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**GENERAL:**

Outdoor Split Water-to-Air Two-Stage "RT" 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 UV protected powder coated heavy gauge galvanized steel. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117.

Cabinet must conform to ASTM water protection design for outdoor use.

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

Cabinets shall have separate holes and knockouts for entrance of line voltage and

low voltage control wiring. All factory-installed wiring passing through factory knockouts and openings shall be protected from sheet metal edges at openings by plastic ferrules. Supply and return water connections shall be copper MPT 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 be encased in a clam shell rigid foam case and injected with 8lb. spray foam to eliminate any condensation forming on heat exchanger.

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, 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/drier for added moisture protection. Units to have line set refrigeration back seat service valves with Schrader ports installed.

Hermetic compressors shall be internally sprung. The compressor will be mounted on EPDM rubber grommets secured to the cabinet base 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 coaxial heat exchangers shall be of copper inner water tube and steel refrigerant outer tube design (water coil), shall have enhanced rifled and knurled inner tube,

## ENGINEERING SPECIFICATIONS:

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 one directional with the use of a check valve and bypass port. 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.

An outdoor ambient temperature sensor shall be wired in series with the source circulating pump

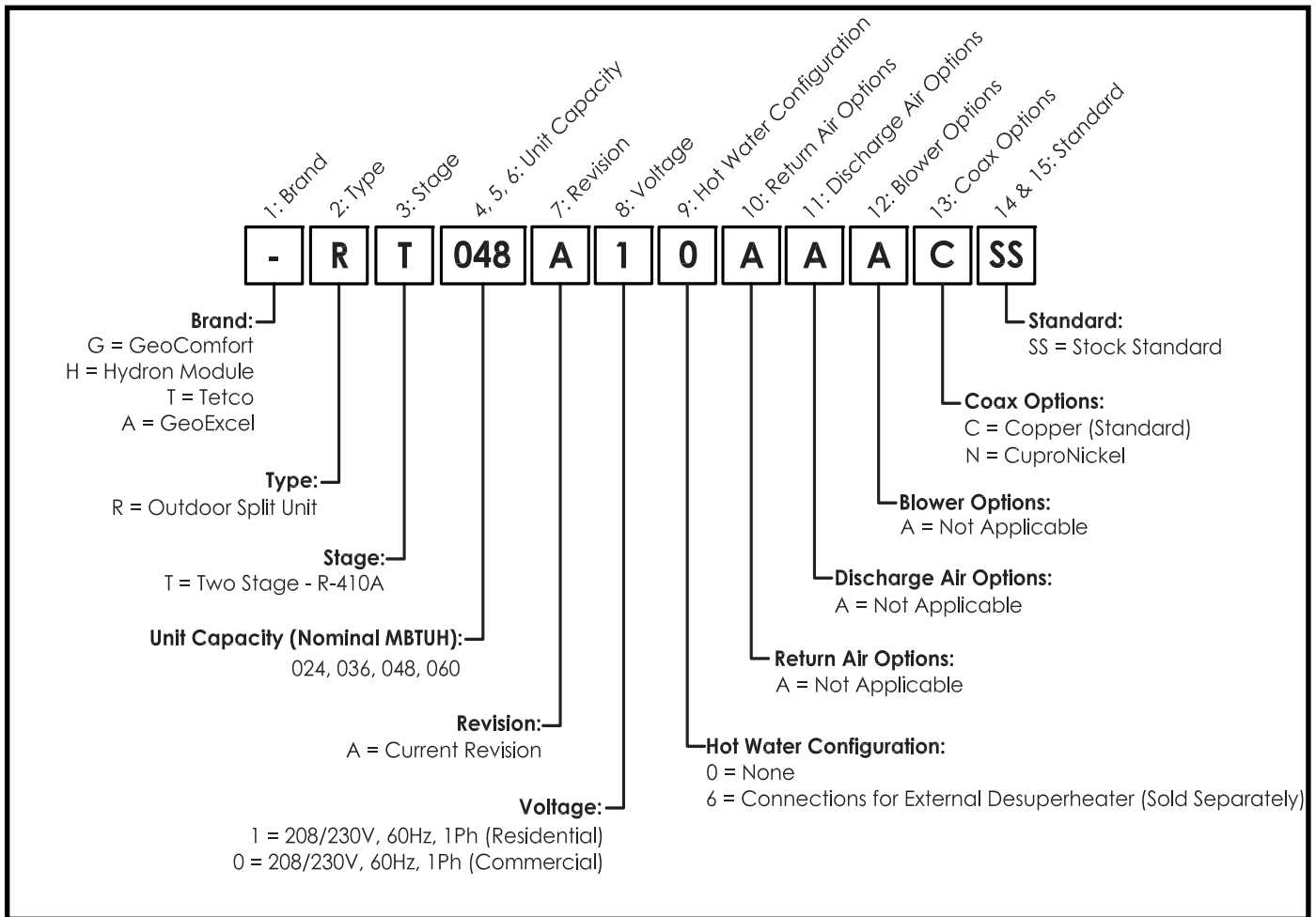
connection to allow low outdoor temperature operation of the loop pumps independent of the compressor operation.

