6.0
		1.1	2.5	80	72,758	3,451	60,983	99	6.2	0.4	1.0	72,176	3,299	60,920	93	6.4	1.5	3.4	71,595	3,148	60,855	90	22.7	2.5	5.8
		1.1	2.5	100	70,102	4,439	54,957	119	4.6	0.4	0.9	69,770	4,267	55,211	112	4.8	1.4	3.2	69,438	4,096	55,462	109	17.0	2.4	5.5
		1.1	2.5	120	66,754	5,578	47,723	138	3.5	0.3	0.8	66,758	5,395	48,350	132	3.6	1.3	3.0	66,762	5,211	48,510	129	12.8	2.3	5.3
		1.1	2.5	130	Operation not recommended														66,047	5,608	46,939	139	11.8	2.2	5.2
	11.30	2.2	5.0	60	78,521	2,627	69,559	81	8.8	0.4	1.0	77,738	2,497	69,218	74	9.1	1.5	3.5	76,956	2,367	67,418	71	32.5	2.6	6.0
		2.2	5.0	80	76,421	3,464	64,600	100	6.5	0.4	1.0	75,838	3,314	64,531	93	6.7	1.5	3.4	75,255	3,163	64,463	90	23.8	2.5	5.8
		2.2	5.0	100	73,577	4,456	58,373	120	4.8	0.4	0.8	73,204	4,283	58,590	113	5.0	1.4	3.2	72,832	4,111	58,805	110	17.7	2.4	5.6
		2.2	5.0	120	69,987	5,603	50,871	139	3.7	0.3	0.7	69,836	5,406	51,391	132	3.8	1.3	3.0	69,685	5,210	51,503	130	13.4	2.3	5.3
		2.2	5.0	130	Operation not recommended														68,979	5,680	49,614	139	12.1	2.2	5.2
	15.0	4.0	9.2	60	82,320	2,639	73,317	82	9.1	0.4	1.0	81,500	2,502	72,963	74	9.5	1.5	3.5	80,679	2,366	71,328	71	34.1	2.6	6.0
		4.0	9.2	80	80,084	3,477	68,221	101	6.8	0.4	1.0	79,499	3,328	68,144	94	7.0	1.5	3.4	78,915	3,178	68,071	91	24.8	2.5	5.8
		4.0	9.2	100	77,051	4,473	61,788	121	5.0	0.3	0.7	76,638	4,300	61,966	114	5.2	1.4	3.2	76,224	4,126	62,148	110	18.5	2.4	5.6
		4.0	9.2	120	73,219	5,627	54,018	140	3.8	0.3	0.7	72,914	5,418	54,428	133	3.9	1.3	3.0	72,608	5,209	54,496	130	13.9	2.3	5.3
		4.0	9.2	130	Operation not recommended														71,911	5,751	52,290	140	12.5	2.3	5.2
80	7.5	1.0	2.4	60	82,701	2,659	71,896	82	9.1	0.4	1.0	81,805	2,521	73,203	75	9.5	1.5	3.5	80,909	2,382	70,921	71	10.0	2.6	6.0
		1.0	2.4	80	80,544	3,515	68,551	101	6.7	0.4	0.9	79,852	3,344	68,442	94	7.0	1.5	3.3	79,159	3,172	68,336	91	7.3	2.5	5.8
		1.0	2.4	100	77,572	4,517	62,160	121	5.0	0.4	0.9	77,184	4,324	62,431	114	5.2	1.4	3.2	76,795	4,130	62,703	110	5.4	2.4	5.5
		1.0	2.4	120	73,784	5,666	53,914	140	3.8	0.3	0.7	73,801	5,461	55,168	133	4.0	1.3	3.0	73,817	5,255	55,268	130	4.1	2.3	5.3
		1.0	2.4	130	Operation not recommended														73,065	5,617	53,902	140	3.8	2.2	5.2
	11.30	2.0	4.6	60	86,838	2,673	77,718	83	9.5	0.4	1.0	85,902	2,528	77,276	75	10.0	1.5	3.5	84,966	2,382	75,189	72	10.5	2.6	6.0
		2.0	4.6	80	84,566	3,528	72,528	103	7.0	0.4	0.9	83,895	3,349	72,468	95	7.3	1.5	3.3	83,223	3,170	72,408	91	7.7	2.5	5.8
		2.0	4.6	100	81,424	4,533	65,957	122	5.3	0.4	0.8	81,009	4,330	66,235	114	5.5	1.4	3.2	80,594	4,126	66,516	111	5.7	2.4	5.5
		2.0	4.6	120	77,411	5,689	58,000	141	4.0	0.3	0.7	77,245	5,470	58,581	134	4.1	1.3	3.0	77,079	5,251	58,624	131	4.3	2.3	5.3
		2.0	4.6	130	Operation not recommended														76,384	5,713	56,892	140	3.9	2.2	5.2
	15.0	3.8	8.9	60	90,975	2,686	80,357	85	9.9	0.4	1.0	89,999	2,534	81,353	76	10.4	1.5	3.5	89,023	2,381	79,456	72	11.0	2.6	6.0
		3.8	8.9	80	88,588	3,540	76,510	104	7.3	0.4	0.9	87,937	3,354	76,493	96	7.7	1.5	3.3	87,286	3,167	76,480	92	8.1	2.5	5.8
		3.8	8.9	100	85,276	4,549	69,755	123	5.5	0.3	0.7	84,834	4,336	70,040	115	5.7	1.4	3.1	84,392	4,122	70,328	111	6.0	2.4	5.5
		3.8	8.9	120	81,037	5,712	61,163	142	4.2	0.3	0.6	80,689	5,480	61,991	134	4.3	1.3	3.0	80,341	5,247	61,980	131	4.5	2.3	5.3
		3.8	8.9	130	Operation not recommended														79,704	5,809	59,883	141	4.0	2.2	5.2

