![ClimateMaster logo]

CLIMATEMASTER®
A **NIBE** GROUP MEMBER

COMMERCIAL
TRANQUILITY® (SW) WATER-TO-WATER SERIES

PRODUCT CATALOG

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

Preliminary

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THE TRANQUILITY® (SW) WATER-TO-WATER SERIES

The Tranquility (SW) Water-to-Water Series presents a combination of high efficiency and capacity, boasting advanced features, quiet operation, and versatile-application flexibility, all at competitive prices. The Tranquility SW, ClimateMaster's 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 Tranquility Water-to-Water (SW) 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 SW Series provides high capacity in a small footprint, which saves mechanical room space. The Tranquility SW 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 Tranquility SW. The uniquely-designed brazed-plate heat exchangers (BPHE) are designed for many years of reliable operation.

ClimateMaster's double isolation compressor mounting system and heavy-gauge steel cabinet helps make the Tranquility SW the quietest large capacity water-to-water unit on the market. Scroll compressor(s) operate quietly, and provide part-load operation (unit size 120) for capacity control. Options such as DDC controls and UltraQuiet 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.

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

FEATURES

- Size 036 (3 tons, 10.6 kW), 060 (5 tons, 17.6 kW), 120 (10 Tons, 35.2 kW)

- High-efficiency scroll compressor(s)

- 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

- Exceeds ASHRAE 90.1 efficiencies

- Heavy-gauge galvanized-steel construction

- Insulated compressor compartment

- Small footprint

- TXV metering devices

- DXM2.5 Advanced Communicating Controls (Standard on unit sizes 036 and 060)

- Dual CXM2 Communicating Controls (Standard on unit size 120)

- CXM2 Communicating Controls:

  - Multiple communication pathways for unit access and diagnosis:

  ○ Cloud-based remote monitoring via Wi-Fi communicating color-touchscreen thermostat

  ○ Connect directly to the system with a handheld 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:

  - Includes all of the CXM2 features

  - Controls operation of domestic Hot Water Generator (HWG)

  - Precise compressor staging

  - vFlow® unit-integrated modulating water valve for maximum water-flow control (replaces traditional motorized water valve and autoflow regulator) (available for sizes 036 and 060)

- Extended range insulation for geothermal applications

- Compressor Run and Fault lights visible on the front of the cabinet

- Six standard safety features

OPTIONS

- BACnet, Modbus, and Johnson Controls N2 compatibility options for Building Management Systems (BMS)

- UltraQuiet sound-attenuation package

ACCESSORIES

- iGate® 2 Communicating (AWC) Thermostat with color touchscreen

- 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

iGATE 2 COMMUNICATION – CLOUD CONNECTED, WEB-ENABLED INFORMATION GATEWAY TO MONITOR, CONTROL, AND DIAGNOSE YOUR SYSTEM

iGate 2 Communication – Cloud connected, web-enabled information gateway to monitor, control, and diagnose your system.

The Tranquility SW is equipped with industry-first, iGate 2 communication information gateway that allows users to interact with their water-source system in easy to read clear language.

Monitor/Configure – Installers can configure from the myUplink PRO website, mobile app, AWC Thermostat, or diagnostic tool, including: 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.
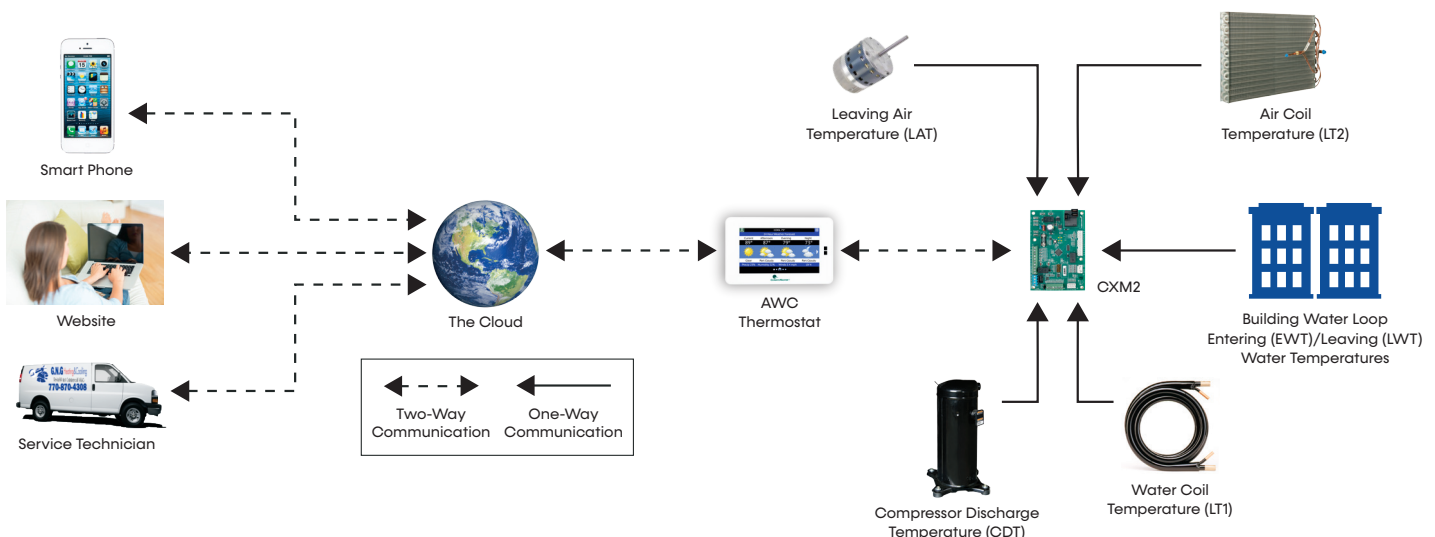
Precise Control – The new CXM2 enables intelligent, two-way communication between the CXM2 and smart components like the AWC Thermostat and diagnostic tool. CXM2 Communicating Controls uses information received from the temperature sensors to precisely control operation to deliver high efficiency, reliability and increased comfort.

Diagnostics – iGate 2 takes diagnosing water source heat pump units to a next level of simplicity, by providing a dashboard of system and fault information, in clear language, on the AWC Thermostat, handheld service tool and the web portal/mobile app on the internet.

iGate 2 Service Warnings notify the homeowner and contractor of a fault and displays fault descriptions by app notifications/email with possible causes. Additionally, the current system status can be viewed graphically on the web portal and mobile app.

In iGate 2 Service Mode, the service personnel 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 the service personnel to manually command operation for any of the thermostat outputs, blower speed, to help troubleshoot specific components. This operation can either be conducted at the unit with a communicating thermostat/diagnostic tool or remotely with mobile app/website when the AWC Thermostat controls are used.

With an iGate 2 communicating system, users and contractors have a web-enabled gateway to system information never before available and exclusive to ClimateMaster products.

Smart Phone

Website

Service Technician

The Cloud

◄ - - - ► Two-Way Communication   ◄—— One-Way Communication

AWC Thermostat

Leaving Air Temperature (LAT)

Air Coil Temperature (LT2)

CXM2

Building Water Loop Entering (EWT)/Leaving (LWT) Water Temperatures

Compressor Discharge Temperature (CDT)

Water Coil Temperature (LT1)

iGate 2 Communicating Controls Powered by DXM2.5 Advanced Communicating Controls

iGATE 2 COMMUNICATION – CLOUD CONNECTED, WEB-ENABLED INFORMATION GATEWAY TO MONITOR, CONTROL, AND DIAGNOSE YOUR SYSTEM
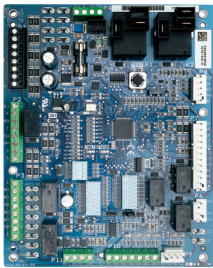
The Tranquility SW is equipped with industry-first, iGate 2 communication information gateway that allows users to interact with their water-source system in easy to read clear language AND delivers improved reliability and efficiency by precisely controlling smart components.

Monitor/Configure – Installers can configure from the myUplink PRO website, mobile app, AWC Thermostat, or diagnostic tool, including: airflow, 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 – The DXM2.5 enables intelligent, two-way communication between the DXM2.5 and smart components like the communicating thermostat/diagnostic tool and constant volume CV EC blower motor. DXM2.5 Advanced Communicating Controls uses information received from the smart components and temperature sensors to precisely control operation of the variable speed CV EC fan to deliver higher efficiency, reliability and increased comfort.

Diagnostics – iGate 2 takes diagnosing water source heat pump units to a next level of simplicity, by providing a dashboard of system and fault information, in clear language, on the AWC Thermostat, handheld service tool and the web portal/mobile app on the internet.

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With an iGate 2 communicating system, users and contractors have a web-enabled gateway to system information never before available and exclusive to ClimateMaster products.


Smart Phone · Website · Service Technician · The Cloud · AWC Thermostat · DXM2.5 · Two-Way Communication · One-Way Communication · Constant Volume (CV) EC Fan Motor · Leaving Air Temperature (LAT) · Air Coil Temperature (LT2) · Building Water Loop Entering (EWT)/Leaving (LWT) Water Temperatures · Water Coil Temperature (LT1) · Compressor Discharge Temperature (CDT)

iGate 2 Communicating (AWC) Thermostat

Models:
SW
036-120

IGATE 2 COMMUNICATION – CLOUD CONNECTED, WEB-ENABLED INFORMATION GATEWAY TO MONITOR, CONTROL, AND DIAGNOSE YOUR SYSTEM
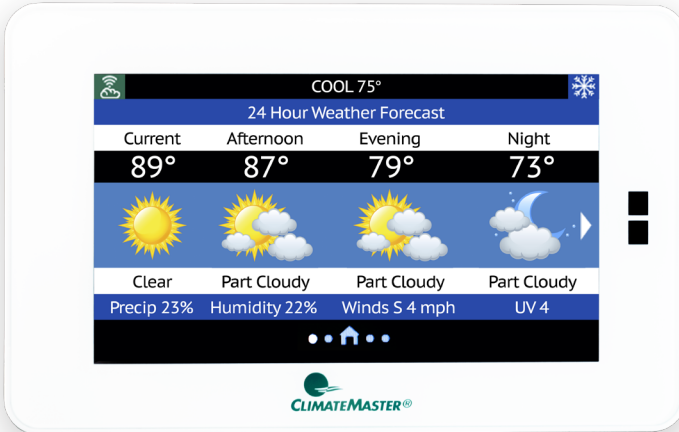
The iGate 2 Communicating (AWC) Thermostat is innovating the future of comfort technology, one building at a time. The inspired design of the touch screen interface allows you to see real-time data for the efficiency and health of your system, with early warnings for potential system faults. The cloud based information gateway allows technicians to remotely diagnose system issues before occupants even know there is a problem. Control and monitor the system in your home or business from anywhere in the world with an easy to use app on your phone.

Features with Efficiency in Mind

Touchscreen Interface
A brilliantly customizable touch screen monitor for simple control.

Seamless Integration
Between your AWC Thermostat and comfort system.

(Mobile) Remote System Control
Control temperature and schedule from anywhere in the world.

Early Fault Warnings
Alerts the building owner and the contractor of potential system faults in the future.

Remote Diagnostics
Enable the contractor to remotely diagnose system issues, adjust system settings, and reset faults.

Real-Time Operations Data and System Schematics
Access simply via the myUplink Pro Account and web portal to view system diagrams with current operating temperatures.

Revenue Stream
HVAC professionals can offer owners service contracts with remote monitoring and diagnostic capabilities without the large expense of a building management system.

HVAC Professional | User Experience
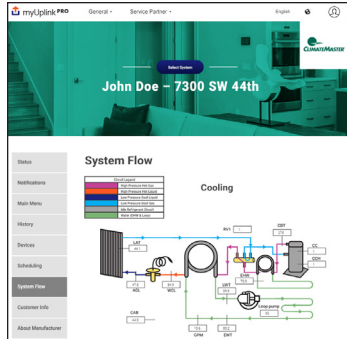
iGate 2 establishes a two-way link between the AWC Thermostat and the cloud, adding significant value for both residential and commercial customers. Our new thermostat works with your customers' Tranquility comfort systems to provide the most efficient link between their system and your services. The customizable monitoring from the myUplink PRO web portal or phone app account allows for continuous system monitoring, analysis, repair recognition, and early warnings for potential system faults that are sent to you and your customer.

myUplink **PRO**

Benefits

- Remote login from anywhere, anytime from any internet connected device
- View system fault history with possible root causes
- Information is available for contractors to troubleshoot and diagnose systems remotely
- Secure internet connection keeps homeowner information private
- Access thermostat(s) through Android and iPhone mobile apps

Homeowner | User Experience
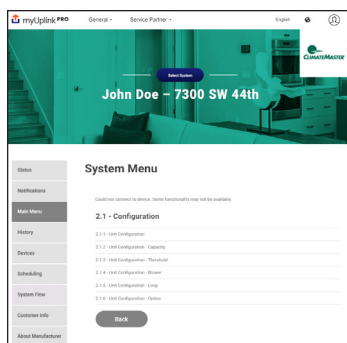
iGate 2 advanced unit controls enable a two-way communication link for critical system information between the unit and the cloud. From any internet connected device or smart phone, building owners can control and monitor their systems from anywhere in the world. iGate 2 offers building owners peace of mind their systems are operating at peak performance with advanced operational performance issue notifications. HVAC professionals get notifications when systems are operating out of range. They can log in remotely to check system faults, review current operating conditions, and diagnose issues remotely. This gives the HVAC technician the upper hand when showing up to perform service, saving time which in turn, saves money.

myUplink

Benefits

- Communicates personal settings and reminders through the iGate 2 communication system
- Easy-to-use, full-color, high-resolution user interface
- Sleek, intuitive control panel
- Secure internet connection keeps your information private
- Contains unit model, serial number and your HVAC professionals contact information
- System monitoring automatically contacts HVAC system providers when service is needed

vFLOW INTERNAL VARIABLE WATER FLOW

Industry-first, built-in vFlow replaces a traditionally inefficient, external component of the system (water circulation) with an ultra-high-efficient, variable-speed, internal water-flow system. This saves 70-80% on water circulation compared to traditional single-speed pump systems. Multi-unit installations are also much simpler with vFlow systems, as the units automatically adjust water flow across the system.

vFlow is enabled by iGate 2, which facilitates intelligent communication between the thermostat, DXM2.5, sensors, and internal water pump/valve to make true variable water flow a reality.

vFLOW IS AVAILABLE IN FOUR VARIATIONS:

1. Low System Pressure Drop Modulating Valve – High CV motorized valve for central pumping. (Standard unit).
2. High System Pressure Drop Modulating Valve – Motorized valve for higher-pressure water systems, such as water well pumps (optional).
3. Standard Head Variable Pump – multi unit/ central pumping (optional).
4. High Head Variable Pump – multi/individual unit pumping (optional).

vFLOW 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 Tranquility products can be installed more easily and compactly than their predecessors because vFlow components are 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

vFlow technology enables variable water flow through the unit, with the DXM2.5 adjusting the pump speed 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. vFlow 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 variable-speed pump or motorized modulating valve delivers variable water-flow, controlled by DXM2.5, based on loop water ΔT.

ENERGY SAVINGS WITH WATER CIRCULATION CONTROL

Units with vFlow deliver greater operating cost savings by varying the water flow to match the unit's operation (ex: lower water flow when unit is in part-load operation). Lowering the flow results in lower energy consumption by the water pump (=greater cost savings) in vFlow units (whether internal or external pump).

In applications using vFlow with internal variable speed electronically commuted (EC) pump, the EC pump uses fewer watts than a fixed speed (PSC) pump even at full load. The EC pump excels in energy savings in part load, saving 70-80% watts compared to fixed speed pumps (see chart). The EC pump can operate with independent flow rates for both heating and cooling operations allowing for more energy savings.

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.
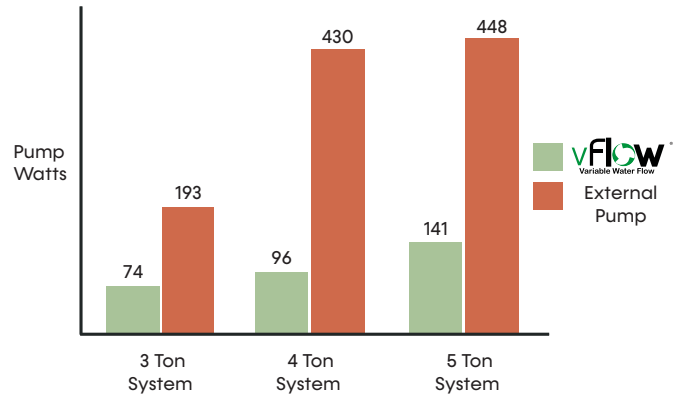
Reference Calculations

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

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
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 & 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 SW120 at design conditions supplies 104,677 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
S	W	M	0	3	6	A	G	C	0	0	0	P	B	S

PRODUCT NAME
S = 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	Soft Start
CXM2	C	N	
DXM2.5	D	P	4
CXM2 with Disconnect	W	R	
DXM2.5 with Disconnect	B	S	

CABINET

Cabinet	UltraQuiet	Option
Commercial	No	0
	Yes	5
Residential	No	R
	Yes	D

STANDARD
S = Standard

RESERVED FOR FUTURE
0 = None

EXTENDED OPTIONS

	Standard	HWG	HWG and Pump
None	0	G	P

LOAD SIDE OPTIONS

Description	Option
	Standard
None	0
Internal Pump, High Head (Variable without Check Valve)	K

SOURCE SIDE OPTIONS

Option	Description
Standard	
None	0
C	Modulating Valve
2	Internal Flow Controller High Head with Check Valve
H	Internal Flow Controller High Head without Check Valve

Use ClimateMaster's selection software at https://climatemastersolutions.com/eRep/ to build your Tranquility SW model.

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
SW036	28,227	13.7	37,927	4.4	31,816	21.4	32,837	3.7	29,488	16.0	26,093	3.0
SW060	54,500	14.5	66,930	4.3	56,842	21.3	56,066	3.7	54,999	16.8	45,687	3.0
SW120	109,000	14.5	133,860	4.3	113,684	21.3	112,132	3.7	109,998	16.8	91,374	3.0

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
- Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
- 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
SW036	19,759	14.7	26,549	4.5	22,271	22.1	22,986	3.9	20,642	17.4	18,265	3.0
SW060	38,150	16.4	46,851	4.6	39,789	25.9	39,246	3.8	38,499	19.0	31,981	3.1
SW120	76,300	16.4	93,702	4.6	79,579	25.9	78,492	3.8	76,999	19.0	63,962	3.1

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
- Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
- 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 W/W	Capacity W	COP	Capacity W	EER W/W	Capacity W	COP	Capacity W	EER W/W	Capacity W	COP
SW036	8	4.0	11	4.4	9	6.3	10	3.7	9	4.7	8	3.0
SW060	16	4.2	20	4.3	17	6.3	16	3.7	16	4.9	13	3.0
SW120	32	4.2	39	4.3	33	6.3	33	3.7	32	4.9	27	3.0

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Cooling capacities based upon 27°C DB, 19°C WB entering air temperature.
- Heating capacities based upon 20°C DB, 15°C WB entering air temperature.
- 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 W/W	Capacity W	COP	Capacity W	EER W/W	Capacity W	COP	Capacity W	EER W/W	Capacity W	COP
SW036	6	4.3	8	4.5	7	6.5	7	3.9	6	5.1	5	3.0
SW060	11	4.8	14	4.6	12	7.6	12	3.8	11	5.6	9	3.1
SW120	22	4.8	27	4.6	23	7.6	23	3.8	23	5.6	19	3.1

Notes:
- Where dual voltages are available, ratings are based on the lower voltage setting.
- Cooling capacities based upon 27°C DB, 19°C WB entering air temperature.
- Heating capacities based upon 20°C DB, 15°C WB entering air temperature.
- Ground Loop Heat Pump ratings based on 15% antifreeze solution.

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.

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).

