



# **TABLE OF CONTENTS**

|  |    |
|--|----|
| GENERAL: .....   | 3  |
| BASIC CONSTRUCTION: .....                                    | 3  |
| REFRIGERANT CIRCUIT: .....                                   | 3  |
| ELECTRICAL: .....  | 4  |
| SOLID STATE CONTROL BOARD SYSTEM: .....                      | 4  |
| MODEL NOMENCLATURE DECODER:.....                             | 6  |
| AHRI PERFORMANCE DATA:.....                                  | 6  |
| UNIT DIMENSIONAL DATA, SINGLE COMPRESSOR:.....               | 7  |
| UNIT DIMENSIONAL DATA, DUAL COMPRESSOR: .....                | 7  |
| SINGLE COMPRESSOR UNIT ELECTRICAL DATA: .....                | 8  |
| NOTE: PROPER POWER SUPPLY EVALUATION .....                   | 8  |
| DUAL COMPRESSOR UNIT ELECTRICAL DATA: .....                  | 9  |
| WATER FLOW SELECTION:.....                                   | 10 |
| PERFORMANCE DATA NOTES.....                                  | 10 |
| GLOSSARY OF TERMS .....                                      | 11 |
| SENSIBLE COOLING CORRECTION FACTORS: .....                   | 11 |
| HEATING & COOLING CALCULATIONS:.....                         | 11 |
| COOLING CORRECTION FACTORS:.....                             | 11 |
| HEATING CORRECTION FACTORS: .....                            | 11 |
| MODEL 036, 3 TON, PART LOAD PERFORMANCE DATA: .....          | 12 |
| MODEL 036, 3 TON, FULL LOAD PERFORMANCE DATA: .....          | 13 |
| MODEL 048, 4 TON, PART LOAD PERFORMANCE DATA: .....          | 14 |
| MODEL 048, 4 TON, FULL LOAD PERFORMANCE DATA: .....          | 15 |
| MODEL 060, 5 TON PART LOAD PERFORMANCE DATA: .....           | 16 |
| MODEL 060, 5 TON, FULL LOAD PERFORMANCE DATA: .....          | 17 |
| MODEL 092, 8 TON, FULL LOAD COOLING PERFORMANCE DATA:.....   | 18 |
| MODEL 092, 8 TON, FULL LOAD HEATING PERFORMANCE DATA: .....  | 19 |
| MODEL 120, 10 TON, FULL LOAD COOLING PERFORMANCE DATA:.....  | 20 |
| MODEL 120, 10 TON, FULL LOAD HEATING PERFORMANCE DATA: ..... | 21 |
| MODEL 144, 12 TON, PART LOAD PERFORMANCE DATA: .....         | 22 |
| MODEL 144, 12 TON, FULL LOAD PERFORMANCE DATA: .....         | 23 |

## ENGINEERING SPECIFICATIONS:

### GENERAL:

Packaged Water-to-Water Two-Stage "WT" Series Geothermal Heat Pumps shall be constructed based on all information to follow. Equipment shall be completely assembled, piped, internally wired, charged with refrigerant, and tested.

Units shall be supplied completely factory built capable of operating over an entering water temperature range from 25° to 120°F (-3.9° to 48.9°C) (extended data tables; Heating 25F – 90F, cooling 50F – 110F) as standard. All equipment listed in this section must be rated and certified in accordance with Air-Conditioning, Heating and Refrigeration Institute/International Standards Organization (AHRI/ISO 13256-1). All equipment must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL-1995 for the United States and CAN/CSA-C22.2 NO.236 for Canada, by Intertek Testing Laboratories (ETL). The units shall have AHRI/ISO and ETL-US-C labels.

All units shall be fully quality tested by factory run testing under normal operating conditions as described herein. Quality control system shall automatically perform via computer: helium leak check of both the water and refrigerant circuits, pressure tests, double evacuation and accurately charged system, perform detailed heating and cooling mode tests, and quality cross check all operational and test conditions to pass/fail criteria.

### BASIC CONSTRUCTION:

The heat pumps shall be fabricated from powder coated heavy gauge galvanized steel. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117.

All units must have a minimum of three access panels for serviceability of compressor compartment. See IOM manuals for service clearances.

All interior surfaces shall be lined with 3/8 inch (9.5mm) thick, 3-6 lb/ft<sup>3</sup> (24 kg/m<sup>3</sup>) acoustic type closed cell, non-porous, non-fibrous

Nitrile/Vinyl insulation. Standard cabinet panel insulation must meet UL-1995 and ASTM E 84/UL 723 Flame 25 / Smoke 50 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. The insulation shall be UL-GREENGUARD certified under the Childrens and Schools classification and approved by the Factory Mutual Research Corporation. For added protection it shall be protected with an EPA-approved antimicrobial agent.

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 brass FPT fittings, and shall be securely mounted flush to the cabinet allowing for connection to a flexible hose without the use of a back-up wrench. All water connections and electrical knockouts must be in the compressor compartment as to not interfere with the serviceability of unit.

The unit shall be supplied with extended range internal insulation. All internal water lines and the evaporator side refrigeration tubing shall all have closed cell EPDM insulation. The water to refrigerant coaxial heat exchanger shall have 8# closed cell foam applied or closed cell EPDM oam tape wrap.

Option: Sound attenuating compressor blanket for additional noise reduction.

### REFRIGERANT CIRCUIT:

All units shall contain R-410A sealed refrigerant circuit including a high efficiency two-stage unloading scroll compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, reversing valve, coaxial refrigerant to water heat exchangers (source and load), and safety controls (see controls section). Refrigerant access ports shall be factory installed on high and low pressure refrigerant lines to facilitate field service. All units have factory installed bi-directional filter/

## ENGINEERING SPECIFICATIONS:

drier for added moisture protection. All dual compressor models shall be complete and independent circuits with each having its own reversing valve, expansion valve, compressor and heat exchangers.

Hermetic compressors shall be internally sprung. The compressor shall have a dual level vibration isolation system. The compressor will be mounted on EPDM rubber grommets secured to a large heavy gauge compressor mounting plate, which is then mounted to the cabinet base with specially engineered sound-tested PU foam vibration isolation pads for maximized vibration attenuation. Compressor shall have thermal overload protection. Compressor discharge and suction refrigerant lines to have shock loops directly at compressor for additional vibration elimination.

Refrigerant to water heat exchangers (source and load water coils) shall be of copper inner water tube and steel refrigerant outer tube coaxial design, shall have enhanced rifled and knurled inner tube, rated to withstand 625 PSIG (4309 kPa) working refrigerant pressure and 500 PSIG (3445 kPa) working water pressure, and designed to have a low water pressure drop (max. 15ft.hd.).

Refrigerant metering shall be accomplished by thermostatic expansion valve only. Expansion valves shall be dual port balanced types with external equalizer for optimum refrigerant metering. The expansion valves must be bi-directional without the use of check valves. Units shall be designed and tested for operating ranges of entering water temperatures from 25° to 120°F (-3.9° to 48.9°C). Reversing valve shall be four-way solenoid activated refrigerant valve, which shall default to heating mode should the solenoid fail to function.

Option: The unit will be supplied with a cupronickel coaxial water to refrigerant heat exchanger (source heat exchanger only).

Option: The unit shall be supplied with a hot water generator (desuperheater) heat exchanger, which shall be double wall and vented.

## ELECTRICAL:

A control box shall be located within the unit compressor compartment and shall contain a 75VA transformer, 24 volt activated, 2 or 3 pole compressor contactor, terminal block for thermostat wiring and solid-state controller for complete unit operation and control. 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 24 Volt and provide heating or cooling as required by the remote aquastat/sensor.

Source pump high voltage terminal block including minimum 7amp circuit breaker protection to be provided for field wiring of source pumps.

A detachable low voltage thermostat terminal strip with screw terminals to be provided for field wiring.

## SOLID STATE CONTROL BOARD SYSTEM:

Units shall have a solid-state control system. 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 24V thermostat. The control system shall have the following features:

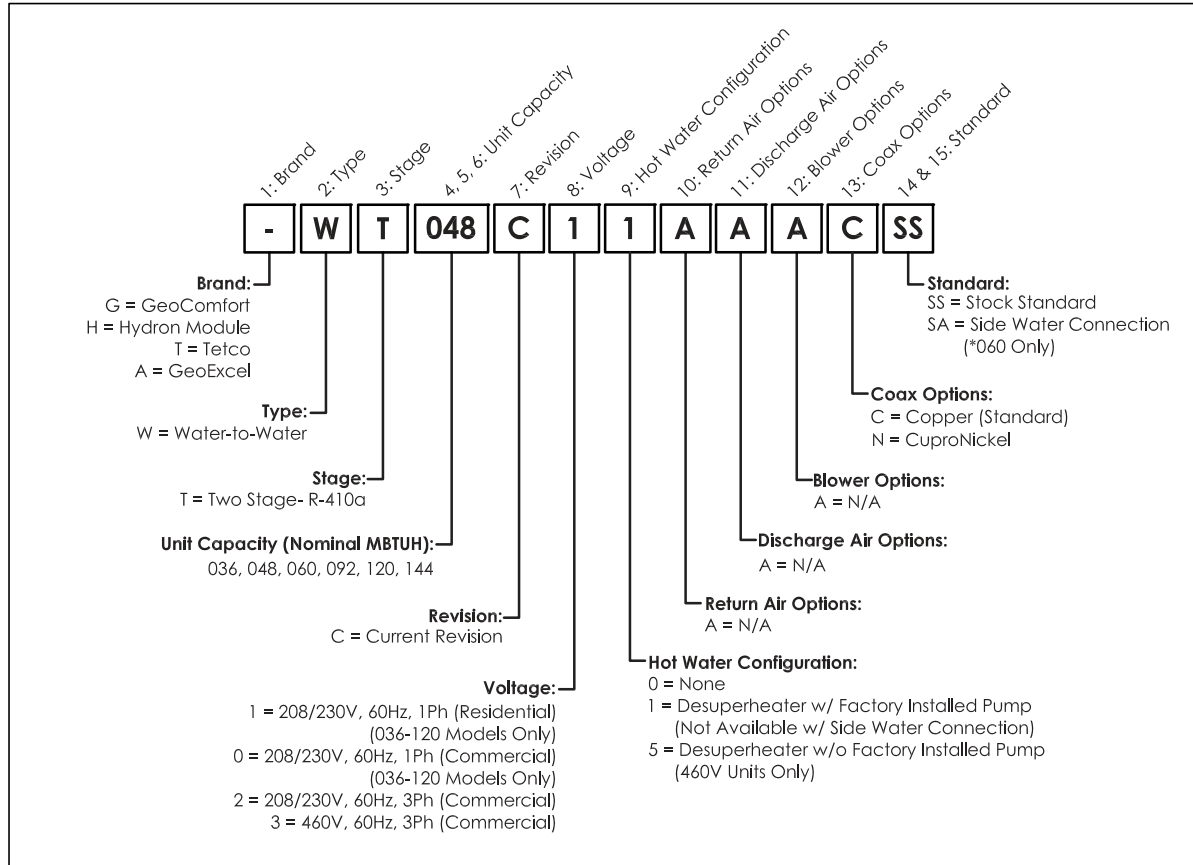
- Anti-short cycle time delay on compressor operation (5 minutes).
- Random start on power up mode.
- Low voltage protection.
- High voltage protection.
- Unit shutdown on high or low refrigerant pressures.
- Unit shutdown on low temperature (low source coil temp OR low air coil temp).
- Condensate overflow electronic protection.
- Option to reset unit at thermostat or disconnect (soft or hard reset functions)
- Fault retry logic. The same fault trip has to occur 3 times before a hard lockout. If a fault occurs 3 times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur. A soft or hard reset will restart the unit.

## ENGINEERING SPECIFICATIONS:

- Ability to defeat time delays for servicing (test mode).
- Light emitting diode (LED) on circuit board to indicate high pressure, low pressure, low/high voltage, low water/air temperature, condensate overflow, high discharge gas temperature, faulty temperature sensor(s), and control voltage status.
- The low-pressure switch shall not be monitored for the first 90 seconds after a compressor start command to prevent nuisance safety trips.
- 24V output to cycle a motorized water valve or other device with compressor contactor.
- Water coil (evaporator) low temperature sensing selectable for water or anti-freeze.
- High discharge gas temperature sensing and protection.
- Smart desuperheater operation and logic to eliminate any heat transfer from the water tank to the source loop during cooling mode.

# ENGINEERING SPECIFICATIONS:

## MODEL NOMENCLATURE DECODER:



## AHRI PERFORMANCE DATA:

| MODEL | TYPE | F/L COOL | F/L EER | F/L HEAT | F/L COP | P/L COOL | P/L EER | P/L HEAT | P/L COP |
|-------|------|----------|---------|----------|---------|----------|---------|----------|---------|
| WT036 | GW   | 44,300   | 20.6    | 44,900   | 3.6     | 34,600   | 24.5    | 33,300   | 3.5     |
|       | GL   | 42,000   | 16.0    | 36,400   | 3.0     | 33,300   | 20.6    | 29,200   | 3.1     |
| WT048 | GW   | 54,300   | 19.8    | 55,100   | 3.6     | 40,800   | 23.0    | 40,500   | 3.4     |
|       | GL   | 49,400   | 15.1    | 44,100   | 3.0     | 38,800   | 19.2    | 35,700   | 3.1     |
| WT060 | GW   | 62,700   | 19.0    | 66,200   | 3.6     | 47,800   | 21.4    | 49,500   | 3.5     |
|       | GL   | 57,800   | 14.6    | 53,200   | 3.0     | 46,100   | 18.1    | 44,400   | 3.1     |
| WT092 | GW   | 107,100  | 19.8    | 117,000  | 3.8     | 78,500   | 22.2    | 82,300   | 3.5     |
|       | GL   | 100,200  | 15.2    | 92,400   | 3.1     | 75,700   | 18.6    | 75,700   | 3.1     |
| WT120 | GW   | 124,400  | 20.1    | 124,900  | 3.5     | NA       | NA      | NA       | NA      |
|       | GL   | 114,800  | 15.4    | 97,400   | 2.8     | NA       | NA      | NA       | NA      |
| WT144 | GW   | 134,000  | 17.2    | 140,800  | 3.3     | NA       | NA      | NA       | NA      |
|       | GL   | 124,500  | 13.5    | 109,400  | 2.7     | NA       | NA      | NA       | NA      |

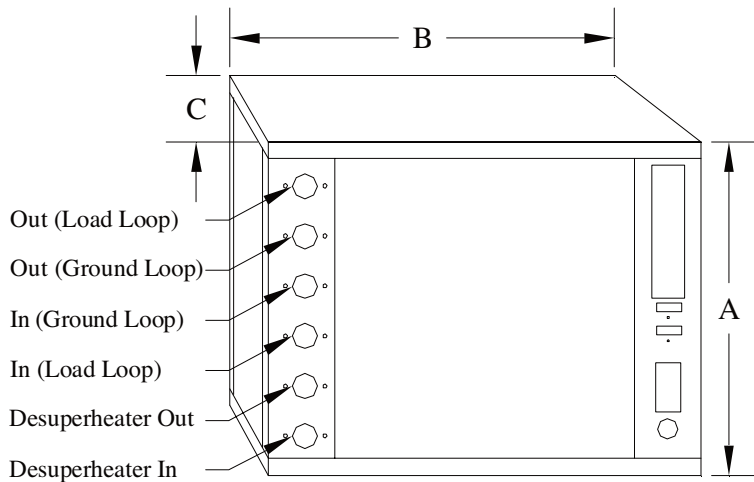
**Ground Loop (GL) Notes:**  
 Rated in accordance with ISO Standard 13256-2 which includes Pump Penalties.  
 Heating capacities based on 32°F EST & 104°F ELT.  
 Cooling capacities based on 77°F EST & 53.6°F ELT.  
 Entering load temperature over 120°F heating and under 45°F Cooling is not permissible.  
 Floor heating is most generally designed for 85°F entering load temperature.

**Ground Water (GW) Notes:**  
 Rated in accordance with ISO Standard 13256-2 which includes Pump Penalties.  
 Heating capacities based on 50°F EST & 104°F ELT.  
 Cooling capacities based on 59°F EST & 53.6°F ELT.  
 Entering load temperature over 120°F heating and under 45°F Cooling is not permissible.  
 Floor heating is most generally designed for 85°F entering load temperature.

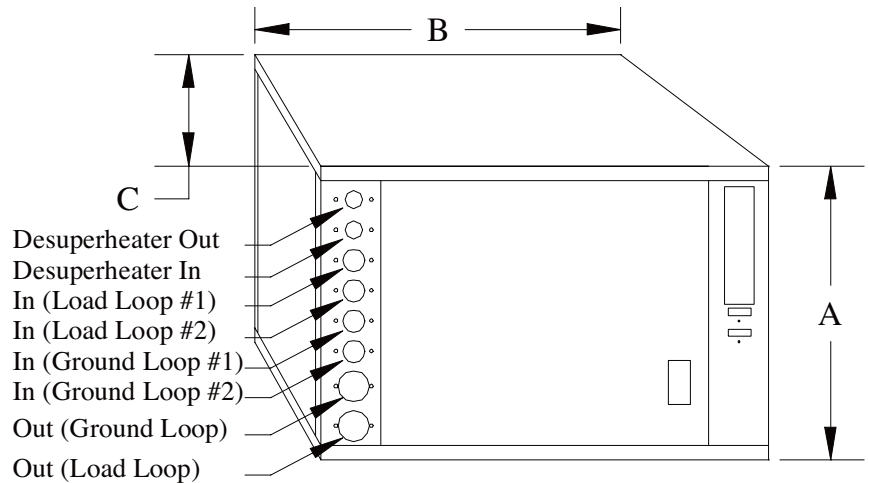
Notice:\*Model 144 is available in 3-Phase Only and is outside the scope of the ENERGY STAR program and AHRI listing.

# ENGINEERING SPECIFICATIONS:

## UNIT DIMENSIONAL DATA, SINGLE COMPRESSOR:



## UNIT DIMENSIONAL DATA, DUAL COMPRESSOR:



### Single Compressor Units

| Model | Dimensional Data |    |    | Source Loop** |     | Load Loop |     | Weight | Factory Charge (oz) |
|-------|------------------|----|----|---------------|-----|-----------|-----|--------|---------------------|
|       | A                | B  | C  | IN            | OUT | IN        | OUT |        |                     |
| 036   | 24               | 26 | 34 | 1"            | 1"  | 1"        | 1"  | 315    | 65                  |
| 048   | 24               | 26 | 34 | 1"            | 1"  | 1"        | 1"  | 345    | 73                  |
| 060   | 24               | 26 | 36 | 1"            | 1"  | 1"        | 1"  | 390    | 101                 |

### Dual Compressor Units

| Model | Dimensional Data |    |    | Ground Loop |       | Load Loop |       | Weight | Factory Charge (oz) |
|-------|------------------|----|----|-------------|-------|-----------|-------|--------|---------------------|
|       | A                | B  | C  | IN*         | OUT   | IN*       | OUT   |        |                     |
| 092   | 24               | 30 | 48 | 1"          | 1.25" | 1"        | 1.25" | 550    | 68 EA               |
| 120   | 24               | 30 | 48 | 1"          | 1.5"  | 1"        | 1.5"  | 670    | 76 EA               |
| 144   | 24               | 30 | 48 | 1"          | 1.5"  | 1"        | 1.5"  | 670    | 81 EA               |

\* There are two "IN" connections, but only one "Out" connection

\*\* GeoComfort residential models only - 1" double o-ring fittings

## ENGINEERING SPECIFICATIONS:

### SINGLE COMPRESSOR UNIT ELECTRICAL DATA:

| Model | Voltage Code/ HWG Option | 60 Hz Power |       | Compressor |      | HWG Pump FLA | Ext. Loop Pump FLA | Total Unit FLA | Min Circuit AMPS | Max Fuse HACR | Min AWG | Max Ft |
|-------|--------------------------|-------------|-------|------------|------|--------------|--------------------|----------------|------------------|---------------|---------|--------|
|       |                          | Volts       | Phase | LRA        | RLA  |              |                    |                |                  |               |         |        |
| WT036 | 00                       | 208/230     | 1     | 104.0      | 21.2 | 0.0          | 0.0                | 21.2           | 26.5             | 45            | 10      | 78     |
|       | 01                       | 208/230     | 1     | 104.0      | 21.2 | 0.5          | 0.0                | 21.7           | 27.0             | 45            | 10      | 76     |
|       | 10                       | 208/230     | 1     | 104.0      | 21.2 | 0.0          | 4.0                | 25.2           | 30.5             | 50            | 8       | 101    |
|       | 11                       | 208/230     | 1     | 104.0      | 21.2 | 0.5          | 4.0                | 25.7           | 31.0             | 50            | 8       | 99     |
|       | 20                       | 208/230     | 3     | 83.1       | 14.0 | 0.0          | 0.0                | 14.0           | 17.5             | 30            | 14      | 46     |
|       | 21                       | 208/230     | 3     | 83.1       | 14.0 | 0.5          | 0.0                | 14.5           | 18.0             | 30            | 14      | 44     |
|       | 30/35                    | 460         | 3     | 41.0       | 6.4  | 0.0          | 0.0                | 6.4            | 8.0              | 10            | 14      | 100    |
| WT048 | 00                       | 208/230     | 1     | 152.9      | 27.1 | 0.0          | 0.0                | 27.1           | 33.9             | 60            | 8       | 94     |
|       | 01                       | 208/230     | 1     | 152.9      | 27.1 | 0.5          | 0.0                | 27.6           | 34.4             | 60            | 8       | 92     |
|       | 10                       | 208/230     | 1     | 152.9      | 27.1 | 0.0          | 5.5                | 32.6           | 39.4             | 60            | 8       | 78     |
|       | 11                       | 208/230     | 1     | 152.9      | 27.1 | 0.5          | 5.5                | 33.1           | 39.9             | 60            | 8       | 77     |
|       | 20                       | 208/230     | 3     | 110.0      | 16.5 | 0.0          | 0.0                | 16.5           | 20.6             | 35            | 12      | 60     |
|       | 21                       | 208/230     | 3     | 110.0      | 16.5 | 0.5          | 0.0                | 17.0           | 21.1             | 35            | 12      | 58     |
|       | 30/35                    | 460         | 3     | 52.0       | 7.2  | 0.0          | 0.0                | 7.2            | 9.0              | 15            | 14      | 89     |
| WT060 | 00                       | 208/230     | 1     | 179.2      | 29.7 | 0.0          | 0.0                | 29.7           | 37.1             | 60            | 8       | 86     |
|       | 01                       | 208/230     | 1     | 179.2      | 29.7 | 0.5          | 0.0                | 30.2           | 37.6             | 60            | 8       | 84     |
|       | 10                       | 208/230     | 1     | 179.2      | 29.7 | 0.0          | 5.5                | 35.2           | 42.6             | 70            | 6       | 115    |
|       | 11                       | 208/230     | 1     | 179.2      | 29.7 | 0.5          | 5.5                | 35.7           | 43.1             | 70            | 6       | 114    |
|       | 20                       | 208/230     | 3     | 136.0      | 17.6 | 0.0          | 0.0                | 17.6           | 22.0             | 40            | 12      | 56     |
|       | 21                       | 208/230     | 3     | 136.0      | 17.6 | 0.5          | 0.0                | 18.1           | 22.5             | 40            | 12      | 55     |
|       | 30/35                    | 460         | 3     | 66.1       | 8.5  | 0.0          | 0.0                | 8.5            | 10.6             | 14            | 14      | 75     |

Notes:

1. All line and low voltage wiring must adhere to the National Electrical Code and Local Codes, whichever is the most stringent.
  2. Wire length based on a one way measurement with a 2% voltage drop.
  3. Wire size based on 60°C copper conductor and minimum circuit ampacity.
  4. All fuses class RK-5
- \* The external loop pump FLA is based on a maximum of three UP26-116F-230V pumps (1/2hp) for 048 - 060 and two pumps for 034

### NOTE: PROPER POWER SUPPLY EVALUATION

When any compressor bearing unit is connected to a weak power supply, starting current will generate a significant “sag” in the voltage which reduces the starting torque of the compressor motor and increases the start time. This will influence the rest of the electrical system in the building by lowering the voltage to the lights. This momentary low voltage causes “light dimming”. The total electrical system should be evaluated with an electrician and HVAC technician. The evaluation should include all connections, sizes of wires, and size of the distribution panel between the unit and the utility’s connection. The transformer connection and sizing should be evaluated by the electric utility provider.