Notes:
- Operation in the light grey area requires antifreeze.
- Operation in the black area is not recommended.

Antifreeze Correction Table

Antifreeze Type	Antifreeze %	Cooling EWT 90 °F			Heating EWT 30 °F		WPD Corr. Fct. EWT 30 °F
		Total Cap	Sens Cap	Power	Htg Cap	Power	
Water	0	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

Standard Unit

Unit Size	Rated Voltage	Voltage Code	Voltage Min/Max	Compressor A			No Pump		
				RLA	LRA	Qty	Total Unit FLA	Min Circuit Amp	Fuse HACR
MW036	208/230-1-60	G.J.	187/252	14.6	76.0	1	14.6	18.3	30
	265/60/1	E.D	249/291	10.2	55.0	1	10.2	12.7	20
	208/230-3-60	H.K.	187/252	8.6	70.0	1	8.6	10.8	15
	460-3-60	F.L.	432/504	4.5	39.0	1	4.5	5.6	15
MW060	208/230-1-60	G.J.	187/252	22.3	149.0	1	22.3	27.9	50
	208/230-3-60	H.K.	187/252	14.0	150.0	1	14.0	17.5	30
	460-3-60	F.L.	432/504	6.3	58.0	1	6.3	7.9	15
MW120	208/230-1-60	G.J.	187/252	23.7	157.0	2	47.4	53.4	70
	208/230-3-60	H.K.	187/252	16.0	156.4	2	32.1	36.1	50
	460-3-60	F.L.	432/504	7.1	69.0	2	14.1	15.9	20