		Flow 70.0 GPM					
	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.
.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
.89	6.68	208.9	19.61	142.0	106.0	3.1	5.32	12.
.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		
	4.5	17.25	185.6	87.0	4.			
			154.1					

EWT °F	GPM	WPD PSI	WPD FT	LEWT °F	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT
	Source Flow				Flow 4.5 GPM					WPD		Flow 6.75 GPM					WPD		Flow 9 GPM					WPD	
50	4.5	1.3	3.1	50	31,503	1,491	36,437	36.0	21.1	0.6	1.38	33,436	1,520	38,468	40.1	22.0	1.4	3.2	34,271	1521	39306	42.4	22.5	2.6	5.9
50	4.5	1.3	3.1	60	35,713	1,526	40,766	44.1	23.4	0.5	1.2	37,230	1,542	42,335	49.0	24.1	1.3	3.1	38,056	1548	43179	51.5	24.6	2.5	5.8
50	4.5	1.3	3.1	70	39,210	1,553	44,351	52.6	25.2	0.5	1.1	40,392	1,563	45,564	58.0	25.8	1.3	2.9	41,132	1572	46334	60.9	26.2	2.4	5.6
50	4.5	1.3	3.1	80	41,921	1,571	47,121	61.4	26.7	0.4	0.9	42,922	1,581	48,155	67.3	27.1	1.2	2.8	43,499	1593	48773	70.3	27.3	2.3	5.4
50	4.5	1.3	3.1	90	43,792	1,580	49,020	70.5	27.7	0.3	0.8	44,818	1,598	50,106	76.7	28.0	1.1	2.6	45,158	1612	50493	80.0	28.0	2.2	5.1
50	6.75	3.4	7.8	50	31,907	1,415	36,589	35.8	22.6	0.6	1.4	33,864	1,443	38,640	40.0	23.5	1.4	3.2	34,710	1444	39488	42.3	24.0	2.6	5.9
50	6.75	3.4	7.8	60	36,171	1,449	40,966	43.9	25.0	0.5	1.2	37,708	1,464	42,552	48.8	25.8	1.3	3.1	38,543	1469	43405	51.4	26.2	2.5	5.8
50	6.75	3.4	7.8	70	39,713	1,474	44,592	52.3	26.9	0.5	1.1	40,910	1,483	45,818	57.9	27.6	1.3	2.9	41,659	1492	46596	60.7	27.9	2.4	5.6
50	6.75	3.4	7.8	80	42,458	1,491	47,393	61.1	28.5	0.4	0.9	43,472	1,500	48,438	67.1	29.0	1.2	2.8	44,057	1512	49061	70.2	29.1	2.3	5.4
50	6.75	3.4	7.8	90	44,354	1,499	49,315	70.3	29.6	0.3	0.8														
50	9	6.0	13.9	50	32,311	1,326	36,699	35.6	24.4	0.6	1.4	34,293	1,352	38,769	39.8	25.4	1.4	3.2	35,150	1353	39628	42.2	26.0	2.6	5.9
50	9	6.0	13.9	60	36,629	1,358	41,123	43.7	27.0	0.5	1.2	38,185	1,372	42,726	48.7	27.8	1.3	3.1	39031	1377	43589	51.3	28.3	2.5	5.8
50	9	6.0	13.9	70	40,216	1,382	44,789	52.1	29.1	0.5	1.1	41,428	1,390	46,028	57.7	29.8	1.3	2.9	42186	1398	46814	60.6	30.2	2.4	5.6
50	9	6.0	13.9	80	42,996	1,398	47,621	60.9	30.8	0.4	0.9	44,023	1,407	48,678	67.0	31.3	1.2	2.8	44615	1417	49305	70.1	31.5	2.3	5.4
50	9	6.0	13.9	90	44,915	1,405	49,565	70.0	32.0	0.3	0.8														
70	4.5	1.0	2.3	50	29,164	1,959	35,649	37.0	14.9	0.6	1.4	31,135	1,952	37,597	40.8	15.9	1.4	3.2	32,001	1975	38538	42.9	16.2	2.6	5.9
70	4.5	1.0	2.3	60	33,120	1,983	39,682	45.3	16.7	0.5	1.2	36,481	1,964	42,980	49.2	18.6	1.3	3.1	35,488	1959	41971	52.1	18.1	2.5	5.8
70	4.5	1.0	2.3	70	37,842	2,006	44,482	53.2	18.9	0.5	1.1	40,474	1,984	47,042	58.0	20.4	1.3	2.9	38,688	2001	45312	61.4	19.3	2.4	5.6
70	4.5	1.0	2.3	80	41,461	2,030	48,178	61.6	20.4	0.4	1.0	44,058	2,015	50,726	66.9	21.9	1.2	2.8	41,601	2037	48343	70.8	20.4	2.3	5.4
70	4.5	1.0	2.3	90	44,800	2,052	51,592	70.1	21.8	0.3	0.8														
70	6.75	2.8	6.5	50	29,538	1,859	35,692	36.9	15.9	0.6	1.4	31,535	1,853	37,666	40.7	17.0	1.4	3.2	32,411	1874	38615	42.8	17.3	2.6	5.9
70	6.75	2.8	6.5	60	33,544	1,881	39,771	45.1	17.8	0.5	1.2	36,949	1,863	43,116	49.1	19.8	1.3	3.1	35,943	1859	42095	52.0	19.3	2.5	5.8
70	6.75	2.8	6.5	70	38,327	1,904	44,628	53.0	20.1	0.5	1.1	40,993	1,883	47,225	57.9	21.8	1.3	2.9	39,184	1899	45469	61.3	20.6	2.4	5.6
70	6.75	2.8	6.5	80	41,992	1,926	48,366	61.3	21.8	0.4	0.9	44,623	1,912	50,950	66.8	23.3	1.2	2.8	42,134	1933	48532	70.6	21.8	2.3	5.4
70	6.75	2.8	6.5	90	45,375	1,947	51,819	69.8	23.3	0.3	0.8				90.0							90.0				
70	9	5.1	11.9	50	29912	1,743	35,680	36.7	17.2	0.6	1.4	31,934	1,737	37,681	40.5	18.4	1.4	3.2	32821	1757	38636	42.7	18.7	2.6	5.9
70	9	5.1	11.9	60	33969	1,764	39,806	44.9	19.3	0.5	1.2	37,417	1,747	43,197	48.9	21.4	1.3	3.1	36398	1743	42165	51.9	20.9	2.5	5.8
70	9	5.1	11.9	70	38812	1,785	44,718	52.8	21.7	0.5	1.1	41,512	1,765	47,354	57.7	23.5	1.3	2.9	39680	1780	45572	61.2	22.3	2.4	5.6
70	9	5.1	11.9	80	42524	1,805	48,499	61.1	23.6	0.4	0.9	45,188	1,792	51,119	66.6	25.2	1.2	2.8	42668	1812	48664	70.5	23.5	2.3	5.4
70	9	5.1	11.9	90	45949	1,825	51,990	69.6	25.2	0.3	0.8														
90	4.5	0.8	1.8	50	26,181	2,553	34,629	38.4	10.3	0.6	1.4	28,033	2,593	36,615	41.7	10.8	1.4	3.2	28,768	2571	37277	43.6	11.2	2.6	5.9
90	4.5	0.8	1.8	60	30,177	2,575	38,701	46.6	11.7	0.5	1.2	32,935	2,597	41,531	50.2	12.7	1.3	3.1	32,561	2561	41038	52.8	12.7	2.5	5.8
90	4.5	0.8	1.8	70	35,151	2,598	43,749	54.4	13.5	0.5	1.1	37,723	2,615	46,378	58.8	14.4	1.3	2.9	36,249	2594	44833	61.9	14.0	2.4	5.6
90	4.5	0.8	1.8	80	39,265	2,620	47,934	62.5	15.0	0.4	0.9	41,642	2,647	50,402	67.7	15.7	1.2	2.8	39,831	2630	48537	71.1	15.1	2.3	5.4
90	4.5	0.8	1.8	90	42,833	2,640	51,569	71.0	16.2	0.3	0.8														

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

Source				LOAD																			
EWT °F	Flow			LEWT °F	Flow 4.5 GPM					WPD		Flow 6.75 GPM					WPD		Flow 9 GPM				WPD	
	GPM	WPD PSI	WPD FT		TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT
90	6.75	2.4	5.4	50	26,517	2,422	34,534	38.2	10.9	0.6	1.4	28,393	2,461	36,536	41.6	11.5	1.4	3.2	29,137	2439	37211	43.5	11.9	2.6	5.9
90	6.75	2.4	5.4	60	30,564	2,444	38,653	46.4	12.5	0.5	1.2	33,357	2,465	41,514	50.1	13.5	1.3	3.1	32,979	2431	41023	52.7	13.6	2.5	5.8
90	6.75	2.4	5.4	70	35,602	2,465	43,761	54.2	14.4	0.5	1.1	38,206	2,482	46,419	58.7	15.4	1.3	2.9	36,713	2461	44859	61.8	14.9	2.4	5.6
90	6.75	2.4	5.4	80	39,768	2,486	47,995	62.3	16.0	0.4	0.9	42,176	2,512	50,489	67.5	16.8	1.2	2.8	40,341	2496	48603	71.0	16.2	2.3	5.4
90	6.75	2.4	5.4	90	43,382	2,505	51,672	70.7	17.3	0.3	0.8														
90	9	4.5	10.3	50	26,852	2,271	34,367	38.1	11.8	0.6	1.4	28,752	2,306	36,386	41.5	12.5	1.4	3.2	29506	2287	37074	43.4	12.9	2.6	5.9
90	9	4.5	10.3	60	30,951	2,291	38,533	46.2	13.5	0.5	1.2	33,780	2,310	41,426	50.0	14.6	1.3	3.1	33396	2278	40937	52.6	14.7	2.5	5.8
90	9	4.5	10.3	70	36,052	2,311	43,700	54.0	15.6	0.5	1.1	38,690	2,326	46,389	58.5	16.6	1.3	2.9	37178	2307	44814	61.7	16.1	2.4	5.6
90	9	4.5	10.3	80	40,271	2,330	47,983	62.1	17.3	0.4	0.9	42,710	2,354	50,502	67.3	18.1	1.2	2.8	40852	2340	48596	70.9	17.5	2.3	5.4
90	9	4.5	10.3	90	43,931	2,348	51,702	70.5	18.7	0.3	0.8														
110	4.5	0.6	1.4	50	22,553	3,271	33,378	40.0	6.9	0.6	1.4	24,129	3,330	35,149	42.9	7.2	1.4	3.2	24,574	3328	35590	44.5	7.4	2.6	5.9
110	4.5	0.6	1.4	60	26,886	3,305	37,824	48.1	8.1	0.5	1.2	28,547	3,325	39,553	51.5	8.6	1.3	3.1	29,275	3334	40310	53.5	8.8	2.5	5.8
110	4.5	0.6	1.4	70	31,138	3,328	42,153	56.2	9.4	0.5	1.1	32,885	3,337	43,929	60.3	9.9	1.3	2.9	33,814	3349	44899	62.5	10.1	2.4	5.6
110	4.5	0.6	1.4	80	35,333	3,341	46,390	64.3	10.6	0.4	0.9	37,202	3,364	48,336	69.0	11.1	1.2	2.8	38,189	3374	49355	71.5	11.3	2.3	5.4
110	6.75	2.0	4.7	50	22,842	3,104	33,114	39.8	7.4	0.6	1.4	24,439	3,160	34,896	42.8	7.7	1.4	3.2	24,889	3158	35342	44.5	7.9	2.6	5.9
110	6.75	2.0	4.7	60	27,231	3,136	37,610	47.9	8.7	0.5	1.2	28,913	3,156	39,357	51.4	9.2	1.3	3.1	29,651	3164	40122	53.4	9.4	2.5	5.8
110	6.75	2.0	4.7	70	31,537	3,158	41,990	56.0	10.0	0.5	1.1	33,307	3,167	43,787	60.1	10.5	1.3	2.9	34,247	3178	44766	62.4	10.8	2.4	5.6
110	6.75	2.0	4.7	80	35,786	3,170	46,279	64.1	11.3	0.4	0.9	37,679	3,192	48,245	68.8	11.8	1.2	2.8	38,679	3201	49274	71.4	12.1	2.3	5.4
110	9	4.0	9.2	50	23,131	2,909	32,760	39.7	8.0	0.6	1.4	24,748	2,962	34,550	42.7	8.4	1.4	3.2	25205	2961	35003	44.4	8.5	2.6	5.9
110	9	4.0	9.2	60	27,575	2,940	37,305	47.7	9.4	0.5	1.2	29,279	2,958	39,069	51.3	9.9	1.3	3.1	30026	2966	39842	53.3	10.1	2.5	5.8
110	9	4.0	9.2	70	31,936	2,961	41,735	55.8	10.8	0.5	1.1	33,728	2,968	43,552	60.0	11.4	1.3	2.9	34681	2979	44541	62.3	11.6	2.4	5.6
110	9	4.0	9.2	80	36,239	2,972	46,075	63.9	12.2	0.4	0.9	38,156	2,992	48,060	68.7	12.8	1.2	2.8	39168	3001	49100	71.3	13.1	2.3	5.4
120	6.75	1.9	4.4	50	20,068	3,548	31,811	41.1	5.7	0.6	1.4	21,471	3,604	33,400	43.6	6.0	1.4	3.2	21,867	3611	33817	45.1	6.1	2.6	5.9
120	6.75	1.9	4.4	60	24,568	3,587	36,439	49.1	6.8	0.5	1.2	26,085	3,609	38,031	52.3	7.2	1.3	3.1	26,751	3619	38728	54.1	7.4	2.5	5.8
120	6.75	1.9	4.4	70	29,131	3,605	41,061	57.1	8.1	0.5	1.1	30,766	3,614	42,727	60.9	8.5	1.3	2.9	31,635	3627	43640	63.0	8.7	2.4	5.6
120	6.75	1.9	4.4	80	33,407	3,611	45,360	65.2	9.3	0.4	0.9	35,097	3,636	47,132	69.6	9.7	1.2	2.8	36,108	3647	48177	72.0	9.9	2.3	5.4
120	9	3.8	8.8	50	20,369	3,394	31,601	40.9	6.0	0.6	1.4	21,793	3,448	33203.4	43.5	6.3	1.4	3.2	22195	3453	33625	45.1	6.4	2.6	5.9
120	9	3.8	8.8	60	24,936	3,431	36,291	48.9	7.3	0.5	1.2	26,476	3,452	37,903	52.2	7.7	1.3	3.1	27152	3462	38608	54.0	7.8	2.5	5.8
120	9	3.8	8.8	70	29,568	3,448	40,979	56.9	8.6	0.5	1.1	31,227	3,457	42,668	60.7	9.0	1.3	2.9	32109	3470	43592	62.9	9.3	2.4	5.6

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source Flow SGPM	WPD PSI	WPD FT	LEWT °F	Flow 4.5 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	FT	Flow 6.75 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	FT	Flow 9GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	FT
20	9	7.7	17.9	60	25,314	1,535	20,234	65.8	4.8	0.5	1.2	25,629	1,453	20,820	65.9	5.2	1.3	3.1	25,694	1415	21,012	65.9	5.3	2.5	5.8
20	9	7.7	17.9	80	24,953	1,964	18,453	85.7	3.7	0.4	0.9	25,141	1,860	18,987	85.8	4.0	1.2	2.8	25,153	1810	19,162	85.8	4.1	2.3	5.4
20	9	7.7	17.9	90	24,645	2,241	17,227	95.6	3.2	0.3	0.8	24,749	2,122	17,726	95.7	3.4	1.1	2.6	24,727	2,066	17,890	95.7	3.5	2.2	5.1
20	9	7.7	17.9	100	24,253	2,560	15,779	105.6	2.8	0.3	0.7	24,259	2,424	16,236	105.6	2.9	1.1	2.5	24,196	2,360	16,386	105.5	3.0	2.1	4.9
30	4.5	1.7	4.0	60	25,762	1,388	21,168	71.8	5.4	0.5	1.2	26,130	1,314	21,781	72.0	5.8	1.3	3.1	26,216	1,279	21,982	72.0	6.0	2.5	5.8
30	4.5	1.7	4.0	80	25,958	1,788	20,041	91.9	4.3	0.4	0.9	26,224	1,693	20,622	92.0	4.5	1.2	2.8	26,266	1,648	20,812	92.0	4.7	2.3	5.4
30	4.5	1.7	4.0	90	25,840	2,054	19,043	101.8	3.7	0.3	0.8	26,030	1,945	19,594	101.9	3.9	1.1	2.6	26,040	1,893	19,775	101.9	4.0	2.2	5.1
30	4.5	1.7	4.0	100	25,592	2,368	17,756	111.7	3.2	0.3	0.7	25,689	2,242	18,270	111.8	3.4	1.1	2.5	25,661	2,182	18,439	111.8	3.4	2.1	4.9
30	4.5	1.7	4.0	120	24,785	3,153	14,351	131.4	2.3	0.2	0.5	24,645	2,985	14,766	131.3	2.4	0.9	2.1	24,520	2,906	14,903	131.2	2.5	1.8	4.3
30	6.75	4.1	9.4	60	30,212	1,466	25,360	69.2	6.0	0.5	1.2	30,688	1,388	26,094	69.4	6.5	1.3	3.1	30,807	1,351	26,335	69.4	6.7	2.5	5.8
30	6.75	4.1	9.4	80	29,814	1,883	23,583	89.1	4.6	0.4	0.9	30,166	1,783	24,266	89.2	5.0	1.2	2.8	30,233	1,735	24,490	89.2	5.1	2.3	5.4
30	6.75	4.1	9.4	90	29,442	2,155	22,310	99.0	4.0	0.3	0.8	29,709	2,041	22,955	99.1	4.3	1.1	2.6	29,742	1,986	23,167	99.1	4.4	2.2	5.1
30	6.75	4.1	9.4	100	28,962	2,472	20,780	108.8	3.4	0.3	0.7	29,128	2,341	21,382	108.9	3.6	1.1	2.5	29,120	2,278	21,579	108.9	3.7	2.1	4.9
30	6.75	4.1	9.4	120	27,712	3,246	16,968	128.5	2.5	0.2	0.5	27,632	3,074	17,459	128.4	2.6	0.9	2.1	27,523	2,992	17,620	128.4	2.7	1.8	4.3
30	9	7.1	16.4	60	28,291	1,544	23,180	66.5	5.4	0.5	1.2	28,690	1,462	23,852	66.6	5.8	1.3	3.1	28782	1,423	24,072	66.6	5.9	2.5	5.8
30	9	7.1	16.4	80	27,755	1,978	21,210	86.4	4.1	0.4	0.9	28,021	1,872	21,824	86.4	4.4	1.2	2.8	28058	1,823	22,025	86.4	4.5	2.3	5.4
30	9	7.1	16.4	90	27,354	2,256	19,886	96.3	3.6	0.3	0.8	27,532	2,136	20,462	96.3	3.8	1.1	2.6	27534	2,080	20,651	96.3	3.9	2.2	5.1
30	9	7.1	16.4	100	26,864	2,576	18,337	106.2	3.1	0.3	0.7	26,941	2,439	18,868	106.2	3.2	1.1	2.5	26901	2,375	19,042	106.2	3.3	2.1	4.9
30	9	7.1	16.4	120	25,617	3,340	14,563	125.9	2.2	0.2	0.5	25,451	3,162	14,984	125.8	2.4	0.9	2.1	25312	3,079	15,123	125.8	2.4	1.8	4.3
40	4.5	1.5	3.5	80	29,680	1,814	23,676	93.6	4.8	0.4	0.9	30,046	1,718	24,361	93.8	5.1	1.2	2.8	30,120	1,672	24,586	93.8	5.3	2.3	5.4
40	4.5	1.5	3.5	90	29,414	2,081	22,527	103.5	4.1	0.3	0.8	29,700	1,970	23,179	103.6	4.4	1.1	2.6	29,741	1,918	23,393	103.6	4.5	2.2	5.1
40	4.5	1.5	3.5	100	29,020	2,394	21,097	113.3	3.6	0.3	0.7	29,209	2,267	21,708	113.4	3.8	1.1	2.5	29,211	2,207	21,908	113.4	3.9	2.1	4.9
40	4.5	1.5	3.5	120	27,914	3,171	17,420	132.8	2.6	0.2	0.5	27,860	3,002	17,924	132.8	2.7	0.9	2.1	27,762	2,923	18,089	132.7	2.8	1.8	4.3
40	6.75	3.7	8.6	60	36,901	1,481	31,998	71.3	7.3	0.5	1.2	37,566	1,403	32,924	71.5	7.8	1.3	3.1	37,747	1365	33,228	71.5	8.1	2.5	5.8
40	6.75	3.7	8.6	80	36,034	1,903	29,736	91.0	5.6	0.4	0.9	36,560	1,802	30,597	91.2	5.9	1.2	2.8	36,684	1754	30,880	91.2	6.1	2.3	5.4
40	6.75	3.7	8.6	90	35,429	2,176	28,226	100.8	4.8	0.3	0.8	35,863	2,060	29,043	101.0	5.1	1.1	2.6	35,950	2006	29,311	101.0	5.3	2.2	5.1
40	6.75	3.7	8.6	100	34,715	2,493	26,464	110.6	4.1	0.3	0.7	35,042	2,361	27,230	110.7	4.4	1.1	2.5	35,086	2298	27,481	110.7	4.5	2.1	4.9
40	6.75	3.7	8.6	120	32,988	3,263	22,187	130.1	3.0	0.2	0.5	33,056	3,090	22,830	130.1	3.1	0.9	2.1	32,996	3008	23,040	130.1	3.2	1.8	4.3
40	9	6.5	15.1	60	31,268	1,553	26,127	67.2	5.9	0.5	1.2	31751	1,471	26,883	67.3	6.3	1.3	3.1	31870	1432	27,132	67.3	6.5	2.5	5.8
40	9	6.5	15.1	80	30,558	1,991	23,967	87.0	4.5	0.4	0.9	30901	1,885	24,661	87.1	4.8	1.2	2.8	30963	1836	24,888	87.1	4.9	2.3	5.4
40	9	6.5	15.1	90	30,063	2,271	22,545	96.9	3.9	0.3	0.8	30316	2,151	23,198	96.9	4.1	1.1	2.6	30341	2094	23,412	97.0	4.2	2.2	5.1
40	9	6.5	15.1	100	29,475	2,592	20,895	106.8	3.3	0.3	0.7	29623	2,454	21,500	106.8	3.5	1.1	2.5	29606	2389	21,698	106.8	3.6	2.1	4.9
40	9	6.5	15.1	120	28,019	3,356	16,912	126.4	2.4	0.2	0.5	27918	3,177	17,402	126.4	2.6	0.9	2.1	27800	3093	17,562	126.4	2.6	1.8	4.3
50	4.5	1.3	3.1	60	33,822	1,431	29,086	75.5	6.9	0.5	1.2	34,412	1,355	29,928	75.8	7.4	1.3	3.1	34,569	1,319	30,204	75.8	7.7	2.5	5.8
50	4.5	1.3	3.1	80	33,402	1,840	27,310	95.3	5.3	0.4	0.9	33,868	1,743	28,101	95.5	5.7	1.2	2.8	33,975	1,696	28,360	95.6	5.9	2.3	5.4
50	4.5	1.3	3.1	90	32,988	2,108	26,011	105.1	4.6	0.3	0.8	33,370	1,996	26,764	105.3	4.9	1.1	2.6	33,442	1,943	27,011	105.3	5.0	2.2	5.1
50	4.5	1.3	3.1	100	32,448	2,420	24,438	114.9	3.9	0.3	0.7	32,730	2,291	25,146	115.0	4.2	1.1	2.5	32,761	2,231	25,378	115.0	4.3	2.1	4.9
50	4.5	1.3	3.1	120	31,044	3,189	20,488	134.2	2.9	0.2	0.5	31,075	3,020	21,081	134.2	3.0	0.9	2.1	31,005	2,940	21,276	134.2	3.1	1.8	4.3
50	4.5	1.3	3.1	130								30,094	3,459	18,647	143.8	2.5	0.8	1.9	29,963	3,367	18,819	143.7	2.6	1.7	3.9