## ENGINEERING SPECIFICATIONS:

### DUAL COMPRESSOR UNIT ELECTRICAL DATA:

| Model | Voltage Code/ HWG Option | 60 Hz Power |       | Compressor |          | HWG Pump FLA | Ext. Loop Pump FLA | Total Unit FLA | Min Circuit AMPS | Max Fuse HACR | Min AWG | Max Ft |
|-------|--------------------------|-------------|-------|------------|----------|--------------|--------------------|----------------|------------------|---------------|---------|--------|
|       |                          | Volts       | Phase | LRA        | RLA      |              |                    |                |                  |               |         |        |
| WT092 | 00                       | 208/230     | 1     | 152.9 ea.  | 27.1 ea. | 0.0          | 0.0                | 54.2           | 61.0             | 80            | 4       | 119    |
|       | 01                       | 208/230     | 1     | 152.9 ea.  | 27.1 ea. | 0.5          | 0.0                | 54.7           | 61.5             | 80            | 4       | 117    |
|       | 10                       | 208/230     | 1     | 152.9 ea.  | 27.1 ea. | 0.0          | 0.0                | 54.2           | 61.0             | 80            | 4       | 119    |
|       | 11                       | 208/230     | 1     | 152.9 ea.  | 27.1 ea. | 0.5          | 0.0                | 54.7           | 61.5             | 80            | 4       | 117    |
|       | 20                       | 208/230     | 3     | 110.0 ea.  | 16.5 ea. | 0.0          | 0.0                | 33.0           | 37.1             | 50            | 8       | 77     |
|       | 21                       | 208/230     | 3     | 110.0 ea.  | 16.5 ea. | 0.5          | 0.0                | 33.5           | 37.6             | 50            | 8       | 76     |
|       | 30/35                    | 460         | 3     | 52.0 ea.   | 7.2 ea.  | 0.0          | 0.0                | 14.4           | 16.2             | 20            | 14      | 44     |
| WT120 | 00                       | 208/230     | 1     | 178.0 ea.  | 28.3 ea. | 0.0          | 0.0                | 56.6           | 63.7             | 90            | 4       | 113    |
|       | 01                       | 208/230     | 1     | 178.0 ea.  | 28.3 ea. | 0.5          | 0.0                | 57.1           | 64.2             | 90            | 4       | 112    |
|       | 10                       | 208/230     | 1     | 178.0 ea.  | 28.3 ea. | 0.0          | 0.0                | 56.6           | 63.7             | 90            | 4       | 113    |
|       | 11                       | 208/230     | 1     | 178.0 ea.  | 28.3 ea. | 0.5          | 0.0                | 57.1           | 64.2             | 90            | 4       | 112    |
|       | 20                       | 208/230     | 3     | 136.0 ea.  | 19.2 ea. | 0.0          | 0.0                | 38.4           | 43.2             | 60            | 6       | 106    |
|       | 21                       | 208/230     | 3     | 136.0 ea.  | 19.2 ea. | 0.5          | 0.0                | 38.9           | 43.7             | 60            | 6       | 104    |
|       | 30/35                    | 460         | 3     | 66.1 ea.   | 8.7 ea.  | 0.0          | 0.0                | 17.4           | 19.6             | 25            | 14      | 37     |
| WT144 | 20                       | 208/230     | 3     | 149.0 ea.  | 22.4 ea. | 0.0          | 0.0                | 44.8           | 50.4             | 70            | 6       | 91     |
|       | 21                       | 208/230     | 3     | 149.0 ea.  | 22.4 ea. | 0.5          | 0.0                | 45.3           | 50.9             | 70            | 6       | 90     |
|       | 30/35                    | 460         | 3     | 75.0 ea.   | 10.6 ea. | 0.0          | 0.0                | 21.2           | 23.9             | 30            | 12      | 47     |

**Notes:**

1. All line and low voltage wiring must adhere to the National Electrical Code and Local Codes, whichever is the most stringent.
2. Wire length based on a one way measurement with a 2% voltage drop.
3. Wire size based on 60°C copper conductor and minimum circuit ampacity.
4. All fuses class RK-5

\* **Data for reference only. Single-Phase model no longer available.**

### PHYSICAL DATA

| MODEL                       | 036                               | 048 | 060 | 092                      | 120                    | 144   |
|-----------------------------|-----------------------------------|-----|-----|--------------------------|------------------------|-------|
| COMPRESSOR TYPE             | Two Stage Unloading Scroll        |     |     | Two Single Stage Scrolls | Dual Two Stage Scrolls |       |
| Refrigerant Type            | R 410-A                           |     |     |                          |                        |       |
| Refrigerant Charge*         | 66                                | 80  | 84  | 68 ea                    | 76 ea                  | 81 ea |
| Heat Exchanger (Source)     | Copper Coaxial Tube in Tube       |     |     |                          |                        |       |
| Source Option               | Cupro-Nickel Coaxial Tube in Tube |     |     |                          |                        |       |
| Unit Weight (nominal) - lbs | 315                               | 340 | 385 | 550                      | 670                    | 670   |

\*Always refer to unit data plate during maintenance or repair

## ENGINEERING SPECIFICATIONS:

### WATER FLOW SELECTION:

Proper flow rate is crucial for reliable operation of geothermal heat pumps. The performance data shows three flow rates for each entering water temperature (EWT column). The general "rule of thumb" when selecting flow rates is the following:

- Top flow rate: Open loop systems (1.5 to 2.0 gpm per ton)
- Middle flow rate: Minimum closed loop system flow rate (2.25 to 2.50 gpm/ton)
- Bottom flow rate: Nominal (optimum) closed loop system flow rate (3.0 gpm/ton)

Although the industry standard is adequate in most areas of North America, it is important to consider the application type before applying this "rule of thumb." Antifreeze is generally required for all closed loop (geothermal) applications. Extreme Southern U.S. locations are the only exception. Open loop (well water) systems cannot use antifreeze, and must have enough flow rate in order to avoid freezing conditions at the Leaving Source Water Temperature (LWT) connection.

Calculations must be made for all systems without antifreeze to determine if the top flow rate is adequate to prevent LWT at or near freezing conditions. The following steps should be taken in making this calculation:

- Determine minimum EWT based upon your geographical area.
- Go to the performance data table for the heat pump model selected and look up the Heat of Extraction (HE) at the "rule of thumb" water flow rate (GPM) and at the design Entering Air Temperature (EAT).
- Calculate the temperature difference (TD) based upon the HE and GPM of the model.
- $TD = HE / (GPM \times 485)$ .
- Calculate the LWT.
- $LWT = EWT - TD$ .
- If the LWT is below 35-38°F, there is potential for freezing conditions if the flow rate or water temperature is less than ideal conditions, and the flow rate must be increased.

Example 1:

EWT = 50°F.

Flow rate = 6 GPM.

Air Flow = 1650 CFM. HE = 36,600 Btuh.

$TD = 36,600 / (6 \times 485) = 12.6^\circ\text{F}$

$LWT = 50 - 12.6 = 37.4^\circ\text{F}$

Since the water flow is leaving at approximately 38°F, the flow rate is acceptable.

Example 2:

EWT = 40°F.

Flow rate = 6 GPM.

Air Flow = 1650 CFM. HE = 30,600 Btuh.

$TD = 30,600 / (6 \times 485) = 10.5^\circ\text{F}$

$LWT = 40 - 10.5 = 29.5^\circ\text{F}$

Water flow rate must be increased to avoid freezing.

### PERFORMANCE DATA NOTES:

1. Capacity is based on 15% (by mass) methanol antifreeze solution as source water and pure water as load water (multiplier: 500).
2. Any condition outside performance table(s) requires correction factor(s).
3. Full-load performance data is accurate within  $\pm 15\%$ . Discharge pressure is up to  $\pm 25$  PSI; Suction pressure is up to  $\pm 15$  PSI, Subcooling is up to  $\pm 5$  °F; Superheat is up to  $\pm 6$  °F.
4. Unit performance test is run without hot water generation.
5. Capacity data does not include pump power and it does not reflect pump power correction for AHRI/ISO conditions.
6. Performance data is based upon the lower voltage of dual voltage rated units.
7. Interpolation of unit performance data is permissible; extrapolation is not.
8. Performance data is a result of lab testing and is not related to warranty.
9. Due to variations in installation, actual unit performance may vary from the tabulated data.
10. See Flow Rate Selection above for proper application.
11. Continuous research and development may result in a change to the current product design and specifications without notice.

## ENGINEERING SPECIFICATIONS:

### GLOSSARY OF TERMS:

|  |  |
|--|--|
| CFM = Airflow, Cubic Feet/Minute                               | HR = Total Heat Of Rejection, Btu/hr               |
| COP = Coefficient of Performance = BTU Output / BTU Input      | KW = Total Power Unit Input, Kilowatts             |
| DH = Desuperheater Capacity, Btu/hr                            | LAT = Leaving Air Temperature, Fahrenheit          |
| EAT = Entering Air Temperature, Fahrenheit (Dry Bulb/Wet Bulb) | LC = Latent Cooling Capacity, Btu/hr               |
| EER = Energy Efficiency Ratio = BTU output/Watts input         | SC = Sensible Cooling Capacity, Btu/hr             |
| EWT = Entering Source Water Temperature, Fahrenheit            | LWT = Leaving Source Water Temperature, Fahrenheit |
| ELT = Entering Load Water Temperature, Fahrenheit              | LLT = Leaving Load Water Temperature, Fahrenheit   |
| GPM = Water Flow, Gallons Per Minute                           | TC = Total Cooling Capacity, Btu/hr                |
| HC = Total Heating Capacity, Btu/hr                            | WPD = Water Pressure Drop, PSI & Feet of Water     |
| HE = Total Heat Of Extraction, Btu/hr                          |  |

### SENSIBLE COOLING CORRECTION FACTORS:

| EAT<br>(WB) °F | EAT (DB) °F |       |       |       |       |
|----------------|-------------|-------|-------|-------|-------|
|                | 70          | 75    | 80    | 85    | 90    |
| 55             | 1.201       | 1.289 |       |       |       |
| 60             | 0.943       | 1.067 | 1.192 |       |       |
| 65             | 0.797       | 0.952 | 1.106 | 1.261 |       |
| 67             | 0.624       | 0.812 | 1.000 | 1.188 | 1.343 |
| 70             |             | 0.697 | 0.820 | 0.944 | 1.067 |
| 75             |             |       | 0.637 | 0.817 | 0.983 |

### COOLING CORRECTION FACTORS:

| EAT<br>(WB) °F | TC     | HR     | kW     |
|----------------|--------|--------|--------|
| 55             | 0.8215 | 0.8293 | 0.8635 |
| 60             | 0.8955 | 0.9001 | 0.9205 |
| 65             | 0.9701 | 0.9715 | 0.9774 |
| 67             | 1.0000 | 1.0000 | 1.0000 |
| 70             | 1.0446 | 1.0425 | 1.0335 |
| 75             | 1.1179 | 1.1124 | 1.0878 |

### HEATING & COOLING CALCULATIONS:

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

### HEATING CORRECTION FACTORS:

| EAT °F | HC     | HE     | kW     |
|--------|--------|--------|--------|
| 50     | 1.0465 | 1.1188 | 0.8024 |
| 55     | 1.0351 | 1.0918 | 0.8436 |
| 60     | 1.0253 | 1.0645 | 0.8928 |
| 65     | 1.0108 | 1.0300 | 0.9454 |
| 70     | 1.0000 | 1.0000 | 1.0000 |
| 75     | 0.9895 | 0.9701 | 1.0553 |
| 80     | 0.9742 | 0.9489 | 1.0518 |

# ENGINEERING SPECIFICATIONS:

## MODEL 036, 3 TON, PART LOAD PERFORMANCE DATA:

| EST °F | Source GPM | WPD |     | ELT °F                    | Load GPM | Heating |     |          |          |        |       |         |          | Cooling                   |          |     |    |          |          |        |    |     |          |
|--------|------------|-----|-----|---------------------------|----------|---------|-----|----------|----------|--------|-------|---------|----------|---------------------------|----------|-----|----|----------|----------|--------|----|-----|----------|
|        |            | PSI | FT  |                           |          | WPD     |     | HC Mbtuh | HE Mbtuh | LLT °F | kW    | COP W/W | DH Mbtuh | ELT °F                    | Load GPM | WPD |    | TC Mbtuh | HR Mbtuh | LLT °F | kW | EER | DH Mbtuh |
|        |            |     |     |                           |          | PSI     | FT  |          |          |        |       |         |          |                           |          | PSI | FT |          |          |        |    |     |          |
| 25     | 6.0        | 2.2 | 5.0 | 85                        | 6.0      | 1.8     | 4.1 | 24.1     | 16.7     | 93.0   | 2.18  | 3.24    | 3.2      | Operation Not Recommended |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 23.9     | 15.2     | 103.0  | 2.55  | 2.75    | 3.2      |                           |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 23.5     | 12.7     | 117.8  | 3.16  | 2.18    | 3.1      |                           |          |     |    |          |          |        |    |     |          |
| 30     | 4.0        | 0.9 | 2.0 | 85                        | 6.0      | 1.8     | 4.1 | 25.5     | 18.0     | 93.5   | 2.21  | 3.38    | 3.4      |                           |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 25.3     | 16.5     | 103.4  | 2.59  | 2.86    | 3.4      |                           |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 24.9     | 13.9     | 118.3  | 3.21  | 2.27    | 3.3      |                           |          |     |    |          |          |        |    |     |          |
|        | 5.0        | 1.3 | 3.0 | 85                        | 6.0      | 1.8     | 4.1 | 26.1     | 18.7     | 93.7   | 2.17  | 3.52    | 3.5      |                           |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 25.9     | 17.2     | 103.6  | 2.54  | 2.99    | 3.4      |                           |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 25.4     | 14.7     | 118.5  | 3.15  | 2.36    | 3.4      |                           |          |     |    |          |          |        |    |     |          |
|        | 6.0        | 1.8 | 4.1 | 85                        | 6.0      | 1.8     | 4.1 | 26.7     | 19.4     | 93.9   | 2.13  | 3.67    | 3.5      |                           |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 26.4     | 17.9     | 103.8  | 2.49  | 3.11    | 3.4      |                           |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 26.0     | 15.5     | 118.7  | 3.09  | 2.47    | 3.4      |                           |          |     |    |          |          |        |    |     |          |
| 40     | 4.0        | 0.8 | 1.8 | 85                        | 6.0      | 1.8     | 4.1 | 29.9     | 22.5     | 95.0   | 1.57  | 4.06    | 3.9      |                           | 40       |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 29.6     | 21.0     | 104.9  | 1.57  | 3.43    | 4.0      |                           | 45       |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 29.1     | 18.4     | 119.7  | 1.57  | 2.72    | 4.0      |                           | 50       |     |    |          |          |        |    |     |          |
|        | 5.0        | 1.2 | 2.7 | 85                        | 6.0      | 1.8     | 4.1 | 30.6     | 23.4     | 95.2   | 2.12  | 4.23    | 4.0      |                           | 40       |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 30.3     | 21.8     | 105.1  | 2.48  | 3.58    | 4.0      |                           | 45       |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 29.8     | 19.3     | 119.9  | 3.07  | 2.84    | 4.0      |                           | 50       |     |    |          |          |        |    |     |          |
|        | 6.0        | 1.6 | 3.7 | 85                        | 6.0      | 1.8     | 4.1 | 31.2     | 24.1     | 95.4   | 2.08  | 4.40    | 4.0      |                           | 40       |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 30.9     | 22.6     | 105.3  | 2.43  | 3.73    | 4.3      |                           | 45       |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 30.4     | 20.1     | 120.1  | 3.01  | 2.96    | 4.2      |                           | 50       |     |    |          |          |        |    |     |          |
|        | 50         | 4.0 | 0.8 | 1.8                       | 85       | 6.0     | 1.8 | 4.1      | 34.2     | 27.0   | 96.4  | 2.12    | 4.73     |                           | 4.5      | 40  |    |          |          |        |    |     |          |
|        |            |     |     |                           | 95       |         | 1.7 | 4.0      | 33.9     | 25.5   | 106.3 | 2.47    | 4.02     |                           | 4.5      | 45  |    |          |          |        |    |     |          |
|        |            |     |     |                           | 110      |         | 1.6 | 3.6      | 33.3     | 22.9   | 121.1 | 3.06    | 3.19     |                           | 4.4      | 50  |    |          |          |        |    |     |          |
| 5.0    |            | 1.2 | 2.8 | 85                        | 6.0      | 1.8     | 4.1 | 35.0     | 27.9     | 96.7   | 2.08  | 4.93    | 4.6      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 34.7     | 26.4     | 106.6  | 2.43  | 4.19    | 4.5      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 34.1     | 23.8     | 121.4  | 3.01  | 3.32    | 4.5      | 50                        |          |     |    |          |          |        |    |     |          |
| 6.0    |            | 1.6 | 3.8 | 85                        | 6.0      | 1.8     | 4.1 | 35.7     | 28.7     | 96.9   | 2.04  | 5.13    | 4.6      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 35.4     | 27.3     | 106.8  | 2.38  | 4.36    | 4.7      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 34.8     | 24.7     | 121.6  | 2.95  | 3.46    | 4.5      | 50                        |          |     |    |          |          |        |    |     |          |
| 60     | 4.0        | 0.8 | 1.8 | 85                        | 6.0      | 1.8     | 4.1 | 38.8     | 31.8     | 97.9   | 2.05  | 5.55    | 5.1      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 38.4     | 30.2     | 107.8  | 2.40  | 4.69    | 5.1      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 37.7     | 27.6     | 122.6  | 2.97  | 3.72    | 5.1      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 5.0        | 1.2 | 2.7 | 85                        | 6.0      | 1.8     | 4.1 | 39.7     | 32.8     | 98.2   | 2.01  | 5.79    | 5.1      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 39.3     | 31.3     | 108.1  | 2.35  | 4.90    | 5.2      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 38.6     | 28.6     | 122.9  | 2.92  | 3.87    | 5.1      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 6.0        | 1.6 | 3.7 | 85                        | 6.0      | 1.8     | 4.1 | 40.5     | 33.7     | 98.5   | 1.98  | 5.99    | 5.3      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 40.1     | 32.2     | 108.4  | 2.31  | 5.09    | 5.5      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 39.4     | 29.6     | 123.1  | 2.86  | 4.04    | 5.5      | 50                        |          |     |    |          |          |        |    |     |          |
| 70     | 4.0        | 0.7 | 1.6 | 85                        | 6.0      | 1.8     | 4.1 | 43.3     | 36.5     | 99.4   | 2.00  | 6.35    | 5.7      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 42.9     | 34.9     | 109.3  | 2.33  | 5.40    | 5.5      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 42.2     | 32.3     | 124.1  | 2.89  | 4.28    | 5.6      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 5.0        | 1.1 | 2.5 | 85                        | 6.0      | 1.8     | 4.1 | 44.3     | 37.6     | 99.8   | 1.96  | 6.62    | 5.7      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 43.9     | 36.1     | 109.6  | 2.29  | 5.62    | 5.8      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 43.2     | 33.5     | 124.4  | 2.84  | 4.46    | 5.6      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 6.0        | 1.4 | 3.3 | 85                        | 6.0      | 1.8     | 4.1 | 45.3     | 38.7     | 100.1  | 1.92  | 6.91    | 6.0      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 44.8     | 37.1     | 109.9  | 2.25  | 5.84    | 5.9      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 44.1     | 34.6     | 124.7  | 2.78  | 4.65    | 5.8      | 50                        |          |     |    |          |          |        |    |     |          |
| 80     | 4.0        | 0.6 | 1.5 | 85                        | 6.0      | 1.8     | 4.1 | 47.6     | 40.9     | 100.9  | 1.96  | 7.12    | 6.3      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 47.2     | 39.4     | 110.7  | 2.30  | 6.01    | 6.3      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 46.4     | 36.7     | 125.5  | 2.85  | 4.77    | 6.3      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 5.0        | 1.0 | 2.2 | 85                        | 6.0      | 1.8     | 4.1 | 48.8     | 42.2     | 101.3  | 1.93  | 7.41    | 6.4      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 48.3     | 40.6     | 111.1  | 2.25  | 6.29    | 6.6      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 47.5     | 38.0     | 125.8  | 2.79  | 4.99    | 6.5      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 6.0        | 1.3 | 3.0 | 85                        | 6.0      | 1.8     | 4.1 | 49.8     | 43.4     | 101.6  | 1.89  | 7.72    | 6.6      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 49.3     | 41.8     | 111.4  | 2.21  | 6.54    | 6.8      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 48.5     | 39.2     | 126.2  | 2.74  | 5.19    | 6.7      | 50                        |          |     |    |          |          |        |    |     |          |
| 90     | 4.0        | 0.6 | 1.5 | 85                        | 6.0      | 1.8     | 4.1 | 52.0     | 45.4     | 102.3  | 1.94  | 7.86    | 7.0      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 51.5     | 43.8     | 112.2  | 2.26  | 6.68    | 6.9      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 50.6     | 41.0     | 126.9  | 2.80  | 5.30    | 6.8      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 5.0        | 1.0 | 2.2 | 85                        | 6.0      | 1.8     | 4.1 | 53.2     | 46.7     | 102.7  | 1.90  | 8.21    | 7.1      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 52.7     | 45.1     | 112.6  | 2.22  | 6.96    | 7.1      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 51.8     | 42.4     | 127.3  | 2.75  | 5.52    | 6.9      | 50                        |          |     |    |          |          |        |    |     |          |
|        | 6.0        | 1.3 | 3.0 | 85                        | 6.0      | 1.8     | 4.1 | 54.3     | 48.0     | 103.1  | 1.86  | 8.56    | 7.3      | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 95                        |          | 1.7     | 4.0 | 53.8     | 46.4     | 112.9  | 2.18  | 7.23    | 7.2      | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     | 110                       |          | 1.6     | 3.6 | 52.9     | 43.7     | 127.6  | 2.70  | 5.74    | 7.1      | 50                        |          |     |    |          |          |        |    |     |          |
| 110    | 4.0        | 0.5 | 1.2 | Operation Not Recommended |          |         |     |          |          |        |       |         |          | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     |                           |          |         |     |          |          |        |       |         |          | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     |                           |          |         |     |          |          |        |       |         |          | 50                        |          |     |    |          |          |        |    |     |          |
|        | 5.0        | 0.8 | 1.8 |                           |          |         |     |          |          |        |       |         |          | 40                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     |                           |          |         |     |          |          |        |       |         |          | 45                        |          |     |    |          |          |        |    |     |          |
|        |            |     |     |                           |          |         |     |          |          |        |       |         |          | 50                        |          |     |    |          |          |        |    |     |          |
| 6.0    | 1.1        | 2.5 | 40  |                           |          |         |     |          |          |        |       |         |          |                           |          |     |    |          |          |        |    |     |          |
|        |            |     | 45  |                           |          |         |     |          |          |        |       |         |          |                           |          |     |    |          |          |        |    |     |          |
|        |            |     | 50  |                           |          |         |     |          |          |        |       |         |          |                           |          |     |    |          |          |        |    |     |          |