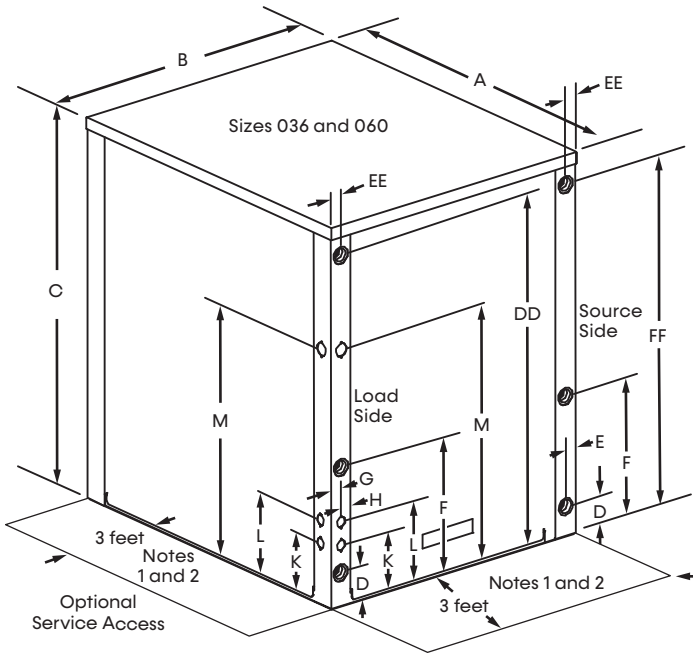
MARS (MW) Series

Unit Size	MW036	MW060	MW120
Compressor (qty)	1		2
Number of refrigerant circuits	1	1	2
Factory Charge R-454B - (oz.) (per circuit)	42	48	48
Refrigerant Leak Detection System	O	O	O
Water Connection Size			
Source/Load - FPT	1"		1-1/2"
HWG - FPT	1/2"		
Weight			
Weight - Operating (lbs) [kg]	187 [85]	239 [108]	496 [224]
Weight - Shipping (lbs) [kg]	212 [96]	264 [120]	520 [235]
Water Volume			
Gallons [Liters]	0.56 [2.12]	0.7 [2.65]	1.40 [5.30]

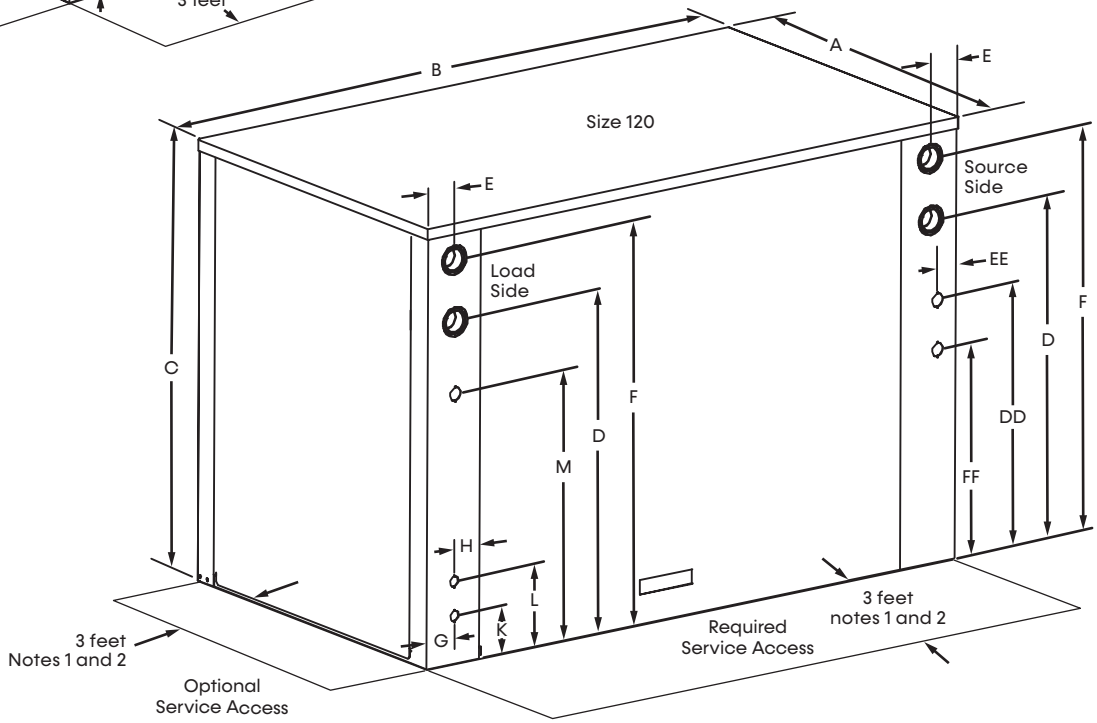
- O = Optional, R = Required

Unit Maximum Water Working Pressure and Flow

Unit Maximum Water Working Pressure PSIG (kPa)	
Unit	145 (100)
Maximum Water Flow Through Unit GPM (l/min)	
036	25 (94.6)
060, 120	35 (132.5)



Notes:
1. Front and side access is preferred for service access. All components may be serviced from the front access panel if side access is not available.
2. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.