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

Source					LOAD																					
EWT °F	Flow			LEWT °F	Flow 4.5 GPM					WPD		Flow 6.75 GPM					WPD		Flow 9GPM					WPD	
	SGPM	WPD PSI	WPD FT		HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT
50	6.75	3.4	7.8	60	35,654	1,497	30,700	70.9	7.0	0.5	1.2	36,279	1,417	31,589	71.1	7.5	1.3	3.1	36,446	1380	31,881	71.1	7.7	2.5	5.8
50	6.75	3.4	7.8	80	34,897	1,923	28,533	90.7	5.3	0.4	0.9	35,385	1,821	29,359	90.8	5.7	1.2	2.8	35,496	1772	29,630	90.8	5.9	2.3	5.4
50	6.75	3.4	7.8	90	34,342	2,197	27,069	100.5	4.6	0.3	0.8	34,739	2,080	27,853	100.6	4.9	1.1	2.6	34,813	2025	28,110	100.6	5.0	2.2	5.1
50	6.75	3.4	7.8	100	33,674	2,514	25,353	110.3	3.9	0.3	0.7	33,965	2,380	26,086	110.4	4.2	1.1	2.5	33,997	2317	26,327	110.4	4.3	2.1	4.9
50	6.75	3.4	7.8	120	32,024	3,281	21,167	129.8	2.9	0.2	0.5	32,060	3,106	21,780	129.8	3.0	0.9	2.1	31,988	3024	21,981	129.8	3.1	1.8	4.3
50	6.75	3.4	7.8	130								30,945	3,535	19,246	139.5	2.6	0.8	1.9	30,812	3441	19,423	139.4	2.6	1.7	3.9
50	9	6.0	13.9	60	37,486	1,562	32,315	68.6	7.0	0.5	1.2	38146	1,479	33,250	68.7	7.6	1.3	3.1	38323	1440	33,557	68.8	7.8	2.5	5.8
50	9	6.0	13.9	80	36,393	2,005	29,756	88.3	5.3	0.4	0.9	36901	1,898	30,618	88.5	5.7	1.2	2.8	37017	1848	30,901	88.5	5.9	2.3	5.4
50	9	6.0	13.9	90	35,696	2,287	28,128	98.2	4.6	0.3	0.8	36108	2,165	28,942	98.3	4.9	1.1	2.6	36185	2108	29,210	98.3	5.0	2.2	5.1
50	9	6.0	13.9	100	34,899	2,608	26,267	108.0	3.9	0.3	0.7	35200	2,470	27,027	108.1	4.2	1.1	2.5	35233	2404	27,277	108.1	4.3	2.1	4.9
50	9	6.0	13.9	120	33,005	3,372	21,846	127.6	2.9	0.2	0.5	33044	3,192	22,478	127.6	3.0	0.9	2.1	32972	3108	22,686	127.6	3.1	1.8	4.3
50	9	6.0	13.9	130								31795	3,611	19,845	137.3	2.6	0.8	1.9	31662	3515	20,028	137.3	2.6	1.7	3.9
60	4.5	1.2	2.7	60	36,895	1,460	32,063	76.9	7.4	0.5	1.2	37,567	1,383	32,991	77.2	8.0	1.3	3.1	37,750	1,346	33,296	77.3	8.2	2.5	5.8
60	4.5	1.2	2.7	80	36,996	1,874	30,792	97.0	5.8	0.4	0.9	37,557	1,775	31,684	97.2	6.2	1.2	2.8	37,694	1,728	31,976	97.3	6.4	2.3	5.4
60	4.5	1.2	2.7	90	36,745	2,145	29,645	106.8	5.0	0.3	0.8	37,226	2,031	30,503	107.1	5.4	1.1	2.6	37,329	1,977	30,785	107.1	5.5	2.2	5.1
60	4.5	1.2	2.7	100	36,301	2,461	28,155	116.6	4.3	0.3	0.7	36,683	2,330	28,970	116.8	4.6	1.1	2.5	36,746	2,269	29,238	116.8	4.7	2.1	4.9
60	4.5	1.2	2.7	120	34,869	3,238	24,151	136.0	3.2	0.2	0.5	34,999	3,066	24,851	136.0	3.3	0.9	2.1	34,959	2,985	25,080	136.0	3.4	1.8	4.3
60	4.5	1.2	2.7	130								33,881	3,509	22,268	145.5	2.8	0.8	1.9	33,779	3,416	22,474	145.5	2.9	1.7	3.9
60	6.75	3.1	7.1	60	38,565	1,517	33,544	71.8	7.5	0.5	1.2	39,269	1,436	34,515	72.0	8.0	1.3	3.1	39,461	1398	34,834	72.1	8.3	2.5	5.8
60	6.75	3.1	7.1	80	38,391	1,945	31,955	91.7	5.8	0.4	0.9	38,974	1,841	32,880	91.9	6.2	1.2	2.8	39,116	1792	33,183	91.9	6.4	2.3	5.4
60	6.75	3.1	7.1	90	38,015	2,221	30,665	101.6	5.0	0.3	0.8	38,512	2,103	31,553	101.8	5.4	1.1	2.6	38,619	2047	31,844	101.8	5.5	2.2	5.1
60	6.75	3.1	7.1	100	37,450	2,540	29,044	111.4	4.3	0.3	0.7	37,844	2,405	29,885	111.6	4.6	1.1	2.5	37,909	2341	30,161	111.6	4.7	2.1	4.9
60	6.75	3.1	7.1	120	35,771	3,311	24,811	130.9	3.2	0.2	0.5	35,906	3,135	25,529	131.0	3.4	0.9	2.1	35,867	3052	25,765	131.0	3.4	1.8	4.3
60	6.75	3.1	7.1	130								34,649	3,567	22,844	140.6	2.8	0.8	1.9	34,546	3472	23,055	140.6	2.9	1.7	3.9
60	9	5.6	12.8	60	40,234	1,574	35,025	69.2	7.5	0.5	1.2	40971	1,490	36,039	69.4	8.1	1.3	3.1	41173	1451	36,372	69.4	8.3	2.5	5.8
60	9	5.6	12.8	80	39,786	2,015	33,118	89.1	5.8	0.4	0.9	40390	1,908	34,076	89.3	6.2	1.2	2.8	40538	1857	34,391	89.3	6.4	2.3	5.4
60	9	5.6	12.8	90	39,285	2,296	31,685	99.0	5.0	0.3	0.8	39798	2,174	32,602	99.1	5.4	1.1	2.6	39908	2117	32,903	99.1	5.5	2.2	5.1
60	9	5.6	12.8	100	38,599	2,618	29,933	108.8	4.3	0.3	0.7	39005	2,479	30,799	108.9	4.6	1.1	2.5	39071	2413	31,084	109.0	4.7	2.1	4.9
60	9	5.6	12.8	120	36,672	3,384	25,471	128.4	3.2	0.2	0.5	36813	3,204	26,208	128.4	3.4	0.9	2.1	36774	3119	26,450	128.4	3.5	1.8	4.3
60	9	5.6	12.8	130								35416	3,625	23,420	138.1	2.9	0.8	1.9	35314	3529	23,636	138.1	2.9	1.7	3.9
70	4.5	1.0	2.3	60	39,969	1,489	35,040	78.3	7.9	0.5	1.2	40,721	1,410	36,054	78.7	8.5	1.3	3.1	40,930	1,373	36,387	78.8	8.7	2.5	5.8
70	4.5	1.0	2.3	80	40,590	1,908	34,274	98.6	6.2	0.4	0.9	41,246	1,807	35,266	98.9	6.7	1.2	2.8	41,413	1,759	35,592	99.0	6.9	2.3	5.4
70	4.5	1.0	2.3	90	40,503	2,183	33,279	108.6	5.4	0.3	0.8	41,082	2,067	34,243	108.8	5.8	1.1	2.6	41,217	2,012	34,559	108.9	6.0	2.2	5.1
70	4.5	1.0	2.3	100	40,154	2,502	31,873	118.4	4.7	0.3	0.7	40,637	2,369	32,795	118.6	5.0	1.1	2.5	40,731	2,306	33,098	118.7	5.2	2.1	4.9
70	4.5	1.0	2.3	120	38,695	3,287	27,815	137.7	3.4	0.2	0.5	38,922	3,113	28,620	137.8	3.7	0.9	2.1	38,913	3,030	28,884	137.8	3.8	1.8	4.3
70	4.5	1.0	2.3	130								37,668	3,559	25,890	147.3	3.1	0.8	1.9	37,595	3,464	26,129	147.2	3.2	1.7	3.9

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source Flow SGPM	WPD PSI	WPD FT	LEWT °F	Flow 4.5 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	FT	Flow 6.75 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	FT	Flow 9GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	FT
70	6.75	2.8	6.5	60	41,475	1,537	36,387	72.7	7.9	0.5	1.2	42,258	1,456	37,441	72.9	8.5	1.3	3.1	42,476	1417	37,786	73.0	8.8	2.5	5.8
70	6.75	2.8	6.5	80	41,885	1,967	35,376	92.8	6.2	0.4	0.9	42,563	1,862	36,400	93.0	6.7	1.2	2.8	42,736	1813	36,736	93.1	6.9	2.3	5.4
70	6.75	2.8	6.5	90	41,689	2,244	34,260	102.7	5.4	0.3	0.8	42,285	2,125	35,252	102.9	5.8	1.1	2.6	42,424	2069	35,578	103.0	6.0	2.2	5.1
70	6.75	2.8	6.5	100	41,227	2,566	32,736	112.6	4.7	0.3	0.7	41,723	2,429	33,683	112.7	5.0	1.1	2.5	41,821	2365	33,994	112.8	5.2	2.1	4.9
70	6.75	2.8	6.5	120	39,517	3,342	28,455	132.1	3.5	0.2	0.5	39,752	3,164	29,279	132.1	3.7	0.9	2.1	39,745	3081	29,549	132.1	3.8	1.8	4.3
70	6.75	2.8	6.5	130								38,352	3,599	26,442	141.7	3.1	0.8	1.9	38,281	3503	26,686	141.7	3.2	1.7	3.9
70	9	5.1	11.9	60	42,982	1,585	37,735	69.8	7.9	0.5	1.2	43795	1,501	38,827	70.0	8.6	1.3	3.1	44022	1461	39,186	70.1	8.8	2.5	5.8
70	9	5.1	11.9	80	43,180	2,025	36,479	89.9	6.2	0.4	0.9	43880	1,917	37,535	90.1	6.7	1.2	2.8	44058	1866	37,881	90.1	6.9	2.3	5.4
70	9	5.1	11.9	90	42,874	2,306	35,242	99.8	5.4	0.3	0.8	43489	2,184	36,262	100.0	5.8	1.1	2.6	43632	2126	36,597	100.0	6.0	2.2	5.1
70	9	5.1	11.9	100	42,299	2,629	33,599	109.7	4.7	0.3	0.7	42809	2,489	34,572	109.8	5.0	1.1	2.5	42910	2423	34,891	109.8	5.2	2.1	4.9
70	9	5.1	11.9	120	40,338	3,397	29,096	129.2	3.5	0.2	0.5	40583	3,216	29,938	129.3	3.7	0.9	2.1	40577	3131	30,214	129.3	3.8	1.8	4.3
70	9	5.1	11.9	130								39036	3,638	26,995	138.9	3.1	0.8	1.9	38966	3542	27,244	138.9	3.2	1.7	3.9
80	4.5	0.9	2.0	60	43,043	1,519	38,017	79.7	8.3	0.5	1.2	43,876	1,438	39,117	80.1	8.9	1.3	3.1	44,111	1,400	39,478	80.2	9.2	2.5	5.8
80	4.5	0.9	2.0	80	44,184	1,942	37,756	100.2	6.7	0.4	0.9	44,935	1,839	38,849	100.6	7.2	1.2	2.8	45,132	1,790	39,207	100.7	7.4	2.3	5.4
80	4.5	0.9	2.0	90	44,261	2,220	36,913	110.3	5.8	0.3	0.8	44,938	2,102	37,982	110.6	6.3	1.1	2.6	45,105	2,046	38,333	110.7	6.5	2.2	5.1
80	4.5	0.9	2.0	100	44,007	2,543	35,590	120.2	5.1	0.3	0.7	44,590	2,408	36,620	120.4	5.4	1.1	2.5	44,717	2,344	36,958	120.5	5.6	2.1	4.9
80	4.5	0.9	2.0	120	42,521	3,337	31,478	139.5	3.7	0.2	0.5	42,845	3,159	32,389	139.6	4.0	0.9	2.1	42,867	3,075	32,688	139.6	4.1	1.8	4.3
80	4.5	0.9	2.0	130								41,455	3,609	29,511	149.0	3.4	0.8	1.9	41,410	3,513	29,784	149.0	3.5	1.7	3.9
80	6.75	2.6	5.9	60	44,386	1,558	39,231	73.6	8.4	0.5	1.2	45,248	1,475	40,367	73.8	9.0	1.3	3.1	45,491	1436	40,739	73.9	9.3	2.5	5.8
80	6.75	2.6	5.9	80	45,379	1,988	38,798	93.9	6.7	0.4	0.9	46,152	1,883	39,921	94.1	7.2	1.2	2.8	46,355	1833	40,289	94.2	7.4	2.3	5.4
80	6.75	2.6	5.9	90	45,362	2,268	37,856	103.9	5.9	0.3	0.8	46,059	2,147	38,952	104.1	6.3	1.1	2.6	46,230	2090	39,311	104.1	6.5	2.2	5.1
80	6.75	2.6	5.9	100	45,003	2,591	36,427	113.7	5.1	0.3	0.7	45,602	2,453	37,482	113.9	5.4	1.1	2.5	45,732	2388	37,828	114.0	5.6	2.1	4.9
80	6.75	2.6	5.9	120	43,263	3,373	32,099	133.2	3.8	0.2	0.5	43,598	3,194	33,029	133.3	4.0	0.9	2.1	43,623	3109	33,333	133.3	4.1	1.8	4.3
80	6.75	2.6	5.9	130								42,056	3,630	30,041	142.8	3.4	0.8	1.9	42,015	3534	30,318	142.8	3.5	1.7	3.9
80	9	4.8	11.0	60	45,730	1,597	40,445	70.5	8.4	0.5	1.2	46620	1,512	41,616	70.7	9.0	1.3	3.1	46871	1472	42,000	70.7	9.3	2.5	5.8
80	9	4.8	11.0	80	46,574	2,035	39,840	90.7	6.7	0.4	0.9	47369	1,926	40,993	90.9	7.2	1.2	2.8	47578	1875	41,371	90.9	7.4	2.3	5.4
80	9	4.8	11.0	90	46,464	2,316	38,798	100.6	5.9	0.3	0.8	47179	2,193	39,922	100.8	6.3	1.1	2.6	47355	2135	40,290	100.8	6.5	2.2	5.1
80	9	4.8	11.0	100	45,999	2,639	37,265	110.5	5.1	0.3	0.7	46613	2,499	38,344	110.7	5.5	1.1	2.5	46748	2432	38,698	110.7	5.6	2.1	4.9
80	9	4.8	11.0	120	44,005	3,410	32,721	130.1	3.8	0.2	0.5	44352	3,228	33,668	130.2	4.0	0.9	2.1	44380	3143	33,979	130.2	4.1	1.8	4.3