**ENGINEERING SPECIFICATIONS:**

**MODEL 036, 3 TON, FULL LOAD PERFORMANCE DATA:**

| EST °F | Source GPM | WPD |     | Heating |          |     |     |          |          |        |      |         |          | Cooling                   |                           |     |    |          |          |        |    |     |          |
|--------|------------|-----|-----|---------|----------|-----|-----|----------|----------|--------|------|---------|----------|---------------------------|---------------------------|-----|----|----------|----------|--------|----|-----|----------|
|        |            | PSI | FT  | ELT °F  | Load GPM | WPD |     | HC Mbtuh | HE Mbtuh | LLT °F | kW   | COP W/W | DH Mbtuh | ELT °F                    | Load GPM                  | WPD |    | TC Mbtuh | HR Mbtuh | LLT °F | kW | EER | DH Mbtuh |
|        |            |     |     |         |          | PSI | FT  |          |          |        |      |         |          |                           |                           | PSI | FT |          |          |        |    |     |          |
| 25     | 9.0        | 4.0 | 9.2 | 85      | 9.0      | 2.6 | 5.9 | 30.9     | 21.6     | 91.9   | 2.74 | 3.31    | 4.1      | Operation Not Recommended |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 30.4     | 19.7     | 101.8  | 3.15 | 2.83    | 4.1      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 29.1     | 16.2     | 116.5  | 3.79 | 2.25    | 3.8      |                           |                           |     |    |          |          |        |    |     |          |
| 30     | 5.0        | 1.5 | 3.5 | 85      | 9.0      | 2.6 | 5.9 | 35.0     | 25.4     | 92.8   | 2.80 | 3.66    | 4.6      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 34.5     | 23.5     | 102.7  | 3.22 | 3.14    | 4.6      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 33.0     | 19.8     | 117.3  | 3.87 | 2.50    | 4.3      |                           |                           |     |    |          |          |        |    |     |          |
|        | 7.0        | 2.6 | 5.9 | 85      | 9.0      | 2.6 | 5.9 | 35.8     | 26.4     | 93.0   | 2.76 | 3.80    | 4.8      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 35.4     | 24.6     | 102.9  | 3.17 | 3.27    | 4.6      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 33.8     | 20.8     | 117.5  | 3.82 | 2.59    | 4.5      |                           |                           |     |    |          |          |        |    |     |          |
|        | 9.0        | 3.8 | 8.8 | 85      | 9.0      | 2.6 | 5.9 | 35.9     | 26.6     | 93.0   | 2.73 | 3.85    | 4.7      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 35.4     | 24.7     | 102.9  | 3.14 | 3.30    | 4.6      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 33.8     | 20.9     | 117.5  | 3.78 | 2.62    | 4.4      |                           |                           |     |    |          |          |        |    |     |          |
| 40     | 5.0        | 1.4 | 3.1 | 85      | 9.0      | 2.6 | 5.9 | 40.1     | 30.6     | 93.9   | 2.60 | 4.23    | 5.2      |                           | Operation Not Recommended |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 39.6     | 28.7     | 103.8  | 2.60 | 3.63    | 5.4      |                           |                           | 45  |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 37.8     | 24.7     | 118.4  | 2.60 | 2.88    | 5.3      |                           |                           | 50  |    |          |          |        |    |     |          |
|        | 7.0        | 2.3 | 5.4 | 85      | 9.0      | 2.6 | 5.9 | 41.1     | 31.8     | 94.1   | 2.74 | 4.40    | 5.3      |                           |                           | 40  |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 40.6     | 29.9     | 104.0  | 3.15 | 3.78    | 5.3      |                           |                           | 45  |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 38.8     | 25.9     | 118.6  | 3.79 | 3.00    | 5.3      |                           |                           | 50  |    |          |          |        |    |     |          |
|        | 9.0        | 3.4 | 8.0 | 85      | 9.0      | 2.6 | 5.9 | 41.2     | 32.0     | 94.2   | 2.71 | 4.46    | 5.2      |                           |                           | 40  |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 40.7     | 30.1     | 104.0  | 3.12 | 3.82    | 5.6      |                           |                           | 45  |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 38.8     | 26.0     | 118.6  | 3.75 | 3.03    | 5.5      |                           |                           | 50  |    |          |          |        |    |     |          |
| 50     | 5.0        | 1.2 | 2.8 | 85      | 9.0      | 2.6 | 5.9 | 45.1     | 35.6     | 95.0   | 2.77 | 4.77    | 6.0      |                           |                           | 40  |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 44.5     | 33.6     | 104.9  | 3.19 | 4.09    | 5.9      |                           |                           | 45  |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 42.5     | 29.4     | 119.4  | 3.83 | 3.25    | 5.7      |                           |                           | 50  |    |          |          |        |    |     |          |
|        | 7.0        | 2.1 | 4.8 | 85      | 9.0      | 2.6 | 5.9 | 46.2     | 36.9     | 95.3   | 2.73 | 4.96    | 6.1      |                           |                           | 40  |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 45.6     | 34.9     | 105.1  | 3.14 | 4.26    | 5.9      |                           |                           | 45  |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 43.6     | 30.7     | 119.7  | 3.78 | 3.38    | 5.8      |                           |                           | 50  |    |          |          |        |    |     |          |
|        | 9.0        | 3.1 | 7.2 | 85      | 9.0      | 2.6 | 5.9 | 46.3     | 37.1     | 95.3   | 2.70 | 5.03    | 6.0      |                           |                           | 40  |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 45.7     | 35.1     | 105.2  | 3.11 | 4.31    | 5.9      |                           |                           | 45  |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 43.7     | 30.9     | 119.7  | 3.74 | 3.42    | 5.7      |                           |                           | 50  |    |          |          |        |    |     |          |
| 60     | 5.0        | 1.1 | 2.6 | 85      | 9.0      | 2.6 | 5.9 | 51.5     | 42.0     | 96.4   | 2.78 | 5.43    | 6.7      |                           |                           | 40  |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 50.8     | 39.9     | 106.3  | 3.20 | 4.65    | 6.7      |                           |                           | 45  |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 48.6     | 35.5     | 120.8  | 3.85 | 3.70    | 6.7      |                           |                           | 50  |    |          |          |        |    |     |          |
|        | 7.0        | 1.9 | 4.4 | 85      | 9.0      | 2.6 | 5.9 | 52.8     | 43.5     | 96.7   | 2.74 | 5.65    | 6.7      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 52.1     | 41.4     | 106.6  | 3.15 | 4.85    | 6.8      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 49.8     | 36.9     | 121.1  | 3.79 | 3.85    | 6.6      | 50                        |                           |     |    |          |          |        |    |     |          |
|        | 9.0        | 2.8 | 6.5 | 85      | 9.0      | 2.6 | 5.9 | 52.9     | 43.7     | 96.8   | 2.71 | 5.72    | 6.7      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 52.2     | 41.6     | 106.6  | 3.12 | 4.90    | 7.2      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 49.9     | 37.1     | 121.1  | 3.75 | 3.90    | 7.0      | 50                        |                           |     |    |          |          |        |    |     |          |
| 70     | 5.0        | 1.0 | 2.4 | 85      | 9.0      | 2.6 | 5.9 | 57.5     | 47.9     | 97.8   | 2.81 | 6.00    | 7.6      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 56.8     | 45.8     | 107.6  | 3.23 | 5.15    | 7.3      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 54.2     | 40.9     | 122.0  | 3.89 | 4.08    | 7.2      | 50                        |                           |     |    |          |          |        |    |     |          |
|        | 7.0        | 1.8 | 4.1 | 85      | 9.0      | 2.6 | 5.9 | 58.9     | 49.4     | 98.1   | 2.77 | 6.23    | 7.6      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 58.1     | 47.2     | 107.9  | 3.18 | 5.35    | 7.6      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 55.5     | 42.4     | 122.3  | 3.83 | 4.25    | 7.2      | 50                        |                           |     |    |          |          |        |    |     |          |
|        | 9.0        | 2.6 | 6.1 | 85      | 9.0      | 2.6 | 5.9 | 59.1     | 49.8     | 98.1   | 2.74 | 6.32    | 7.7      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 58.3     | 47.6     | 108.0  | 3.15 | 5.42    | 7.6      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 55.7     | 42.8     | 122.4  | 3.79 | 4.31    | 7.3      | 50                        |                           |     |    |          |          |        |    |     |          |
| 80     | 5.0        | 1.0 | 2.3 | 85      | 9.0      | 2.6 | 5.9 | 61.4     | 51.7     | 98.6   | 2.85 | 6.31    | 8.0      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 60.6     | 49.4     | 108.5  | 3.28 | 5.41    | 8.1      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 57.9     | 44.4     | 122.9  | 3.95 | 4.30    | 7.9      | 50                        |                           |     |    |          |          |        |    |     |          |
|        | 7.0        | 1.7 | 3.9 | 85      | 9.0      | 2.6 | 5.9 | 62.9     | 53.3     | 99.0   | 2.81 | 6.56    | 8.1      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 62.1     | 51.0     | 108.8  | 3.24 | 5.62    | 8.3      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 59.3     | 46.0     | 123.2  | 3.89 | 4.47    | 8.1      | 50                        |                           |     |    |          |          |        |    |     |          |
|        | 9.0        | 2.5 | 5.8 | 85      | 9.0      | 2.6 | 5.9 | 63.0     | 53.5     | 99.0   | 2.78 | 6.64    | 8.1      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 62.2     | 51.3     | 108.8  | 3.20 | 5.70    | 8.4      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 59.4     | 46.3     | 123.2  | 3.85 | 4.52    | 8.2      | 50                        |                           |     |    |          |          |        |    |     |          |
| 90     | 5.0        | 0.9 | 2.2 | 85      | 9.0      | 2.6 | 5.9 | 65.1     | 55.2     | 99.5   | 2.91 | 6.56    | 8.7      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 64.3     | 52.9     | 109.3  | 3.35 | 5.63    | 8.6      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 61.4     | 47.7     | 123.6  | 4.02 | 4.48    | 8.2      | 50                        |                           |     |    |          |          |        |    |     |          |
|        | 7.0        | 1.6 | 3.8 | 85      | 9.0      | 2.6 | 5.9 | 66.7     | 56.9     | 99.8   | 2.87 | 6.81    | 8.9      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 65.8     | 54.5     | 109.6  | 3.30 | 5.84    | 8.8      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 62.9     | 49.4     | 124.0  | 3.97 | 4.64    | 8.4      | 50                        |                           |     |    |          |          |        |    |     |          |
|        | 9.0        | 2.4 | 5.6 | 85      | 9.0      | 2.6 | 5.9 | 66.9     | 57.2     | 99.9   | 2.83 | 6.93    | 8.9      | 40                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 95      |          | 2.5 | 5.8 | 66.0     | 54.9     | 109.7  | 3.26 | 5.93    | 8.8      | 45                        |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 110     |          | 2.2 | 5.1 | 63.0     | 49.6     | 124.0  | 3.92 | 4.71    | 8.4      | 50                        |                           |     |    |          |          |        |    |     |          |
| 110    | 5.0        | 0.9 | 2.0 | 45      | 9.0      | 2.6 | 6.0 | 33.0     | 46.1     | 32.7   | 3.83 | 8.62    | 4.4      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 50      |          | 2.6 | 6.0 | 36.3     | 49.4     | 36.9   | 3.83 | 9.48    | 4.8      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 55      |          | 2.6 | 6.0 | 38.7     | 51.8     | 41.4   | 3.84 | 10.08   | 5.2      |                           |                           |     |    |          |          |        |    |     |          |
|        | 7.0        | 1.5 | 3.4 | 45      | 9.0      | 2.6 | 6.0 | 33.9     | 46.8     | 32.5   | 3.78 | 8.97    | 4.5      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 50      |          | 2.6 | 6.0 | 37.3     | 50.2     | 36.7   | 3.78 | 9.87    | 4.9      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 55      |          | 2.6 | 6.0 | 39.8     | 52.7     | 41.2   | 3.78 | 10.53   | 5.3      |                           |                           |     |    |          |          |        |    |     |          |
|        | 9.0        | 2.2 | 5.1 | 45      | 9.0      | 2.6 | 6.0 | 34.0     | 46.8     | 32.4   | 3.74 | 9.09    | 4.5      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 50      |          | 2.6 | 6.0 | 37.4     | 50.1     | 36.7   | 3.73 | 10.03   | 5.0      |                           |                           |     |    |          |          |        |    |     |          |
|        |            |     |     | 55      |          | 2.6 | 6.0 | 39.9     | 52.7     | 41.1   | 3.74 | 10.67   | 5.3      |                           |                           |     |    |          |          |        |    |     |          |

# ENGINEERING SPECIFICATIONS:

## MODEL 048, 4 TON, PART LOAD PERFORMANCE DATA:

| EST °F | Source GPM | WPD |     | ELT °F | Load GPM | Heating |     |          |          |        |      |         | Cooling  |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|--------|------------|-----|-----|--------|----------|---------|-----|----------|----------|--------|------|---------|----------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-----|
|        |            | PSI | FT  |        |          | WPD     |     | HC Mbtuh | HE Mbtuh | LLT °F | kW   | COP W/W | DH Mbtuh | ELT °F                    | Load GPM                  | WPD                       |                           | TC Mbtuh                  | HR Mbtuh                  | LLT °F                    | kW                        | EER                       | DH Mbtuh                  |     |
|        |            |     |     |        |          | PSI     | FT  |          |          |        |      |         |          |                           |                           | PSI                       | FT                        |                           |                           |                           |                           |                           |                           | PSI |
| 25     | 9.0        | 2.3 | 5.2 | 85     | 9.0      | 2.2     | 5.0 | 30.3     | 21.2     | 91.7   | 2.67 | 3.33    | 3.9      | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 29.4     | 19.0     | 101.5  | 3.06 | 2.82    | 3.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 28.5     | 15.7     | 116.3  | 3.74 | 2.23    | 3.7      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
| 30     | 5.0        | 0.5 | 1.2 | 85     | 9.0      | 2.2     | 5.0 | 29.4     | 19.7     | 91.5   | 2.84 | 3.03    | 3.8      |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 28.6     | 17.5     | 101.4  | 3.24 | 2.59    | 3.8      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 27.7     | 14.2     | 116.2  | 3.97 | 2.04    | 3.6      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        | 7.0        | 1.0 | 2.3 | 85     | 9.0      | 2.2     | 5.0 | 31.4     | 22.2     | 92.0   | 2.71 | 3.40    | 4.2      |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 30.5     | 19.9     | 101.8  | 3.10 | 2.88    | 4.1      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 29.5     | 16.6     | 116.6  | 3.79 | 2.28    | 3.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        | 9.0        | 2.2 | 5.0 | 85     | 9.0      | 2.2     | 5.0 | 32.3     | 23.4     | 92.2   | 2.61 | 3.63    | 4.3      |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 31.4     | 21.2     | 102.0  | 2.99 | 3.08    | 4.1      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 30.4     | 17.9     | 116.8  | 3.65 | 2.44    | 4.0      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
| 40     | 5.0        | 0.5 | 1.1 | 85     | 9.0      | 2.2     | 5.0 | 34.5     | 24.9     | 92.7   | 2.22 | 3.61    | 4.5      |                           |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 33.6     | 22.6     | 102.5  | 2.22 | 3.07    | 4.7      |                           |                           |                           |                           |                           | 4.5                       |                           |                           |                           |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 32.5     | 19.1     | 117.2  | 2.22 | 2.43    | 4.6      |                           |                           |                           |                           |                           | 5.0                       |                           |                           |                           |                           |     |
|        | 7.0        | 0.9 | 2.1 | 85     | 9.0      | 2.2     | 5.0 | 36.8     | 27.7     | 93.2   | 2.68 | 4.02    | 4.8      |                           |                           |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 35.8     | 25.4     | 103.0  | 3.06 | 3.43    | 4.9      |                           |                           |                           |                           |                           |                           | 4.5                       |                           |                           |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 34.7     | 21.9     | 117.7  | 3.75 | 2.71    | 4.8      |                           |                           |                           |                           |                           |                           | 5.0                       |                           |                           |                           |     |
|        | 9.0        | 1.9 | 4.5 | 85     | 9.0      | 2.2     | 5.0 | 37.9     | 29.1     | 93.4   | 2.58 | 4.31    | 4.9      |                           |                           |                           |                           |                           |                           | Operation Not Recommended |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 36.9     | 26.8     | 103.2  | 2.95 | 3.67    | 5.0      |                           |                           |                           |                           |                           |                           |                           | 4.5                       |                           |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 35.7     | 23.4     | 117.9  | 3.61 | 2.90    | 5.0      |                           |                           |                           |                           |                           |                           |                           | 5.0                       |                           |                           |     |
| 50     | 5.0        | 0.4 | 1.0 | 85     | 9.0      | 2.2     | 5.0 | 39.6     | 30.1     | 93.8   | 2.77 | 4.19    | 5.3      |                           |                           |                           |                           |                           |                           |                           | Operation Not Recommended |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 38.5     | 27.7     | 103.6  | 3.17 | 3.56    | 5.1      |                           |                           |                           |                           |                           |                           |                           |                           | 4.5                       |                           |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 37.3     | 24.1     | 118.3  | 3.87 | 2.82    | 5.0      |                           |                           |                           |                           |                           |                           |                           |                           | 5.0                       |                           |     |
|        | 7.0        | 0.8 | 2.0 | 85     | 9.0      | 2.2     | 5.0 | 42.2     | 33.2     | 94.4   | 2.65 | 4.67    | 5.6      |                           |                           |                           |                           |                           |                           |                           |                           | Operation Not Recommended |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 41.1     | 30.8     | 104.1  | 3.03 | 3.98    | 5.4      |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5                       |     |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 39.8     | 27.2     | 118.8  | 3.70 | 3.15    | 5.3      |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0                       |     |
|        | 9.0        | 1.8 | 4.2 | 85     | 9.0      | 2.2     | 5.0 | 43.5     | 34.8     | 94.7   | 2.55 | 5.00    | 5.7      |                           |                           |                           |                           |                           |                           |                           |                           |                           | Operation Not Recommended |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 42.3     | 32.3     | 104.4  | 2.92 | 4.25    | 5.5      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 41.0     | 28.8     | 119.1  | 3.57 | 3.37    | 5.4      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
| 60     | 5.0        | 0.4 | 1.0 | 85     | 9.0      | 2.2     | 5.0 | 44.0     | 34.8     | 94.8   | 2.70 | 4.78    | 5.7      | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 42.8     | 32.3     | 104.5  | 3.08 | 4.07    | 5.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 41.4     | 28.5     | 119.2  | 3.77 | 3.22    | 5.8      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 7.0        | 0.8 | 2.0 | 85     | 9.0      | 2.2     | 5.0 | 46.9     | 38.1     | 95.4   | 2.58 | 5.33    | 6.0      |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 45.6     | 35.5     | 105.1  | 2.95 | 4.53    | 6.1      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 44.2     | 31.9     | 119.8  | 3.60 | 3.60    | 6.0      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 9.0        | 1.8 | 4.2 | 85     | 9.0      | 2.2     | 5.0 | 48.3     | 39.8     | 95.7   | 2.48 | 5.71    | 6.2      |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 47.0     | 37.3     | 105.4  | 2.84 | 4.85    | 6.2      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 45.5     | 33.7     | 120.1  | 3.47 | 3.84    | 6.1      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
| 70     | 5.0        | 0.4 | 1.0 | 85     | 9.0      | 2.2     | 5.0 | 48.2     | 39.3     | 95.7   | 2.62 | 5.39    | 6.4      |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 46.8     | 36.6     | 105.4  | 2.99 | 4.59    | 6.1      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 45.4     | 32.9     | 120.1  | 3.66 | 3.64    | 6.0      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 7.0        | 0.9 | 2.0 | 85     | 9.0      | 2.2     | 5.0 | 51.4     | 42.9     | 96.4   | 2.50 | 6.03    | 6.7      |                           |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 49.9     | 40.1     | 106.1  | 2.86 | 5.11    | 6.5      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 48.4     | 36.5     | 120.8  | 3.50 | 4.05    | 6.3      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 9.0        | 1.8 | 4.2 | 85     | 9.0      | 2.2     | 5.0 | 52.9     | 44.7     | 96.8   | 2.41 | 6.43    | 6.9      |                           |                           |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 51.5     | 42.1     | 106.4  | 2.76 | 5.47    | 6.6      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 49.8     | 38.3     | 121.1  | 3.37 | 4.33    | 6.5      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
| 80     | 5.0        | 0.4 | 1.0 | 85     | 9.0      | 2.2     | 5.0 | 52.7     | 43.9     | 96.7   | 2.58 | 5.99    | 6.8      |                           |                           |                           |                           |                           |                           | Operation Not Recommended |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 51.3     | 41.2     | 106.4  | 2.95 | 5.10    | 7.1      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 49.7     | 37.4     | 121.0  | 3.60 | 4.05    | 7.0      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 7.0        | 0.8 | 2.0 | 85     | 9.0      | 2.2     | 5.0 | 56.2     | 47.8     | 97.5   | 2.46 | 6.70    | 7.3      |                           |                           |                           |                           |                           |                           |                           | Operation Not Recommended |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 54.7     | 45.1     | 107.2  | 2.82 | 5.68    | 7.4      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 52.9     | 41.2     | 121.8  | 3.44 | 4.51    | 7.3      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 9.0        | 1.8 | 4.2 | 85     | 9.0      | 2.2     | 5.0 | 57.9     | 49.8     | 97.9   | 2.37 | 7.16    | 7.5      |                           |                           |                           |                           |                           |                           |                           |                           | Operation Not Recommended |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 56.3     | 47.1     | 107.5  | 2.71 | 6.09    | 7.5      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 54.5     | 43.2     | 122.1  | 3.32 | 4.81    | 7.4      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
| 90     | 5.0        | 0.4 | 0.9 | 85     | 9.0      | 2.2     | 5.0 | 57.2     | 48.6     | 97.7   | 2.53 | 6.63    | 7.6      |                           |                           |                           |                           |                           |                           |                           |                           |                           | Operation Not Recommended |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 55.6     | 45.7     | 107.4  | 2.90 | 5.62    | 7.5      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 53.9     | 41.8     | 122.0  | 3.54 | 4.46    | 7.2      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 7.0        | 0.8 | 1.8 | 85     | 9.0      | 2.2     | 5.0 | 61.0     | 52.7     | 98.6   | 2.42 | 7.39    | 8.2      | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 59.3     | 49.8     | 108.2  | 2.77 | 6.27    | 7.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 57.4     | 45.9     | 122.8  | 3.38 | 4.98    | 7.7      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 9.0        | 1.7 | 3.8 | 85     | 9.0      | 2.2     | 5.0 | 62.8     | 54.8     | 99.0   | 2.33 | 7.90    | 8.4      |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 61.1     | 52.0     | 108.6  | 2.67 | 6.71    | 8.2      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 59.2     | 48.1     | 123.2  | 3.26 | 5.32    | 7.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
| 110    | 5.0        | 0.4 | 0.9 | 85     | 9.0      | 2.2     | 5.0 | 62.8     | 54.8     | 99.0   | 2.33 | 7.90    | 8.4      |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 61.1     | 52.0     | 108.6  | 2.67 | 6.71    | 8.2      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 59.2     | 48.1     | 123.2  | 3.26 | 5.32    | 7.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 7.0        | 0.7 | 1.7 | 85     | 9.0      | 2.2     | 5.0 | 62.8     | 54.8     | 99.0   | 2.33 | 7.90    | 8.4      |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 61.1     | 52.0     | 108.6  | 2.67 | 6.71    | 8.2      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 59.2     | 48.1     | 123.2  | 3.26 | 5.32    | 7.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |
|        | 9.0        | 1.6 | 3.6 | 85     | 9.0      | 2.2     | 5.0 | 62.8     | 54.8     | 99.0   | 2.33 | 7.90    | 8.4      |                           |                           |                           |                           | Operation Not Recommended |                           |                           |                           |                           |                           |     |
|        |            |     |     | 95     |          | 2.1     | 4.9 | 61.1     | 52.0     | 108.6  | 2.67 | 6.71    | 8.2      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 4.5 |
|        |            |     |     | 110    |          | 1.9     | 4.4 | 59.2     | 48.1     | 123.2  | 3.26 | 5.32    | 7.9      |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           | 5.0 |