### 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.
- 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 low temperature sensing selectable for water or anti-freeze.
- Air coil low temperature sensing.
- High discharge gas temperature sensing.
- Smart desuperheater operation and logic to eliminate any heat transfer from the water tank to the source loop during cooling mode.

MODEL NOMENCLATURE DECODER:



AHRI PERFORMANCE DATA:

Ground Loop Heat Pump

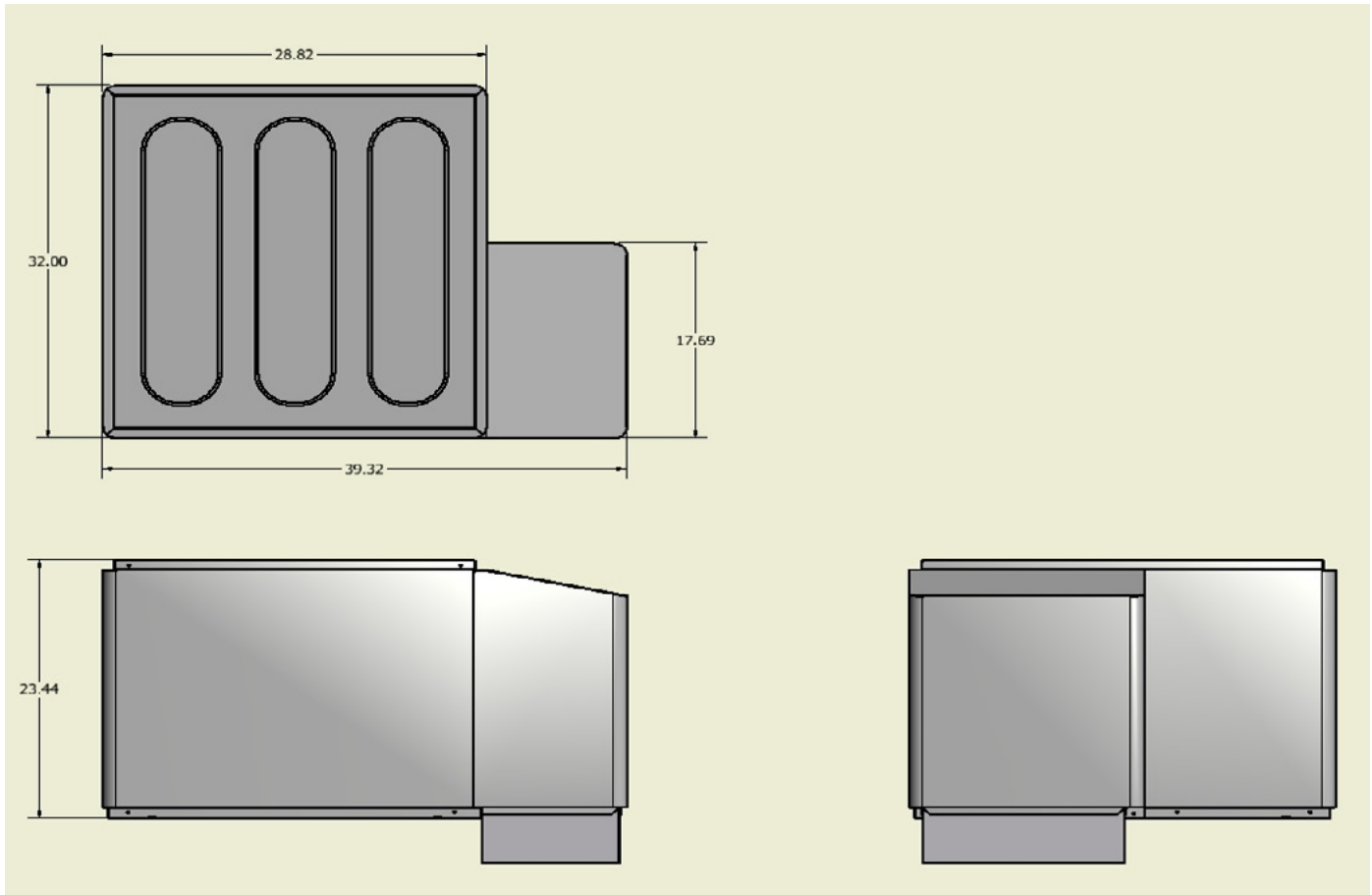


| MODEL | CAPACITY  | HEATING |     | COOLING |      |
|-------|-----------|---------|-----|---------|------|
|       |           | Btu/hr  | COP | Btu/hr  | EER  |
| RT024 | Full Load | 17,800  | 3.4 | 24,600  | 15.9 |
|       | Part Load | 14,700  | 3.9 | 19,600  | 23.7 |
| RT036 | Full Load | 27,200  | 3.8 | 36,000  | 16.7 |
|       | Part Load | 21,700  | 4.2 | 27,800  | 25.3 |
| RT048 | Full Load | 36,400  | 3.9 | 50,800  | 18.0 |
|       | Part Load | 29,800  | 4.4 | 39,000  | 25.4 |
| RT060 | Full Load | 45,600  | 3.5 | 61,500  | 17.2 |
|       | Part Load | 37,000  | 4.1 | 47,900  | 24.1 |