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source Flow SGPM	WPD (psi)	WPD (ft)	LEWT °F	Flow 7.5 GPM TC Btuh	Pwr W	HR Btuh	LWT °F	EER	WPD PSI	FT	Flow 11.25 GPM TC Btuh	Pwr W	HR Btuh	LWT °F	EER	WPD PSI	FT	Flow 15 GPM TC Btuh	Pwr W	HR Btuh	LWT °F	EER	WPD PSI	FT
50	7.5	1.3	2.9	50	51,037	2249	58,480	36.4	22.7	1.4	3.3	51,859	2226	59,227	40.8	23.3	3.5	8.0	53,671	2204	60,965	42.8	24.4	4.8	11.0
50	7.5	1.3	2.9	60	51,604	2268	59,110	46.2	22.8	1.4	3.2	52,435	2245	59,866	50.7	23.4	3.3	7.7	54,267	2223	61,624	52.8	24.4	4.6	10.6
50	7.5	1.3	2.9	70	52,172	2287	59,741	56.1	22.8	1.3	3.0	53,012	2264	60,505	60.6	23.4	3.2	7.4	54,864	2241	62,282	62.7	24.5	4.4	10.1
50	7.5	1.3	2.9	80	53,836	2289	61,412	65.6	23.5	1.2	2.9	54,703	2266	62,204	70.3	24.1	3.1	7.1	56,614	2244	64,040	72.5	25.2	4.3	9.8
50	7.5	1.3	2.9	90	55,500	2292	63,084	75.2	24.2	1.2	2.7	56,394	2269	63,902	80.0	24.9	3.0	6.9	58,364	2246	65,798	82.2	26.0	4.1	9.5
50	11.25	3.4	7.9	50	51,780	2272	59,298	36.2	22.8	1.4	3.3	52,510	2249	59,953	40.7	23.3	3.5	8.0	54,345	2226	61,713	42.8	24.4	4.8	11.0
50	11.25	3.4	7.9	60	53,792	2291	61,374	45.7	23.5	1.4	3.2	54,551	2268	62,057	50.3	24.1	3.3	7.7	56,457	2245	63,888	52.5	25.1	4.6	10.6
50	11.25	3.4	7.9	70	55,804	2310	63,450	55.1	24.2	1.3	3.0	56,591	2287	64,161	59.9	24.7	3.2	7.4	58,569	2264	66,062	62.2	25.9	4.4	10.2
50	11.25	3.4	7.9	80	56,314	2312	63,967	65.0	24.4	1.2	2.9	57,108	2289	64,685	69.8	24.9	3.1	7.1	59,104	2266	66,605	72.1	26.1	4.3	9.8
50	11.25	3.4	7.9	90	56,823	2315	64,484	74.8	24.5	1.2	2.7	57,625	2292	65,209	79.8	25.1	3.0	6.9	59,639	2269	67,147	82.0	26.3	4.1	9.5
50	15.0	6.2	14.2	50	53,899	2294	61,493	35.6	23.5	1.4	3.3	54,794	2272	62,312	40.3	24.1	3.5	8.0	56,194	2249	63,637	42.5	25.0	4.8	11.1
50	15.0	6.2	14.2	60	55,749	2314	63,407	45.1	24.1	1.4	3.2	56,981	2291	64,563	49.9	24.9	3.3	7.7	59,665	2268	67,171	52.0	26.3	4.6	10.6
50	15.0	6.2	14.2	70	57,599	2333	65,321	54.6	24.7	1.3	3.0	59,169	2310	66,814	59.5	25.6	3.2	7.4	63,137	2287	70,706	61.6	27.6	4.4	10.1
50	15.0	6.2	14.2	80	58,517	2336	66,248	64.4	25.1	1.2	2.9	59,937	2312	67,590	69.3	25.9	3.1	7.1	63,867	2289	71,444	71.5	27.9	4.2	9.8
50	15.0	6.2	14.2	90	59,435	2338	67,174	74.0	25.4	1.2	2.7	60,705	2315	68,366	79.0	26.2	3.0	6.9	64,597	2292	72,181	81.2	28.2	4.1	9.4
70	7.5	1.1	2.5	50	47,631	2879	57,161	37.3	16.5	1.4	3.3	48,809	2850	58,243	41.3	17.1	3.5	8.0	50,447	2822	59,787	43.3	17.9	4.7	11.0
70	7.5	1.1	2.5	60	51,570	2897	61,159	46.2	17.8	1.4	3.2	52,861	2868	62,354	50.6	18.4	3.3	7.7	54,632	2840	64,030	52.7	19.2	4.6	10.5
70	7.5	1.1	2.5	70	55,508	2915	65,156	55.2	19.0	1.3	3.0	56,913	2886	66,465	59.9	19.7	3.2	7.4	58,817	2857	68,274	62.2	20.6	4.4	10.1
70	7.5	1.1	2.5	80	57,556	2977	67,407	64.7	19.3	1.2	2.9	59,014	2947	68,767	69.5	20.0	3.1	7.1	60,988	2917	70,644	71.9	20.9	4.3	9.8
70	7.5	1.1	2.5	90	59,604	3038	69,658	74.1	19.6	1.2	2.7	61,115	3008	71,069	79.1	20.3	3.0	6.9	63,160	2977	73,014	81.6	21.2	4.1	9.5
70	11.25	3.0	6.9	50	48,646	2908	58,271	37.0	16.7	1.4	3.3	49,816	2879	59,345	41.1	17.3	3.5	8.0	51,487	2850	60,921	43.1	18.1	4.8	11.0
70	11.25	3.0	6.9	60	52,903	2927	62,589	45.9	18.1	1.4	3.2	54,189	2897	63,778	50.4	18.7	3.3	7.7	56,005	2868	65,498	52.5	19.5	4.6	10.6
70	11.25	3.0	6.9	70	57,161	2945	66,907	54.8	19.4	1.3	3.0	58,561	2915	68,210	59.6	20.1	3.2	7.4	60,522	2886	70,075	61.9	21.0	4.4	10.2
70	11.25	3.0	6.9	80	58,953	3007	68,904	64.3	19.6	1.2	2.9	60,403	2977	70,255	69.3	20.3	3.1	7.1	62,425	2947	72,178	71.7	21.2	4.3	9.9
70	11.25	3.0	6.9	90	60,744	3069	70,901	73.8	19.8	1.2	2.7	62,246	3038	72,300	78.9	20.5	3.0	6.9	64,328	3008	74,282	81.4	21.4	4.1	9.6
70	15.0	5.5	12.8	50	49,657	2938	59,380	36.8	16.9	1.4	3.3	51,695	2908	61,321	40.8	17.8	3.5	8.0	52,625	2879	62,154	43.0	18.3	4.8	11.0
70	15.0	5.5	12.8	60	53,977	2956	63,761	45.6	18.3	1.4	3.2	55,891	2927	65,577	50.1	19.1	3.3	7.7	57,594	2897	67,183	52.3	19.9	4.6	10.6
70	15.0	5.5	12.8	70	58,297	2975	68,142	54.5	19.6	1.3	3.0	60,086	2945	69,832	59.3	20.4	3.2	7.4	62,564	2915	72,212	61.7	21.5	4.4	10.1
70	15.0	5.5	12.8	80	60,464	3037	70,515	63.9	19.9	1.2	2.9	62,202	3007	72,153	68.9	20.7	3.1	7.1	65,118	2977	74,969	71.3	21.9	4.2	9.8
70	15.0	5.5	12.8	90	62,630	3100	72,889	73.3	20.2	1.2	2.7	64,317	3069	74,473	78.6	21.0	3.0	6.9	67,672	3038	77,727	81.0	22.3	4.1	9.5
80	7.5	1.0	2.3	50	45,929	3194	56,501	37.8	14.4	1.4	3.3	47,284	3163	57,751	41.6	15.0	3.5	8.0	48,835	3131	59,197	43.5	15.6	4.7	10.9
80	7.5	1.0	2.3	60	51,552	3212	62,183	46.3	16.0	1.4	3.2	53,074	3180	63,598	50.6	16.7	3.3	7.7	54,814	3148	65,233	52.7	17.4	4.6	10.5
80	7.5	1.0	2.3	70	57,176	3229	67,864	54.8	17.7	1.3	3.0	58,864	3197	69,445	59.5	18.4	3.2	7.4	60,794	3165	71,270	61.9	19.2	4.4	10.1
80	7.5	1.0	2.3	80	59,416	3320	70,405	64.2	17.9	1.2	2.9	61,170	3287	72,049	69.1	18.6	3.1	7.1	63,176	3254	73,946	71.6	19.4	4.3	9.8
80	7.5	1.0	2.3	90	61,656	3411	72,945	73.6	18.1	1.2	2.7	63,476	3377	74,652	78.7	18.8	3.0	6.9	65,557	3343	76,622	81.3	19.6	4.1	9.6

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source			LEWT °F	Load																				
	Flow				Flow 7.5 GPM					WPD		Flow 11.25 GPM					WPD		Flow 15 GPM					WPD	
	SGPM	WPD (psi)	WPD (ft)		TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT
80	11.25	2.8	6.5	50	47,079	3227	57,758	37.4	14.6	1.4	3.3	48,469	3194	59,041	41.4	15.2	3.5	8.0	50,058	3163	60,525	43.3	15.8	4.8	11.0
80	11.25	2.8	6.5	60	52,459	3244	63,197	46.0	16.2	1.4	3.2	54,007	3212	64,638	50.4	16.8	3.3	7.7	55,779	3180	66,303	52.6	17.5	4.6	10.6
80	11.25	2.8	6.5	70	57,839	3262	68,636	54.6	17.7	1.3	3.0	59,546	3229	70,235	59.4	18.4	3.2	7.4	61,499	3197	72,081	61.8	19.2	4.4	10.2
80	11.25	2.8	6.5	80	60,272	3354	71,372	63.9	18.0	1.2	2.9	62,051	3320	73,040	69.0	18.7	3.1	7.1	64,086	3287	74,965	71.5	19.5	4.3	9.9
80	11.25	2.8	6.5	90	62,705	3446	74,109	73.3	18.2	1.2	2.7	64,556	3411	75,845	78.5	18.9	3.0	6.9	66,673	3377	77,850	81.1	19.7	4.2	9.6
80	15.0	5.3	12.1	50	47,535	3259	58,323	37.3	14.6	1.4	3.3	50,146	3227	60,825	41.1	15.5	3.5	8.0	50,840	3194	61,413	43.2	15.9	4.8	11.0
80	15.0	5.3	12.1	60	53,091	3277	63,937	45.8	16.2	1.4	3.2	55,345	3244	66,083	50.2	17.1	3.3	7.7	56,559	3212	67,189	52.5	17.6	4.6	10.6
80	15.0	5.3	12.1	70	58,646	3295	69,552	54.4	17.8	1.3	3.0	60,545	3262	71,341	59.2	18.6	3.2	7.4	62,277	3229	72,966	61.7	19.3	4.4	10.1
80	15.0	5.3	12.1	80	61,437	3388	72,649	63.6	18.1	1.2	2.9	63,334	3354	74,434	68.7	18.9	3.1	7.1	65,743	3320	76,732	71.2	19.8	4.3	9.8
80	15.0	5.3	12.1	90	64,228	3480	75,746	72.9	18.5	1.2	2.7	66,123	3446	77,527	78.2	19.2	3.0	6.9	69,210	3411	80,499	80.8	20.3	4.1	9.6
90	7.5	0.9	2.1	50	43,489	3646	55,557	38.4	11.9	1.4	3.3	44,871	3610	56,818	42.0	12.4	3.5	8.0	46,052	3574	57,880	43.9	12.9	4.7	10.9
90	7.5	0.9	2.1	60	49,177	3685	61,371	46.9	13.3	1.4	3.2	50,741	3648	62,814	51.0	13.9	3.3	7.7	52,071	3611	64,023	53.1	14.4	4.5	10.5
90	7.5	0.9	2.1	70	54,864	3723	67,185	55.4	14.7	1.3	3.0	56,611	3686	68,809	59.9	15.4	3.2	7.4	58,090	3649	70,166	62.3	15.9	4.4	10.1
90	7.5	0.9	2.1	80	57,848	3810	70,458	64.6	15.2	1.2	2.9	59,695	3772	72,179	69.4	15.8	3.1	7.1	61,240	3734	73,600	71.8	16.4	4.3	9.8
90	7.5	0.9	2.1	90	60,832	3898	73,731	73.8	15.6	1.2	2.7	62,778	3859	75,548	78.8	16.3	3.0	6.9	64,391	3820	77,034	81.4	16.9	4.1	9.6
90	11.25	2.7	6.1	50	44,529	3683	56,719	38.1	12.1	1.4	3.3	45,943	3646	58,011	41.8	12.6	3.5	8.0	47,153	3610	59,100	43.7	13.1	4.8	11.0
90	11.25	2.7	6.1	60	50,255	3722	62,573	46.6	13.5	1.4	3.2	51,855	3685	64,050	50.8	14.1	3.3	7.7	53,211	3648	65,283	52.9	14.6	4.6	10.6
90	11.25	2.7	6.1	70	55,982	3760	68,427	55.1	14.9	1.3	3.0	57,767	3723	70,088	59.7	15.5	3.2	7.4	59,268	3686	71,466	62.1	16.1	4.4	10.2
90	11.25	2.7	6.1	80	58,890	3849	71,627	64.3	15.3	1.2	2.9	60,770	3810	73,381	69.2	15.9	3.1	7.1	62,341	3772	74,825	71.7	16.5	4.3	9.9
90	11.25	2.7	6.1	90	61,797	3937	74,827	73.5	15.7	1.2	2.7	63,774	3898	76,674	78.7	16.4	3.0	6.9	65,414	3859	78,184	81.3	17.0	4.1	9.6
90	15.0	5.0	11.6	50	45,121	3720	57,434	38.0	12.1	1.4	3.3	47,123	3683	59,313	41.6	12.8	3.5	8.0	48,063	3646	60,131	43.6	13.2	4.7	10.9
90	15.0	5.0	11.6	60	50,790	3759	63,232	46.5	13.5	1.4	3.2	52,581	3722	64,899	50.7	14.1	3.3	7.7	54,102	3685	66,297	52.8	14.7	4.6	10.5
90	15.0	5.0	11.6	70	56,458	3798	69,030	54.9	14.9	1.3	3.0	58,039	3760	70,484	59.7	15.4	3.2	7.4	60,141	3723	72,462	62.0	16.2	4.4	10.1
90	15.0	5.0	11.6	80	59,793	3888	72,660	64.1	15.4	1.2	2.9	61,534	3849	74,272	69.1	16.0	3.1	7.1	63,785	3810	76,396	71.5	16.7	4.3	9.8
90	15.0	5.0	11.6	90	63,128	3977	76,290	73.2	15.9	1.2	2.7	65,029	3937	78,059	78.4	16.5	3.0	6.9	67,429	3898	80,329	81.0	17.3	4.1	9.5
110	7.5	0.8	1.8	50	38,610	4550	53,669	39.7	8.5	1.4	3.3	40,044	4505	54,952	42.9	8.9	3.5	8.0	40,485	4460	55,244	44.6	9.1	4.7	10.9
110	7.5	0.8	1.8	60	44,425	4630	59,748	48.2	9.6	1.4	3.2	46,076	4583	61,245	51.8	10.1	3.3	7.7	46,583	4538	61,601	53.8	10.3	4.5	10.4
110	7.5	0.8	1.8	70	50,241	4709	65,827	56.6	10.7	1.3	3.0	52,107	4662	67,538	60.7	11.2	3.2	7.4	52,681	4616	67,957	63.0	11.4	4.3	10.0
110	7.5	0.8	1.8	80	54,712	4790	70,565	65.4	11.4	1.2	2.9	56,745	4742	72,439	69.9	12.0	3.1	7.1	57,370	4695	72,907	72.4	12.2	4.2	9.8
110	7.5	0.8	1.8	90	59,183	4871	75,304	74.2	12.2	1.2	2.7	61,382	4822	77,341	79.1	12.7	3.0	6.9	62,058	4774	77,857	81.7	13.0	4.2	9.6
110	11.25	2.4	5.6	50	39,428	4596	54,639	39.5	8.6	1.4	3.3	40,893	4550	55,952	42.7	9.0	3.5	8.0	41,343	4505	56,251	44.5	9.2	4.8	11.0
110	11.25	2.4	5.6	60	45,847	4676	61,325	47.8	9.8	1.4	3.2	47,551	4630	62,873	51.5	10.3	3.3	7.7	48,074	4583	63,244	53.6	10.5	4.6	10.5
110	11.25	2.4	5.6	70	52,267	4757	68,011	56.1	11.0	1.3	3.0	54,209	4709	69,795	60.4	11.5	3.2	7.4	54,806	4662	70,236	62.7	11.8	4.4	10.1
110	11.25	2.4	5.6	80	56,124	4838	72,138	65.0	11.6	1.2	2.9	58,209	4790	74,062	69.7	12.2	3.1	7.1	58,850	4742	74,545	72.2	12.4	4.2	9.8
110	11.25	2.4	5.6	90	59,981	4920	76,265	74.0	12.2	1.2	2.7	62,210	4871	78,330	78.9	12.8	3.0	6.9	62,895	4822	78,854	81.6	13.0	4.1	9.5

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source Flow SGPM	Source Flow WPD (psi)	Source Flow WPD (ft)	LEWT °F	Flow 7.5 GPM TC Btuh	Flow 7.5 GPM Pwr W	Flow 7.5 GPM HR Btuh	Flow 7.5 GPM LWT °F	Flow 7.5 GPM EER	WPD PSI	WPD FT	Flow 11.25 GPM TC Btuh	Flow 11.25 GPM Pwr W	Flow 11.25 GPM HR Btuh	Flow 11.25 GPM LWT °F	Flow 11.25 GPM EER	WPD PSI	WPD FT	Flow 15 GPM TC Btuh	Flow 15 GPM Pwr W	Flow 15 GPM HR Btuh	Flow 15 GPM LWT °F	Flow 15 GPM EER	WPD PSI	WPD FT
110	15.0	4.6	10.7	50	40,292	4642	55,657	39.3	8.7	1.4	3.3	41,079	4596	56,290	42.7	8.9	3.5	8.0	42,510	4550	57,569	44.3	9.3	4.7	10.8
110	15.0	4.6	10.7	60	46,187	4724	61,821	47.7	9.8	1.4	3.2	47,053	4676	62,530	51.6	10.1	3.3	7.7	49,190	4630	64,512	53.4	10.6	4.5	10.5
110	15.0	4.6	10.7	70	52,083	4805	67,985	56.1	10.8	1.3	3.0	53,027	4757	68,771	60.6	11.1	3.2	7.4	55,870	4709	71,456	62.6	11.9	4.4	10.2
110	15.0	4.6	10.7	80	56,506	4887	72,681	64.9	11.6	1.2	2.9	57,933	4838	73,947	69.7	12.0	3.1	7.1	59,869	4790	75,722	72.0	12.5	4.3	9.8
110	15.0	4.6	10.7	90	60,929	4970	77,377	73.8	12.3	1.2	2.7	62,840	4920	79,123	78.8	12.8	3.0	6.9	63,868	4871	79,988	81.5	13.1	4.1	9.5
120	7.5	0.7	1.7	50	35,888	5142	52,905	40.4	7.0	1.4	3.3	37,352	5090	54,199	43.4	7.3	3.5	8.0	38,112	5039	54,790	44.9	7.6	4.7	10.9
120	7.5	0.7	1.7	60	41,419	5230	58,728	49.0	7.9	1.4	3.2	43,110	5178	60,246	52.3	8.3	3.3	7.7	43,986	5126	60,951	54.1	8.6	4.5	10.5
120	7.5	0.7	1.7	70	46,950	5318	64,552	57.5	8.8	1.3	3.0	48,867	5265	66,292	61.3	9.3	3.2	7.4	49,860	5212	67,111	63.4	9.6	4.3	10.0
120	7.5	0.7	1.7	80	51,374	5416	69,299	66.3	9.5	1.2	2.9	53,470	5362	71,216	70.5	10.0	3.1	7.1	54,558	5308	72,126	72.7	10.3	4.2	9.7
120	7.5	0.7	1.7	90	55,797	5514	74,046	75.1	10.1	1.2	2.7	58,074	5459	76,140	79.7	10.6	3.0	6.9	59,255	5404	77,141	82.1	11.0	4.1	9.4
120	11.25	2.4	5.5	50	36,130	5194	53,319	40.4	7.0	1.4	3.3	37,604	5142	54,621	43.3	7.3	3.5	8.0	38,369	5090	55,216	44.9	7.5	4.8	11.1
120	11.25	2.4	5.5	60	41,856	5283	59,340	48.8	7.9	1.4	3.2	43,564	5230	60,874	52.3	8.3	3.3	7.7	44,450	5178	61,586	54.1	8.6	4.6	10.6
120	11.25	2.4	5.5	70	47,582	5372	65,362	57.3	8.9	1.3	3.0	49,524	5318	67,126	61.2	9.3	3.2	7.4	50,531	5265	67,957	63.3	9.6	4.4	10.1
120	11.25	2.4	5.5	80	52,038	5471	70,144	66.1	9.5	1.2	2.9	54,161	5416	72,087	70.4	10.0	3.1	7.1	55,263	5362	73,009	72.6	10.3	4.2	9.8
120	11.25	2.4	5.5	90	56,493	5570	74,926	74.9	10.1	1.2	2.7	58,798	5514	77,047	79.5	10.7	3.0	6.9	59,994	5459	78,060	82.0	11.0	4.1	9.5
120	15.0	4.5	10.3	50	37,304	5246	54,667	40.1	7.1	1.4	3.3	38,913	5194	56,102	43.1	7.5	3.5	8.0	39,611	5142	56,628	44.7	7.7	4.7	11.0
120	15.0	4.5	10.3	60	43,048	5336	60,708	48.5	8.1	1.4	3.2	45,029	5283	62,513	52.0	8.5	3.3	7.7	45,892	5230	63,201	53.9	8.8	4.6	10.5
120	15.0	4.5	10.3	70	48,791	5426	66,750	57.0	9.0	1.3	3.0	51,146	5372	68,925	60.9	9.5	3.2	7.4	52,174	5318	69,775	63.0	9.8	4.4	10.1
120	15.0	4.5	10.3	80	53,295	5526	71,584	65.8	9.6	1.2	2.9	55,807	5471	73,913	70.1	10.2	3.1	7.1	56,852	5416	74,777	72.4	10.5	4.2	9.8
120	15.0	4.5	10.3	90	57,798	5626	76,417	74.5	10.3	1.2	2.7	60,468	5570	78,902	79.2	10.9	3.0	6.9	61,531	5514	79,780	81.7	11.2	4.1	9.5