# ENGINEERING SPECIFICATIONS:

## MODEL 048, 4 TON, FULL LOAD PERFORMANCE DATA:

| EST °F | Source GPM | WPD  |      | Heating |          |      |                           |          |          |        |       |         |          | Cooling                   |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|--------|------------|------|------|---------|----------|------|---------------------------|----------|----------|--------|-------|---------|----------|---------------------------|----------|------|------|----------|----------|--------|------|------|----------|-------|---------------------------|------|------|------|------|------|-------|-------|-------|------|-----|------|---------------------------|------|------|------|-------|-------|------|------|-----|------|------|------|---------------------------|-------|-------|-----|------|-----|-----|------|------|------|------|------|------|------|-----|------|------|------|------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|-------|-----|----|------|-----|-----|------|------|------|------|-------|-----|
|        |            | PSI  | FT   | ELT °F  | Load GPM | WPD  |                           | HC Mbtuh | HE Mbtuh | LLT °F | kW    | COP W/W | DH Mbtuh | ELT °F                    | Load GPM | WPD  |      | TC Mbtuh | HR Mbtuh | LLT °F | kW   | EER  | DH Mbtuh |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | PSI  | FT                        |          |          |        |       |         |          |                           |          | PSI  | FT   |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 25     | 12.0       | 4.2  | 9.7  | 85      | 12.0     | 3.6  | 8.4                       | 41.1     | 29.8     | 91.9   | 3.32  | 3.63    | 5.4      | Operation Not Recommended |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      | 95      | 3.4      | 7.9  | 40.2                      | 27.4     | 101.7    | 3.74   | 3.15  | 5.3     |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      | 110     | 3.4      | 7.9  | 38.9                      | 23.7     | 116.5    | 4.45   | 2.56  | 5.1     |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 30     | 6.0        | 0.7  | 1.6  | 85      | 12.0     | 3.6  | 8.4                       | 40.8     | 28.4     | 91.8   | 3.62  | 3.30    | 5.4      |                           |          |      |      |          |          |        |      |      |          |       | Operation Not Recommended |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      | 95      | 3.4      | 7.9  | 39.9                      | 26.0     | 101.7    | 4.08   | 2.87  | 5.3     |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      | 110     | 3.4      | 7.9  | 38.7                      | 22.2     | 116.5    | 4.85   | 2.34  | 5.1     |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 30         | 9.0  | 2.2  | 5.2     | 85       | 12.0 | 3.6                       | 8.4      | 43.5     | 31.7   | 92.3  | 3.45    | 3.70     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 5.8  | Operation Not Recommended |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 95       | 3.4  | 7.9                       | 42.5     | 29.2     | 102.1  | 3.89  | 3.20    | 5.6      |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 110      | 3.4  | 7.9                       | 41.2     | 25.4     | 116.9  | 4.63  | 2.61    | 5.5      |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            | 30   | 12.0 | 4.0     | 9.2      | 85   | 12.0                      | 3.6      | 8.4      | 44.2   | 32.8  | 92.4    | 3.34     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 3.88 |                           |      |      |      |       |       |      |      |     |      |      | 5.8  | Operation Not Recommended |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 43.2     | 30.3   | 102.2 | 3.77    | 3.36     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 5.6  |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 41.9     | 26.6   | 117.0 | 4.48    | 2.74     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 5.5  |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 40     |            |      | 6.0  | 0.6     | 1.4      | 85   | 12.0                      | 3.6      | 8.4      | 46.9   | 34.4  | 92.8    | 3.99     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 3.77 |                           |      |      |      |       |       |      |      |     |      |      | 6.1  |                           |       |       |     |      |     |     |      |      |      |      | 40   | 12.0 | 4.0  | 9.2 | 47.1 | 53.9 | 32.2 | 1.98 | 23.79 | 5.7  |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 45.8     | 31.7   | 102.6 | 3.99    | 3.26     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.4  |                           |      |      |      |       |       |      |      |     |      |      | 45   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 44.4     | 27.7   | 117.4 | 3.99    | 2.66     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.3  |                           |      |      |      |       |       |      |      |     |      |      | 50   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 40         |      | 9.0  | 2.0     | 4.6      | 85   | 12.0                      | 3.6      | 8.4      | 49.9   | 38.0  | 93.3    | 3.48     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 4.20 |                           |      |      |      |       |       |      |      |     |      |      | 6.5  |                           |       |       |     |      |     |     |      |      |      |      | 40   |      |      |     |      |      |      |      |       |      | 12.0 | 4.0  | 9.2  | 50.2 | 56.6 | 31.6 | 1.89 | 26.56 | 6.1  |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 48.8     | 35.4   | 103.1 | 3.93    | 3.64     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.5  |                           |      |      |      |       |       |      |      |     |      |      | 45   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 47.3     | 31.4   | 117.9 | 4.67    | 2.97     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.5  |                           |      |      |      |       |       |      |      |     |      |      | 50   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            | 40   | 12.0 | 3.6     | 8.3      | 85   | 12.0                      | 3.6      | 8.4      | 50.7   | 39.2  | 93.5    | 3.38     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 4.40 |                           |      |      |      |       |       |      |      |     |      |      | 6.5  |                           |       |       |     |      |     |     |      |      |      |      | 40   |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      | 12.0 | 4.0  | 9.2  | 54.1 | 60.3 | 31.0 | 1.83 | 29.56 | 6.5  |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 49.6     | 36.6   | 103.3 | 3.80    | 3.83     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.8  |                           |      |      |      |       |       |      |      |     |      |      | 45   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 48.0     | 32.6   | 118.0 | 4.52    | 3.11     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.6  |                           |      |      |      |       |       |      |      |     |      |      | 50   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 50         |      | 6.0  | 0.6     | 1.3      | 85   | 12.0                      | 3.6      | 8.4      | 53.1   | 40.5  | 93.9    | 3.69     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 4.22 |                           |      |      |      |       |       |      |      |     |      |      | 7.1  |                           |       |       |     |      |     |     |      |      |      |      | 40   |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      | 12.0 | 4.0  | 9.2  | 43.1 | 51.7 | 32.8 | 2.51 | 17.17 | 5.7  |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 51.9     | 37.7   | 103.7 | 4.16    | 3.66     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.9  |                           |      |      |      |       |       |      |      |     |      |      | 45   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 50.3     | 33.4   | 118.4 | 4.95    | 2.98     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 6.7  |                           |      |      |      |       |       |      |      |     |      |      | 50   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            | 50   | 9.0  | 1.8     | 4.2      | 85   | 12.0                      | 3.6      | 8.4      | 56.6   | 44.6  | 94.4    | 3.52     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 4.71 |                           |      |      |      |       |       |      |      |     |      |      | 7.5  |                           |       |       |     |      |     |     |      |      |      |      | 40   |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      | 12.0 | 4.0  | 9.2  | 45.8 | 54.0 | 32.4 | 2.40 | 19.08 | 6.1 |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 55.3     | 41.8   | 104.2 | 3.97    | 4.08     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 7.2  |                           |      |      |      |       |       |      |      |     |      |      | 45   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 53.6     | 37.5   | 118.9 | 4.72    | 3.33     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 7.1  |                           |      |      |      |       |       |      |      |     |      |      | 50   |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      | 50   | 12.0    | 3.2      | 7.5  | 85                        | 12.0     | 3.6      | 8.4    | 57.4  | 45.8    | 94.6     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 3.41 |                           |      |      |      |       |       |      |      |     |      |      | 4.93 |                           |       |       |     |      |     |     |      |      |      |      | 7.5  |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     | 40 | 12.0 | 4.0 | 9.2 | 49.4 | 57.3 | 31.8 | 2.32 | 21.29 | 6.5 |
|        |            |      |      |         |          |      | 95                        | 3.4      | 7.9      | 56.1   | 43.0  | 104.4   | 3.85     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 4.27 |                           |      |      |      |       |       |      |      |     |      |      | 7.4  |                           |       |       |     |      |     |     |      |      |      |      | 45   |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          |      | 110                       | 3.4      | 7.9      | 54.4   | 38.8  | 119.1   | 4.57     |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     | 3.49 |                           |      |      |      |       |       |      |      |     |      |      | 7.1  |                           |       |       |     |      |     |     |      |      |      |      | 50   |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 60     |            | 6.0  |      | 0.5     | 1.2      | 85   | 12.0                      | 3.6      | 8.4      | 59.5   | 46.7  | 94.9    | 3.75     | 4.65                      | 7.8      | 40   | 12.0 | 4.0      | 9.2      | 41.3   | 50.8 | 33.1 | 2.78     | 14.86 |                           |      |      |      |      |      |       |       |       |      |     | 5.9  |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 58.1     | 43.7   | 104.7 | 4.22    | 4.03     | 8.0                       | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 56.3     | 39.2   | 119.4 | 5.02    | 3.29     | 7.9                       | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 60         | 9.0  | 1.7  | 3.9     | 85       | 12.0 | 3.6                       | 8.4      | 63.4     | 51.2   | 95.6  | 3.58    | 5.19     | 8.2                       | 40       | 12.0 |      |          |          |        |      |      |          |       | 4.0                       | 9.2  | 44.0 | 53.1 | 32.0 | 2.66 | 16.54 | 6.3   |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 95       | 3.4  | 7.9                       | 61.9     | 48.1     | 105.3  | 4.03  | 4.50    | 8.3      | 45                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 110      | 3.4  | 7.9                       | 60.0     | 43.7     | 120.0  | 4.79  | 3.67    | 8.1      | 50                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            | 60   | 12.0 | 3.0     | 6.9      | 85   | 12.0                      | 3.6      | 8.4      | 64.4   | 52.6  | 95.7    | 3.46     | 5.45                      | 8.3      |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       | 40    | 12.0 | 4.0 |      | 9.2                       | 47.4 | 56.2 | 32.1 | 2.57  | 18.44 | 6.8  |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 62.9     | 49.6   | 105.5 | 3.90    | 4.73     | 8.5                       | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 61.0     | 45.2   | 120.2 | 4.64    | 3.85     | 8.4                       | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 70         |      | 6.0  | 0.5     | 1.2      | 85   | 12.0                      | 3.6      | 8.4      | 66.3   | 53.3  | 96.1    | 3.82     | 5.09                      | 8.8      |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       | 40    |      |     |      |                           |      |      |      |       |       |      | 12.0 | 4.0 | 9.2  | 39.4 | 49.8 | 33.4                      | 3.05  | 12.92 | 5.2 |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 64.8     | 50.1   | 105.8 | 4.30    | 4.42     | 8.4                       | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 62.8     | 45.3   | 120.5 | 5.12    | 3.59     | 8.3                       | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 70     |            | 9.0  | 1.6  | 3.8     | 85       | 12.0 | 3.6                       | 8.4      | 70.7     | 58.3   | 96.8  | 3.64    | 5.69     | 9.2                       | 40       |      | 12.0 | 4.0      | 9.2      | 42.0   | 51.9 | 33.0 | 2.91     | 14.43 |                           |      |      |      |      |      |       |       | 5.4   |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 95       | 3.4  | 7.9                       | 69.1     | 55.1     | 106.5  | 4.11  | 4.93    | 9.0      | 45                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 110      | 3.4  | 7.9                       | 66.9     | 50.2     | 121.2  | 4.88  | 4.02    | 8.7      | 50                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            | 70   | 12.0 | 2.9     | 6.8      | 85   | 12.0                      | 3.6      | 8.4      | 71.8   | 59.8  | 97.0    | 3.53     | 5.96                      | 9.4      | 40   |      |          |          |        |      |      |          |       | 12.0                      | 4.0  | 9.2  | 45.3 | 54.9 | 32.5 | 2.82  | 16.06 |       |      |     | 6.0  |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 70.1     | 56.5   | 106.7 | 3.98    | 5.16     | 9.1                       | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 68.0     | 51.9   | 121.3 | 4.73    | 4.21     | 8.9                       | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 80     |            |      | 6.0  | 0.5     | 1.2      | 85   | 12.0                      | 3.6      | 8.4      | 73.6   | 60.3  | 97.3    | 3.89     | 5.55                      | 9.6      | 40   |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       | 12.0 | 4.0 |      | 9.2                       | 37.1 | 48.7 | 33.8 | 3.41  | 10.88 | 5.4  |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 72.0     | 57.0   | 107.0 | 4.39    | 4.81     | 9.9                       | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 69.7     | 51.9   | 121.6 | 5.22    | 3.91     | 9.8                       | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 80         | 9.0  | 1.7  | 3.9     | 85       | 12.0 | 3.6                       | 8.4      | 78.5     | 65.8   | 98.1  | 3.72    | 6.18     | 10.2                      | 40       | 12.0 |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      | 4.0  | 9.2 | 39.5 | 50.6 | 33.4 | 3.25                      | 12.15 | 5.7   |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 95       | 3.4  | 7.9                       | 76.7     | 62.4     | 107.8  | 4.19  | 5.36    | 10.4     | 45                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 110      | 3.4  | 7.9                       | 74.3     | 57.3     | 122.4  | 4.98  | 4.37    | 10.2     | 50                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            | 80   | 12.0 | 3.0     | 7.0      | 85   | 12.0                      | 3.6      | 8.4      | 79.7   | 67.4  | 98.3    | 3.60     | 6.49                      | 10.3     |      | 40   | 12.0     | 4.0      | 9.2    | 42.6 | 53.3 | 32.9     | 3.15  |                           |      |      |      |      |      |       |       | 13.52 |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       | 6.2 |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 77.9     | 64.0   | 108.0 | 4.06    | 5.62     | 10.6                      | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 75.5     | 59.1   | 122.6 | 4.82    | 4.59     | 10.4                      | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 90         |      | 6.0  | 0.6     | 1.3      | 85   | 12.0                      | 3.6      | 8.4      | 81.1   | 67.5  | 98.5    | 3.98     | 5.97                      | 10.9     |      | 40   |          |          |        |      |      |          |       | 12.0                      | 4.0  | 9.2  | 34.9 | 48.0 | 34.2 | 3.84  | 9.09  |       |      |     | 4.7  |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 79.3     | 64.0   | 108.2 | 4.48    | 5.19     | 10.6                      | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 76.8     | 58.6   | 122.8 | 5.33    | 4.22     | 10.3                      | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 90     |            | 9.0  | 1.8  | 4.1     | 85       | 12.0 | 3.6                       | 8.4      | 86.5     | 73.6   | 99.4  | 3.79    | 6.69     | 11.6                      | 40       |      | 12.0 |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       | 4.0  | 9.2 |      | 37.2                      | 49.7 | 33.8 | 3.66 | 10.16 | 5.0   |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 95       | 3.4  | 7.9                       | 84.5     | 69.9     | 109.1  | 4.28  | 5.79    | 11.3     | 45                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         | 110      | 3.4  | 7.9                       | 81.9     | 64.5     | 123.7  | 5.09  | 4.72    | 11.0     | 50                        |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            | 90   | 12.0 | 3.2     | 7.4      | 85   | 12.0                      | 3.6      | 8.4      | 87.8   | 75.3  | 99.6    | 3.67     | 7.01                      | 11.7     | 40   |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       | 12.0 | 4.0  | 9.2 | 40.1 | 52.2 | 33.3 | 3.55                      | 11.30 | 5.4   |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 95   | 3.4                       | 7.9      | 85.8     | 71.7   | 109.3 | 4.14    | 6.07     | 11.5                      | 45       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 110  | 3.4                       | 7.9      | 83.1     | 66.3   | 123.9 | 4.93    | 4.94     | 11.1                      | 50       |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
| 110    |            |      | 6.0  | 0.6     | 1.4      | 40   | Operation Not Recommended |          |          |        |       |         |          |                           |          |      |      | 12.0     | 4.0      | 9.2    | 31.4 | 47.9 | 34.8     | 4.85  |                           |      |      |      |      |      |       |       | 6.47  |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       | 4.2 |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 45   |                           |          |          |        |       |         |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     | 12.0 | 4.0 | 9.2 | 33.9 | 50.6 | 39.4 | 4.90 | 6.92 | 4.6  |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        |            |      |      |         |          | 50   |                           |          |          |        |       |         |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      | 12.0 | 4.0 | 9.2  | 36.4 | 53.3 | 43.9 | 4.95  | 7.35 | 4.9  |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 40         | 12.0 | 4.0  | 9.2     | 33.4     | 49.2 |                           |          |          |        |       |         |          |                           |          |      |      |          |          |        |      |      |          |       | 34.4                      | 4.62 | 7.23 | 4.5  |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 45         |      |      |         |          |      |                           |          |          |        |       |         |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      | 12.0 | 4.0  | 9.2   | 36.1  |       |      |     | 52.0 |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      | 39.0 | 4.67 | 7.73 | 4.8  |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 50         |      |      |         |          |      |                           |          |          |        |       |         |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      | 12.0 | 4.0  | 9.2   | 38.7 | 54.8 | 43.6 | 4.72 | 8.20 | 5.2  |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 40         |      |      |         |          |      |                           |          |          |        |       |         |          |                           |          |      | 12.0 |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       | 4.0  | 9.2 |      | 36.0                      | 51.3 | 34.0 | 4.48 | 8.04  | 4.8   |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 45         |      |      |         |          |      |                           |          |          |        |       |         |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      | 12.0 | 4.0  | 9.2   | 38.9 | 54.4 | 38.5 | 4.53 | 8.59 | 5.2  |      |      |       |      |      |      |      |      |      |      |      |       |     |    |      |     |     |      |      |      |      |       |     |
|        | 50         |      |      |         |          |      |                           |          |          |        |       |         |          |                           |          |      |      |          |          |        |      |      |          |       |                           |      |      |      |      |      |       |       |       |      |     |      |                           |      |      |      |       |       |      |      |     |      |      |      |                           |       |       |     |      |     |     |      |      |      |      |      |      |      |     |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      | 12.0 | 4.0  | 9.2   | 41.8 | 57.4 | 43.0 | 4.57 | 9.15 | 5.6  |      |      |       |     |    |      |     |     |      |      |      |      |       |     |

# ENGINEERING SPECIFICATIONS:

## MODEL 060, 5 TON PART LOAD PERFORMANCE DATA:

| EST °F | Source GPM | WPD  |      | Heating                   |          |      |      |          |          |        |       |         |          | Cooling                   |          |     |     |          |          |        |      |      |          |
|--------|------------|------|------|---------------------------|----------|------|------|----------|----------|--------|-------|---------|----------|---------------------------|----------|-----|-----|----------|----------|--------|------|------|----------|
|        |            | PSI  | FT   | ELT °F                    | Load GPM | WPD  |      | HC Mbtuh | HE Mbtuh | LLT °F | kW    | COP W/W | DH Mbtuh | ELT °F                    | Load GPM | WPD |     | TC Mbtuh | HR Mbtuh | LLT °F | kW   | EER  | DH Mbtuh |
|        |            |      |      |                           |          | PSI  | FT   |          |          |        |       |         |          |                           |          | PSI | FT  |          |          |        |      |      |          |
| 25     | 12.0       | 5.4  | 12.5 | 85                        | 12.0     | 3.2  | 7.5  | 36.4     | 25.4     | 91.1   | 3.22  | 3.31    | 4.8      | Operation Not Recommended |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 35.3     | 22.7     | 100.9  | 3.68  | 2.81    | 4.7      |                           |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 34.2     | 18.8     | 115.7  | 4.50  | 2.23    | 4.5      |                           |          |     |     |          |          |        |      |      |          |
| 30     | 6.0        | 1.6  | 3.6  | 85                        | 12.0     | 3.2  | 7.5  | 35.7     | 23.9     | 91.0   | 3.46  | 3.02    | 4.7      |                           |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 34.6     | 21.1     | 100.8  | 3.96  | 2.56    | 4.6      |                           |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 33.5     | 17.0     | 115.6  | 4.84  | 2.03    | 4.4      |                           |          |     |     |          |          |        |      |      |          |
|        | 9.0        | 2.8  | 6.5  | 85                        | 12.0     | 3.2  | 7.5  | 37.5     | 26.4     | 91.3   | 3.25  | 3.38    | 5.0      |                           |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 36.4     | 23.7     | 101.1  | 3.72  | 2.87    | 4.8      |                           |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 35.3     | 19.8     | 115.9  | 4.55  | 2.27    | 4.7      |                           |          |     |     |          |          |        |      |      |          |
|        |            | 12.0 | 5.1  | 11.8                      | 85       | 12.0 | 3.2  | 7.5      | 38.8     | 28.1   | 91.5  | 3.14    | 3.62     |                           | 5.1      |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 37.7     | 25.4   | 101.3 | 3.60    | 3.07     |                           | 4.9      |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 36.5     | 21.5   | 116.1 | 4.40    | 2.43     |                           | 4.8      |     |     |          |          |        |      |      |          |
| 40     | 6.0        | 1.4  | 3.3  | 85                        | 12.0     | 3.2  | 7.5  | 41.9     | 30.2     | 92.0   | 3.45  | 3.59    | 5.4      |                           | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 40.6     | 27.3     | 101.8  | 3.45  | 3.04    | 5.6      |                           | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 39.4     | 23.1     | 116.6  | 3.45  | 2.42    | 5.5      |                           | 50       |     |     |          |          |        |      |      |          |
|        | 9.0        | 2.7  | 6.2  | 85                        | 12.0     | 3.2  | 7.5  | 44.0     | 33.0     | 92.3   | 3.21  | 4.02    | 5.7      |                           | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 42.7     | 30.1     | 102.1  | 3.68  | 3.40    | 5.8      |                           | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 41.4     | 26.1     | 116.9  | 4.49  | 2.70    | 5.7      |                           | 50       |     |     |          |          |        |      |      |          |
|        |            | 12.0 | 4.6  | 10.6                      | 85       | 12.0 | 3.2  | 7.5      | 45.6     | 35.0   | 92.6  | 3.11    | 4.30     |                           | 5.8      | 40  |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 44.2     | 32.1   | 102.4 | 3.55    | 3.65     |                           | 6.0      | 45  |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 42.9     | 28.1   | 117.2 | 4.35    | 2.89     |                           | 5.9      | 50  |     |          |          |        |      |      |          |
|        | 50         | 6.0  | 1.3  | 2.9                       | 85       | 12.0 | 3.2  | 7.5      | 48.0     | 36.5   | 93.0  | 3.38    | 4.16     |                           | 6.4      | 40  |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 46.5     | 33.3   | 102.8 | 3.87    | 3.52     |                           | 6.2      | 45  |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 45.1     | 29.0   | 117.5 | 4.73    | 2.79     |                           | 6.0      | 50  |     |          |          |        |      |      |          |
| 9.0    |            | 2.5  | 5.8  | 85                        | 12.0     | 3.2  | 7.5  | 50.5     | 39.6     | 93.4   | 3.18  | 4.65    | 6.7      |                           | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 48.9     | 36.5     | 103.2  | 3.63  | 3.95    | 6.4      |                           | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 47.5     | 32.4     | 117.9  | 4.44  | 3.14    | 6.3      |                           | 50       |     |     |          |          |        |      |      |          |
|        |            | 12.0 | 4.1  | 9.5                       | 85       | 12.0 | 3.2  | 7.5      | 52.3     | 41.8   | 93.7  | 3.07    | 4.99     |                           | 6.8      | 40  |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 50.7     | 38.7   | 103.5 | 3.51    | 4.23     |                           | 6.6      | 45  |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 49.2     | 34.6   | 118.2 | 4.29    | 3.36     |                           | 6.4      | 50  |     |          |          |        |      |      |          |
| 60     |            | 6.0  | 1.2  | 2.7                       | 85       | 12.0 | 3.2  | 7.5      | 53.3     | 42.1   | 93.9  | 3.29    | 4.75     | 6.9                       | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 51.7     | 38.9   | 103.6 | 3.76    | 4.03     | 7.1                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 50.1     | 34.4   | 118.4 | 4.60    | 3.19     | 7.0                       | 50       |     |     |          |          |        |      |      |          |
|        | 9.0        | 2.5  | 5.8  | 85                        | 12.0     | 3.2  | 7.5  | 56.0     | 45.5     | 94.3   | 3.09  | 5.31    | 7.2      | 40                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 54.3     | 42.3     | 104.1  | 3.53  | 4.51    | 7.3      | 45                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 52.7     | 38.0     | 118.8  | 4.32  | 3.58    | 7.2      | 50                        |          |     |     |          |          |        |      |      |          |
|        |            | 12.0 | 3.8  | 8.7                       | 85       | 12.0 | 3.2  | 7.5      | 58.0     | 47.8   | 94.7  | 2.99    | 5.69     | 7.4                       | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 56.3     | 44.6   | 104.4 | 3.42    | 4.82     | 7.5                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 54.6     | 40.3   | 119.1 | 4.18    | 3.83     | 7.4                       | 50       |     |     |          |          |        |      |      |          |
|        | 70         | 6.0  | 1.1  | 2.5                       | 85       | 12.0 | 3.2  | 7.5      | 58.4     | 47.5   | 94.7  | 3.19    | 5.37     | 7.8                       | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 56.6     | 44.1   | 104.4 | 3.65    | 4.54     | 7.4                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 54.9     | 39.6   | 119.2 | 4.47    | 3.60     | 7.3                       | 50       |     |     |          |          |        |      |      |          |
| 9.0    |            | 2.4  | 5.5  | 85                        | 12.0     | 3.2  | 7.5  | 61.4     | 51.2     | 95.2   | 3.00  | 6.00    | 8.0      | 40                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 59.5     | 47.8     | 104.9  | 3.43  | 5.08    | 7.8      | 45                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 57.7     | 43.4     | 119.6  | 4.20  | 4.03    | 7.5      | 50                        |          |     |     |          |          |        |      |      |          |
|        |            | 12.0 | 3.5  | 8.1                       | 85       | 12.0 | 3.2  | 7.5      | 63.6     | 53.7   | 95.6  | 2.90    | 6.43     | 8.3                       | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 61.7     | 50.4   | 105.3 | 3.32    | 5.45     | 8.0                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 59.8     | 45.9   | 120.0 | 4.06    | 4.32     | 7.8                       | 50       |     |     |          |          |        |      |      |          |
| 80     |            | 6.0  | 1.0  | 2.4                       | 85       | 12.0 | 3.2  | 7.5      | 63.9     | 53.2   | 95.7  | 3.14    | 5.96     | 8.3                       | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 62.0     | 49.8   | 105.3 | 3.59    | 5.06     | 8.5                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 60.1     | 45.1   | 120.0 | 4.39    | 4.01     | 8.4                       | 50       |     |     |          |          |        |      |      |          |
|        | 9.0        | 2.3  | 5.3  | 85                        | 12.0     | 3.2  | 7.5  | 67.2     | 57.1     | 96.2   | 2.95  | 6.68    | 8.7      | 40                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 65.2     | 53.7     | 105.9  | 3.38  | 5.65    | 8.9      | 45                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 63.2     | 49.1     | 120.5  | 4.13  | 4.48    | 8.8      | 50                        |          |     |     |          |          |        |      |      |          |
|        |            | 12.0 | 3.3  | 7.7                       | 85       | 12.0 | 3.2  | 7.5      | 69.6     | 59.9   | 96.6  | 2.85    | 7.16     | 9.0                       | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 67.5     | 56.4   | 106.3 | 3.26    | 6.07     | 9.1                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 65.5     | 51.9   | 120.9 | 3.99    | 4.81     | 8.9                       | 50       |     |     |          |          |        |      |      |          |
|        | 90         | 6.0  | 1.0  | 2.3                       | 85       | 12.0 | 3.2  | 7.5      | 69.4     | 58.9   | 96.6  | 3.09    | 6.58     | 9.3                       | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 67.2     | 55.2   | 106.2 | 3.53    | 5.58     | 9.0                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 65.2     | 50.5   | 120.9 | 4.32    | 4.42     | 8.7                       | 50       |     |     |          |          |        |      |      |          |
| 9.0    |            | 2.3  | 5.3  | 85                        | 12.0     | 3.2  | 7.5  | 72.9     | 63.0     | 97.2   | 2.90  | 7.37    | 9.8      | 40                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 95                        |          | 3.0  | 7.0  | 70.7     | 59.4     | 106.8  | 3.32  | 6.24    | 9.5      | 45                        |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 110                       |          | 2.2  | 5.1  | 68.6     | 54.7     | 121.4  | 4.06  | 4.95    | 9.2      | 50                        |          |     |     |          |          |        |      |      |          |
|        |            | 12.0 | 3.2  | 7.3                       | 85       | 12.0 | 3.2  | 7.5      | 75.5     | 65.9   | 97.6  | 2.81    | 7.87     | 10.1                      | 40       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 95       |      | 3.0  | 7.0      | 73.2     | 62.2   | 107.2 | 3.21    | 6.68     | 9.8                       | 45       |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 110      |      | 2.2  | 5.1      | 71.0     | 57.6   | 121.8 | 3.92    | 5.31     | 9.5                       | 50       |     |     |          |          |        |      |      |          |
| 110    |            | 6.0  | 0.7  | 1.6                       | 40       | 12.0 | 3.5  | 8.0      | 36.7     | 53.0   | 33.9  | 4.79    | 7.66     | 4.9                       |          |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 45       |      | 3.5  | 8.0      | 38.0     | 54.3   | 38.7  | 4.77    | 7.97     | 5.1                       |          |     |     |          |          |        |      |      |          |
|        |            |      |      |                           | 50       |      | 3.5  | 8.0      | 41.0     | 57.1   | 43.2  | 4.72    | 8.69     | 5.5                       |          |     |     |          |          |        |      |      |          |
|        | 9.0        | 2.2  | 5.1  | Operation Not Recommended |          |      |      |          |          |        |       |         |          | 40                        | 12.0     | 3.5 | 8.0 | 38.8     | 54.2     | 33.5   | 4.50 | 8.62 | 5.2      |
|        |            |      |      | 45                        | 3.5      | 8.0  | 40.3 | 55.6     | 38.3     | 4.48   | 9.00  | 5.4     |          |                           |          |     |     |          |          |        |      |      |          |
|        |            |      |      | 50                        | 3.5      | 8.0  | 43.4 | 58.5     | 42.8     | 4.44   | 9.77  | 5.8     |          |                           |          |     |     |          |          |        |      |      |          |
|        |            | 40   | 12.0 | 3.5                       | 8.0      | 40.4 | 55.2 | 33.3     | 4.35     | 9.29   | 5.4   |         |          |                           |          |     |     |          |          |        |      |      |          |
|        |            | 45   |      | 3.5                       | 8.0      | 41.9 | 56.7 | 38.0     | 4.33     | 9.68   | 5.6   |         |          |                           |          |     |     |          |          |        |      |      |          |
|        |            | 50   |      | 3.5                       | 8.0      | 45.2 | 59.8 | 42.5     | 4.29     | 10.54  | 6.0   |         |          |                           |          |     |     |          |          |        |      |      |          |