Unit Size		Overall Cabinet			Water Connections														Electrical Knockouts				
		Depth/ Length	Width	Height	Water In (Source)		Water Out (Source)		Water In (Load)		Water Out (Load)		Water In/Out Φ	HWG In		HWG Out		HWG In/Out Φ	Low Voltage		High Voltage	G	H
		A	B	C	D	E	F	E	D	E	F	E		DD	EE	FF	EE		K	L	M		
																			KO 1/2"		KO 3/4"		
036-060	inch	27.5	25.4	27.0	4.0	2.2	10.6	2.2	4.0	2.2	10.6	2.2	1.0	25.4	2.2	25.4	2.2	0.5	6.0	7.6	20.6	2.1	1.1
	cm	69.9	64.5	68.6	10.1	5.5	26.9	5.5	26.9	5.5	10.1	5.5	2.5	64.5	5.6	64.5	5.6	1.3	15.3	19.4	52.2	5.3	2.9
120	inch	30.6	48.8	34.8	28.3	2.8	32.2	2.8	28.3	2.8	32.2	2.8	1.5	23.3	2.1	19.8	2.1	0.5	7.1	9.1	24.3	2.8	1.1
	cm	77.7	124.0	88.4	71.8	7.2	81.9	7.2	81.8	7.2	71.8	7.2	3.8	59.2	5.4	50.3	5.3	1.3	18.1	23.2	61.6	7.0	2.9

GENERAL

Furnish and install MARS MW water-source heat pumps as indicated on the plans. Equipment shall be completely assembled, piped and internally wired. Capacities and characteristics as listed in the schedule and the specifications that follow.

Units shall be supplied completely factory built capable of operating over an entering water temperature range from 20° to 120°F (-6.7° to 48.9°C) as standard. All equipment listed in this section must be rated in accordance with Air-Conditioning, Heating and Refrigeration Institute/International Standards Organization (AHRI/ISO 13256-2). All equipment must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL 60335-2-40 4th Edition, UL 60335-1 6th Edition for the United States and Can/CSA C22.2 No. 60335-2-40:22, CAN/CSA C22.2 No 60335-1:16 for Canada, by Intertek Testing Laboratories (ETL). The units shall have AHRI/ISO and ETL-US-C labels.

All units shall pass a factory acceptance test. The quality control system shall automatically perform the factory acceptance test via computer. A detailed report card from the factory acceptance test shall ship with each unit. **NOTE: If unit fails the factory acceptance test it shall not be allowed to ship. Unit serial number will be recorded by factory acceptance test and furnished on report card for ease of unit warranty status.**

BASIC CONSTRUCTION

All units must have multiple removable panels for serviceability of compressor compartment. **Units having only one access panel shall not be acceptable.** All units must have front access for side-by-side installations.

The heat pumps shall be fabricated from heavy gauge galvanized steel. All interior surfaces shall be lined with ½-inch (12.7 mm) thick, 1½ lb/ft³ (24 kg/m³) acoustic type glass fiber insulation. Insulation placement shall be designed in a manner that will eliminate any exposed edges.

Standard cabinet panel insulation must meet NFPA 90A requirements, air erosion and mold growth limits of UL-181, stringent fungal resistance test per ASTM-C1071 and ASTM G21, and shall meet zero-level bacteria growth per ASTM G22. **Unit insulation must meet these stringent requirements or unit(s) will not be accepted.**

Cabinets shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring. All factory-installed wiring passing through factory knockouts and openings shall be protected from sheet metal edges at openings by plastic ferrules. Supply and return water connections shall be copper FPT fittings. **Contractor shall be responsible for any extra costs involved in the installation of units that do not have this feature.** Contractor must ensure that units can be easily removed for servicing and coordinate locations of electrical conduit and lights with the electrical contractor.

Option: Sound Attenuation - Sizes 036, 060, and 120 include sound-attenuating insulation on unit base pan and all removable panels plus a refrigerant line muffler.

REFRIGERANT CIRCUIT

Units shall have sealed, isolated refrigerant circuit(s), each including a high-efficiency scroll compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, a reversing valve, load and source brazed-plate refrigerant-to-water heat exchangers, and safety controls including a high pressure switch, low pressure switch (loss of charge), and low water temperature sensors. Access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety device shall prevent compressor operation via a microprocessor lockout circuit.

Unit shall be supplied with extended range insulation, which adds closed cell insulation to internal water lines, and provides insulation on suction side refrigeration tubing including refrigerant-to-water heat exchangers.

Hermetic compressors shall be internally sprung. The compressors shall have a dual level vibration isolation system. The compressors will be mounted on specially engineered sound-tested EPDM vibration isolation grommets to a large heavy gauge compressor mounting

plate, which is then isolated from the cabinet base with EPDM grommets for maximized vibration attenuation. Compressors shall have thermal overload protection.