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	SGPM	WPD PSI	WPD FT	LEWT °F	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT
	Source					Flow 7.5 GPM					WPD			Flow 11.25 GPM					WPD			Flow 15 GPM					WPD	
20	15	7.3	16.9	60	39,881	2,430	31,839	65.5	4.8	1.4	3.2	40,052	2,381	32,171	65.5	4.9	3.3	7.7	40,229	2,334	32,506	65.5	5.1	6.0	13.8
20	15	7.3	16.9	80	39,245	3,171	28,749	85.4	3.6	1.2	2.9	39,339	3,108	29,053	85.4	3.7	3.1	7.1	39,440	3,046	29,359	85.4	3.8	5.6	13.0
20	15	7.3	16.9	100	38,481	4,113	24,867	105.3	2.7	1.1	2.6	38,477	4,031	25,136	105.3	2.8	2.9	6.7	38,481	3,950	25,407	105.3	2.9	5.3	12.3
30	7.5	1.5	3.5	60	46,346	2,521	38,003	72.7	5.4	1.4	3.2	46,575	2,470	38,399	72.8	5.5	3.3	7.7	46,812	2,421	38,799	72.9	5.7	6.0	13.8
30	7.5	1.5	3.5	80	45,499	3,275	34,659	92.5	4.1	1.2	2.9	45,648	3,210	35,025	92.5	4.2	3.1	7.1	45,804	3,146	35,394	92.6	4.3	5.6	13.0
30	7.5	1.5	3.5	100	44,457	4,220	30,490	112.2	3.1	1.1	2.6	44,505	4,136	30,817	112.2	3.2	2.9	6.7	44,561	4,053	31,147	112.3	3.2	5.3	12.3
30	7.5	1.5	3.5	120	43,222	5,356	25,498	131.9	2.4	1.1	2.4	43,148	5,248	25,778	131.9	2.4	2.8	6.4	43,083	5,143	26,060	131.8	2.5	5.1	11.7
30	11.25	4.0	9.2	60	48,505	2,563	40,023	68.9	5.5	1.4	3.2	48,745	2,512	40,433	68.9	5.7	3.3	7.7	48,993	2,461	40,847	69.0	5.8	6.0	13.8
30	11.25	4.0	9.2	80	47,503	3,330	36,481	88.7	4.2	1.2	2.9	47,658	3,263	36,857	88.7	4.3	3.1	7.1	47,822	3,198	37,237	88.8	4.4	5.6	13.0
30	11.25	4.0	9.2	100	46,395	4,291	32,193	108.5	3.2	1.1	2.6	46,445	4,205	32,527	108.5	3.2	2.9	6.7	46,504	4,121	32,865	108.5	3.3	5.3	12.3
30	11.25	4.0	9.2	120	45,184	5,446	27,161	128.3	2.4	1.1	2.4	45,107	5,337	27,444	128.3	2.5	2.8	6.4	45,039	5,230	27,729	128.3	2.5	5.1	11.7
30	15	6.9	15.9	60	50,397	2,606	41,773	66.9	5.7	1.4	3.2	50,646	2,554	42,195	67.0	5.8	3.3	7.7	50,904	2,503	42,621	67.0	6.0	6.0	13.8
30	15	6.9	15.9	80	49,375	3,386	38,169	86.8	4.3	1.2	2.9	49,536	3,318	38,554	86.8	4.4	3.1	7.1	49,706	3,252	38,944	86.8	4.5	5.6	13.0
30	15	6.9	15.9	100	48,115	4,363	33,674	106.6	3.2	1.1	2.6	48,166	4,276	34,014	106.6	3.3	2.9	6.7	48,226	4,190	34,358	106.6	3.4	5.3	12.3
30	15	6.9	15.9	120	46,616	5,538	28,288	126.4	2.5	1.1	2.4	46,535	5,427	28,574	126.4	2.5	2.8	6.4	46,464	5,318	28,863	126.4	2.6	5.1	11.7
40	7.5	1.4	3.2	60	52,811	2,612	44,167	74.5	5.9	1.4	3.2	53,099	2,559	44,628	74.6	6.1	3.3	7.7	53,394	2,508	45,093	74.7	6.2	6.0	13.8
40	7.5	1.4	3.2	80	51,753	3,379	40,569	94.2	4.5	1.2	2.9	51,957	3,311	40,997	94.3	4.6	3.1	7.1	52,169	3,245	41,428	94.3	4.7	5.6	13.0
40	7.5	1.4	3.2	100	50,434	4,327	36,113	113.9	3.4	1.1	2.6	50,533	4,240	36,499	113.9	3.5	2.9	6.7	50,641	4,156	36,888	113.9	3.6	5.3	12.3
40	7.5	1.4	3.2	120	48,855	5,455	30,800	133.4	2.6	1.1	2.4	48,828	5,346	31,135	133.4	2.7	2.8	6.4	48,812	5,239	31,473	133.4	2.7	5.1	11.7
40	11.25	3.7	8.5	60	55,643	2,646	46,885	70.2	6.2	1.4	3.2	55,947	2,593	47,364	70.3	6.3	3.3	7.7	56,259	2,542	47,847	70.3	6.5	6.0	13.8
40	11.25	3.7	8.5	80	54,232	3,424	42,899	89.9	4.6	1.2	2.9	54,446	3,356	43,340	90.0	4.8	3.1	7.1	54,668	3,288	43,785	90.0	4.9	5.6	13.0
40	11.25	3.7	8.5	100	52,684	4,385	38,172	109.7	3.5	1.1	2.6	52,788	4,297	38,566	109.7	3.6	2.9	6.7	52,901	4,211	38,964	109.7	3.7	5.3	12.3
40	11.25	3.7	8.5	120	51,003	5,528	32,706	129.3	2.7	1.1	2.4	50,975	5,418	33,044	129.3	2.8	2.8	6.4	50,958	5,309	33,386	129.3	2.8	5.1	11.7
40	15	6.5	15.0	60	57,453	2,682	48,578	67.9	6.3	1.4	3.2	57,766	2,628	49,069	67.9	6.4	3.3	7.7	58,088	2,575	49,565	68.0	6.6	6.0	13.8
40	15	6.5	15.0	80	56,064	3,470	44,580	87.7	4.7	1.2	2.9	56,285	3,400	45,031	87.7	4.9	3.1	7.1	56,514	3,332	45,486	87.8	5.0	5.6	13.0
40	15	6.5	15.0	100	54,375	4,443	39,669	107.5	3.6	1.1	2.6	54,481	4,355	40,069	107.5	3.7	2.9	6.7	54,598	4,267	40,474	107.5	3.7	5.3	12.3
40	15	6.5	15.0	120	52,385	5,603	33,843	127.2	2.7	1.1	2.4	52,356	5,491	34,185	127.2	2.8	2.8	6.4	52,338	5,381	34,530	127.2	2.9	5.1	11.7
50	7.5	1.3	2.9	60	59,276	2,702	50,332	76.3	6.4	1.4	3.2	59,622	2,648	50,857	76.4	6.6	3.3	7.7	59,977	2,595	51,387	76.5	6.8	6.0	13.8
50	7.5	1.3	2.9	80	58,007	3,483	46,480	95.9	4.9	1.2	2.9	58,265	3,413	46,969	96.0	5.0	3.1	7.1	58,533	3,345	47,463	96.1	5.1	5.6	13.0
50	7.5	1.3	2.9	100	56,410	4,434	41,737	115.5	3.7	1.1	2.6	56,561	4,345	42,181	115.5	3.8	2.9	6.7	56,721	4,258	42,629	115.6	3.9	5.3	12.3
50	7.5	1.3	2.9	120	54,488	5,555	36,103	135.0	2.9	1.1	2.4	54,509	5,444	36,492	135.0	2.9	2.8	6.4	54,541	5,335	36,885	135.0	3.0	5.1	11.7
50	7.5	1.3	2.9	130								53,499	6,155	33,128	144.7	2.5	2.7	6.2	53,452	6,032	33,489	144.7	2.6	5.0	11.5

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Flow SGPM	Flow WPD PSI	Flow WPD FT	LEWT °F	Flow 7.5 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	WPD FT	Flow 11.25 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	WPD FT	Flow 15 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	WPD FT
50	11.25	3.4	7.9	60	62,782	2,730	53,747	71.5	6.7	1.4	3.2	63,149	2,675	54,295	71.6	6.9	3.3	7.7	63,524	2,622	54,848	71.6	7.1	6.0	13.8
50	11.25	3.4	7.9	80	60,961	3,518	49,318	91.2	5.1	1.2	2.9	61,233	3,448	49,822	91.2	5.2	3.1	7.1	61,514	3,379	50,332	91.3	5.3	5.6	13.0
50	11.25	3.4	7.9	100	58,973	4,478	44,151	110.8	3.9	1.1	2.6	59,131	4,389	44,605	110.8	3.9	2.9	6.7	59,298	4,301	45,063	110.9	4.0	5.3	12.3
50	11.25	3.4	7.9	120	56,821	5,611	38,251	130.4	3.0	1.1	2.4	56,843	5,499	38,645	130.4	3.0	2.8	6.4	56,877	5,389	39,042	130.4	3.1	5.1	11.7
50	11.25	3.4	7.9	130								56,160	6,217	35,584	140.3	2.6	2.7	6.2	56,111	6,093	35,946	140.3	2.7	5.0	11.5
50	15	6.2	14.2	60	64,510	2,757	55,384	68.9	6.9	1.4	3.2	64,887	2,702	55,943	68.9	7.0	3.3	7.7	65,273	2,648	56,508	69.0	7.2	6.0	13.8
50	15	6.2	14.2	80	62,753	3,554	50,992	88.6	5.2	1.2	2.9	63,033	3,483	51,507	88.7	5.3	3.1	7.1	63,323	3,413	52,027	88.7	5.4	5.6	13.0
50	15	6.2	14.2	100	60,635	4,524	45,663	108.3	3.9	1.1	2.6	60,797	4,433	46,125	108.4	4.0	2.9	6.7	60,969	4,345	46,590	108.4	4.1	5.3	12.3
50	15	6.2	14.2	120	58,155	5,668	39,398	128.0	3.0	1.1	2.4	58,178	5,554	39,796	128.0	3.1	2.8	6.4	58,212	5,443	40,198	128.0	3.1	5.1	11.7
50	15	6.2	14.2	130								56,991	6,280	36,206	137.8	2.7	2.7	6.2	56,941	6,154	36,572	137.8	2.7	5.0	11.5
60	7.5	1.2	2.7	60	62,913	2,757	53,789	77.3	6.7	1.4	3.2	63,289	2,702	54,347	77.4	6.9	3.3	7.7	63,674	2,648	54,911	77.5	7.0	6.0	13.8
60	7.5	1.2	2.7	80	62,859	3,545	51,127	97.3	5.2	1.2	2.9	63,161	3,474	51,663	97.4	5.3	3.1	7.1	63,472	3,404	52,205	97.4	5.5	5.6	13.0
60	7.5	1.2	2.7	100	61,747	4,491	46,883	117.0	4.0	1.1	2.6	61,947	4,401	47,380	117.0	4.1	2.9	6.7	62,157	4,313	47,882	117.1	4.2	5.3	12.3
60	7.5	1.2	2.7	120	59,578	5,596	41,059	136.4	3.1	1.1	2.4	59,648	5,484	41,499	136.4	3.2	2.8	6.4	59,729	5,374	41,943	136.4	3.3	5.1	11.7
60	7.5	1.2	2.7	130								58,436	6,209	37,886	146.1	2.8	2.7	6.2	58,243	6,022	38,312	146.0	2.8	5.0	11.5
60	11.25	3.2	7.3	60	65,694	2,785	56,477	72.0	6.9	1.4	3.2	66,086	2,729	57,054	72.1	7.1	3.3	7.7	66,488	2,674	57,636	72.2	7.3	6.0	13.8
60	11.25	3.2	7.3	80	65,644	3,581	53,793	92.0	5.4	1.2	2.9	65,958	3,509	54,345	92.1	5.5	3.1	7.1	66,283	3,439	54,902	92.1	5.6	5.6	13.0
60	11.25	3.2	7.3	100	64,439	4,543	49,404	111.8	4.2	1.1	2.6	64,648	4,452	49,913	111.8	4.3	2.9	6.7	64,867	4,363	50,427	111.9	4.4	5.3	12.3
60	11.25	3.2	7.3	120	62,082	5,672	43,310	131.4	3.2	1.1	2.4	62,154	5,558	43,758	131.4	3.3	2.8	6.4	62,239	5,447	44,211	131.4	3.3	5.1	11.7
60	11.25	3.2	7.3	130								61,253	6,272	40,495	141.2	2.9	2.7	6.2	61,051	6,083	40,919	141.2	2.9	5.0	11.5
60	15	5.8	13.5	60	67,882	2,813	58,572	69.3	7.1	1.4	3.2	68,288	2,757	59,164	69.4	7.3	3.3	7.7	68,703	2,702	59,762	69.4	7.5	6.0	13.8
60	15	5.8	13.5	80	67,941	3,617	55,971	89.3	5.5	1.2	2.9	68,267	3,545	56,536	89.4	5.6	3.1	7.1	68,604	3,474	57,107	89.4	5.8	5.6	13.0
60	15	5.8	13.5	100	66,720	4,595	51,511	109.2	4.3	1.1	2.6	66,936	4,504	52,031	109.2	4.4	2.9	6.7	67,164	4,414	52,557	109.2	4.5	5.3	12.3
60	15	5.8	13.5	120	64,218	5,749	45,191	128.8	3.3	1.1	2.4	64,294	5,634	45,648	128.8	3.3	2.8	6.4	64,382	5,521	46,109	128.8	3.4	5.1	11.7
60	15	5.8	13.5	130															62,616	6,144	42,281	138.6	3.0	5.0	11.5
70	7.5	1.1	2.5	60	66,551	2,811	57,246	78.3	6.9	1.4	3.2	66,957	2,755	57,838	78.4	7.1	3.3	7.7	67,372	2,700	58,435	78.5	7.3	6.0	13.8
70	7.5	1.1	2.5	80	67,712	3,607	55,775	98.6	5.5	1.2	2.9	68,057	3,535	56,358	98.7	5.6	3.1	7.1	68,411	3,464	56,947	98.8	5.8	5.6	13.0
70	7.5	1.1	2.5	100	67,084	4,549	52,030	118.4	4.3	1.1	2.6	67,333	4,458	52,580	118.5	4.4	2.9	6.7	67,593	4,368	53,135	118.6	4.5	5.3	12.3
70	7.5	1.1	2.5	120	64,669	5,636	46,014	137.8	3.4	1.1	2.4	64,787	5,524	46,506	137.8	3.4	2.8	6.4	64,917	5,413	47,001	137.8	3.5	5.1	11.7
70	7.5	1.1	2.5	130															63,033	6,012	43,136	147.3	3.1	5.0	11.5
70	11.25	3.0	6.9	60	68,606	2,840	59,207	72.6	7.1	1.4	3.2	69,024	2,783	59,813	72.7	7.3	3.3	7.7	69,451	2,727	60,425	72.7	7.5	6.0	13.8
70	11.25	3.0	6.9	80	70,326	3,643	58,268	92.9	5.7	1.2	2.9	70,684	3,570	58,867	93.0	5.8	3.1	7.1	71,052	3,499	59,472	93.0	6.0	5.6	13.0
70	11.25	3.0	6.9	100	69,905	4,608	54,656	112.8	4.4	1.1	2.6	70,164	4,515	55,220	112.9	4.6	2.9	6.7	70,435	4,425	55,790	112.9	4.7	5.3	12.3
70	11.25	3.0	6.9	120	67,342	5,732	48,370	132.3	3.4	1.1	2.4	67,465	5,618	48,872	132.4	3.5	2.8	6.4	67,601	5,505	49,380	132.4	3.6	5.1	11.7
70	11.25	3.0	6.9	130															65,990	6,073	45,893	142.1	3.2	5.0	11.5