**ENGINEERING SPECIFICATIONS:**

**MODEL 060, 5 TON, FULL LOAD PERFORMANCE DATA:**

| EST OF | Source GPM | WPD |      | ELT °F | Load GPM | Heating |      |          |          |        |      |         | Cooling  |          |      |      |          |          |        |      |       |          |       |     |
|--------|------------|-----|------|--------|----------|---------|------|----------|----------|--------|------|---------|----------|----------|------|------|----------|----------|--------|------|-------|----------|-------|-----|
|        |            | PSI | FT   |        |          | WPD     |      | HC Mbtuh | HE Mbtuh | LLT °F | kW   | COP W/W | DH Mbtuh | Load GPM | WPD  |      | TC Mbtuh | HR Mbtuh | LLT °F | kW   | EER   | DH Mbtuh |       |     |
|        |            |     |      |        |          | PSI     | FT   |          |          |        |      |         |          |          | PSI  | FT   |          |          |        |      |       |          | PSI   | FT  |
| 25     | 15.0       | 6.5 | 15.0 | 85     | 15       | 5.2     | 12.1 | 49.2     | 35.8     | 91.6   | 3.66 | 6.5     | 40       | 15       | 4.6  | 10.7 | 62.3     | 71.6     | 31.7   | 2.72 | 22.90 | 8.1      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 48.0     | 32.6     | 101.4  | 4.50 | 3.13    |          |          | 6.4  | 4.6  | 10.7     | 64.7     | 74.1   | 36.4 | 2.75  | 23.53    | 8.3   |     |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 46.4     | 27.9     | 116.2  | 5.41 | 2.51    |          |          | 6.1  | 4.6  | 10.7     | 69.5     | 79.0   | 40.7 | 2.78  | 25.00    | 9.0   |     |
| 30     | 10.0       | 3.3 | 7.7  | 85     | 15       | 5.2     | 12.1 | 50.2     | 35.8     | 91.7   | 4.22 | 3.49    | 40       | 15       | 4.6  | 10.7 | 64.5     | 73.5     | 31.4   | 2.65 | 24.34 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 48.9     | 32.5     | 101.5  | 4.82 | 2.97    |          |          | 6.5  | 4.6  | 10.7     | 67.0     | 76.1   | 36.1 | 2.68  | 25.00    | 8.5   |     |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 47.3     | 27.5     | 116.3  | 5.79 | 2.39    |          |          | 6.2  | 4.6  | 10.7     | 72.0     | 81.2   | 40.4 | 2.70  | 26.67    | 9.3   |     |
|        | 13.0       | 5.1 | 11.8 | 85     | 15       | 5.2     | 12.1 | 51.8     | 37.8     | 91.9   | 4.11 | 3.69    | 40       | 15       | 4.6  | 10.7 | 65.7     | 74.6     | 31.2   | 2.62 | 25.08 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 50.5     | 34.5     | 101.7  | 4.69 | 3.16    |          |          | 6.6  | 4.6  | 10.7     | 68.2     | 77.2   | 35.9 | 2.64  | 25.83    | 8.7   |     |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 48.8     | 29.6     | 116.5  | 5.64 | 2.54    |          |          | 6.5  | 4.6  | 10.7     | 73.3     | 82.4   | 40.2 | 2.67  | 27.45    | 8.7   |     |
|        | 15.0       | 6.4 | 14.8 | 85     | 15       | 5.2     | 12.1 | 52.6     | 38.7     | 92.0   | 4.06 | 3.80    | 40       | 15       | 4.6  | 10.7 | 71.2     | 81.0     | 40.5   | 2.86 | 24.90 | 9.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 51.3     | 35.5     | 101.8  | 4.64 | 3.24    |          |          | 6.7  | 4.6  | 10.7     | 59.1     | 70.2   | 32.1 | 3.24  | 18.24    | 8.3   |     |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 49.6     | 30.6     | 116.6  | 5.57 | 2.61    |          |          | 6.5  | 4.6  | 10.7     | 60.6     | 70.6   | 31.9 | 2.92  | 20.75    | 8.1   |     |
| 40     | 10.0       | 3.2 | 7.4  | 85     | 15       | 5.2     | 12.1 | 57.8     | 43.5     | 92.7   | 4.19 | 4.04    | 40       | 15       | 4.6  | 10.7 | 62.3     | 71.6     | 31.7   | 2.72 | 22.90 | 8.1      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 56.3     | 40.0     | 102.5  | 4.79 | 3.44    |          |          | 7.7  | 45   | 4.6      | 10.7     | 64.7   | 74.1 | 36.4  | 2.75     | 23.53 | 8.3 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 54.4     | 34.7     | 117.3  | 5.76 | 2.77    |          |          | 7.6  | 50   | 4.6      | 10.7     | 69.5   | 79.0 | 40.7  | 2.78     | 25.00 | 9.0 |
|        | 13.0       | 4.9 | 11.3 | 85     | 15       | 5.2     | 12.1 | 59.6     | 45.7     | 92.9   | 4.08 | 4.28    | 40       | 15       | 4.6  | 10.7 | 64.5     | 73.5     | 31.4   | 2.65 | 24.34 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 58.1     | 42.2     | 102.7  | 4.66 | 3.65    |          |          | 7.8  | 45   | 4.6      | 10.7     | 67.0   | 76.1 | 36.1  | 2.68     | 25.00 | 8.5 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 56.2     | 37.1     | 117.5  | 5.61 | 2.94    |          |          | 7.7  | 50   | 4.6      | 10.7     | 72.0   | 81.2 | 40.4  | 2.70     | 26.67 | 9.3 |
|        | 15.0       | 6.1 | 14.1 | 85     | 15       | 5.2     | 12.1 | 60.6     | 46.8     | 93.1   | 4.03 | 4.41    | 40       | 15       | 4.6  | 10.7 | 65.7     | 74.6     | 31.2   | 2.62 | 25.08 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 59.1     | 43.4     | 102.9  | 4.61 | 3.76    |          |          | 8.1  | 45   | 4.6      | 10.7     | 68.2   | 77.2 | 35.9  | 2.64     | 25.83 | 8.7 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 57.1     | 38.2     | 117.6  | 5.54 | 3.02    |          |          | 8.0  | 50   | 4.6      | 10.7     | 73.3   | 82.4 | 40.2  | 2.67     | 27.45 | 8.7 |
| 50     | 10.0       | 3.1 | 7.1  | 85     | 15       | 5.2     | 12.1 | 65.5     | 51.2     | 93.7   | 4.18 | 4.59    | 40       | 15       | 4.6  | 10.7 | 60.6     | 70.6     | 31.9   | 2.92 | 20.75 | 8.1      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 63.9     | 47.6     | 103.5  | 4.78 | 3.92    |          |          | 8.5  | 45   | 4.6      | 10.7     | 62.9   | 73.0 | 36.6  | 2.95     | 21.32 | 8.3 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 61.8     | 42.2     | 118.2  | 5.75 | 3.15    |          |          | 8.2  | 50   | 4.6      | 10.7     | 67.6   | 77.8 | 41.0  | 2.98     | 22.68 | 9.0 |
|        | 13.0       | 4.7 | 10.8 | 85     | 15       | 5.2     | 12.1 | 67.6     | 53.7     | 94.0   | 4.07 | 4.87    | 40       | 15       | 4.6  | 10.7 | 62.8     | 72.5     | 31.6   | 2.84 | 22.11 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 65.9     | 50.0     | 103.8  | 4.65 | 4.15    |          |          | 8.6  | 45   | 4.6      | 10.7     | 65.1   | 74.9 | 36.3  | 2.87     | 22.68 | 8.5 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 63.7     | 44.6     | 118.5  | 5.60 | 3.33    |          |          | 8.5  | 50   | 4.6      | 10.7     | 70.0   | 79.9 | 40.7  | 2.90     | 24.14 | 9.3 |
|        | 15.0       | 5.9 | 13.6 | 85     | 15       | 5.2     | 12.1 | 68.7     | 55.0     | 94.2   | 4.02 | 5.01    | 40       | 15       | 4.6  | 10.7 | 63.9     | 73.5     | 31.5   | 2.81 | 22.74 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 67.0     | 51.3     | 103.9  | 4.60 | 4.27    |          |          | 8.7  | 45   | 4.6      | 10.7     | 66.3   | 76.0 | 36.2  | 2.84     | 23.35 | 9.3 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 64.8     | 45.9     | 118.6  | 5.53 | 3.43    |          |          | 8.5  | 50   | 4.6      | 10.7     | 71.2   | 81.0 | 40.5  | 2.86     | 24.90 | 9.3 |
| 60     | 10.0       | 3.0 | 6.8  | 85     | 15       | 5.2     | 12.1 | 73.3     | 58.6     | 94.8   | 4.30 | 5.00    | 40       | 15       | 4.6  | 10.7 | 59.1     | 70.2     | 32.1   | 3.24 | 18.24 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 71.4     | 54.6     | 104.5  | 4.91 | 4.26    |          |          | 9.7  | 45   | 4.6      | 10.7     | 61.3   | 72.5 | 36.8  | 3.27     | 18.75 | 8.1 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 69.0     | 48.8     | 119.2  | 5.91 | 3.42    |          |          | 9.6  | 50   | 4.6      | 10.7     | 65.9   | 77.2 | 41.2  | 3.31     | 19.91 | 8.4 |
|        | 13.0       | 4.5 | 10.5 | 85     | 15       | 5.2     | 12.1 | 75.6     | 61.3     | 95.1   | 4.19 | 5.29    | 40       | 15       | 4.6  | 10.7 | 61.2     | 71.9     | 31.8   | 3.15 | 19.43 | 8.6      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 73.7     | 57.4     | 104.8  | 4.78 | 4.52    |          |          | 9.9  | 45   | 4.6      | 10.7     | 63.5   | 74.4 | 36.5  | 3.18     | 19.97 | 8.3 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 71.2     | 51.6     | 119.5  | 5.75 | 3.63    |          |          | 9.7  | 50   | 4.6      | 10.7     | 68.3   | 79.3 | 40.9  | 3.22     | 21.21 | 8.5 |
|        | 15.0       | 5.7 | 13.1 | 85     | 15       | 5.2     | 12.1 | 76.8     | 62.7     | 95.2   | 4.14 | 5.44    | 40       | 15       | 4.6  | 10.7 | 62.4     | 73.0     | 31.7   | 3.11 | 20.06 | 8.7      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 74.9     | 58.8     | 105.0  | 4.73 | 4.64    |          |          | 10.2 | 45   | 4.6      | 10.7     | 64.7   | 75.4 | 36.4  | 3.15     | 20.54 | 8.6 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 72.4     | 53.0     | 119.7  | 5.68 | 3.74    |          |          | 10.1 | 50   | 4.6      | 10.7     | 69.5   | 80.4 | 40.7  | 3.18     | 21.86 | 8.6 |
| 70     | 10.0       | 2.9 | 6.7  | 85     | 15       | 5.2     | 12.1 | 81.4     | 66.2     | 95.9   | 4.45 | 5.36    | 40       | 15       | 4.6  | 10.7 | 57.7     | 69.8     | 32.3   | 3.54 | 16.30 | 7.6      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 79.4     | 62.0     | 105.6  | 5.09 | 4.57    |          |          | 10.3 | 45   | 4.6      | 10.7     | 59.8   | 72.0 | 37.0  | 3.57     | 16.75 | 7.8 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 76.7     | 55.8     | 120.2  | 6.12 | 3.67    |          |          | 10.1 | 50   | 4.6      | 10.7     | 64.3   | 76.6 | 41.4  | 3.61     | 17.81 | 8.5 |
|        | 13.0       | 4.4 | 10.2 | 85     | 15       | 5.2     | 12.1 | 84.0     | 69.2     | 96.2   | 4.33 | 5.69    | 40       | 15       | 4.6  | 10.7 | 59.7     | 71.4     | 32.0   | 3.44 | 17.35 | 7.8      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 81.9     | 65.0     | 105.9  | 4.95 | 4.85    |          |          | 10.7 | 45   | 4.6      | 10.7     | 62.0   | 73.9 | 36.7  | 3.48     | 17.82 | 8.2 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 79.2     | 58.9     | 120.6  | 5.95 | 3.90    |          |          | 10.3 | 50   | 4.6      | 10.7     | 66.6   | 78.6 | 41.1  | 3.51     | 18.97 | 8.7 |
|        | 15.0       | 5.5 | 12.8 | 85     | 15       | 5.2     | 12.1 | 85.4     | 70.8     | 96.4   | 4.28 | 5.85    | 40       | 15       | 4.6  | 10.7 | 60.8     | 72.4     | 31.9   | 3.40 | 17.88 | 8.0      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 83.3     | 66.6     | 106.1  | 4.89 | 4.99    |          |          | 10.9 | 45   | 4.6      | 10.7     | 63.1   | 74.8 | 36.6  | 3.44     | 18.34 | 8.9 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 80.5     | 60.4     | 120.7  | 5.88 | 4.01    |          |          | 10.6 | 50   | 4.6      | 10.7     | 67.8   | 79.6 | 41.0  | 3.47     | 19.54 | 8.9 |
| 80     | 10.0       | 2.8 | 6.5  | 85     | 15       | 5.2     | 12.1 | 90.4     | 74.9     | 97.1   | 4.54 | 5.84    | 40       | 15       | 4.6  | 10.7 | 56.0     | 69.2     | 32.5   | 3.87 | 14.47 | 7.9      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 88.2     | 70.5     | 106.8  | 5.18 | 4.99    |          |          | 12.0 | 45   | 4.6      | 10.7     | 58.1   | 71.5 | 37.3  | 3.92     | 14.82 | 7.7 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 85.2     | 63.9     | 121.4  | 6.23 | 4.01    |          |          | 11.8 | 50   | 4.6      | 10.7     | 62.5   | 76.0 | 41.7  | 3.96     | 15.78 | 8.0 |
|        | 13.0       | 4.3 | 9.9  | 85     | 15       | 5.2     | 12.1 | 93.3     | 78.2     | 97.4   | 4.42 | 6.19    | 40       | 15       | 4.6  | 10.7 | 58.0     | 70.9     | 32.3   | 3.77 | 15.38 | 8.1      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 91.0     | 73.8     | 107.1  | 5.05 | 5.28    |          |          | 12.3 | 45   | 4.6      | 10.7     | 60.2   | 73.2 | 37.0  | 3.81     | 15.80 | 7.9 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 88.0     | 67.3     | 121.7  | 6.07 | 4.25    |          |          | 12.1 | 50   | 4.6      | 10.7     | 64.7   | 77.8 | 41.4  | 3.85     | 16.81 | 8.2 |
|        | 15.0       | 5.4 | 12.4 | 85     | 15       | 5.2     | 12.1 | 94.9     | 80.0     | 97.7   | 4.36 | 6.38    | 40       | 15       | 4.6  | 10.7 | 59.1     | 71.8     | 32.1   | 3.73 | 15.84 | 8.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 92.5     | 75.5     | 107.3  | 4.99 | 5.43    |          |          | 12.7 | 45   | 4.6      | 10.7     | 61.3   | 74.2 | 36.8  | 3.77     | 16.26 | 7.9 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 89.4     | 69.0     | 121.9  | 5.99 | 4.37    |          |          | 12.5 | 50   | 4.6      | 10.7     | 65.9   | 78.9 | 41.2  | 3.80     | 17.34 | 8.2 |
| 90     | 10.0       | 2.7 | 6.3  | 85     | 15       | 5.2     | 12.1 | 99.6     | 83.8     | 98.3   | 4.63 | 6.30    | 40       | 15       | 4.6  | 10.7 | 54.2     | 69.1     | 32.8   | 4.36 | 12.43 | 7.3      |       |     |
|        |            |     |      | 95     |          | 5.1     | 11.7 | 97.1     | 79.0     | 107.9  | 5.30 | 5.37    |          |          | 13.0 | 45   | 4.6      | 10.7     | 56.2   | 71.2 | 37.5  | 4.41     | 12.74 | 7.5 |
|        |            |     |      | 110    |          | 4.6     | 10.7 | 93.9     | 72.2     | 122.5  | 6.37 | 4.32    |          |          | 12.6 | 50   |          |          |        |      |       |          |       |     |

# ENGINEERING SPECIFICATIONS:

## MODEL 092, 8 TON, FULL LOAD COOLING PERFORMANCE DATA:

| Source Water |          |      |      | Load Water |        |          |      |      | Cooling |          |          |      |            |                |              |               |              |      |     |
|--------------|----------|------|------|------------|--------|----------|------|------|---------|----------|----------|------|------------|----------------|--------------|---------------|--------------|------|-----|
| EST °F       | Flow GPM | WPD  |      | LST °F     | ELT °F | Flow GPM | WPD  |      | LLT °F  | TC MBtuh | HR MBtuh | kW   | EER Btuh/W | Discharge PSIG | Suction PSIG | Subcooling °F | Superheat °F |      |     |
|              |          | PSID | FT   |            |        |          | PSID | FT   |         |          |          |      |            |                |              |               |              |      |     |
| 40           | 12.0     | 1.3  | 2.9  | 57.7       | 40     | 24.0     | 4.0  | 9.3  | 32.5    | 89.6     | 103.3    | 4.02 | 22.3       | 182.3          | 81.4         | 13.2          | 3.5          |      |     |
|              |          |      |      | 59.0       | 45     |          | 3.9  | 9.1  | 36.9    | 96.6     | 110.5    | 4.05 | 23.8       | 182.3          | 87.8         | 13.1          | 3.3          |      |     |
|              |          |      |      | 60.3       | 50     |          | 3.9  | 8.9  | 41.3    | 104.0    | 117.9    | 4.09 | 25.4       | 182.3          | 94.6         | 13.0          | 3.0          |      |     |
|              | 18.0     | 2.6  | 6.0  | 52.8       | 40     |          | 4.0  | 9.3  | 31.8    | 98.5     | 111.6    | 3.86 | 25.5       | 171.6          | 87.5         | 10.1          | 3.0          |      |     |
|              |          |      |      | 53.7       | 45     |          | 3.9  | 9.1  | 36.2    | 106.2    | 119.5    | 3.89 | 27.3       | 171.6          | 94.4         | 10.0          | 3.1          |      |     |
|              |          |      |      | 54.6       | 50     |          | 3.9  | 8.9  | 40.5    | 114.2    | 127.6    | 3.92 | 29.1       | 171.6          | 101.7        | 9.9           | 3.2          |      |     |
|              | 24.0     | 4.4  | 10.1 | 49.7       | 40     |          | 4.0  | 9.3  | 31.6    | 100.2    | 112.9    | 3.72 | 27.0       | 166.1          | 88.0         | 8.6           | 4.7          |      |     |
|              |          |      |      | 50.4       | 45     |          | 3.9  | 9.1  | 36.0    | 108.1    | 120.9    | 3.75 | 28.8       | 166.1          | 95.0         | 8.5           | 5.0          |      |     |
|              |          |      |      | 51.1       | 50     |          | 3.9  | 8.9  | 40.3    | 116.2    | 129.2    | 3.78 | 30.7       | 166.1          | 102.3        | 8.4           | 5.3          |      |     |
|              | 50       | 12.0 | 1.2  | 2.8        | 67.2   |          | 40   | 24.0 | 4.0     | 9.3      | 33.1     | 83.1 | 100.2      | 5.01           | 16.6         | 231.6         | 78.9         | 23.5 | 5.8 |
|              |          |      |      |            | 68.4   |          | 45   |      | 3.9     | 9.1      | 37.5     | 89.6 | 106.8      | 5.05           | 17.7         | 231.6         | 85.2         | 23.4 | 5.7 |
|              |          |      |      |            | 69.6   |          | 50   |      | 3.8     | 8.9      | 42.0     | 96.4 | 113.8      | 5.09           | 18.9         | 231.6         | 91.8         | 23.2 | 5.6 |
| 18.0         |          | 2.5  | 5.8  | 62.3       | 40     | 4.0      | 9.3  |      | 32.4    | 91.3     | 107.7    | 4.81 | 19.0       | 218.1          | 84.8         | 19.8          | 5.4          |      |     |
|              |          |      |      | 63.2       | 45     | 3.9      | 9.1  |      | 36.8    | 98.5     | 115.0    | 4.85 | 20.3       | 218.1          | 91.5         | 19.8          | 5.6          |      |     |
|              |          |      |      | 64.0       | 50     | 3.9      | 8.9  |      | 41.2    | 105.9    | 122.6    | 4.89 | 21.7       | 218.1          | 98.6         | 19.6          | 5.8          |      |     |
| 24.0         |          | 4.2  | 9.6  | 59.3       | 40     | 4.0      | 9.3  |      | 32.3    | 92.9     | 108.8    | 4.63 | 20.1       | 211.0          | 85.4         | 18.1          | 7.2          |      |     |
|              |          |      |      | 60.0       | 45     | 3.9      | 9.1  |      | 36.6    | 100.2    | 116.2    | 4.68 | 21.4       | 211.0          | 92.1         | 18.0          | 7.6          |      |     |
|              |          |      |      | 60.6       | 50     | 3.9      | 8.9  |      | 41.0    | 107.8    | 123.9    | 4.71 | 22.9       | 211.0          | 99.2         | 17.9          | 8.1          |      |     |
| 60           |          | 12.0 | 1.2  | 2.7        | 77.2   | 40       | 24.0 |      | 4.0     | 9.3      | 33.2     | 81.0 | 99.9       | 5.52           | 14.7         | 261.0         | 80.2         | 22.2 | 5.5 |
|              |          |      |      |            | 78.3   | 45       |      |      | 3.9     | 9.1      | 37.7     | 87.4 | 106.4      | 5.57           | 15.7         | 261.0         | 86.5         | 22.0 | 5.4 |
|              |          |      |      |            | 79.4   | 50       |      |      | 3.8     | 8.9      | 42.2     | 94.0 | 113.1      | 5.61           | 16.7         | 261.0         | 93.2         | 21.9 | 5.3 |
|              | 18.0     | 2.4  | 5.6  | 72.3       | 40     | 4.0      |      | 9.3  | 32.6    | 89.0     | 107.1    | 5.30 | 16.8       | 245.7          | 86.1         | 18.3          | 5.1          |      |     |
|              |          |      |      | 73.1       | 45     | 3.9      |      | 9.1  | 37.0    | 96.0     | 114.2    | 5.34 | 18.0       | 245.7          | 92.9         | 18.2          | 5.4          |      |     |
|              |          |      |      | 73.9       | 50     | 3.9      |      | 8.9  | 41.4    | 103.3    | 121.6    | 5.39 | 19.2       | 245.7          | 100.2        | 18.1          | 5.6          |      |     |
|              | 24.0     | 4.0  | 9.3  | 69.3       | 40     | 4.0      |      | 9.3  | 32.5    | 90.6     | 108.0    | 5.11 | 17.7       | 237.8          | 86.7         | 16.5          | 6.9          |      |     |
|              |          |      |      | 69.9       | 45     | 3.9      |      | 9.1  | 36.9    | 97.7     | 115.3    | 5.15 | 19.0       | 237.8          | 93.5         | 16.4          | 7.4          |      |     |
|              |          |      |      | 70.5       | 50     | 3.9      |      | 8.9  | 41.2    | 105.1    | 122.8    | 5.20 | 20.2       | 237.8          | 100.8        | 16.2          | 7.9          |      |     |
|              | 70       | 12.0 | 1.2  | 2.7        | 87.0   | 40       |      | 24.0 | 4.0     | 9.3      | 33.5     | 78.4 | 99.2       | 6.08           | 12.9         | 292.3         | 81.0         | 21.3 | 5.5 |
|              |          |      |      |            | 88.1   | 45       |      |      | 3.9     | 9.1      | 38.0     | 84.6 | 105.5      | 6.13           | 13.8         | 292.3         | 87.4         | 21.2 | 5.4 |
|              |          |      |      |            | 89.2   | 50       |      |      | 3.8     | 8.9      | 42.4     | 91.0 | 112.0      | 6.18           | 14.7         | 292.3         | 94.1         | 21.0 | 5.4 |
| 18.0         |          | 2.4  | 5.4  | 82.2       | 40     | 4.0      | 9.3  |      | 32.8    | 86.2     | 106.1    | 5.83 | 14.8       | 275.2          | 87.0         | 17.4          | 5.1          |      |     |
|              |          |      |      | 82.9       | 45     | 3.9      | 9.1  |      | 37.3    | 92.9     | 113.0    | 5.89 | 15.8       | 275.2          | 93.9         | 17.3          | 5.5          |      |     |
|              |          |      |      | 83.8       | 50     | 3.9      | 8.9  |      | 41.7    | 99.9     | 120.2    | 5.93 | 16.9       | 275.2          | 101.1        | 17.1          | 5.8          |      |     |
| 24.0         |          | 3.9  | 9.0  | 79.2       | 40     | 4.0      | 9.3  |      | 32.7    | 87.7     | 106.9    | 5.63 | 15.6       | 266.4          | 87.6         | 15.5          | 6.9          |      |     |
|              |          |      |      | 79.8       | 45     | 3.9      | 9.1  |      | 37.1    | 94.6     | 113.9    | 5.68 | 16.7       | 266.4          | 94.5         | 15.4          | 7.5          |      |     |
|              |          |      |      | 80.4       | 50     | 3.9      | 8.9  |      | 41.5    | 101.7    | 121.2    | 5.72 | 17.8       | 266.4          | 101.8        | 15.2          | 8.1          |      |     |
| 80           |          | 12.0 | 1.1  | 2.6        | 96.8   | 40       | 24.0 |      | 4.0     | 9.2      | 33.8     | 74.6 | 98.0       | 6.86           | 10.9         | 332.6         | 81.3         | 22.7 | 5.8 |
|              |          |      |      |            | 97.9   | 45       |      |      | 3.9     | 9.1      | 38.3     | 80.5 | 104.1      | 6.92           | 11.6         | 332.6         | 87.7         | 22.6 | 5.8 |
|              |          |      |      |            | 99.0   | 50       |      |      | 3.8     | 8.9      | 42.8     | 86.6 | 110.4      | 6.98           | 12.4         | 332.6         | 94.5         | 22.4 | 5.9 |
|              | 18.0     | 2.3  | 5.3  | 92.0       | 40     | 4.0      |      | 9.3  | 33.2    | 82.0     | 104.5    | 6.59 | 12.5       | 313.1          | 87.3         | 18.8          | 5.5          |      |     |
|              |          |      |      | 92.7       | 45     | 3.9      |      | 9.1  | 37.6    | 88.4     | 111.1    | 6.65 | 13.3       | 313.1          | 94.2         | 18.7          | 5.9          |      |     |
|              |          |      |      | 93.5       | 50     | 3.9      |      | 8.9  | 42.1    | 95.1     | 118.0    | 6.70 | 14.2       | 313.1          | 101.5        | 18.5          | 6.3          |      |     |
|              | 24.0     | 3.8  | 8.9  | 89.0       | 40     | 4.0      |      | 9.3  | 33.0    | 83.5     | 105.1    | 6.35 | 13.1       | 303.0          | 87.9         | 17.0          | 7.4          |      |     |
|              |          |      |      | 89.6       | 45     | 3.9      |      | 9.1  | 37.5    | 90.0     | 111.8    | 6.41 | 14.0       | 303.0          | 94.8         | 16.9          | 8.0          |      |     |
|              |          |      |      | 90.2       | 50     | 3.9      |      | 8.9  | 41.9    | 96.8     | 118.8    | 6.46 | 15.0       | 303.0          | 102.2        | 16.6          | 8.7          |      |     |
|              | 90       | 12.0 | 1.1  | 2.6        | 106.8  | 40       |      | 24.0 | 4.0     | 9.2      | 34.1     | 70.8 | 97.6       | 7.85           | 9.0          | 372.5         | 82.6         | 22.2 | 5.5 |
|              |          |      |      |            | 107.8  | 45       |      |      | 3.9     | 9.1      | 38.6     | 76.4 | 103.4      | 7.92           | 9.7          | 375.8         | 89.1         | 22.6 | 5.5 |
|              |          |      |      |            | 108.8  | 50       |      |      | 3.8     | 8.9      | 43.2     | 82.1 | 109.4      | 7.98           | 10.3         | 379.3         | 96.0         | 23.0 | 5.6 |
| 18.0         |          | 2.3  | 5.3  | 101.9      | 40     | 4.0      | 9.3  |      | 33.5    | 77.8     | 103.5    | 7.53 | 10.3       | 350.7          | 88.7         | 18.5          | 5.2          |      |     |
|              |          |      |      | 102.6      | 45     | 3.9      | 9.1  |      | 38.0    | 83.9     | 109.8    | 7.60 | 11.0       | 353.8          | 95.7         | 19.0          | 5.7          |      |     |
|              |          |      |      | 103.3      | 50     | 3.9      | 8.9  |      | 42.5    | 90.3     | 116.4    | 7.66 | 11.8       | 357.1          | 103.1        | 19.4          | 6.1          |      |     |
| 24.0         |          | 3.8  | 8.8  | 98.9       | 40     | 4.0      | 9.3  |      | 33.4    | 79.2     | 104.0    | 7.26 | 10.9       | 339.4          | 89.3         | 16.8          | 7.1          |      |     |
|              |          |      |      | 99.5       | 45     | 3.9      | 9.1  |      | 37.9    | 85.4     | 110.4    | 7.33 | 11.7       | 342.4          | 96.3         | 17.2          | 7.8          |      |     |
|              |          |      |      | 100.1      | 50     | 3.9      | 8.9  |      | 42.3    | 91.9     | 117.1    | 7.39 | 12.4       | 345.6          | 103.8        | 17.7          | 8.5          |      |     |
| 110          |          | 12.0 | 1.2  | 2.7        | 126.8  | 40       | 24.0 |      | 4.0     | 9.2      | 34.7     | 63.4 | 97.6       | 10.04          | 6.3          | 475.4         | 87.0         | 20.4 | 3.8 |
|              |          |      |      |            | 127.7  | 45       |      |      | 3.9     | 9.1      | 39.3     | 68.3 | 102.9      | 10.13          | 6.7          | 479.6         | 93.8         | 20.9 | 3.9 |
|              |          |      |      |            | 128.6  | 50       |      |      | 3.8     | 8.9      | 43.9     | 73.5 | 108.3      | 10.21          | 7.2          | 484.1         | 101.1        | 21.3 | 4.1 |
|              | 18.0     | 2.4  | 5.4  | 121.7      | 40     | 4.0      |      | 9.3  | 34.2    | 69.6     | 102.5    | 9.64 | 7.2        | 447.6          | 93.4         | 16.4          | 3.6          |      |     |
|              |          |      |      | 122.4      | 45     | 3.9      |      | 9.1  | 38.7    | 75.1     | 108.3    | 9.72 | 7.7        | 451.5          | 100.8        | 16.9          | 4.1          |      |     |
|              |          |      |      | 123.1      | 50     | 3.8      |      | 8.9  | 43.3    | 80.8     | 114.2    | 9.80 | 8.2        | 455.7          | 108.6        | 17.2          | 4.6          |      |     |
|              | 24.0     | 3.9  | 9.0  | 118.8      | 40     | 4.0      |      | 9.3  | 34.1    | 70.9     | 102.6    | 9.30 | 7.6        | 433.2          | 94.0         | 14.8          | 5.5          |      |     |
|              |          |      |      | 119.3      | 45     | 3.9      |      | 9.1  | 38.6    | 76.4     | 108.4    | 9.38 | 8.2        | 437.0          | 101.5        | 15.2          | 6.3          |      |     |
|              |          |      |      | 119.8      | 50     | 3.8      |      | 8.9  | 43.2    | 82.2     | 114.4    | 9.45 | 8.7        | 441.1          | 109.3        | 15.6          | 7.1          |      |     |