The refrigerant-to-water heat exchangers shall be stainless steel-copper brazed plate, rated to withstand 650 PSIG (4482 kPa) working refrigerant pressure and 145 PSIG (999.7 kPa) working water pressure.

Units charged with 62 ounces or greater of R-454B shall be supplied with a Refrigerant Detection System (RDS) with sensors to be strategically placed within the cabinet. In the event of a refrigerant leak, the RDS disables compressor operation and the RDS control board sends a signal the CXM2 or DXM2.5 to energize a pair of contacts to control a ventilation fan, if required. **Units charged with 62 ounces or greater of R-454B that do not have an RDS shall not be acceptable.**

Option: The Refrigerant Detection System (RDS) package shall consist of the RDS module and sensors to be strategically placed within the cabinet. In the event of a refrigerant leak, the RDS disables compressor operation and enables a field-supplied exhaust fan or ventilator dampers to disperse any concentration of leaked refrigerant in compliance with UL 60335-2-40 safety standards for flammable refrigerants (optional for all unit sizes).

Option: The unit shall be supplied with a hot water generator (desuperheater).

ELECTRICAL

A control box shall be located within the unit compressor compartment and shall contain a 75VA transformer, 24V activated, 3-pole compressor contactor, terminal block for thermostat wiring and solid-state controller for complete unit operation. Reversing valve wiring shall be routed through this electronic controller. Units shall be name-plated for use with time delay fuses or HACR circuit breakers. Unit controls shall be 24V and provide heating or cooling as required by the remote aquastat/sensor. Units with two compressors (size 120) shall have a solid-state time delay relay and random start to prevent both compressors from starting simultaneously.

SOLID-STATE CONTROL SYSTEM (CXM2 COMMUNICATING CONTROLS)

Units shall have a solid-state control system. Units utilizing electro-mechanical control shall not be acceptable. The control system microprocessor board shall be specifically designed to protect against building electrical system noise contamination, EMI, and RFI interference. The control system shall interface with a heat-pump type thermostat. The CXM2 comes standard on size 120 and includes the following features:

a. Anti-short cycle time delay on compressor operation.
b. Random start on power up mode.
c. Low voltage protection.
d. High voltage protection.
e. Unit shutdown on high or low refrigerant pressures.
f. Unit shutdown on low water temperature.
g. Option to reset unit at thermostat or disconnect.
h. Automatic intelligent reset. Unit shall automatically reset the unit 5 minutes after trip if the fault has cleared. If a fault occurs 3 times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur.
i. Ability to defeat time delays for servicing.
j. The low-pressure switch shall not be monitored for the first 120 seconds after a compressor start command to prevent nuisance safety trips.
k. 24V output to cycle a motorized water valve or other device with compressor contactor.
l. Unit Performance Sentinel (UPS). The UPS warns when the heat pump is running inefficiently.
m. Water coil low temperature sensing (selectable for water or anti-freeze).
n. Minimized reversing valve operation (Unit control logic shall only switch the reversing valve when cooling is demanded for the first time. The reversing valve shall be held in this position until the first call for heating, ensuring quiet operation and increased valve life).

o. Emergency shutdown contacts.

p. Entering and leaving water temperature sensing.

q. Load Loop leaving water temperature sensing.

r. Compressor discharge temperature sensing.

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

When CXM2 is connected to the Wireless Service Tool, the installer/service technician can; check DIP switch S2 settings; run operation modes manually; check all physical inputs from thermostat and refrigerant pressure switches status, (Y1, Y2, W, O, G, H, ESD, NSB, OR, HP switch, and LOC switch); current or at time of fault the following temperatures - water coil (LT1), compressor discharge, leaving water, entering water and control voltage; record last five faults, list possible reasons, and clear faults.

DXM2.5 ADVANCED COMMUNICATING CONTROLS

This control system is a communicating controller. The DXM2.5 is standard for unit sizes 036 and 060.

DXM2.5 shall have the above-mentioned features of the CXM2 along with the following expanded features:

a. Removable thermostat connector.

b. Night setback control.

c. Random start on return from night setback.

d. Override temperature control with 2-hour timer for room occupant to override setback temperature at the thermostat.

e. Dry contact night setback output for digital night setback thermostats.

f. Ability to work with heat pump or heat/cool (Y, W) type thermostats.

g. Ability to work with heat pump thermostats using O or B reversing valve control.

h. Boilerless system heat control at low loop water temperature.

i. Ability to allow up to three units to be controlled by one thermostat.

j. Relay to operate an external damper.

k. Relay to start system pump.

l. 75VA control transformer. Control transformer shall have load side short circuit and overload protection via a built-in circuit breaker.