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source Flow SGPM	Source Flow WPD PSI	Source Flow WPD FT	LEWT °F	Flow 7.5 GPM HC Btuh	Flow 7.5 GPM Pwr W	Flow 7.5 GPM HE Btuh	Flow 7.5 GPM LWT °F	Flow 7.5 GPM COP	WPD PSI	WPD FT	Flow 11.25 GPM HC Btuh	Flow 11.25 GPM Pwr W	Flow 11.25 GPM HE Btuh	Flow 11.25 GPM LWT °F	Flow 11.25 GPM COP	WPD PSI	WPD FT	Flow 15 GPM HC Btuh	Flow 15 GPM Pwr W	Flow 15 GPM HE Btuh	Flow 15 GPM LWT °F	Flow 15 GPM COP	WPD PSI	WPD FT
70	15	5.5	12.8	60	71,255	2,869	61,761	69.8	7.3	1.4	3.2	71,689	2,811	62,385	69.9	7.5	3.3	7.7	72,133	2,755	63,015	69.9	7.7	6.0	13.8
70	15	5.5	12.8	80	73,130	3,680	60,950	90.1	5.8	1.2	2.9	73,502	3,607	61,566	90.1	6.0	3.1	7.1	73,885	3,534	62,188	90.2	6.1	5.6	13.0
70	15	5.5	12.8	100	72,805	4,667	57,358	110.0	4.6	1.1	2.6	73,076	4,574	57,938	110.0	4.7	2.9	6.7	73,358	4,482	58,523	110.1	4.8	5.3	12.3
70	15	5.5	12.8	120	70,281	5,830	50,985	129.7	3.5	1.1	2.4	70,410	5,714	51,500	129.7	3.6	2.8	6.4	70,552	5,599	52,021	129.7	3.7	5.1	11.7
70	15	5.5	12.8	130															68,291	6,134	47,990	139.4	3.3	5.0	11.5
80	7.5	1.0	2.3	60	70,189	2,866	60,704	79.3	7.2	1.4	3.2	70,624	2,809	61,328	79.4	7.4	3.3	7.7	71,069	2,752	61,959	79.5	7.6	6.0	13.8
80	7.5	1.0	2.3	80	72,565	3,669	60,422	99.9	5.8	1.2	2.9	72,952	3,596	61,052	100.1	5.9	3.1	7.1	73,351	3,524	61,689	100.2	6.1	5.6	13.0
80	7.5	1.0	2.3	100	72,422	4,606	57,177	119.9	4.6	1.1	2.6	72,720	4,514	57,780	120.0	4.7	2.9	6.7	73,029	4,424	58,389	120.1	4.8	5.3	12.3
80	7.5	1.0	2.3	120	69,760	5,677	50,970	139.2	3.6	1.1	2.4	69,927	5,564	51,512	139.2	3.7	2.8	6.4	70,106	5,453	52,060	139.3	3.8	5.1	11.7
80	7.5	1.0	2.3	130															67,824	6,002	47,960	148.6	3.3	5.0	11.5
80	11.25	2.8	6.5	60	71,518	2,895	61,937	73.1	7.2	1.4	3.2	71,961	2,837	62,572	73.2	7.4	3.3	7.7	72,415	2,780	63,213	73.3	7.6	6.0	13.8
80	11.25	2.8	6.5	80	75,009	3,706	62,744	93.7	5.9	1.2	2.9	75,409	3,632	63,389	93.8	6.1	3.1	7.1	75,821	3,559	64,041	93.9	6.2	5.6	13.0
80	11.25	2.8	6.5	100	75,371	4,672	59,908	113.8	4.7	1.1	2.6	75,681	4,579	60,528	113.9	4.8	2.9	6.7	76,004	4,487	61,153	113.9	5.0	5.3	12.3
80	11.25	2.8	6.5	120	72,603	5,793	53,430	133.3	3.7	1.1	2.4	72,776	5,677	53,986	133.3	3.8	2.8	6.4	72,963	5,564	54,549	133.4	3.8	5.1	11.7
80	11.25	2.8	6.5	130															70,930	6,062	50,866	143.0	3.4	5.0	11.5
80	15	5.3	12.1	60	74,627	2,924	64,949	70.3	7.5	1.4	3.2	75,090	2,866	65,605	70.3	7.7	3.3	7.7	75,563	2,808	66,268	70.4	7.9	6.0	13.8
80	15	5.3	12.1	80	78,318	3,743	65,929	90.8	6.1	1.2	2.9	78,736	3,669	66,595	90.8	6.3	3.1	7.1	79,166	3,595	67,268	90.9	6.5	5.6	13.0
80	15	5.3	12.1	100	78,890	4,739	63,206	110.8	4.9	1.1	2.6	79,215	4,644	63,844	110.9	5.0	2.9	6.7	79,553	4,551	64,489	110.9	5.1	5.3	12.3
80	15	5.3	12.1	120	76,344	5,911	56,779	130.5	3.8	1.1	2.4	76,526	5,793	57,353	130.5	3.9	2.8	6.4	76,722	5,677	57,932	130.5	4.0	5.1	11.7
80	15	5.3	12.1	130															73,966	6,124	53,699	140.2	3.5	5.0	11.5

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	SGPM	WPD (psi)	WPD (ft)	LEWT °F	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT
	Source				**Load**																				
	Flow				**Flow 15 GPM**					**WPD**		**Flow 22.5 GPM**					**WPD**		**Flow 30 GPM**					**WPD**	
50	15	1.4	3.2	50	102,074	4498	116,959	36	22.7	1.6	3.7	103,717	4453	118,454	41	23.3	3.8	8.8	107,341	4408	121,931	42.8	24.4	6.8	15.7
50	15	1.4	3.2	60	103,208	4536	118,220	46.2	22.8	1.5	3.5	104,870	4490	119,732	50.7	23.4	3.7	8.4	108,534	4446	123,248	52.8	24.4	6.6	15.2
50	15	1.4	3.2	70	104,343	4574	119,481	56.1	22.8	1.4	3.3	106,023	4528	121,010	60.6	23.4	3.5	8.1	109,728	4483	124,564	62.7	24.5	6.4	14.7
50	15	1.4	3.2	80	107,672	4579	122,825	65.6	23.5	1.4	3.2	109,405	4533	124,407	70.3	24.1	3.4	7.9	113,228	4487	128,080	72.5	25.2	6.2	14.3
50	15	1.4	3.2	90	111,000	4583	126,169	75.2	24.2	1.3	3.0	112,787	4537	127,804	80.0	24.9	3.3	7.6	116,728	4492	131,595	82.2	26.0	6.0	13.9
50	22.5	3.8	8.7	50	103,559	4543	118,595	36.2	22.8	1.6	3.7	105,020	4498	119,906	40.7	23.3	3.8	8.8	108,690	4453	123,427	42.8	24.4	6.8	15.7
50	22.5	3.8	8.7	60	107,584	4582	122,747	45.7	23.5	1.5	3.5	109,102	4536	124,114	50.3	24.1	3.7	8.4	112,914	4490	127,776	52.5	25.1	6.6	15.2
50	22.5	3.8	8.7	70	111,608	4620	126,899	55.1	24.2	1.4	3.3	113,183	4574	128,321	59.9	24.7	3.5	8.1	117,138	4528	132,124	62.2	25.9	6.4	14.7
50	22.5	3.8	8.7	80	112,627	4625	127,934	65.0	24.4	1.4	3.2	114,217	4579	129,370	69.8	24.9	3.4	7.9	118,208	4533	133,209	72.1	26.1	6.2	14.3
50	22.5	3.8	8.7	90	113,647	4629	128,968	74.8	24.5	1.3	3.0	115,250	4583	130,419	79.8	25.1	3.3	7.6	119,277	4537	134,294	82.0	26.3	6.0	13.9
50	30	6.8	15.6	50	107,799	4589	122,987	35.6	23.5	1.6	3.7	109,589	4543	124,625	40.3	24.1	3.8	8.8	112,388	4498	127,274	42.5	25.0	6.8	15.7
50	30	6.8	15.6	60	111,498	4628	126,815	45.1	24.1	1.5	3.5	113,963	4582	129,126	49.9	24.9	3.7	8.4	119,331	4536	134,343	52.0	26.3	6.6	15.2
50	30	6.8	15.6	70	115,197	4667	130,643	54.6	24.7	1.4	3.3	118,337	4620	133,628	59.5	25.6	3.5	8.1	126,274	4574	141,412	61.6	27.6	6.4	14.7
50	30	6.8	15.6	80	117,034	4672	132,495	64.4	25.1	1.4	3.2	119,874	4625	135,180	69.3	25.9	3.4	7.9	127,734	4579	142,887	71.5	27.9	6.2	14.3
50	30	6.8	15.6	90	118,871	4676	134,348	74.0	25.4	1.3	3.0	121,410	4629	136,732	79.0	26.2	3.3	7.6	129,194	4583	144,362	81.2	28.2	6.0	13.9
70	15	1.2	2.7	50	95,263	5759	114,321	37.3	16.5	1.6	3.7	97,618	5701	116,486	41.3	17.1	3.8	8.8	100,894	5644	119,573	43.3	17.9	6.8	15.7
70	15	1.2	2.7	60	103,139	5795	122,317	46.2	17.8	1.5	3.5	105,722	5737	124,708	50.6	18.4	3.7	8.4	109,264	5679	128,060	52.7	19.2	6.6	15.2
70	15	1.2	2.7	70	111,016	5831	130,313	55.2	19.0	1.4	3.3	113,826	5772	132,930	59.9	19.7	3.5	8.1	117,634	5715	136,548	62.2	20.6	6.4	14.7
70	15	1.2	2.7	80	115,112	5953	134,815	64.7	19.3	1.4	3.2	118,028	5894	137,534	69.5	20.0	3.4	7.9	121,977	5835	141,288	71.9	20.9	6.2	14.3
70	15	1.2	2.7	90	119,208	6076	139,317	74.1	19.6	1.3	3.0	122,230	6015	142,138	79.1	20.3	3.3	7.6	126,319	5955	146,028	81.6	21.2	6.0	13.9
70	22.5	3.3	7.6	50	97,292	5817	116,543	37.0	16.7	1.6	3.7	99,632	5759	118,690	41.1	17.3	3.8	8.8	102,974	5701	121,842	43.1	18.1	6.8	15.7
70	22.5	3.3	7.6	60	105,807	5853	125,179	45.9	18.1	1.5	3.5	108,377	5795	127,555	50.4	18.7	3.7	8.4	112,009	5737	130,996	52.5	19.5	6.6	15.2
70	22.5	3.3	7.6	70	114,322	5890	133,814	54.8	19.4	1.4	3.3	117,123	5831	136,420	59.6	20.1	3.5	8.1	121,045	5772	140,149	61.9	21.0	6.4	14.7
70	22.5	3.3	7.6	80	117,905	6013	137,808	64.3	19.6	1.4	3.2	120,807	5953	140,510	69.3	20.3	3.4	7.9	124,851	5894	144,357	71.7	21.2	6.2	14.3
70	22.5	3.3	7.6	90	121,489	6137	141,801	73.8	19.8	1.3	3.0	124,491	6076	144,600	78.9	20.5	3.3	7.6	128,656	6015	148,564	81.4	21.4	6.0	13.9
70	30	6.1	14.1	50	99,313	5875	118,759	36.8	16.9	1.6	3.7	103,390	5817	122,642	40.8	17.8	3.8	8.8	105,249	5759	124,308	43.0	18.3	6.8	15.7
70	30	6.1	14.1	60	107,954	5912	127,521	45.6	18.3	1.5	3.5	111,781	5853	131,153	50.1	19.1	3.7	8.4	115,188	5795	134,366	52.3	19.9	6.6	15.2
70	30	6.1	14.1	70	116,594	5949	136,283	54.5	19.6	1.4	3.3	120,172	5890	139,665	59.3	20.4	3.5	8.1	125,127	5831	144,425	61.7	21.5	6.4	14.7
70	30	6.1	14.1	80	120,927	6074	141,031	63.9	19.9	1.4	3.2	124,403	6013	144,306	68.9	20.7	3.4	7.9	130,236	5953	149,939	71.3	21.9	6.2	14.3
70	30	6.1	14.1	90	125,260	6199	145,778	73.3	20.2	1.3	3.0	128,634	6137	148,947	78.6	21.0	3.3	7.6	135,344	6076	155,453	81.0	22.3	6.0	13.9
80	15	1.1	2.5	50	91,857	6389	113,002	37.8	14.4	1.6	3.7	94,568	6325	115,502	41.6	15.0	3.8	8.8	97,670	6262	118,394	43.5	15.6	6.8	15.7
80	15	1.1	2.5	60	103,105	6424	124,366	46.3	16.0	1.5	3.5	106,148	6360	127,196	50.6	16.7	3.7	8.4	109,629	6296	130,467	52.7	17.4	6.6	15.2
80	15	1.1	2.5	70	114,352	6459	135,729	54.8	17.7	1.4	3.3	117,727	6394	138,890	59.5	18.4	3.5	8.1	121,588	6330	142,539	61.9	19.2	6.4	14.7
80	15	1.1	2.5	80	118,832	6641	140,810	64.2	17.9	1.4	3.2	122,339	6574	144,097	69.1	18.6	3.4	7.9	126,351	6508	147,892	71.6	19.4	6.2	14.3
80	15	1.1	2.5	90	123,312	6822	145,891	73.6	18.1	1.3	3.0	126,951	6754	149,305	78.7	18.8	3.3	7.6	131,114	6686	153,244	81.3	19.6	6.0	13.9

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

	Source				Load																				
		Flow		LEWT °F	Flow 15 GPM					WPD		Flow 22.5 GPM					WPD		Flow 30 GPM					WPD	
EWT °F	SGPM	WPD (psi)	WPD (ft)		TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT	TC Btuh	Pwr W	HR Btuh	LWT °F	EER	PSI	FT
80	22.5	3.1	7.1	50	94,158	6454	115,517	37.4	14.6	1.6	3.7	96,937	6389	118,082	41.4	15.2	3.8	8.8	100,116	6325	121,050	43.3	15.8	6.8	15.7
80	22.5	3.1	7.1	60	104,918	6489	126,394	46.0	16.2	1.5	3.5	108,015	6424	129,276	50.4	16.8	3.7	8.4	111,557	6360	132,606	52.6	17.5	6.6	15.2
80	22.5	3.1	7.1	70	115,679	6524	137,272	54.6	17.7	1.4	3.3	119,093	6459	140,470	59.4	18.4	3.5	8.1	122,998	6394	144,162	61.8	19.2	6.4	14.7
80	22.5	3.1	7.1	80	120,544	6708	142,744	63.9	18.0	1.4	3.2	124,102	6641	146,080	69.0	18.7	3.4	7.9	128,172	6574	149,930	71.5	19.5	6.2	14.3
80	22.5	3.1	7.1	90	125,410	6891	148,217	73.3	18.2	1.3	3.0	129,112	6822	151,691	78.5	18.9	3.3	7.6	133,346	6754	155,699	81.1	19.7	6.0	13.9
80	30	5.8	13.4	50	95,071	6519	116,645	37.3	14.6	1.6	3.7	100,291	6454	121,650	41.1	15.5	3.8	8.8	101,680	6389	122,825	43.2	15.9	6.8	15.7
80	30	5.8	13.4	60	106,182	6554	127,874	45.8	16.2	1.5	3.5	110,691	6489	132,166	50.2	17.1	3.7	8.4	113,117	6424	134,378	52.5	17.6	6.6	15.2
80	30	5.8	13.4	70	117,293	6590	139,104	54.4	17.8	1.4	3.3	121,090	6524	142,683	59.2	18.6	3.5	8.1	124,554	6459	145,931	61.7	19.3	6.4	14.7
80	30	5.8	13.4	80	122,874	6775	145,298	63.6	18.1	1.4	3.2	126,668	6708	148,868	68.7	18.9	3.4	7.9	131,487	6641	153,465	71.2	19.8	6.2	14.3
80	30	5.8	13.4	90	128,455	6961	151,493	72.9	18.5	1.3	3.0	132,247	6891	155,054	78.2	19.2	3.3	7.6	138,419	6822	160,998	80.8	20.3	6.0	13.9
90	15	1.0	2.3	50	86,978	7293	111,114	38.4	11.9	1.6	3.7	89,742	7220	113,636	42.0	12.4	3.8	8.8	92,103	7148	115,759	43.9	12.9	6.8	15.7
90	15	1.0	2.3	60	98,353	7369	122,742	46.9	13.3	1.5	3.5	101,482	7295	125,627	51.0	13.9	3.7	8.4	104,141	7222	128,045	53.1	14.4	6.6	15.2
90	15	1.0	2.3	70	109,729	7446	134,371	55.4	14.7	1.4	3.3	113,223	7371	137,619	59.9	15.4	3.5	8.1	116,179	7297	140,331	62.3	15.9	6.4	14.7
90	15	1.0	2.3	80	115,696	7620	140,917	64.6	15.2	1.4	3.2	119,389	7544	144,358	69.4	15.8	3.4	7.9	122,481	7469	147,199	71.8	16.4	6.2	14.3
90	15	1.0	2.3	90	121,663	7795	147,463	73.8	15.6	1.3	3.0	125,555	7717	151,097	78.8	16.3	3.3	7.6	128,782	7640	154,068	81.4	16.9	6.0	13.9
90	22.5	2.9	6.7	50	89,057	7366	113,437	38.1	12.1	1.6	3.7	91,886	7293	116,023	41.8	12.6	3.8	8.8	94,306	7220	118,201	43.7	13.1	6.8	15.7
90	22.5	2.9	6.7	60	100,511	7444	125,146	46.6	13.5	1.5	3.5	103,710	7369	128,099	50.8	14.1	3.7	8.4	106,421	7295	130,566	52.9	14.6	6.6	15.2
90	22.5	2.9	6.7	70	111,964	7521	136,855	55.1	14.9	1.4	3.3	115,534	7446	140,176	59.7	15.5	3.5	8.1	118,536	7371	142,932	62.1	16.1	6.4	14.7
90	22.5	2.9	6.7	80	117,779	7697	143,255	64.3	15.3	1.4	3.2	121,541	7620	146,762	69.2	15.9	3.4	7.9	124,682	7544	149,650	71.7	16.5	6.2	14.3
90	22.5	2.9	6.7	90	123,594	7874	149,655	73.5	15.7	1.3	3.0	127,547	7795	153,347	78.7	16.4	3.3	7.6	130,827	7717	156,369	81.3	17.0	6.0	13.9
90	30	5.5	12.7	50	90,242	7441	114,868	38.0	12.1	1.6	3.7	94,247	7366	118,627	41.6	12.8	3.8	8.8	96,127	7293	120,263	43.6	13.2	6.8	15.7
90	30	5.5	12.7	60	101,579	7519	126,464	46.5	13.5	1.5	3.5	105,162	7444	129,798	50.7	14.1	3.7	8.4	108,205	7369	132,594	52.8	14.7	6.6	15.2
90	30	5.5	12.7	70	112,917	7597	138,059	54.9	14.9	1.4	3.3	116,078	7521	140,969	59.7	15.4	3.5	8.1	120,283	7446	144,925	62.0	16.2	6.4	14.7
90	30	5.5	12.7	80	119,587	7775	145,320	64.1	15.4	1.4	3.2	123,068	7697	148,543	69.1	16.0	3.4	7.9	127,570	7620	152,791	71.5	16.7	6.2	14.3
90	30	5.5	12.7	90	126,256	7954	152,580	73.2	15.9	1.3	3.0	130,058	7874	156,118	78.4	16.5	3.3	7.6	134,858	7795	160,658	81.0	17.3	6.0	13.9
110	15	0.8	2.0	50	77,220	9100	107,338	39.7	8.5	1.6	3.7	80,088	9009	109,905	42.9	8.9	3.8	8.8	80,970	8919	110,489	44.6	9.1	6.8	15.7
110	15	0.8	2.0	60	88,851	9259	119,496	48.2	9.6	1.5	3.5	92,151	9167	122,490	51.8	10.1	3.7	8.4	93,166	9075	123,202	53.8	10.3	6.6	15.2
110	15	0.8	2.0	70	100,482	9419	131,654	56.6	10.7	1.4	3.3	104,215	9324	135,075	60.7	11.2	3.5	8.1	105,363	9231	135,915	63.0	11.4	6.4	14.7
110	15	0.8	2.0	80	109,424	9580	141,131	65.4	11.4	1.4	3.2	113,489	9484	144,878	69.9	12.0	3.4	7.9	114,739	9389	145,815	72.4	12.2	6.2	14.3
110	15	0.8	2.0	90	118,367	9741	150,607	74.2	12.2	1.3	3.0	122,764	9644	154,682	79.1	12.7	3.3	7.6	124,116	9548	155,715	81.7	13.0	6.0	13.9
110	22.5	2.7	6.2	50	78,856	9192	109,278	39.5	8.6	1.6	3.7	81,785	9100	111,903	42.7	9.0	3.8	8.8	82,686	9009	112,503	44.5	9.2	6.8	15.7
110	22.5	2.7	6.2	60	91,695	9353	122,650	47.8	9.8	1.5	3.5	95,101	9259	125,746	51.5	10.3	3.7	8.4	96,149	9167	126,487	53.6	10.5	6.6	15.2
110	22.5	2.7	6.2	70	104,534	9514	136,021	56.1	11.0	1.4	3.3	108,417	9419	139,589	60.4	11.5	3.5	8.1	109,611	9324	140,472	62.7	11.8	6.4	14.7
110	22.5	2.7	6.2	80	112,249	9677	144,275	65.0	11.6	1.4	3.2	116,418	9580	148,124	69.7	12.2	3.4	7.9	117,701	9484	149,090	72.2	12.4	6.2	14.3
110	22.5	2.7	6.2	90	119,963	9840	152,529	74.0	12.2	1.3	3.0	124,419	9741	156,660	78.9	12.8	3.3	7.6	125,790	9644	157,708	81.6	13.0	6.0	13.9