**ENGINEERING SPECIFICATIONS:**

**MODEL 092, 8 TON, FULL LOAD HEATING PERFORMANCE DATA:**

| Source Water |             |      |      | Load Water |           |             |      |      |           | Heating     |             |       |            |                   |                 |                  |                 |      |      |
|--------------|-------------|------|------|------------|-----------|-------------|------|------|-----------|-------------|-------------|-------|------------|-------------------|-----------------|------------------|-----------------|------|------|
| EST<br>°F    | Flow<br>GPM | WPD  |      | LST<br>°F  | ELT<br>°F | Flow<br>GPM | WPD  |      | LLT<br>°F | HC<br>MBtuh | HE<br>MBtuh | kW    | COP<br>W/W | Discharge<br>PSIG | Suction<br>PSIG | Subcooling<br>°F | Superheat<br>°F |      |      |
|              |             | PSID | FT   |            |           |             | PSID | FT   |           |             |             |       |            |                   |                 |                  |                 |      |      |
| 25           | 24.0        | 4.9  | 11.2 | 19.5       | 85        | 24.0        | 3.2  | 7.5  | 92.2      | 86.3        | 63.5        | 6.68  | 3.79       | 308.7             | 65.9            | 14.6             | 8.1             |      |      |
|              |             |      |      | 19.9       | 95        |             | 3.1  | 7.2  | 102.1     | 85.7        | 59.6        | 7.65  | 3.28       | 352.4             | 68.4            | 14.2             | 6.6             |      |      |
|              |             |      |      | 20.5       | 110       |             | 3.0  | 7.0  | 117.0     | 83.7        | 52.4        | 9.17  | 2.68       | 421.6             | 70.7            | 12.7             | 5.6             |      |      |
| 30           | 12.0        | 1.4  | 3.3  | 20.8       | 85        | 24.0        | 3.2  | 7.5  | 91.5      | 78.5        | 53.8        | 7.24  | 3.18       | 342.9             | 68.9            | 20.8             | 6.4             |      |      |
|              |             |      |      | 21.5       | 95        |             | 3.1  | 7.2  | 101.5     | 78          | 49.7        | 8.30  | 2.75       | 391.4             | 71.4            | 19.9             | 4.9             |      |      |
|              |             |      |      | 22.7       | 110       |             | 3.0  | 7.0  | 116.4     | 76.2        | 42.3        | 9.93  | 2.25       | 468.3             | 73.8            | 18.6             | 3.8             |      |      |
|              | 18.0        | 2.9  | 6.7  | 21.9       | 85        |             | 24.0 | 3.2  | 7.5       | 92.8        | 94          | 70.3  | 6.94       | 3.97              | 322.8           | 74.0             | 17.0            | 5.4  |      |
|              |             |      |      | 22.4       | 95        |             |      | 3.1  | 7.2       | 102.8       | 93.4        | 66.2  | 7.96       | 3.44              | 368.5           | 76.7             | 16.3            | 3.9  |      |
|              |             |      |      | 23.3       | 110       |             |      | 3.0  | 7.0       | 117.6       | 91.2        | 58.7  | 9.53       | 2.80              | 440.9           | 79.3             | 14.7            | 2.9  |      |
|              | 24.0        | 4.8  | 11.0 | 23.8       | 85        |             |      | 24.0 | 3.2       | 7.5         | 92.9        | 94.5  | 71.6       | 6.70              | 4.13            | 312.4            | 74.5            | 15.2 | 6.8  |
|              |             |      |      | 24.2       | 95        |             |      |      | 3.1       | 7.2         | 102.8       | 93.9  | 67.7       | 7.68              | 3.58            | 356.6            | 77.2            | 14.7 | 5.3  |
|              |             |      |      | 24.8       | 110       |             |      |      | 3.0       | 7.0         | 117.6       | 91.7  | 60.3       | 9.19              | 2.92            | 426.7            | 79.8            | 13.1 | 4.3  |
| 40           | 12.0        | 1.4  | 3.1  | 29.0       | 85        | 24.0        |      |      | 3.2       | 7.5         | 92.5        | 89.4  | 64.3       | 7.35              | 3.56            | 349.3            | 81.9            | 21.8 | 5.7  |
|              |             |      |      | 29.7       | 95        |             |      |      | 3.1       | 7.2         | 102.4       | 88.8  | 60.0       | 8.43              | 3.09            | 398.6            | 84.9            | 20.8 | 4.2  |
|              |             |      |      | 31.0       | 110       |             |      |      | 3.0       | 7.0         | 117.2       | 86.8  | 52.4       | 10.09             | 2.52            | 477.0            | 87.7            | 19.6 | 3.3  |
|              | 18.0        | 2.8  | 6.4  | 30.5       | 85        |             | 24.0 |      | 3.2       | 7.5         | 93.9        | 107   | 82.9       | 7.06              | 4.44            | 328.8            | 87.9            | 18.0 | 5.4  |
|              |             |      |      | 31.0       | 95        |             |      |      | 3.1       | 7.2         | 103.9       | 106.4 | 78.8       | 8.09              | 3.85            | 375.3            | 91.2            | 17.3 | 4.0  |
|              |             |      |      | 31.9       | 110       |             |      |      | 3.0       | 7.0         | 118.7       | 103.9 | 70.8       | 9.69              | 3.14            | 449.1            | 94.3            | 15.7 | 3.1  |
|              | 24.0        | 4.5  | 10.5 | 32.7       | 85        |             |      | 24.0 | 3.2       | 7.5         | 94.0        | 107.6 | 84.4       | 6.81              | 4.63            | 318.2            | 88.5            | 16.2 | 7.3  |
|              |             |      |      | 33.1       | 95        |             |      |      | 3.1       | 7.2         | 103.9       | 106.9 | 80.3       | 7.80              | 4.02            | 363.2            | 91.8            | 15.6 | 5.8  |
|              |             |      |      | 33.8       | 110       |             |      |      | 3.0       | 7.0         | 118.7       | 104.4 | 72.5       | 9.34              | 3.28            | 434.6            | 94.9            | 14.0 | 5.0  |
| 50           | 12.0        | 1.3  | 3.0  | 37.1       | 85        | 24.0        |      |      | 3.2       | 7.5         | 93.4        | 100.5 | 75.0       | 7.48              | 3.94            | 355.7            | 95.2            | 22.7 | 5.8  |
|              |             |      |      | 37.9       | 95        |             |      |      | 3.1       | 7.2         | 103.3       | 99.9  | 70.7       | 8.57              | 3.42            | 405.9            | 98.7            | 21.6 | 4.3  |
|              |             |      |      | 39.3       | 110       |             |      |      | 3.0       | 7.0         | 118.1       | 97.5  | 62.5       | 10.26             | 2.79            | 485.7            | 102.0           | 20.6 | 3.6  |
|              | 18.0        | 2.6  | 6.1  | 39.0       | 85        |             | 24.0 |      | 3.2       | 7.5         | 95.0        | 120.3 | 95.8       | 7.18              | 4.91            | 334.9            | 102.2           | 18.9 | 6.3  |
|              |             |      |      | 39.5       | 95        |             |      |      | 3.1       | 7.2         | 105.0       | 119.6 | 91.5       | 8.23              | 4.26            | 382.2            | 106.0           | 18.1 | 4.8  |
|              |             |      |      | 40.5       | 110       |             |      |      | 3.0       | 7.0         | 119.7       | 116.8 | 83.2       | 9.85              | 3.48            | 457.3            | 109.6           | 16.5 | 4.1  |
|              | 24.0        | 4.3  | 10.0 | 41.6       | 85        |             |      | 24.0 | 3.2       | 7.5         | 95.1        | 120.9 | 97.3       | 6.92              | 5.12            | 324.1            | 102.9           | 17.2 | 8.6  |
|              |             |      |      | 42.0       | 95        |             |      |      | 3.1       | 7.2         | 105.0       | 120.2 | 93.1       | 7.93              | 4.44            | 369.9            | 106.7           | 16.4 | 7.2  |
|              |             |      |      | 42.7       | 110       |             |      |      | 3.0       | 7.0         | 119.8       | 117.3 | 84.9       | 9.50              | 3.62            | 442.6            | 110.3           | 14.8 | 6.6  |
| 60           | 12.0        | 1.3  | 2.9  | 45.0       | 85        | 24.0        |      |      | 3.2       | 7.5         | 94.4        | 113.2 | 87.3       | 7.59              | 4.37            | 362.7            | 110.1           | 23.4 | 5.8  |
|              |             |      |      | 45.8       | 95        |             |      |      | 3.1       | 7.2         | 104.4       | 112.4 | 82.7       | 8.70              | 3.79            | 414.0            | 114.2           | 22.2 | 4.4  |
|              |             |      |      | 47.3       | 110       |             |      |      | 3.0       | 7.0         | 119.2       | 109.8 | 74.2       | 10.42             | 3.09            | 495.4            | 118.0           | 21.4 | 3.7  |
|              | 18.0        | 2.5  | 5.8  | 47.3       | 85        |             | 24.0 |      | 3.2       | 7.5         | 96.3        | 135.5 | 110.7      | 7.28              | 5.45            | 341.5            | 118.3           | 19.7 | 7.0  |
|              |             |      |      | 47.8       | 95        |             |      |      | 3.1       | 7.2         | 106.2       | 134.6 | 106.1      | 8.35              | 4.72            | 389.8            | 122.7           | 18.6 | 5.6  |
|              |             |      |      | 48.9       | 110       |             |      |      | 3.0       | 7.0         | 121.0       | 131.4 | 97.3       | 10.00             | 3.85            | 466.4            | 126.8           | 17.1 | 5.0  |
|              | 24.0        | 4.2  | 9.6  | 50.4       | 85        |             |      | 24.0 | 3.2       | 7.5         | 96.3        | 136.1 | 112.1      | 7.02              | 5.68            | 330.5            | 119.1           | 17.9 | 9.9  |
|              |             |      |      | 50.7       | 95        |             |      |      | 3.1       | 7.2         | 106.3       | 135.2 | 107.7      | 8.05              | 4.92            | 377.2            | 123.4           | 17.0 | 8.5  |
|              |             |      |      | 51.5       | 110       |             |      |      | 3.0       | 7.0         | 121.0       | 132.1 | 99.2       | 9.64              | 4.02            | 451.4            | 127.6           | 15.4 | 8.0  |
| 70           | 12.0        | 1.2  | 2.8  | 52.8       | 85        | 24.0        |      |      | 3.2       | 7.5         | 95.5        | 126.4 | 100.1      | 7.71              | 4.80            | 369.8            | 125.8           | 23.8 | 6.2  |
|              |             |      |      | 53.6       | 95        |             |      |      | 3.1       | 7.2         | 105.5       | 125.6 | 95.4       | 8.84              | 4.16            | 422.1            | 130.5           | 22.5 | 4.8  |
|              |             |      |      | 55.1       | 110       |             |      |      | 3.0       | 7.0         | 120.2       | 122.6 | 86.5       | 10.59             | 3.39            | 505.1            | 134.9           | 21.9 | 4.2  |
|              | 18.0        | 2.4  | 5.6  | 55.6       | 85        |             | 24.0 |      | 3.2       | 7.5         | 97.6        | 151.3 | 126.1      | 7.40              | 5.99            | 348.2            | 135.2           | 20.1 | 8.0  |
|              |             |      |      | 56.1       | 95        |             |      |      | 3.1       | 7.2         | 107.5       | 150.3 | 121.3      | 8.49              | 5.19            | 397.4            | 140.2           | 18.9 | 6.6  |
|              |             |      |      | 57.2       | 110       |             |      |      | 3.0       | 7.0         | 122.2       | 146.8 | 112.1      | 10.16             | 4.23            | 475.5            | 144.9           | 17.4 | 6.2  |
|              | 24.0        | 4.0  | 9.3  | 59.0       | 85        |             |      | 24.0 | 3.2       | 7.5         | 97.7        | 152   | 127.6      | 7.14              | 6.24            | 337.0            | 136.1           | 18.3 | 11.4 |
|              |             |      |      | 59.4       | 95        |             |      |      | 3.1       | 7.2         | 107.6       | 151.1 | 123.2      | 8.19              | 5.41            | 384.6            | 141.1           | 17.3 | 10.0 |
|              |             |      |      | 60.2       | 110       |             |      |      | 3.0       | 7.0         | 122.3       | 147.5 | 114.1      | 9.80              | 4.41            | 460.2            | 145.9           | 15.6 | 9.7  |
| 80           | 12.0        | 1.2  | 2.7  | 60.7       | 85        | 24.0        |      |      | 3.2       | 7.5         | 96.6        | 139.1 | 112.2      | 7.88              | 5.17            | 376.3            | 141.3           | 23.9 | 7.3  |
|              |             |      |      | 61.5       | 95        |             |      |      | 3.1       | 7.2         | 106.5       | 138.2 | 107.4      | 9.04              | 4.48            | 429.5            | 146.5           | 22.5 | 5.9  |
|              |             |      |      | 63.1       | 110       |             |      |      | 3.0       | 7.0         | 121.3       | 135   | 98.1       | 10.82             | 3.66            | 513.9            | 151.4           | 22.1 | 5.4  |
|              | 18.0        | 2.4  | 5.5  | 63.9       | 85        |             | 24.0 |      | 3.2       | 7.5         | 98.9        | 166.5 | 140.7      | 7.57              | 6.45            | 354.3            | 151.8           | 20.3 | 9.7  |
|              |             |      |      | 64.4       | 95        |             |      |      | 3.1       | 7.2         | 108.8       | 165.5 | 135.9      | 8.67              | 5.59            | 404.3            | 157.4           | 18.9 | 8.3  |
|              |             |      |      | 65.6       | 110       |             |      |      | 3.0       | 7.0         | 123.5       | 161.6 | 126.1      | 10.39             | 4.56            | 483.8            | 162.7           | 17.5 | 7.9  |
|              | 24.0        | 3.9  | 9.0  | 67.8       | 85        |             |      | 24.0 | 3.2       | 7.5         | 98.9        | 167.3 | 142.4      | 7.30              | 6.72            | 342.9            | 152.8           | 18.5 | 13.6 |
|              |             |      |      | 68.2       | 95        |             |      |      | 3.1       | 7.2         | 108.9       | 166.3 | 137.8      | 8.36              | 5.83            | 391.3            | 158.4           | 17.3 | 12.2 |
|              |             |      |      | 69.0       | 110       |             |      |      | 3.0       | 7.0         | 123.5       | 162.4 | 128.2      | 10.02             | 4.75            | 468.2            | 163.8           | 15.6 | 12.0 |
| 90           | 12.0        | 1.1  | 2.7  | 68.6       | 85        | 24.0        |      |      | 3.2       | 7.5         | 97.7        | 152.1 | 124.6      | 8.06              | 5.53            | 382.8            | 157.0           | 24.0 | 8.7  |
|              |             |      |      | 69.5       | 95        |             |      |      | 3.1       | 7.2         | 107.6       | 151.1 | 119.6      | 9.24              | 4.79            | 436.9            | 162.8           | 22.4 | 7.2  |
|              |             |      |      | 71.1       | 110       |             |      |      | 3.0       | 7.0         | 122.3       | 147.6 | 109.9      | 11.06             | 3.91            | 522.8            | 168.3           | 22.2 | 6.8  |
|              | 18.0        | 2.3  | 5.4  | 72.2       | 85        |             | 24.0 |      | 3.2       | 7.5         | 100.2       | 182.1 | 155.7      | 7.73              | 6.90            | 360.4            | 168.7           | 20.3 | 11.7 |
|              |             |      |      | 72.7       | 95        |             |      |      | 3.1       | 7.2         | 110.1       | 180.9 | 150.6      | 8.87              | 5.98            | 411.3            | 174.9           | 18.8 | 10.2 |
|              |             |      |      | 73.9       | 110       |             |      |      | 3.0       | 7.0         | 124.7       | 176.7 | 140.5      | 10.62             | 4.88            | 492.2            | 180.8           | 17.5 | 9.9  |
|              | 24.0        | 3.8  | 8.9  | 76.5       | 85        |             |      | 24.0 | 3.2       | 7.5         | 100.3       | 183   | 157.5      | 7.46              | 7.19            | 348.8            | 169.8           | 18.6 | 16.1 |
|              |             |      |      | 76.9       | 95        |             |      |      | 3.1       | 7.2         | 110.2       | 181.8 | 152.6      | 8.55              | 6.23            | 398.1            | 176.0           | 17.2 | 14.6 |
|              |             |      |      | 77.7       | 110       |             |      |      | 3.0       | 7.0         | 124.8       | 177.5 | 142.6      | 10.24             | 5.08            | 476.3            | 182.0           | 15.5 | 14.5 |