Option: Unit-Integrated Variable Water Flow Modulating Water Valve for precise water-flow control

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

When DXM2.5 is connected to the Wireless Service Tool, the installer/service technician can; check and set CFM; check DIP switch S1, S2, and S3 settings; run operation modes manually; check all physical inputs from thermostat and refrigerant pressure switches status, (Y1, Y2, W, O, G, H, ESD, NSB, OR, HP switch, and LOC switch); current or at time of fault the following temperatures - water coil (LT1), compressor discharge, leaving water, entering water and control voltage; record last five faults, list possible reasons, and clear faults.

Option: MPC (Multiple Protocol Control) interface system

Units shall have all the features listed above (either CXM2 or DXM2.5) and the control board will be supplied with a Multiple Protocol interface board. Available protocols are BACnet MS/TP, Modbus, or Johnson Controls N2. The choice of protocol shall be field selectable/changeable via the use of a simple selector switch. Protocol selection shall not require any additional programming or special external hardware or software tools. This enables all units to be daisy-chain connected by a 2-wire twisted-pair shielded cable. The following points must be available at a central or remote computer location:

a. Source leaving water temperature
b. Load leaving water temperature
c. Command of space temperature setpoint
d. Cooling status
e. Heating status
f. Low temperature sensor alarm
g. Low pressure sensor alarm
h. High pressure switch alarm
i. Hi/low voltage alarm
j. Unoccupied/occupied command
k. Cooling command
l. Heating command
m. Fault reset command
n. Itemized fault code revealing reason for specific shutdown fault (any one of seven)

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

WARRANTY

MARS shall warranty equipment for a period of 12 months from startup or 18 months from shipping (which ever occurs first).

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

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

Option: Extended 4-year control board warranty covers the CXM2/DXM2.5 for a total of 5 years.

FIELD-INSTALLED OPTIONS

Hose Kits

All units shall be connected with hoses. The hoses shall be 2-feet (61 cm) long, braided stainless steel; fire-rated hoses complete with adapters. Only fire-rated hoses will be accepted.

Valves

The following valves are available and will be shipped loose:

a. Ball valve; bronze material, standard port full flow design, FPT connections.
b. Ball valve with memory stop and PT port.
c. "Y" strainer with blowdown valve; bronze material, FPT connections.
d. Motorized water valve; slow acting, 24V, FPT connections.

Hose Kit Assemblies

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

a. Supply and return hoses having ball valve with PT port.

b. Supply hose having ball valve with PT port; return hose having automatic flow regulator valve with PT ports, and ball valve.

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

d. Supply hose having "Y" strainer with blowdown valve, and ball valve with PT port; return hose having ball valve with PT port.

WIRELESS SERVICE TOOL

Allows installation and service personnel to access the configuration and service modes of the DXM2.5:

a. Configure the leaving water temperature setpoint, pump, or modulating valve operation.

b. Diagnose by viewing fault history and operating conditions at the time of fault and manually operating the unit.

⚠ NOTICE

This product specification document is furnished as a means to copy and paste MARS product information into project specification. It is not intended to be a complete list of product requirements. This document is an excerpt from the product submittal and must not be used without consulting the complete product submittal. For complete product installation and application requirements, please consult the complete product submittal. MARS is not responsible for misuse of this document or a failure to adequately review specific requirements in the product catalog.

Date	Section	Description
06/26/25	All	Created

Due to ongoing product improvements, specifications, and dimensions are subject to change and correction without notice or incurring obligations. Determining the application and suitability for use of any product is the responsibility of the installer. Additionally, the installer is responsible for verifying dimensional data on the actual product prior to beginning any installation preparations.

Incentive and rebate programs have precise requirements as to product performance and certification. All products meet applicable regulations in effect on date of manufacture; however, certifications are not necessarily granted for the life of a product. Therefore, it is the responsibility of the applicant to determine whether a specific model qualifies for these incentive/rebate programs.

1900 Wellworth Ave. | Jackson, MI 49203
Phone: 517.787.2100
www.marsdelivers.com

LC3053