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source Flow SGPM	Source Flow WPD (psi)	Source Flow WPD (ft)	LEWT °F	Flow 15 GPM TC Btuh	Flow 15 GPM Pwr W	Flow 15 GPM HR Btuh	Flow 15 GPM LWT °F	Flow 15 GPM EER	WPD PSI	WPD FT	Flow 22.5 GPM TC Btuh	Flow 22.5 GPM Pwr W	Flow 22.5 GPM HR Btuh	Flow 22.5 GPM LWT °F	Flow 22.5 GPM EER	WPD PSI	WPD FT	Flow 30 GPM TC Btuh	Flow 30 GPM Pwr W	Flow 30 GPM HR Btuh	Flow 30 GPM LWT °F	Flow 30 GPM EER	WPD PSI	WPD FT
110	30	5.1	11.7	50	80,584	9285	111,314	39.3	8.7	1.6	3.7	82,157	9192	112,580	42.7	8.9	3.8	8.8	85,020	9100	115,138	44.3	9.3	6.8	15.7
110	30	5.1	11.7	60	92,375	9447	123,642	47.7	9.8	1.5	3.5	94,106	9353	125,060	51.6	10.1	3.7	8.4	98,380	9259	129,025	53.4	10.6	6.6	15.2
110	30	5.1	11.7	70	104,165	9610	135,970	56.1	10.8	1.4	3.3	106,054	9514	137,541	60.6	11.1	3.5	8.1	111,740	9419	142,912	62.6	11.9	6.4	14.7
110	30	5.1	11.7	80	113,012	9775	145,362	64.9	11.6	1.4	3.2	115,867	9677	147,893	69.7	12.0	3.4	7.9	119,738	9580	151,444	72.0	12.5	6.2	14.3
110	30	5.1	11.7	90	121,859	9939	154,754	73.8	12.3	1.3	3.0	125,680	9840	158,246	78.8	12.8	3.3	7.6	127,736	9741	159,976	81.5	13.1	6.0	13.9
120	15	0.8	1.8	50	71,776	10283	105,810	40.4	7.0	1.6	3.7	74,705	10181	108,399	43.4	7.3	3.8	8.8	76,224	10079	109,581	44.9	7.6	6.8	15.7
120	15	0.8	1.8	60	82,838	10460	117,457	49.0	7.9	1.5	3.5	86,219	10355	120,491	52.3	8.3	3.7	8.4	87,972	10252	121,902	54.1	8.6	6.6	15.2
120	15	0.8	1.8	70	93,901	10636	129,103	57.5	8.8	1.4	3.3	97,733	10530	132,584	61.3	9.3	3.5	8.1	99,720	10425	134,222	63.4	9.6	6.4	14.7
120	15	0.8	1.8	80	102,747	10832	138,598	66.3	9.5	1.4	3.2	106,941	10724	142,432	70.5	10.0	3.4	7.9	109,115	10616	144,252	72.7	10.3	6.2	14.3
120	15	0.8	1.8	90	111,594	11028	148,092	75.1	10.1	1.3	3.0	116,148	10917	152,281	79.7	10.6	3.3	7.6	118,510	10808	154,281	82.1	11.0	6.0	13.9
120	22.5	2.6	6.0	50	72,259	10387	106,637	40.4	7.0	1.6	3.7	75,208	10283	109,243	43.3	7.3	3.8	8.8	76,737	10181	110,431	44.9	7.5	6.8	15.7
120	22.5	2.6	6.0	60	83,712	10566	118,680	48.8	7.9	1.5	3.5	87,129	10460	121,747	52.3	8.3	3.7	8.4	88,900	10355	123,172	54.1	8.6	6.6	15.2
120	22.5	2.6	6.0	70	95,165	10744	130,723	57.3	8.9	1.4	3.3	99,049	10636	134,252	61.2	9.3	3.5	8.1	101,063	10530	135,913	63.3	9.6	6.4	14.7
120	22.5	2.6	6.0	80	104,075	10941	140,288	66.1	9.5	1.4	3.2	108,323	10832	144,173	70.4	10.0	3.4	7.9	110,525	10724	146,017	72.6	10.3	6.2	14.3
120	22.5	2.6	6.0	90	112,986	11139	149,852	74.9	10.1	1.3	3.0	117,597	11028	154,095	79.5	10.7	3.3	7.6	119,988	10917	156,121	82.0	11.0	6.0	13.9
120	30	4.9	11.3	50	74,609	10492	109,334	40.1	7.1	1.6	3.7	77,826	10387	112,204	43.1	7.5	3.8	8.8	79,221	10283	113,256	44.7	7.7	6.8	15.7
120	30	4.9	11.3	60	86,095	10672	121,417	48.5	8.1	1.5	3.5	90,058	10566	125,027	52.0	8.5	3.7	8.4	91,784	10460	126,403	53.9	8.8	6.6	15.2
120	30	4.9	11.3	70	97,582	10852	133,500	57.0	9.0	1.4	3.3	102,291	10744	137,849	60.9	9.5	3.5	8.1	104,347	10636	139,550	63.0	9.8	6.4	14.7
120	30	4.9	11.3	80	106,589	11052	143,167	65.8	9.6	1.4	3.2	111,614	10941	147,826	70.1	10.2	3.4	7.9	113,704	10832	149,555	72.4	10.5	6.2	14.3
120	30	4.9	11.3	90	115,596	11252	152,835	74.5	10.3	1.3	3.0	120,937	11139	157,803	79.2	10.9	3.3	7.6	123,062	11028	159,560	81.7	11.2	6.0	13.9

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	SGPM	WPD PSI	WPD FT	LEWT °F	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT
		Source					Flow 15 GPM			WPD				Flow 22.5 GPM			WPD				Flow 30 GPM			WPD	
20	30	8.0	18.6	60	79,763	4,860	63,678	65.5	4.8	1.5	3.5	80,104	4,763	64,341	65.5	4.9	3.3	7.7	80,459	4,667	65,011	65.3	5.1	6.0	13.8
20	30	8.0	18.6	80	78,490	6,343	57,498	85.4	3.6	1.4	3.2	78,678	6,216	58,105	85.4	3.7	3.1	7.1	78,880	6,092	58,719	85.3	3.8	5.6	13.0
20	30	8.0	18.6	100	76,962	8,227	49,734	105.3	2.7	1.3	2.9	76,955	8,062	50,272	105.3	2.8	2.9	6.7	76,963	7,901	50,814	105.1	2.9	5.3	12.3
30	15	1.7	3.9	60	92,692	5,042	76,006	72.7	5.4	1.5	3.5	93,151	4,941	76,799	72.8	5.5	3.3	7.7	93,624	4,842	77,599	66.3	5.7	6.0	13.8
30	15	1.7	3.9	80	90,998	6,550	69,318	92.5	4.1	1.4	3.2	91,295	6,419	70,049	92.5	4.2	3.1	7.1	91,609	6,291	70,788	86.1	4.3	5.6	13.0
30	15	1.7	3.9	100	88,915	8,440	60,981	112.2	3.1	1.3	2.9	89,010	8,271	61,635	112.2	3.2	2.9	6.7	89,123	8,106	62,295	105.9	3.2	5.3	12.3
30	15	1.7	3.9	120	86,445	10,711	50,995	131.9	2.4	1.2	2.7	86,296	10,497	51,556	131.9	2.4	2.8	6.4	86,167	10,287	52,121	125.7	2.5	5.1	11.7
30	22.5	4.4	10.1	60	97,010	5,126	80,045	68.9	5.5	1.5	3.5	97,491	5,023	80,865	68.9	5.7	3.3	7.7	97,986	4,923	81,694	66.6	5.8	6.0	13.8
30	22.5	4.4	10.1	80	95,005	6,660	72,962	88.7	4.2	1.4	3.2	95,317	6,527	73,715	88.7	4.3	3.1	7.1	95,644	6,396	74,474	86.5	4.4	5.6	13.0
30	22.5	4.4	10.1	100	92,790	8,582	64,387	108.5	3.2	1.3	2.9	92,890	8,410	65,055	108.5	3.2	2.9	6.7	93,008	8,242	65,729	106.2	3.3	5.3	12.3
30	22.5	4.4	10.1	120	90,369	10,891	54,322	128.3	2.4	1.2	2.7	90,213	10,674	54,887	128.3	2.5	2.8	6.4	90,077	10,460	55,458	125.9	2.5	5.1	11.7
30	30	7.6	17.5	60	100,794	5,212	83,545	66.9	5.7	1.5	3.5	101,293	5,107	84,389	67.0	5.8	3.3	7.7	101,807	5,005	85,241	66.8	6.0	6.0	13.8
30	30	7.6	17.5	80	98,750	6,772	76,337	86.8	4.3	1.4	3.2	99,073	6,636	77,108	86.8	4.4	3.1	7.1	99,412	6,504	77,887	86.6	4.5	5.6	13.0
30	30	7.6	17.5	100	96,229	8,726	67,348	106.6	3.2	1.3	2.9	96,332	8,552	68,028	106.6	3.3	2.9	6.7	96,453	8,381	68,715	106.4	3.4	5.3	12.3
30	30	7.6	17.5	120	93,231	11,075	56,577	126.4	2.5	1.2	2.7	93,070	10,854	57,148	126.4	2.5	2.8	6.4	92,929	10,637	57,725	126.1	2.6	5.1	11.7
40	15	1.5	3.5	60	105,622	5,223	88,335	74.5	5.9	1.5	3.5	106,197	5,119	89,256	74.6	6.1	3.3	7.7	106,789	5,016	90,186	67.2	6.2	6.0	13.8
40	15	1.5	3.5	80	103,506	6,758	81,139	94.2	4.5	1.4	3.2	103,913	6,623	81,994	94.3	4.6	3.1	7.1	104,337	6,490	82,856	87.0	4.7	5.6	13.0
40	15	1.5	3.5	100	100,868	8,654	72,227	113.9	3.4	1.3	2.9	101,066	8,481	72,998	113.9	3.5	2.9	6.7	101,283	8,311	73,776	106.7	3.6	5.3	12.3
40	15	1.5	3.5	120	97,710	10,910	61,601	133.4	2.6	1.2	2.7	97,657	10,692	62,270	133.4	2.7	2.8	6.4	97,624	10,478	62,945	126.4	2.7	5.1	11.7
40	22.5	4.0	9.3	60	111,287	5,293	93,770	70.2	6.2	1.5	3.5	111,894	5,187	94,728	70.3	6.3	3.3	7.7	112,518	5,083	95,695	67.5	6.5	6.0	13.8
40	22.5	4.0	9.3	80	108,464	6,848	85,799	89.9	4.6	1.4	3.2	108,891	6,711	86,680	90.0	4.8	3.1	7.1	109,336	6,577	87,569	87.4	4.9	5.6	13.0
40	22.5	4.0	9.3	100	105,368	8,769	76,345	109.7	3.5	1.3	2.9	105,576	8,594	77,133	109.7	3.6	2.9	6.7	105,802	8,422	77,928	107.1	3.7	5.3	12.3
40	22.5	4.0	9.3	120	102,005	11,057	65,412	129.3	2.7	1.2	2.7	101,950	10,835	66,088	129.3	2.8	2.8	6.4	101,915	10,619	66,771	126.8	2.8	5.1	11.7
40	30	7.2	16.6	60	114,907	5,363	97,157	67.9	6.3	1.5	3.5	115,533	5,256	98,138	67.9	6.4	3.3	7.7	116,176	5,151	99,129	67.9	6.6	6.0	13.8
40	30	7.2	16.6	80	112,128	6,940	89,161	87.7	4.7	1.4	3.2	112,569	6,801	90,061	87.7	4.9	3.1	7.1	113,029	6,665	90,971	87.6	5.0	5.6	13.0
40	30	7.2	16.6	100	108,750	8,887	79,337	107.5	3.6	1.3	2.9	108,963	8,709	80,139	107.5	3.7	2.9	6.7	109,196	8,535	80,948	107.3	3.7	5.3	12.3
40	30	7.2	16.6	120	104,771	11,205	67,686	127.2	2.7	1.2	2.7	104,713	10,981	68,370	127.2	2.8	2.8	6.4	104,677	10,761	69,060	127.0	2.9	5.1	11.7
50	15	1.4	3.2	60	118,551	5,405	100,663	76.3	6.4	1.5	3.5	119,244	5,297	101,714	76.4	6.6	3.3	7.7	119,954	5,191	102,774	68.1	6.8	6.0	13.8
50	15	1.4	3.2	80	116,013	6,966	92,959	95.9	4.9	1.4	3.2	116,531	6,826	93,938	96.0	5.0	3.1	7.1	117,066	6,690	94,925	87.8	5.1	5.6	13.0
50	15	1.4	3.2	100	112,821	8,867	83,473	115.5	3.7	1.3	2.9	113,122	8,690	84,361	115.5	3.8	2.9	6.7	113,443	8,516	85,257	107.5	3.9	5.3	12.3
50	15	1.4	3.2	120	108,975	11,110	72,206	135.0	2.9	1.2	2.7	109,018	10,887	72,984	135.0	2.9	2.8	6.4	109,082	10,670	73,769	127.2	3.0	5.1	11.7
50	15	1.4	3.2	130								106,998	12,310	66,256	144.7	2.5	2.7	6.2	106,904	12,064	66,977	137.2	2.6	5.0	11.5

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

EWT °F	Source Flow SGPM	WPD PSI	WPD FT	LEWT °F	Flow 15 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	WPD FT	Flow 22.5 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	WPD FT	Flow 30 GPM HC Btuh	Pwr W	HE Btuh	LWT °F	COP	WPD PSI	WPD FT
50	22.5	3.8	8.7	60	125,563	5,459	107,495	71.5	6.7	1.5	3.5	126,297	5,350	108,590	71.6	6.9	3.3	7.7	127,049	5,243	109,696	68.5	7.1	6.0	13.8
50	22.5	3.8	8.7	80	121,922	7,036	98,635	91.2	5.1	1.4	3.2	122,466	6,895	99,645	91.2	5.2	3.1	7.1	123,029	6,757	100,664	88.3	5.3	5.6	13.0
50	22.5	3.8	8.7	100	117,947	8,957	88,303	110.8	3.9	1.3	2.9	118,261	8,778	89,210	110.8	3.9	2.9	6.7	118,597	8,602	90,127	108.0	4.0	5.3	12.3
50	22.5	3.8	8.7	120	113,642	11,222	76,502	130.4	3.0	1.2	2.7	113,686	10,997	77,289	130.4	3.0	2.8	6.4	113,753	10,777	78,084	127.7	3.1	5.1	11.7
50	22.5	3.8	8.7	130								112,321	12,434	71,167	140.3	2.6	2.7	6.2	112,222	12,186	71,892	137.3	2.7	5.0	11.5
50	30	6.8	15.6	60	129,019	5,515	110,768	68.9	6.9	1.5	3.5	129,773	5,404	111,887	68.9	7.0	3.3	7.7	130,545	5,296	113,017	69.0	7.2	6.0	13.8
50	30	6.8	15.6	80	125,506	7,107	101,984	88.6	5.2	1.4	3.2	126,066	6,965	103,014	88.7	5.3	3.1	7.1	126,645	6,826	104,055	88.6	5.4	5.6	13.0
50	30	6.8	15.6	100	121,270	9,047	91,327	108.3	3.9	1.3	2.9	121,594	8,866	92,249	108.4	4.0	2.9	6.7	121,939	8,689	93,181	108.2	4.1	5.3	12.3
50	30	6.8	15.6	120	116,310	11,335	78,795	128.0	3.0	1.2	2.7	116,356	11,108	79,591	128.0	3.1	2.8	6.4	116,425	10,886	80,395	127.9	3.1	5.1	11.7
50	30	6.8	15.6	130								113,981	12,560	72,412	137.8	2.7	2.7	6.2	113,881	12,309	73,144	137.7	2.7	5.0	11.5
60	15	1.3	3.0	60	125,827	5,514	107,578	77.3	6.7	1.5	3.5	126,579	5,404	108,695	77.4	6.9	3.3	7.7	127,348	5,296	109,822	68.6	7.0	6.0	13.8
60	15	1.3	3.0	80	125,719	7,090	102,254	97.3	5.2	1.4	3.2	126,322	6,948	103,327	97.4	5.3	3.1	7.1	126,945	6,809	104,409	88.6	5.5	5.6	13.0
60	15	1.3	3.0	100	123,495	8,982	93,767	117.0	4.0	1.3	2.9	123,894	8,803	94,761	117.0	4.1	2.9	6.7	124,315	8,627	95,764	108.4	4.2	5.3	12.3
60	15	1.3	3.0	120	119,157	11,191	82,118	136.4	3.1	1.2	2.7	119,296	10,967	82,998	136.4	3.2	2.8	6.4	119,458	10,748	83,886	128.0	3.3	5.1	11.7
60	15	1.3	3.0	130								116,872	12,418	75,771	146.1	2.8	2.7	6.2	116,485	12,044	76,625	137.9	2.8	5.0	11.5
60	22.5	3.5	8.1	60	131,388	5,570	112,955	72.0	6.9	1.5	3.5	132,172	5,458	114,108	72.1	7.1	3.3	7.7	132,976	5,349	115,273	69.1	7.3	6.0	13.8
60	22.5	3.5	8.1	80	131,287	7,161	107,586	92.0	5.4	1.4	3.2	131,917	7,018	108,689	92.1	5.5	3.1	7.1	132,567	6,878	109,804	89.1	5.6	5.6	13.0
60	22.5	3.5	8.1	100	128,878	9,086	98,807	111.8	4.2	1.3	2.9	129,295	8,904	99,825	111.8	4.3	2.9	6.7	129,734	8,726	100,853	108.9	4.4	5.3	12.3
60	22.5	3.5	8.1	120	124,163	11,343	86,621	131.4	3.2	1.2	2.7	124,308	11,116	87,517	131.4	3.3	2.8	6.4	124,477	10,894	88,422	128.5	3.3	5.1	11.7
60	22.5	3.5	8.1	130								122,506	12,544	80,990	141.2	2.9	2.7	6.2	122,101	12,165	81,839	138.1	2.9	5.0	11.5
60	30	6.4	14.8	60	135,764	5,626	117,145	69.3	7.1	1.5	3.5	136,575	5,513	118,328	69.4	7.3	3.3	7.7	137,405	5,403	119,523	69.5	7.5	6.0	13.8
60	30	6.4	14.8	80	135,883	7,234	111,942	89.3	5.5	1.4	3.2	136,535	7,089	113,073	89.4	5.6	3.1	7.1	137,208	6,947	114,215	89.4	5.8	5.6	13.0
60	30	6.4	14.8	100	133,440	9,191	103,021	109.2	4.3	1.3	2.9	133,873	9,007	104,062	109.2	4.4	2.9	6.7	134,327	8,827	105,113	109.1	4.5	5.3	12.3
60	30	6.4	14.8	120	128,436	11,498	90,383	128.8	3.3	1.2	2.7	128,588	11,268	91,296	128.8	3.3	2.8	6.4	128,765	11,042	92,218	128.7	3.4	5.1	11.7
60	30	6.4	14.8	130															125,231	12,288	84,561	138.4	3.0	5.0	11.5
70	15	1.2	2.7	60	133,102	5,623	114,493	78.3	6.9	1.5	3.5	133,913	5,510	115,676	78.4	7.1	3.3	7.7	134,743	5,400	116,870	69.2	7.3	6.0	13.8
70	15	1.2	2.7	80	135,424	7,214	111,549	98.6	5.5	1.4	3.2	136,113	7,069	112,716	98.7	5.6	3.1	7.1	136,823	6,928	113,893	89.4	5.8	5.6	13.0
70	15	1.2	2.7	100	134,169	9,097	104,061	118.4	4.3	1.3	2.9	134,667	8,915	105,161	118.5	4.4	2.9	6.7	135,187	8,737	106,271	109.3	4.5	5.3	12.3
70	15	1.2	2.7	120	129,338	11,273	92,029	137.8	3.4	1.2	2.7	129,575	11,048	93,011	137.8	3.4	2.8	6.4	129,835	10,827	94,003	128.9	3.5	5.1	11.7
70	15	1.2	2.7	130															126,066	12,024	86,273	138.6	3.1	5.0	11.5
70	22.5	3.3	7.6	60	137,212	5,680	118,414	72.6	7.1	1.5	3.5	138,048	5,566	119,626	72.7	7.3	3.3	7.7	138,903	5,455	120,849	69.7	7.5	6.0	13.8
70	22.5	3.3	7.6	80	140,653	7,287	116,536	92.9	5.7	1.4	3.2	141,368	7,141	117,734	93.0	5.8	3.1	7.1	142,104	6,998	118,943	89.9	6.0	5.6	13.0
70	22.5	3.3	7.6	100	139,810	9,215	109,312	112.8	4.4	1.3	2.9	140,329	9,031	110,440	112.9	4.6	2.9	6.7	140,871	8,850	111,580	109.7	4.7	5.3	12.3
70	22.5	3.3	7.6	120	134,685	11,465	96,740	132.3	3.4	1.2	2.7	134,931	11,236	97,745	132.4	3.5	2.8	6.4	135,201	11,011	98,759	129.3	3.6	5.1	11.7
70	22.5	3.3	7.6	130															131,981	12,145	91,785	138.9	3.2	5.0	11.5
70	30	6.1	14.1	60	142,509	5,737	123,522	69.8	7.3	1.5	3.5	143,377	5,622	124,769	69.9	7.5	3.3	7.7	144,265	5,510	126,030	70.0	7.7	6.0	13.8
70	30	6.1	14.1	80	146,260	7,360	121,900	90.1	5.8	1.4	3.2	147,004	7,213	123,131	90.1	6.0	3.1	7.1	147,770	7,069	124,375	90.1	6.1	5.6	13.0
70	30	6.1	14.1	100	145,611	9,335	114,716	110.0	4.6	1.3	2.9	146,152	9,148	115,875	110.0	4.7	2.9	6.7	146,716	8,965	117,046	109.9	4.8	5.3	12.3
70	30	6.1	14.1	120	140,562	11,660	101,971	129.7	3.5	1.2	2.7	140,820	11,427	103,001	129.7	3.6	2.8	6.4	141,104	11,199	104,041	129.5	3.7	5.1	11.7
70	30	6.1	14.1	130															136,581	12,268	95,979	139.2	3.3	5.0	11.5
80	15	1.1	2.5	60	140,378	5,732	121,407	79.3	7.2	1.5	3.5	141,248	5,617	122,657	79.4	7.4	3.3	7.7	142,138	5,505	123,918	69.8	7.6	6.0	13.8
80	15	1.1	2.5	80	145,130	7,338	120,844	99.9	5.8	1.4	3.2	145,905	7,191	122,105	100.1	5.9	3.1	7.1	146,701	7,047	123,377	90.2	6.1	5.6	13.0
80	15	1.1	2.5	100	144,843	9,212	114,355	119.9	4.6	1.3	2.9	145,439	9,028	115,561	120.0	4.7	2.9	6.7	146,059	8,847	116,778	110.2	4.8	5.3	12.3