**ENGINEERING SPECIFICATIONS:**

**MODEL 120, 10 TON, FULL LOAD COOLING PERFORMANCE DATA:**

| Source Water |             |      |      | Load Water |           |             |      |      |           | Cooling     |             |       |               |                   |                 |                  |                 |      |      |
|--------------|-------------|------|------|------------|-----------|-------------|------|------|-----------|-------------|-------------|-------|---------------|-------------------|-----------------|------------------|-----------------|------|------|
| EST<br>°F    | Flow<br>GPM | WPD  |      | LST<br>°F  | ELT<br>°F | Flow<br>GPM | WPD  |      | LLT<br>°F | TC<br>MBtuh | HR<br>MBtuh | kW    | EER<br>Btuh/W | Discharge<br>PSIG | Suction<br>PSIG | Subcooling<br>°F | Superheat<br>°F |      |      |
|              |             | PSID | FT   |            |           |             | PSID | FT   |           |             |             |       |               |                   |                 |                  |                 |      |      |
| 40           | 15.0        | 2.0  | 4.5  | 54.7       | 40        | 30.0        | 6.1  | 14.1 | 33.9      | 91.5        | 106.7       | 4.44  | 20.6          | 181.9             | 66.5            | 19.1             | 15.5            |      |      |
|              |             |      |      | 55.7       | 45        |             | 6.0  | 13.8 | 38.4      | 99.0        | 114.3       | 4.47  | 22.2          | 181.9             | 72.3            | 19.0             | 15.4            |      |      |
|              |             |      |      | 56.8       | 50        |             | 5.9  | 13.5 | 42.9      | 106.8       | 122.1       | 4.50  | 23.7          | 181.9             | 78.2            | 18.8             | 15.5            |      |      |
|              | 22.5        | 4.0  | 9.3  | 50.2       | 40        |             | 6.1  | 14.1 | 33.5      | 96.9        | 111.2       | 4.20  | 23.1          | 172.4             | 71.0            | 16.3             | 15.1            |      |      |
|              |             |      |      | 50.9       | 45        |             | 6.0  | 13.8 | 38.0      | 104.9       | 119.3       | 4.23  | 24.8          | 172.4             | 77.2            | 16.1             | 15.3            |      |      |
|              |             |      |      | 51.7       | 50        |             | 5.9  | 13.6 | 42.5      | 113.0       | 127.6       | 4.26  | 26.5          | 172.4             | 83.5            | 15.9             | 15.7            |      |      |
|              | 30.0        | 6.7  | 15.5 | 47.9       | 40        |             | 6.1  | 14.1 | 33.3      | 100.6       | 114.6       | 4.11  | 24.5          | 167.4             | 73.3            | 14.7             | 15.4            |      |      |
|              |             |      |      | 48.4       | 45        |             | 6.0  | 13.8 | 37.7      | 108.8       | 122.9       | 4.13  | 26.3          | 167.4             | 79.6            | 14.6             | 15.8            |      |      |
|              |             |      |      | 49.0       | 50        |             | 5.9  | 13.6 | 42.2      | 117.3       | 131.5       | 4.17  | 28.2          | 167.4             | 86.2            | 14.4             | 16.4            |      |      |
|              | 50          | 15.0 | 1.9  | 4.4        | 64.7      |             | 40   | 30.0 | 6.1       | 14.1        | 34.0        | 90.1  | 107.3         | 5.05              | 17.8            | 213.1            | 73.3            | 19.4 | 10.6 |
|              |             |      |      |            | 65.8      |             | 45   |      | 6.0       | 13.8        | 38.5        | 97.4  | 114.8         | 5.08              | 19.2            | 213.1            | 79.7            | 19.1 | 10.4 |
|              |             |      |      |            | 66.8      |             | 50   |      | 5.9       | 13.5        | 43.0        | 105.0 | 122.5         | 5.12              | 20.5            | 213.1            | 86.2            | 18.9 | 10.5 |
| 22.5         |             | 3.9  | 8.9  | 60.2       | 40        | 6.1         | 14.1 |      | 33.6      | 95.3        | 111.6       | 4.78  | 20.0          | 201.9             | 78.2            | 16.2             | 10.2            |      |      |
|              |             |      |      | 61.0       | 45        | 6.0         | 13.8 |      | 38.1      | 103.1       | 119.5       | 4.80  | 21.5          | 201.9             | 85.1            | 16.0             | 10.3            |      |      |
|              |             |      |      | 61.7       | 50        | 5.9         | 13.5 |      | 42.6      | 111.2       | 127.7       | 4.84  | 23.0          | 201.9             | 92.0            | 15.8             | 10.6            |      |      |
| 30.0         |             | 6.4  | 14.8 | 57.9       | 40        | 6.1         | 14.1 |      | 33.4      | 98.9        | 114.9       | 4.67  | 21.2          | 196.0             | 80.8            | 14.6             | 10.5            |      |      |
|              |             |      |      | 58.5       | 45        | 6.0         | 13.8 |      | 37.9      | 107.0       | 123.1       | 4.70  | 22.8          | 196.0             | 87.8            | 14.4             | 10.7            |      |      |
|              |             |      |      | 59.0       | 50        | 5.9         | 13.5 |      | 42.3      | 115.4       | 131.5       | 4.73  | 24.4          | 196.0             | 95.0            | 14.1             | 11.3            |      |      |
| 60           |             | 15.0 | 1.8  | 4.2        | 74.8      | 40          | 30.0 |      | 6.1       | 14.1        | 34.1        | 88.0  | 107.7         | 5.76              | 15.3            | 247.7            | 75.8            | 19.9 | 9.1  |
|              |             |      |      |            | 75.8      | 45          |      |      | 6.0       | 13.8        | 38.7        | 95.2  | 115.0         | 5.80              | 16.4            | 247.7            | 82.4            | 19.7 | 8.9  |
|              |             |      |      |            | 76.8      | 50          |      |      | 5.9       | 13.5        | 43.2        | 102.6 | 122.5         | 5.84              | 17.6            | 247.7            | 89.2            | 19.4 | 8.9  |
|              | 22.5        | 3.7  | 8.6  | 70.2       | 40        | 6.1         |      | 14.1 | 33.8      | 93.1        | 111.7       | 5.45  | 17.1          | 234.8             | 80.9            | 16.5             | 8.7             |      |      |
|              |             |      |      | 71.0       | 45        | 6.0         |      | 13.8 | 38.3      | 100.8       | 119.5       | 5.48  | 18.4          | 234.8             | 88.0            | 16.3             | 8.7             |      |      |
|              |             |      |      | 71.7       | 50        | 5.9         |      | 13.5 | 42.8      | 108.6       | 127.5       | 5.53  | 19.7          | 234.8             | 95.2            | 16.0             | 9.0             |      |      |
|              | 30.0        | 6.2  | 14.3 | 67.9       | 40        | 6.1         |      | 14.1 | 33.6      | 96.6        | 114.8       | 5.33  | 18.1          | 227.9             | 83.6            | 14.7             | 8.9             |      |      |
|              |             |      |      | 68.4       | 45        | 6.0         |      | 13.8 | 38.0      | 104.6       | 122.9       | 5.36  | 19.5          | 227.9             | 90.8            | 14.5             | 9.2             |      |      |
|              |             |      |      | 69.0       | 50        | 5.9         |      | 13.5 | 42.5      | 112.7       | 131.2       | 5.41  | 20.9          | 227.9             | 98.3            | 14.2             | 9.7             |      |      |
|              | 70          | 15.0 | 1.8  | 4.1        | 84.8      | 40          |      | 30.0 | 6.1       | 14.1        | 34.3        | 85.3  | 107.8         | 6.59              | 13.0            | 285.9            | 76.7            | 20.6 | 8.8  |
|              |             |      |      |            | 85.8      | 45          |      |      | 6.0       | 13.8        | 38.8        | 92.3  | 115.0         | 6.63              | 13.9            | 285.9            | 83.3            | 20.3 | 8.6  |
|              |             |      |      |            | 86.8      | 50          |      |      | 5.9       | 13.5        | 43.4        | 99.5  | 122.3         | 6.68              | 14.9            | 285.9            | 90.2            | 20.0 | 8.6  |
| 22.5         |             | 3.6  | 8.4  | 80.2       | 40        | 6.1         | 14.1 |      | 34.0      | 90.3        | 111.6       | 6.23  | 14.5          | 271.0             | 81.8            | 17.0             | 8.3             |      |      |
|              |             |      |      | 80.9       | 45        | 6.0         | 13.8 |      | 38.5      | 97.7        | 119.1       | 6.27  | 15.6          | 271.0             | 88.9            | 16.7             | 8.4             |      |      |
|              |             |      |      | 81.6       | 50        | 5.9         | 13.5 |      | 43.0      | 105.4       | 126.9       | 6.32  | 16.7          | 271.0             | 96.2            | 16.4             | 8.7             |      |      |
| 30.0         |             | 6.0  | 13.9 | 77.9       | 40        | 6.1         | 14.1 |      | 33.8      | 93.7        | 114.5       | 6.10  | 15.4          | 263.0             | 84.5            | 15.1             | 8.6             |      |      |
|              |             |      |      | 78.4       | 45        | 6.0         | 13.8 |      | 38.2      | 101.4       | 122.4       | 6.13  | 16.5          | 263.0             | 91.8            | 14.8             | 8.9             |      |      |
|              |             |      |      | 79.0       | 50        | 5.9         | 13.5 |      | 42.7      | 109.3       | 130.4       | 6.18  | 17.7          | 263.0             | 99.4            | 14.5             | 9.5             |      |      |
| 80           |             | 15.0 | 1.8  | 4.0        | 94.8      | 40          | 30.0 |      | 6.1       | 14.1        | 34.5        | 82.1  | 107.8         | 7.52              | 10.9            | 327.6            | 77.5            | 20.8 | 8.5  |
|              |             |      |      |            | 95.8      | 45          |      |      | 6.0       | 13.8        | 39.1        | 88.8  | 114.7         | 7.57              | 11.7            | 327.6            | 84.2            | 20.5 | 8.3  |
|              |             |      |      |            | 96.7      | 50          |      |      | 5.9       | 13.5        | 43.6        | 95.8  | 121.8         | 7.63              | 12.6            | 327.6            | 91.1            | 20.2 | 8.4  |
|              | 22.5        | 3.6  | 8.2  | 90.2       | 40        | 6.1         |      | 14.1 | 34.2      | 86.9        | 111.2       | 7.12  | 12.2          | 310.4             | 82.7            | 17.3             | 8.1             |      |      |
|              |             |      |      | 90.9       | 45        | 6.0         |      | 13.8 | 38.7      | 94.1        | 118.5       | 7.16  | 13.1          | 310.4             | 89.9            | 17.0             | 8.2             |      |      |
|              |             |      |      | 91.5       | 50        | 5.9         |      | 13.5 | 43.2      | 101.4       | 126.0       | 7.21  | 14.1          | 310.4             | 97.2            | 16.6             | 8.5             |      |      |
|              | 30.0        | 5.9  | 13.6 | 87.8       | 40        | 6.1         |      | 14.1 | 34.0      | 90.2        | 114.0       | 6.96  | 13.0          | 301.3             | 85.3            | 15.4             | 8.4             |      |      |
|              |             |      |      | 88.4       | 45        | 6.0         |      | 13.8 | 38.5      | 97.6        | 121.5       | 7.00  | 13.9          | 301.3             | 92.8            | 15.1             | 8.7             |      |      |
|              |             |      |      | 88.9       | 50        | 5.9         |      | 13.5 | 43.0      | 105.2       | 129.3       | 7.06  | 14.9          | 301.3             | 100.4           | 14.8             | 9.2             |      |      |
|              | 90          | 15.0 | 1.7  | 4.0        | 104.8     | 40          |      | 30.0 | 6.1       | 14.1        | 34.8        | 78.3  | 107.6         | 8.57              | 9.1             | 365.5            | 78.9            | 19.0 | 7.8  |
|              |             |      |      |            | 105.7     | 45          |      |      | 6.0       | 13.8        | 39.4        | 84.7  | 114.1         | 8.62              | 9.8             | 365.5            | 85.8            | 19.2 | 7.7  |
|              |             |      |      |            | 106.6     | 50          |      |      | 5.9       | 13.5        | 43.9        | 91.3  | 121.0         | 8.68              | 10.5            | 365.5            | 92.8            | 19.4 | 7.7  |
| 22.5         |             | 3.6  | 8.2  | 100.1      | 40        | 6.1         | 14.1 |      | 34.5      | 82.9        | 110.6       | 8.10  | 10.2          | 346.4             | 84.2            | 15.6             | 7.4             |      |      |
|              |             |      |      | 100.8      | 45        | 6.0         | 13.8 |      | 39.0      | 89.7        | 117.5       | 8.15  | 11.0          | 349.2             | 91.6            | 15.8             | 7.5             |      |      |
|              |             |      |      | 101.4      | 50        | 5.9         | 13.5 |      | 43.6      | 96.7        | 124.7       | 8.21  | 11.8          | 352.4             | 99.1            | 16.1             | 7.9             |      |      |
| 30.0         |             | 5.9  | 13.6 | 97.8       | 40        | 6.1         | 14.1 |      | 34.3      | 86.0        | 113.1       | 7.93  | 10.9          | 336.2             | 86.9            | 13.8             | 7.7             |      |      |
|              |             |      |      | 98.3       | 45        | 6.0         | 13.8 |      | 38.8      | 93.1        | 120.3       | 7.97  | 11.7          | 339.0             | 94.5            | 14.0             | 8.0             |      |      |
|              |             |      |      | 98.8       | 50        | 5.9         | 13.5 |      | 43.3      | 100.3       | 127.7       | 8.03  | 12.5          | 342.1             | 102.3           | 14.3             | 8.6             |      |      |
| 110          |             | 15.0 | 1.8  | 4.1        | 124.6     | 40          | 30.0 |      | 6.1       | 14.1        | 35.4        | 69.0  | 106.5         | 10.99             | 6.3             | 464.4            | 82.1            | 16.4 | 7.1  |
|              |             |      |      |            | 125.4     | 45          |      |      | 6.0       | 13.8        | 40.0        | 74.6  | 112.3         | 11.05             | 6.8             | 468.2            | 89.3            | 16.6 | 7.1  |
|              |             |      |      |            | 126.3     | 50          |      |      | 5.9       | 13.5        | 44.6        | 80.4  | 118.4         | 11.13             | 7.2             | 472.5            | 96.6            | 16.8 | 7.2  |
|              | 22.5        | 3.6  | 8.4  | 119.9      | 40        | 6.1         |      | 14.1 | 35.1      | 73.0        | 108.5       | 10.39 | 7.0           | 440.1             | 87.7            | 12.9             | 6.8             |      |      |
|              |             |      |      | 120.5      | 45        | 6.0         |      | 13.8 | 39.7      | 79.0        | 114.7       | 10.45 | 7.6           | 443.7             | 95.3            | 13.0             | 7.0             |      |      |
|              |             |      |      | 121.1      | 50        | 5.9         |      | 13.5 | 44.3      | 85.2        | 121.1       | 10.53 | 8.1           | 447.7             | 103.1           | 13.2             | 7.5             |      |      |
|              | 30.0        | 6.0  | 13.8 | 117.6      | 40        | 6.1         |      | 14.1 | 34.9      | 75.8        | 110.5       | 10.16 | 7.5           | 427.2             | 90.5            | 11.1             | 7.1             |      |      |
|              |             |      |      | 118.0      | 45        | 6.0         |      | 13.8 | 39.5      | 82.0        | 116.9       | 10.22 | 8.0           | 430.7             | 98.4            | 11.3             | 7.6             |      |      |
|              |             |      |      | 118.5      | 50        | 5.9         |      | 13.5 | 44.1      | 88.4        | 123.5       | 10.30 | 8.6           | 434.6             | 106.5           | 11.4             | 8.3             |      |      |

**ENGINEERING SPECIFICATIONS:**

**MODEL 120, 10 TON, FULL LOAD HEATING PERFORMANCE DATA:**

| Source Water |          |      |      | Load Water |        |          |      | Heating |        |          |          |       |         |                |              |               |              |      |      |
|--------------|----------|------|------|------------|--------|----------|------|---------|--------|----------|----------|-------|---------|----------------|--------------|---------------|--------------|------|------|
| EST °F       | Flow GPM | WPD  |      | LST °F     | ELT °F | Flow GPM | WPD  |         | LLT °F | HC MBtuh | HE MBtuh | kW    | COP W/W | Discharge PSIG | Suction PSIG | Subcooling °F | Superheat °F |      |      |
|              |          | PSID | FT   |            |        |          | PSID | FT      |        |          |          |       |         |                |              |               |              |      |      |
| 25           | 30.0     | 7.5  | 17.3 | 20.3       | 85     | 30.0     | 5.0  | 11.6    | 91.2   | 93.4     | 68.7     | 7.24  | 3.78    | 306.7          | 62.6         | 13.1          | 8.8          |      |      |
|              |          |      |      | 20.6       | 95     |          | 4.9  | 11.3    | 101.1  | 92       | 63.8     | 8.26  | 3.26    | 349.1          | 64.2         | 12.9          | 7.9          |      |      |
|              |          |      |      | 21.2       | 110    |          | 4.7  | 10.8    | 115.9  | 89.2     | 55.4     | 9.92  | 2.64    | 416.2          | 66.0         | 10.8          | 7.3          |      |      |
| 30           | 15.0     | 2.2  | 5.1  | 20.5       | 85     | 30.0     | 5.0  | 11.6    | 91.4   | 96.2     | 69.1     | 7.94  | 3.55    | 337.9          | 64.5         | 19.0          | 9.4          |      |      |
|              |          |      |      | 21.2       | 95     |          | 4.9  | 11.3    | 101.3  | 94.7     | 63.8     | 9.06  | 3.06    | 384.6          | 66.1         | 18.4          | 8.5          |      |      |
|              |          |      |      | 22.5       | 110    |          | 4.7  | 10.8    | 116.1  | 91.8     | 54.7     | 10.88 | 2.47    | 458.5          | 68.0         | 16.3          | 8.0          |      |      |
|              | 22.5     | 4.4  | 10.2 | 23.2       | 85     |          | 30.0 | 5.0     | 11.6   | 91.7     | 99.8     | 74.2  | 7.51    | 3.89           | 320.2        | 68.8          | 15.4         | 8.4  |      |
|              |          |      |      | 23.7       | 95     |          |      | 4.9     | 11.2   | 101.6    | 98.3     | 69.1  | 8.57    | 3.36           | 364.5        | 70.6          | 15.1         | 7.5  |      |
|              |          |      |      | 24.5       | 110    |          |      | 4.7     | 10.8   | 116.4    | 95.3     | 60.2  | 10.29   | 2.71           | 434.5        | 72.5          | 12.9         | 7.0  |      |
|              | 30.0     | 7.3  | 16.9 | 24.7       | 85     |          |      | 30.0    | 5.0    | 11.6     | 91.8     | 101.8 | 76.7    | 7.35           | 4.06         | 310.8         | 71.0         | 13.6 | 8.3  |
|              |          |      |      | 25.1       | 95     |          |      |         | 4.9    | 11.2     | 101.7    | 100.3 | 71.7    | 8.38           | 3.51         | 353.8         | 72.9         | 13.3 | 7.4  |
|              |          |      |      | 25.7       | 110    |          |      |         | 4.7    | 10.8     | 116.5    | 97.2  | 62.8    | 10.07          | 2.83         | 421.7         | 74.9         | 11.1 | 7.0  |
| 40           | 15.0     | 2.1  | 4.8  | 28.5       | 85     | 30.0     |      |         | 5.0    | 11.6     | 92.4     | 111   | 83.5    | 8.05           | 4.04         | 343.8         | 78.2         | 19.5 | 8.3  |
|              |          |      |      | 29.3       | 95     |          |      |         | 4.9    | 11.3     | 102.3    | 109.3 | 78.0    | 9.18           | 3.49         | 391.3         | 80.2         | 18.8 | 7.3  |
|              |          |      |      | 30.6       | 110    |          |      |         | 4.7    | 10.8     | 117.1    | 106   | 68.4    | 11.03          | 2.82         | 466.5         | 82.4         | 16.7 | 7.0  |
|              | 22.5     | 4.2  | 9.8  | 31.8       | 85     |          | 30.0 |         | 5.0    | 11.6     | 92.7     | 115.2 | 89.2    | 7.61           | 4.44         | 325.8         | 83.5         | 16.0 | 7.8  |
|              |          |      |      | 32.3       | 95     |          |      |         | 4.9    | 11.2     | 102.6    | 113.4 | 83.7    | 8.69           | 3.82         | 370.9         | 85.6         | 15.5 | 6.9  |
|              |          |      |      | 33.2       | 110    |          |      |         | 4.7    | 10.8     | 117.3    | 110   | 74.4    | 10.43          | 3.09         | 442.1         | 88.0         | 13.2 | 6.7  |
|              | 30.0     | 7.0  | 16.1 | 33.7       | 85     |          |      | 30.0    | 5.0    | 11.6     | 92.8     | 117.5 | 92.1    | 7.45           | 4.62         | 316.2         | 86.2         | 14.1 | 8.1  |
|              |          |      |      | 34.0       | 95     |          |      |         | 4.9    | 11.2     | 102.7    | 115.7 | 86.7    | 8.50           | 3.99         | 360.0         | 88.4         | 13.7 | 7.2  |
|              |          |      |      | 34.7       | 110    |          |      |         | 4.7    | 10.8     | 117.5    | 112.2 | 77.4    | 10.20          | 3.22         | 429.1         | 90.8         | 11.4 | 7.1  |
| 50           | 15.0     | 2.0  | 4.6  | 36.5       | 85     | 30.0     |      |         | 5.0    | 11.6     | 93.4     | 125.9 | 98.1    | 8.16           | 4.52         | 349.7         | 92.0         | 20.0 | 8.2  |
|              |          |      |      | 37.3       | 95     |          |      |         | 4.9    | 11.2     | 103.3    | 124   | 92.2    | 9.31           | 3.90         | 398.1         | 94.4         | 19.2 | 7.3  |
|              |          |      |      | 38.7       | 110    |          |      |         | 4.7    | 10.8     | 118.0    | 120.2 | 82.1    | 11.18          | 3.15         | 474.6         | 97.0         | 17.2 | 7.2  |
|              | 22.5     | 4.0  | 9.3  | 40.4       | 85     |          | 30.0 |         | 5.0    | 11.5     | 93.7     | 130.6 | 104.3   | 7.72           | 4.96         | 331.4         | 98.2         | 16.5 | 8.3  |
|              |          |      |      | 41.0       | 95     |          |      |         | 4.9    | 11.2     | 103.6    | 128.7 | 98.7    | 8.80           | 4.29         | 377.3         | 100.7        | 15.9 | 7.5  |
|              |          |      |      | 41.9       | 110    |          |      |         | 4.7    | 10.8     | 118.3    | 124.8 | 88.7    | 10.57          | 3.46         | 449.7         | 103.5        | 13.5 | 7.5  |
|              | 30.0     | 6.7  | 15.4 | 42.6       | 85     |          |      | 30.0    | 5.0    | 11.5     | 93.9     | 133.3 | 107.5   | 7.55           | 5.17         | 321.7         | 101.3        | 14.7 | 9.0  |
|              |          |      |      | 43.0       | 95     |          |      |         | 4.9    | 11.2     | 103.8    | 131.3 | 101.9   | 8.61           | 4.47         | 366.2         | 104.0        | 14.1 | 8.2  |
|              |          |      |      | 43.7       | 110    |          |      |         | 4.7    | 10.8     | 118.5    | 127.3 | 92.0    | 10.34          | 3.61         | 436.5         | 106.8        | 11.8 | 8.3  |
| 60           | 15.0     | 1.9  | 4.4  | 44.5       | 85     | 30.0     |      |         | 5.0    | 11.6     | 94.4     | 141.4 | 113.0   | 8.32           | 4.98         | 356.8         | 106.4        | 20.6 | 9.0  |
|              |          |      |      | 45.3       | 95     |          |      |         | 4.9    | 11.2     | 104.3    | 139.3 | 106.9   | 9.49           | 4.30         | 406.2         | 109.2        | 19.7 | 8.1  |
|              |          |      |      | 46.8       | 110    |          |      |         | 4.7    | 10.8     | 119.0    | 135   | 96.1    | 11.40          | 3.47         | 484.2         | 112.2        | 17.8 | 8.3  |
|              | 22.5     | 3.9  | 9.0  | 49.0       | 85     |          | 30.0 |         | 5.0    | 11.5     | 94.8     | 146.7 | 119.8   | 7.87           | 5.46         | 338.2         | 113.6        | 17.2 | 9.7  |
|              |          |      |      | 49.6       | 95     |          |      |         | 4.9    | 11.2     | 104.6    | 144.5 | 113.9   | 8.98           | 4.72         | 384.9         | 116.5        | 16.4 | 8.9  |
|              |          |      |      | 50.5       | 110    |          |      |         | 4.7    | 10.8     | 119.3    | 140.1 | 103.3   | 10.78          | 3.81         | 458.9         | 119.7        | 14.1 | 9.2  |
|              | 30.0     | 6.4  | 14.7 | 51.5       | 85     |          |      | 30.0    | 5.0    | 11.5     | 95.0     | 149.6 | 123.3   | 7.70           | 5.69         | 328.2         | 117.2        | 15.4 | 10.9 |
|              |          |      |      | 51.9       | 95     |          |      |         | 4.9    | 11.2     | 104.8    | 147.4 | 117.4   | 8.78           | 4.92         | 373.6         | 120.3        | 14.7 | 10.1 |
|              |          |      |      | 52.7       | 110    |          |      |         | 4.7    | 10.8     | 119.5    | 142.9 | 106.9   | 10.55          | 3.97         | 445.4         | 123.6        | 12.2 | 10.5 |
| 70           | 15.0     | 1.9  | 4.3  | 52.4       | 85     | 30.0     |      |         | 5.0    | 11.5     | 95.5     | 157   | 128.1   | 8.48           | 5.43         | 364.0         | 120.9        | 21.3 | 10.2 |
|              |          |      |      | 53.3       | 95     |          |      |         | 4.9    | 11.2     | 105.3    | 154.7 | 121.7   | 9.68           | 4.68         | 414.3         | 124.1        | 20.3 | 9.4  |
|              |          |      |      | 54.8       | 110    |          |      |         | 4.7    | 10.8     | 120.0    | 150   | 110.4   | 11.62          | 3.78         | 493.9         | 127.5        | 18.6 | 9.8  |
|              | 22.5     | 3.7  | 8.6  | 57.6       | 85     |          | 30.0 |         | 5.0    | 11.5     | 95.9     | 162.9 | 135.5   | 8.02           | 5.95         | 344.9         | 129.1        | 17.9 | 11.6 |
|              |          |      |      | 58.2       | 95     |          |      |         | 4.8    | 11.2     | 105.7    | 160.5 | 129.3   | 9.15           | 5.14         | 392.6         | 132.4        | 17.0 | 10.8 |
|              |          |      |      | 59.2       | 110    |          |      |         | 4.7    | 10.7     | 120.4    | 155.6 | 118.1   | 10.99          | 4.15         | 468.1         | 136.1        | 14.7 | 11.3 |
|              | 30.0     | 6.2  | 14.2 | 60.4       | 85     |          |      | 30.0    | 5.0    | 11.5     | 96.1     | 166.2 | 139.4   | 7.85           | 6.20         | 334.8         | 133.2        | 16.1 | 13.2 |
|              |          |      |      | 60.8       | 95     |          |      |         | 4.8    | 11.2     | 105.9    | 163.7 | 133.2   | 8.95           | 5.36         | 381.1         | 136.7        | 15.3 | 12.4 |
|              |          |      |      | 61.6       | 110    |          |      |         | 4.7    | 10.7     | 120.6    | 158.7 | 122.0   | 10.75          | 4.33         | 454.3         | 140.5        | 12.8 | 13.0 |
| 80           | 15.0     | 1.8  | 4.2  | 60.3       | 85     | 30.0     |      |         | 5.0    | 11.5     | 96.5     | 172.5 | 143.2   | 8.60           | 5.88         | 370.0         | 135.0        | 21.9 | 11.5 |
|              |          |      |      | 61.3       | 95     |          |      |         | 4.9    | 11.2     | 106.3    | 169.9 | 136.4   | 9.81           | 5.08         | 421.2         | 138.5        | 20.8 | 10.7 |
|              |          |      |      | 62.9       | 110    |          |      |         | 4.7    | 10.7     | 121.0    | 164.8 | 124.6   | 11.78          | 4.10         | 502.1         | 142.4        | 19.4 | 11.3 |
|              | 22.5     | 3.6  | 8.4  | 66.1       | 85     |          | 30.0 |         | 5.0    | 11.5     | 96.9     | 179   | 151.3   | 8.13           | 6.45         | 350.7         | 144.1        | 18.5 | 13.4 |
|              |          |      |      | 66.7       | 95     |          |      |         | 4.8    | 11.2     | 106.8    | 176.3 | 144.6   | 9.28           | 5.57         | 399.2         | 147.8        | 17.5 | 12.6 |
|              |          |      |      | 67.8       | 110    |          |      |         | 4.6    | 10.7     | 121.4    | 170.9 | 132.9   | 11.15          | 4.49         | 475.9         | 151.9        | 15.3 | 13.3 |
|              | 30.0     | 6.0  | 13.9 | 69.3       | 85     |          |      | 30.0    | 5.0    | 11.5     | 97.2     | 182.6 | 155.4   | 7.96           | 6.72         | 340.4         | 148.8        | 16.7 | 15.3 |
|              |          |      |      | 69.8       | 95     |          |      |         | 4.8    | 11.2     | 107.0    | 179.9 | 148.9   | 9.08           | 5.81         | 387.5         | 152.6        | 15.8 | 14.6 |
|              |          |      |      | 70.6       | 110    |          |      |         | 4.6    | 10.7     | 121.6    | 174.4 | 137.2   | 10.90          | 4.69         | 461.9         | 156.8        | 13.4 | 15.4 |
| 90           | 15.0     | 1.8  | 4.1  | 68.2       | 85     | 30.0     |      |         | 5.0    | 11.5     | 97.5     | 188.1 | 158.3   | 8.72           | 6.32         | 376.1         | 149.1        | 22.6 | 13.0 |
|              |          |      |      | 69.2       | 95     |          |      |         | 4.8    | 11.2     | 107.4    | 185.3 | 151.3   | 9.95           | 5.46         | 428.2         | 153.0        | 21.4 | 12.3 |
|              |          |      |      | 70.9       | 110    |          |      |         | 4.7    | 10.7     | 122.0    | 179.6 | 138.8   | 11.95          | 4.40         | 510.4         | 157.2        | 20.2 | 13.0 |
|              | 22.5     | 3.6  | 8.3  | 74.7       | 85     |          | 30.0 |         | 5.0    | 11.5     | 98.0     | 195.1 | 166.9   | 8.25           | 6.93         | 356.5         | 159.2        | 19.2 | 15.4 |
|              |          |      |      | 75.3       | 95     |          |      |         | 4.8    | 11.1     | 107.8    | 192.2 | 160.1   | 9.41           | 5.99         | 405.8         | 163.3        | 18.1 | 14.7 |
|              |          |      |      | 76.5       | 110    |          |      |         | 4.6    | 10.7     | 122.4    | 186.4 | 147.8   | 11.30          | 4.83         | 483.7         | 167.8        | 16.0 | 15.6 |
|              | 30.0     | 5.9  | 13.6 | 78.2       | 85     |          |      | 30.0    | 5.0    | 11.5     | 98.3     | 199.1 | 171.6   | 8.07           | 7.23         | 346.0         | 164.3        | 17.4 | 17.7 |
|              |          |      |      | 78.7       | 95     |          |      |         | 4.8    | 11.1     | 108.1    | 196.1 | 164.7   | 9.20           | 6.25         | 393.9         | 168.6        | 16.4 | 17.0 |
|              |          |      |      | 79.5       | 110    |          |      |         | 4.6    | 10.7     | 122.7    | 190.1 | 152.4   | 11.05          | 5.04         | 469.5         | 173.2        | 14.0 | 18.0 |