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

Source				LOAD																				
EWT	Flow			LEWT	Flow 15 GPM					WPD		Flow 22.5 GPM					WPD		Flow 30 GPM					WPD	
°F	SGPM	WPD PSI	WPD FT	°F	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT	HC Btuh	Pwr W	HE Btuh	LWT °F	COP	PSI	FT
80	15	1.1	2.5	120	139,520	11,355	101,940	139.2	3.6	1.2	2.7	139,853	11,128	103,025	139.2	3.7	2.8	6.4	140,211	10,905	104,119	129.8	3.8	5.1	11.7
80	15	1.1	2.5	130															135,647	12,003	95,920	139.4	3.3	5.0	11.5
80	22.5	3.1	7.1	60	143,037	5,790	123,874	73.1	7.2	1.5	3.5	143,923	5,674	125,144	73.2	7.4	3.3	7.7	144,830	5,561	126,426	70.3	7.6	6.0	13.8
80	22.5	3.1	7.1	80	150,018	7,412	125,487	93.7	5.9	1.4	3.2	150,819	7,264	126,779	93.8	6.1	3.1	7.1	151,642	7,118	128,083	90.6	6.2	5.6	13.0
80	22.5	3.1	7.1	100	150,742	9,344	119,816	113.8	4.7	1.3	2.9	151,363	9,157	121,055	113.9	4.8	2.9	6.7	152,007	8,974	122,306	110.6	5.0	5.3	12.3
80	22.5	3.1	7.1	120	145,206	11,586	106,859	133.3	3.7	1.2	2.7	145,553	11,355	107,973	133.3	3.8	2.8	6.4	145,925	11,128	109,097	130.1	3.8	5.1	11.7
80	22.5	3.1	7.1	130															141,860	12,125	101,732	139.7	3.4	5.0	11.5
80	30	5.8	13.4	60	149,254	5,848	129,898	70.3	7.5	1.5	3.5	150,179	5,731	131,211	70.3	7.7	3.3	7.7	151,125	5,617	132,536	70.4	7.9	6.0	13.8
80	30	5.8	13.4	80	156,636	7,487	131,858	90.8	6.1	1.4	3.2	157,473	7,337	133,190	90.8	6.3	3.1	7.1	158,332	7,190	134,535	90.8	6.5	5.6	13.0
80	30	5.8	13.4	100	157,781	9,478	126,411	110.8	4.9	1.3	2.9	158,430	9,289	127,688	110.9	5.0	2.9	6.7	159,105	9,103	128,978	110.8	5.1	5.3	12.3
80	30	5.8	13.4	120	152,688	11,823	113,559	130.5	3.8	1.2	2.7	153,052	11,586	114,706	130.5	3.9	2.8	6.4	153,444	11,355	115,864	130.4	4.0	5.1	11.7
80	30	5.8	13.4	130															147,931	12,247	107,397	139.9	3.5	5.0	11.5

Notes:
- If you are operating in the light grey area, antifreeze must be used.
- Operation in the dark grey area is not recommended.

Antifreeze Type	Antifreeze %	Cooling			Heating		WPD Corr. Fct. EWT 30 °F
		EWT 90 °F			EWT 30 °F		
		Total Cap	Sens Cap	Power	Htg Cap	Power	
Water	0	1.000	1.000	1.000			
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

Tranquility (SW) Series

Unit Size	SW036	SW060	SW120
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
Number of Sensors	1	1	1
Water Connection Size			
Source/Load	1" Swivel		1-1/2"
HWG	1" Swivel		1-1/2"
Weight			
Weight - Operating (lbs) [kg]	268 [122]	295 [134]	541 [245]
Weight - Shipping (lbs) [kg]	293 [133]	320 [145]	585 [265]
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 PSIG (kPa)	
Unit	145 (100)
Maximum Water Flow Through Unit GAL (L)	
036	25 (94.6)
060, 120	35 (132.5)

Sizes 036 and 060
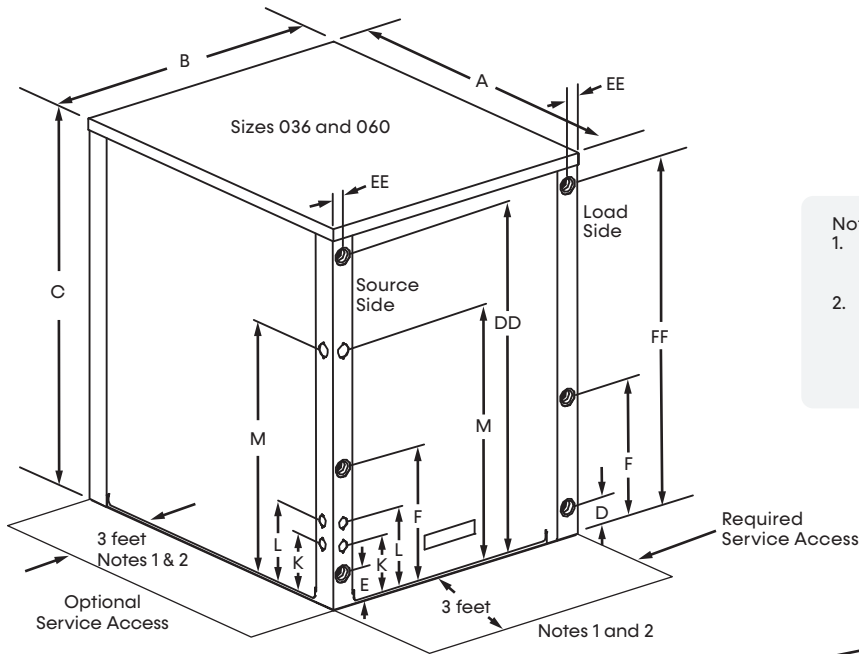
Notes:
1. Front and side access is preferred for service access. All components may be serviced from the front access panel if side access is not available.
2. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.

Size 120
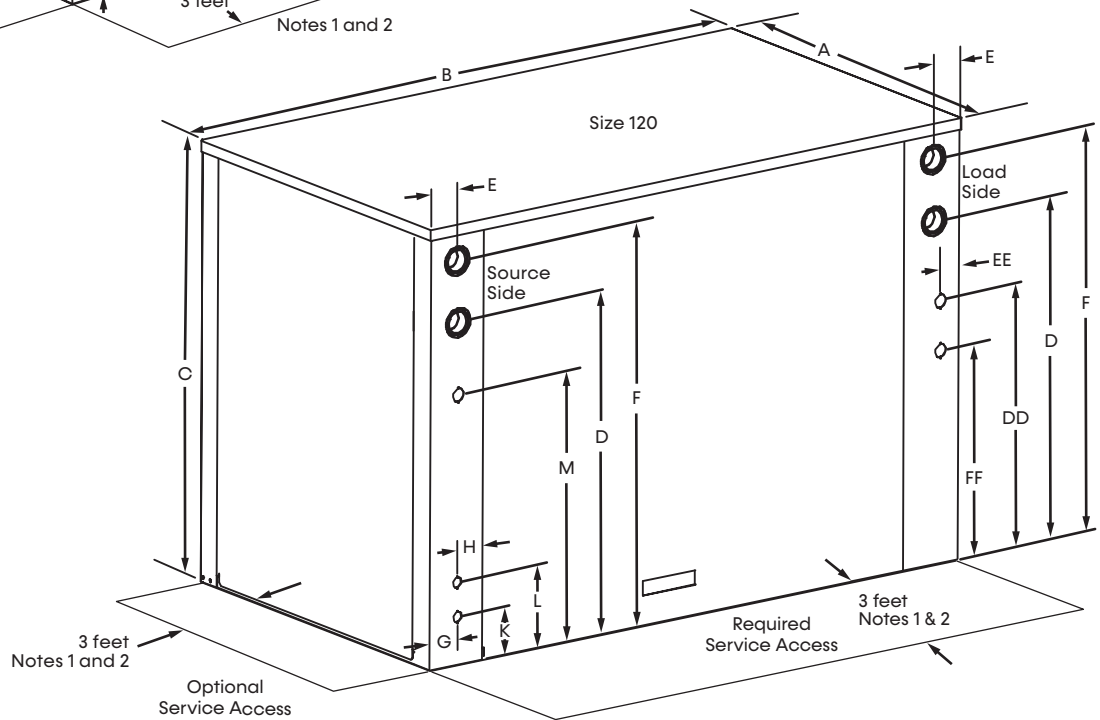
Unit Size		Overall Cabinet			Water Connections												Electrical Knockouts				
		Depth/Length	Width	Height	Water In (Source)		Water Out (Source)		Water In (Load)		Water Out (Load)		Water In/Out	HWG In		HWG Out		Low Voltage		High Voltage	G	H
		A	B	C	E	EE	F	EE	D	E	F	EE		FF	EE	DD	EE	K 1/2"	L 1/2"	M 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	3/4"	25.4	2.2	25.4	2.2	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	3/4"	64.5	5.6	64.5	5.6	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"	23.3	2.1	19.8	2.1	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	1"	59.2	5.4	50.3	5.3	18.1	23.2	61.6	7.0	2.9

MINIMUM INSTALLATION AREA

Minimum area where units without a blower (e.g. w-w), and mechanical/natural ventilation is not required

Model	Charge (oz)	Minimum Installation Area ft² (m²) [A_{min}]			
		Floor	Window	Wall	Ceiling
SW060	48	290 (26.9)	130 (12.1)	75 (7.0)	61 (5.7)
SW120	48	226 (21.0)	120 (11.1)	71 (6.6)	59 (5.5)

A_{min} = Minimum area where unit is installed where unit has incorporated airflow
h_{inst} (floor) = 0.0 ft (0.0 m)
h_{inst} (window) = 3.3 ft (1.0 m)
h_{inst} (wall) = 5.9 ft (1.8 m)
h_{inst} (ceiling) = 7.2 ft (2.2 m)

Minimum area where the exhausted air is being sent if mechanical ventilation is used

Model	Charge (oz)	Minimum Exhaust Area ft² (m²) [A_{min}]			
		Floor	Window	Wall	Ceiling
SW060	48	62 (5.8)	61 (5.7)	60 (5.6)	59 (5.5)
SW120	48	60 (5.6)	58 (5.4)	54 (5.0)	53 (4.9)

EA_{min} = Minimum CFM for mechanical ventilation
h_{inst} (floor) = 0.0 ft (0.0 m)
h_{inst} (window) = 3.3 ft (1.0 m)
h_{inst} (wall) = 5.9 ft (1.8 m)
h_{inst} (ceiling) = 7.2 ft (2.2 m)

Minimum CFM for mechanical ventilation

Model	Charge (oz)	Minimum CFM [Q_{min}]			
		Floor	Window	Wall	Ceiling
SW060	48	112	111	108	106
SW120	48	108	105	98	95

Q_{min} = Minimum CFM provided by mechanical ventilation
h_{inst} (floor) = 0.0 ft (0.0 m)
h_{inst} (window) = 3.3 ft (1.0 m)
h_{inst} (wall) = 5.9 ft (1.8 m)
h_{inst} (ceiling) = 7.2 ft (2.2 m)

Minimum area of opening for natural ventilation

Model	Charge (oz)	A_{nv} in² (m²)
SW060	48	110.76 (0.07)
SW120	48	110.76 (0.07)

A_{nv} = Minimum natural ventilation area opening

When the openings for connected rooms or natural ventilation are required, the following conditions shall be applied:

- The area of any openings above 11.8 inches (300 mm) from the floor shall not be considered in determining compliance with Anv_{min}.

- At least 50% of the required opening area Anv_{min} shall be below 7.8 inches (200 mm) from the floor.

- The bottom of the lowest openings shall not be higher than the point of release when the unit is installed and not more than 3.9 inches (100 mm) from the floor.

- Openings are permanent openings which cannot be closed.

- For openings extending to the floor, the height shall not be less than 0.78 inch (20 mm) above the surface of the floor covering.

- A second higher opening shall be provided. The total size of the second opening shall not be less than 50% of minimum opening area for Anv_{min} and shall be at least 3.3 ft (1.5 m) above the floor.

Table 1: Standard Unit (No Source, Load, or HWG pump)

Unit Size	Rated Voltage	Voltage Code	Voltage Min/Max	Compressor A			No Pump			
				RLA	LRA	Qty	Total Unit FLA	Min Cir Amp	Max Fuse (calc'd)	Fuse HACR
SW036	208/230-60-1	G.J.	187/252	14.6	76.0	1	14.6	18.3	32.9	30.0
	208/230-3-60	H.K.	187/252	8.6	70.0	1	8.6	10.8	19.4	15.0
	460-3-60	F.L.	432/504	4.5	39.0	1	4.5	5.6	10.1	15.0
SW060	208/230-60-1	G.J.	187/252	22.3	149.0	1	22.3	27.9	50.2	50.0
	208/230-3-60	H.K.	187/252	14.0	150.0	1	14.0	17.5	31.4	30.0
	460-3-60	F.L.	432/504	6.3	58.0	1	6.3	7.9	14.3	15.0
SW120	208/230-60-1	G.J.	187/252	23.7	157.0	2	47.4	53.4	77.1	70.0
	208/230-3-60	H.K.	187/252	16.0	156.4	2	32.1	36.1	52.1	50.0
	460-3-60	F.L.	432/504	7.1	69.0	2	14.1	15.9	22.9	20.0

GENERAL

Furnish and install ClimateMaster SW 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.**

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.

Unit(s) shall have exterior indicator lights showing, 1) compressor operation (on/off) and 2) unit "fault" status. Contractor shall be responsible for providing control circuitry and indicator lights for units not providing this feature.

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

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. Both sides of the steel shall be painted for added protection. 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.

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 the unit blower runs to disperse any concentration of leaked refrigerant in compliance with UL 60335-2-40 safety standards for flammable refrigerants (optional for all unit sizes).**

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 control system shall have the following features:

a. Anti-short cycle time delay on compressor operation.

b. Random start on power up mode.

c. Low voltage protection.

d. High voltage protection.

e. Unit shutdown on high or low refrigerant pressures.

f. Unit shutdown on low water temperature.

g. 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 eight safety protections of anti-short cycle, low voltage, high voltage, high refrigerant pressure, low pressure (loss of charge), air coil low temperature cut-out, water coil low temperature cut-out, and condensate overflow protections will not be accepted.

When CXM2 is connected to the AWC Thermostat or handheld 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 air, leaving water, entering water and control voltage; record last five faults, list possible reasons, and clear faults. When the AWC Thermostat is used this same functionality can be viewed and adjusted remotely in the web portal or mobile app. **Systems not providing remote**

access, diagnosis, and adjustment functionality will not be accepted.

Option: DXM2.5 Advanced Communicating Controls

This control system is a communicating controller.

Control 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.

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

When DXM2.5 is connected to the AWC Thermostat or handheld 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), air coil (LT2), compressor discharge, leaving air, leaving water, entering water and control voltage; record last five faults, list possible reasons, and clear faults. When the AWC Thermostat is used this same functionality can be viewed and adjusted remotely with the only portal or mobile app. **Systems not providing remote access, diagnosis, and adjustment functionality will not be accepted.**

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 will permit all units to be daisy-chain connected by a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

a. 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

ClimateMaster shall warranty equipment for a period of 12 months from start up or 18 months from shipping (whichever 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:

e. Supply and return hoses having

ball valve with PT port.

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

g. 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.

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

NOTICE! This product specification document is furnished as a means to copy and paste ClimateMaster 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. ClimateMaster is not responsible for misuse of this document or a failure to adequately review specific requirements in the product catalog.**

Date	Section	Description
11/19/24	Features, Options, and Accessories	Updated the RDS requirements per unit size
	Model Nomenclature	Updated model nomenclature terminology
	Dimensional Data	Updated dimensional depth, length, and width values
	Minimum Installation Area	Updated charge. Corrected variable terminology
	Engineering Specs	Updated unit maximum water working pressure
		Updated CXM2 features
08/30/24	Minimum Installation Area	Updated refrigerant charge amount
	Engineering Specifications	Updated engineering specifications
08/27/24	Cover	Updated cover image
	Physical Data	Updated refrigerant charge
	Dimensional Data	Updated dimensional data
	Minimum Installation Area	Updated Minimum Installation Area data
08/16/24	Introduction	Added brazed-plate content
	Engineering Specifications	Added brazed-plate content
05/14/24	All	Created

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