# ENGINEERING SPECIFICATIONS:

## MODEL 144, 12 TON, PART LOAD PERFORMANCE DATA:

| EST  | GPM  | PSI  | FT                        | Heating                   |       |      |      |       |      |      | Cooling                   |      |      |      |      |      |      |     |
|------|------|------|---------------------------|---------------------------|-------|------|------|-------|------|------|---------------------------|------|------|------|------|------|------|-----|
|      |      |      |                           | ELT                       | HC    | HE   | KW   | LLT   | COP  | DH   | ELT                       | TC   | HR   | KW   | LLT  | EER  | DH   |     |
| 30   | 10.0 | 2.2  | 5.0                       | 85                        | 58.8  | 42.2 | 5.13 | 96.7  | 3.36 | 7.3  | Operation Not Recommended |      |      |      |      |      |      |     |
|      |      |      |                           | 95                        | 57.1  | 39.7 | 5.40 | 106.4 | 3.10 | 7.5  |                           |      |      |      |      |      |      |     |
|      |      |      |                           | 110                       | 55.3  | 37.4 | 5.66 | 121.0 | 2.86 | 7.8  |                           |      |      |      |      |      |      |     |
|      | 14.0 | 4.0  | 9.3                       | 85                        | 60.5  | 44.0 | 5.18 | 93.7  | 3.42 | 7.5  |                           |      |      |      |      |      |      |     |
|      |      |      |                           | 95                        | 58.9  | 41.3 | 5.46 | 103.4 | 3.16 | 7.8  |                           |      |      |      |      |      |      |     |
|      |      |      |                           | 110                       | 57.3  | 38.9 | 5.73 | 118.2 | 2.93 | 8.0  |                           |      |      |      |      |      |      |     |
|      | 18.0 | 6.5  | 15.0                      | 85                        | 61.3  | 44.8 | 5.18 | 91.8  | 3.47 | 7.6  |                           |      |      |      |      |      |      |     |
|      |      |      |                           | 95                        | 59.7  | 42.3 | 5.45 | 101.6 | 3.21 | 7.9  |                           |      |      |      |      |      |      |     |
|      |      |      |                           | 110                       | 58.1  | 39.7 | 5.73 | 116.5 | 2.97 | 8.2  |                           |      |      |      |      |      |      |     |
| 50   | 10.0 | 2.0  | 4.7                       | 85                        | 76.0  | 58.9 | 5.37 | 100.2 | 4.15 | 9.5  |                           | 40   | 61.9 | 72.8 | 3.57 | 27.6 | 17.3 | 5.2 |
|      |      |      |                           | 95                        | 73.7  | 55.4 | 5.66 | 109.7 | 3.82 | 9.7  |                           | 45   | 67.2 | 77.5 | 3.65 | 31.6 | 18.4 | 5.3 |
|      |      |      |                           | 110                       | 71.2  | 52.2 | 5.93 | 124.2 | 3.52 | 10.0 |                           | 50   | 72.6 | 82.1 | 3.73 | 35.5 | 19.5 | 5.5 |
|      | 14.0 | 3.7  | 8.6                       | 85                        | 79.2  | 61.7 | 5.48 | 96.3  | 4.24 | 9.9  |                           | 40   | 62.5 | 73.1 | 3.41 | 31.1 | 18.3 | 5.0 |
|      |      |      |                           | 95                        | 76.6  | 58.2 | 5.77 | 106.0 | 3.89 | 10.1 |                           | 45   | 67.9 | 77.7 | 3.48 | 35.3 | 19.5 | 5.1 |
|      |      |      |                           | 110                       | 74.2  | 54.6 | 6.06 | 120.6 | 3.58 | 10.4 |                           | 50   | 73.3 | 82.4 | 3.55 | 39.5 | 20.6 | 5.2 |
|      | 18.0 | 6.0  | 14.0                      | 85                        | 80.8  | 63.3 | 5.50 | 94.0  | 4.31 | 10.1 |                           | 40   | 63.1 | 73.5 | 3.31 | 33.0 | 19.1 | 4.7 |
|      |      |      |                           | 95                        | 78.2  | 59.7 | 5.79 | 103.7 | 3.96 | 10.3 |                           | 45   | 68.6 | 78.2 | 3.38 | 37.4 | 20.3 | 4.8 |
|      |      |      |                           | 110                       | 75.6  | 56.1 | 6.09 | 118.4 | 3.64 | 10.6 |                           | 50   | 74.1 | 82.8 | 3.45 | 41.8 | 21.5 | 5.0 |
| 70   | 10.0 | 2.0  | 4.7                       | 85                        | 92.5  | 74.3 | 5.71 | 103.5 | 4.75 | 11.5 | 40                        | 58.0 | 70.9 | 4.29 | 28.4 | 13.5 | 7.5  |     |
|      |      |      |                           | 95                        | 89.2  | 70.1 | 6.01 | 112.8 | 4.35 | 11.8 | 45                        | 63.0 | 75.4 | 4.39 | 32.4 | 14.3 | 7.7  |     |
|      |      |      |                           | 110                       | 85.9  | 65.8 | 6.30 | 127.2 | 4.00 | 12.1 | 50                        | 68.1 | 80.0 | 4.47 | 36.4 | 15.3 | 8.0  |     |
|      | 14.0 | 3.6  | 8.3                       | 85                        | 97.1  | 78.3 | 5.88 | 98.9  | 4.84 | 12.1 | 40                        | 58.9 | 71.2 | 4.09 | 31.6 | 14.4 | 7.2  |     |
|      |      |      |                           | 95                        | 93.7  | 73.8 | 6.19 | 108.4 | 4.44 | 12.4 | 45                        | 64.0 | 75.8 | 4.17 | 35.8 | 15.3 | 7.5  |     |
|      |      |      |                           | 110                       | 90.2  | 69.4 | 6.51 | 122.9 | 4.06 | 12.7 | 50                        | 69.1 | 80.4 | 4.25 | 40.1 | 16.2 | 7.6  |     |
|      | 18.0 | 5.8  | 13.3                      | 85                        | 99.7  | 80.7 | 5.95 | 96.1  | 4.92 | 12.4 | 40                        | 59.4 | 71.6 | 3.96 | 33.4 | 15.0 | 6.9  |     |
|      |      |      |                           | 95                        | 96.1  | 76.1 | 6.26 | 105.7 | 4.50 | 12.7 | 45                        | 64.7 | 76.2 | 4.04 | 37.8 | 16.0 | 7.1  |     |
|      |      |      |                           | 110                       | 92.5  | 71.5 | 6.57 | 120.3 | 4.13 | 13.0 | 50                        | 69.8 | 80.6 | 4.13 | 42.2 | 16.9 | 7.4  |     |
| 90   | 10.0 | 1.9  | 4.3                       | 85                        | 106.6 | 87.6 | 5.67 | 106.3 | 5.52 | 13.3 | 40                        | 52.8 | 68.2 | 5.31 | 29.4 | 9.9  | 9.9  |     |
|      |      |      |                           | 95                        | 102.7 | 82.5 | 6.41 | 115.5 | 4.70 | 13.6 | 45                        | 57.4 | 72.6 | 5.41 | 33.5 | 10.6 | 10.2 |     |
|      |      |      |                           | 110                       | 98.8  | 77.6 | 6.59 | 129.7 | 4.39 | 13.9 | 50                        | 62.0 | 77.0 | 5.50 | 37.6 | 11.3 | 10.4 |     |
|      | 14.0 | 3.3  | 7.7                       | 85                        | 112.7 | 92.9 | 6.22 | 101.1 | 5.31 | 14.0 | 40                        | 53.8 | 68.6 | 4.99 | 32.3 | 10.8 | 9.5  |     |
|      |      |      |                           | 95                        | 108.6 | 87.6 | 6.55 | 110.5 | 4.86 | 14.4 | 45                        | 58.5 | 73.0 | 5.12 | 36.6 | 11.4 | 9.8  |     |
|      |      |      |                           | 110                       | 104.3 | 82.4 | 6.88 | 124.9 | 4.45 | 14.6 | 50                        | 63.3 | 77.3 | 5.19 | 41.0 | 12.2 | 10.0 |     |
|      | 18.0 | 5.3  | 12.3                      | 85                        | 116.5 | 96.1 | 6.32 | 97.9  | 5.40 | 14.5 | 40                        | 54.5 | 68.7 | 4.87 | 33.9 | 11.2 | 9.1  |     |
|      |      |      |                           | 95                        | 112.0 | 90.7 | 6.64 | 107.4 | 4.94 | 14.8 | 45                        | 59.2 | 73.1 | 4.96 | 38.4 | 11.9 | 9.4  |     |
|      |      |      |                           | 110                       | 107.6 | 85.3 | 6.98 | 122.0 | 4.52 | 15.1 | 50                        | 63.9 | 77.5 | 5.07 | 42.9 | 12.6 | 9.7  |     |
| 110  | 10.0 | 1.8  | 4.2                       | Operation Not Recommended |       |      |      |       |      |      | 40                        | 46.0 | 64.9 | 6.61 | 30.8 | 7.0  | 12.2 |     |
|      |      |      |                           |                           |       |      |      |       |      |      | 45                        | 50.0 | 69.1 | 6.70 | 35.0 | 7.5  | 12.6 |     |
|      | 50   | 54.1 | 73.2                      |                           |       |      |      |       |      |      | 6.87                      | 39.2 | 7.9  | 13.0 |      |      |      |     |
|      | 40   | 47.2 | 65.2                      |                           |       |      |      |       |      |      | 6.19                      | 33.3 | 7.6  | 11.8 |      |      |      |     |
|      | 45   | 51.4 | 69.3                      |                           |       |      |      |       |      |      | 6.33                      | 37.6 | 8.1  | 12.2 |      |      |      |     |
|      | 50   | 55.5 | 73.5                      |                           |       |      |      |       |      |      | 6.50                      | 42.1 | 8.5  | 12.4 |      |      |      |     |
| 14.0 | 3.3  | 7.7  | Operation Not Recommended |                           |       |      |      |       |      | 40   | 47.7                      | 65.2 | 6.06 | 34.7 | 7.9  | 11.3 |      |     |
|      |      |      |                           |                           |       |      |      |       |      | 45   | 51.9                      | 69.3 | 6.14 | 39.2 | 8.5  | 11.7 |      |     |
| 18.0 | 5.3  | 12.1 | Operation Not Recommended |                           |       |      |      |       |      | 50   | 56.0                      | 73.5 | 6.25 | 43.8 | 9.0  | 12.1 |      |     |

**ENGINEERING SPECIFICATIONS:**

**MODEL 144, 12 TON, FULL LOAD PERFORMANCE DATA:**

| EST | GPM  | PSI | FT   | Heating                   |       |       |       |       |      |      | Cooling                   |       |       |       |      |      |      |
|-----|------|-----|------|---------------------------|-------|-------|-------|-------|------|------|---------------------------|-------|-------|-------|------|------|------|
|     |      |     |      | ELT                       | HC    | HE    | KW    | LLT   | COP  | DH   | ELT                       | TC    | HR    | KW    | LLT  | EER  | DH   |
| 30  | 17.8 | 2.3 | 5.4  | 85                        | 117.5 | 84.3  | 10.26 | 98.2  | 3.36 | 14.6 | Operation Not Recommended |       |       |       |      |      |      |
|     |      |     |      | 95                        | 114.2 | 79.4  | 10.81 | 107.8 | 3.10 | 15.1 |                           |       |       |       |      |      |      |
|     |      |     |      | 110                       | 110.6 | 74.8  | 11.33 | 122.4 | 2.86 | 15.5 |                           |       |       |       |      |      |      |
|     | 24.9 | 4.4 | 10.1 | 85                        | 121.1 | 87.9  | 10.37 | 94.7  | 3.42 | 15.1 |                           |       |       |       |      |      |      |
|     |      |     |      | 95                        | 117.7 | 82.7  | 10.92 | 104.5 | 3.16 | 15.6 |                           |       |       |       |      |      |      |
|     |      |     |      | 110                       | 114.5 | 77.8  | 11.47 | 119.2 | 2.93 | 16.1 |                           |       |       |       |      |      |      |
|     | 32.0 | 7.0 | 16.2 | 85                        | 122.6 | 89.6  | 10.36 | 92.7  | 3.47 | 15.3 |                           |       |       |       |      |      |      |
|     |      |     |      | 95                        | 119.4 | 84.7  | 10.91 | 102.5 | 3.21 | 15.8 |                           |       |       |       |      |      |      |
|     |      |     |      | 110                       | 116.2 | 79.4  | 11.45 | 117.3 | 2.97 | 16.3 |                           |       |       |       |      |      |      |
| 50  | 17.8 | 2.2 | 5.0  | 85                        | 152.0 | 117.8 | 10.75 | 102.1 | 4.15 | 18.9 | 40                        | 123.7 | 145.7 | 7.14  | 26.1 | 17.3 | 10.4 |
|     |      |     |      | 95                        | 147.5 | 110.9 | 11.32 | 111.6 | 3.82 | 19.5 | 45                        | 134.4 | 155.1 | 7.30  | 29.9 | 18.4 | 10.7 |
|     |      |     |      | 110                       | 142.5 | 104.3 | 11.87 | 126.0 | 3.52 | 20.0 | 50                        | 145.1 | 164.3 | 7.45  | 33.7 | 19.5 | 10.9 |
|     | 24.9 | 4.1 | 9.4  | 85                        | 158.5 | 123.4 | 10.95 | 97.7  | 4.24 | 19.7 | 40                        | 125.0 | 146.2 | 6.82  | 29.9 | 18.3 | 9.9  |
|     |      |     |      | 95                        | 153.2 | 116.5 | 11.54 | 107.3 | 3.89 | 20.3 | 45                        | 135.7 | 155.4 | 6.97  | 34.1 | 19.5 | 10.2 |
|     |      |     |      | 110                       | 148.3 | 109.3 | 12.13 | 121.9 | 3.58 | 20.8 | 50                        | 146.7 | 164.8 | 7.11  | 38.2 | 20.6 | 10.4 |
|     | 32.0 | 6.6 | 15.1 | 85                        | 161.7 | 126.6 | 11.01 | 95.1  | 4.31 | 20.1 | 40                        | 126.3 | 146.9 | 6.62  | 32.1 | 19.1 | 9.4  |
|     |      |     |      | 95                        | 156.5 | 119.4 | 11.59 | 104.8 | 3.96 | 20.7 | 45                        | 137.2 | 156.4 | 6.76  | 36.4 | 20.3 | 9.7  |
|     |      |     |      | 110                       | 151.2 | 112.2 | 12.17 | 119.4 | 3.64 | 21.2 | 50                        | 148.2 | 165.6 | 6.90  | 40.7 | 21.5 | 9.9  |
| 70  | 17.8 | 2.2 | 5.0  | 85                        | 185.0 | 148.6 | 11.42 | 105.8 | 4.75 | 23.0 | 40                        | 116.1 | 141.8 | 8.59  | 27.0 | 13.5 | 15.0 |
|     |      |     |      | 95                        | 178.4 | 140.1 | 12.01 | 115.1 | 4.35 | 23.6 | 45                        | 126.0 | 150.8 | 8.79  | 30.8 | 14.3 | 15.5 |
|     |      |     |      | 110                       | 171.8 | 131.6 | 12.60 | 129.3 | 4.00 | 24.1 | 50                        | 136.2 | 159.9 | 8.93  | 34.7 | 15.3 | 16.0 |
|     | 24.9 | 3.9 | 9.0  | 85                        | 194.2 | 156.5 | 11.76 | 100.6 | 4.84 | 24.2 | 40                        | 117.9 | 142.3 | 8.17  | 30.5 | 14.4 | 14.5 |
|     |      |     |      | 95                        | 187.3 | 147.6 | 12.37 | 110.1 | 4.44 | 24.8 | 45                        | 128.1 | 151.5 | 8.35  | 34.7 | 15.3 | 15.0 |
|     |      |     |      | 110                       | 180.5 | 138.7 | 13.02 | 124.5 | 4.06 | 25.3 | 50                        | 138.3 | 160.7 | 8.51  | 38.9 | 16.2 | 15.2 |
|     | 32.0 | 6.2 | 14.4 | 85                        | 199.5 | 161.4 | 11.89 | 97.5  | 4.92 | 24.8 | 40                        | 118.9 | 143.1 | 7.92  | 32.6 | 15.0 | 13.7 |
|     |      |     |      | 95                        | 192.3 | 152.2 | 12.51 | 107.0 | 4.50 | 25.4 | 45                        | 129.3 | 152.3 | 8.08  | 36.9 | 16.0 | 14.2 |
|     |      |     |      | 110                       | 185.1 | 143.1 | 13.14 | 121.6 | 4.13 | 26.0 | 50                        | 139.5 | 161.2 | 8.25  | 41.3 | 16.9 | 14.7 |
| 90  | 17.8 | 2.0 | 4.7  | 85                        | 213.3 | 175.2 | 11.33 | 109.0 | 5.52 | 26.6 | 40                        | 105.6 | 136.5 | 10.62 | 28.1 | 9.9  | 19.8 |
|     |      |     |      | 95                        | 205.4 | 165.0 | 12.82 | 118.1 | 4.70 | 27.2 | 45                        | 114.8 | 145.1 | 10.82 | 32.1 | 10.6 | 20.3 |
|     |      |     |      | 110                       | 197.5 | 155.2 | 13.19 | 132.2 | 4.39 | 27.7 | 50                        | 124.0 | 154.1 | 11.00 | 36.1 | 11.3 | 20.8 |
|     | 24.9 | 3.6 | 8.3  | 85                        | 225.4 | 185.7 | 12.44 | 103.1 | 5.31 | 28.1 | 40                        | 107.6 | 137.2 | 9.99  | 31.3 | 10.8 | 19.1 |
|     |      |     |      | 95                        | 217.2 | 175.2 | 13.10 | 112.5 | 4.86 | 28.7 | 45                        | 117.1 | 145.9 | 10.23 | 35.6 | 11.4 | 19.6 |
|     |      |     |      | 110                       | 208.7 | 164.7 | 13.75 | 126.8 | 4.45 | 29.3 | 50                        | 126.5 | 154.6 | 10.38 | 39.8 | 12.2 | 20.1 |
|     | 32.0 | 5.8 | 13.3 | 85                        | 233.0 | 192.3 | 12.64 | 99.6  | 5.40 | 29.0 | 40                        | 108.9 | 137.5 | 9.73  | 33.2 | 11.2 | 18.3 |
|     |      |     |      | 95                        | 224.1 | 181.4 | 13.29 | 109.0 | 4.94 | 29.6 | 45                        | 118.4 | 146.2 | 9.91  | 37.6 | 11.9 | 18.8 |
|     |      |     |      | 110                       | 215.2 | 170.6 | 13.95 | 123.5 | 4.52 | 30.2 | 50                        | 127.8 | 155.1 | 10.14 | 42.0 | 12.6 | 19.3 |
| 110 | 17.8 | 2.0 | 4.5  | Operation Not Recommended |       |       |       |       |      |      | 40                        | 92.1  | 129.8 | 13.22 | 29.6 | 7.0  | 24.4 |
|     |      |     |      |                           |       |       |       |       |      |      | 45                        | 100.0 | 138.3 | 13.40 | 33.8 | 7.5  | 25.2 |
|     |      |     |      |                           |       |       |       |       |      |      | 50                        | 108.2 | 146.4 | 13.73 | 37.8 | 7.9  | 25.9 |
|     | 24.9 | 3.6 | 8.3  |                           |       |       |       |       |      |      | 40                        | 94.4  | 130.4 | 12.38 | 32.4 | 7.6  | 23.6 |
|     |      |     |      |                           |       |       |       |       |      |      | 45                        | 102.8 | 138.5 | 12.65 | 36.7 | 8.1  | 24.4 |
|     |      |     |      |                           |       |       |       |       |      |      | 50                        | 111.0 | 146.9 | 13.00 | 41.1 | 8.5  | 24.9 |
|     | 32.0 | 5.7 | 13.2 |                           |       |       |       |       |      |      | 40                        | 95.4  | 130.4 | 12.11 | 34.0 | 7.9  | 22.6 |
|     |      |     |      |                           |       |       |       |       |      |      | 45                        | 103.8 | 138.5 | 12.28 | 38.5 | 8.5  | 23.4 |
|     |      |     |      |                           |       |       |       |       |      |      | 50                        | 112.0 | 146.9 | 12.51 | 43.0 | 9.0  | 24.1 |

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