Note:  
 Rated in accordance with ISO Standard 13256-1 which includes Pump Penalties.  
 Heating capacities based on 68.0°F DB, 59.0°F WB entering air temperature.  
 Cooling capacities based on 80.6°F DB, 66.2°F WB entering air temperature.  
 Entering water temperatures Full Load: 32°F heating / 77°F cooling.  
 Entering water temperatures Part Load: 41°F heating / 68°F cooling.

# ENGINEERING SPECIFICATIONS:

## DIMENSIONAL DATA, CABINET, DUCT FLANGES AND INSTALLATION CLEARANCE:



### DIMENSIONAL DATA TABLE:

| Model | Dimensional Data |       |       | Refrigeration Connection |         | Water Loop*      |     | Unit Weight (Pounds) |
|-------|------------------|-------|-------|--------------------------|---------|------------------|-----|----------------------|
|       | Height           | Width | Depth | Liquid                   | Suction | IN               | OUT |                      |
| 024   | 23.4             | 32.0  | 28.8  | 3/8"                     | 7/8"    | 1" Double O-Ring |     | 180                  |
| 036   | 23.4             | 32.0  | 28.8  | 3/8"                     | 7/8"    |                  |     | 225                  |
| 048   | 23.4             | 32.0  | 28.8  | 3/8"                     | 7/8"    |                  |     | 270                  |
| 060   | 23.4             | 32.0  | 28.8  | 1/2"                     | 1-1/8"  |                  |     | 270                  |

### UNIT PHYSICAL DATA:

| MODEL                   | 024                                 | 036 | 048 | 060 |
|-------------------------|-------------------------------------|-----|-----|-----|
| COMPRESSOR TYPE         | Two Stage Unloading Scroll          |     |     |     |
| Refrigerant Type        | R 410-A                             |     |     |     |
| Heat Exchanger (Source) | Coaxial Copper/Steel (tube in tube) |     |     |     |
| Source Option           | Coaxial Cupro-Nickel/Steel          |     |     |     |

**Notes:**

All Source water connections are 1" FPT

All Desuperheater connections are 3/4" FPT.

All electrical knockouts are sized for 1/2" or 3/4" conduit

All measurements are in inches.

All drawings are typical, individual models will vary

**UNIT ELECTRICAL DATA:**

| Model | Voltage Code | 60Hz Power |       | Compressor |      | Ext Loop Pump FLA* | Total Unit FLA | Min Circuit AMPS | Max Fuse HACR | Min AWG | Max Ft |
|-------|--------------|------------|-------|------------|------|--------------------|----------------|------------------|---------------|---------|--------|
|       |              | Volts      | Phase | LRA        | RLA  |                    |                |                  |               |         |        |
| 024   | 0            | 208/230    | 1     | 58.3       | 11.7 | 4.0                | 15.7           | 18.6             | 30            | 14      | 41     |
|       | 1            | 208/230    | 1     | 58.3       | 11.7 | 4.0                | 15.7           | 18.6             | 30            | 14      | 41     |
| 036   | 0            | 208/230    | 1     | 83.0       | 15.3 | 4.0                | 19.3           | 23.1             | 35            | 12      | 51     |
|       | 1            | 208/230    | 1     | 83.0       | 15.3 | 4.0                | 19.3           | 23.1             | 35            | 12      | 51     |
| 048   | 0            | 208/230    | 1     | 104.0      | 21.2 | 5.5                | 26.7           | 32.0             | 50            | 8       | 96     |
|       | 1            | 208/230    | 1     | 104.0      | 21.2 | 5.5                | 26.7           | 32.0             | 50            | 8       | 96     |
| 060   | 0            | 208/230    | 1     | 152.9      | 27.1 | 5.5                | 32.6           | 39.4             | 60            | 8       | 78     |
|       | 1            | 208/230    | 1     | 152.9      | 27.1 | 5.5                | 32.6           | 39.4             | 60            | 8       | 78     |

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.
3. All fuses class RK-5
4. Min/Max Voltage: 208/230/60/1 = 187/252

\* The external loop pump FLA is based on a maximum of three UP26-116F-230V pumps (1/2hp) for 048 - 062 and two pumps for 024 - 038

# 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 (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 (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 |



**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 oF

Flow rate = 4.5 GPM.

Air Flow = 1380 CFM. HE = 29,400 Btuh.

$TD = 29,400 / (4.5 \times 485) = 13.5$  oF

LWT = 50 - 13.5 = 36.5 oF

Water flow rate is acceptable.

Example 2:

EWT = 40 oF

Flow rate = 4.5 GPM.

Air Flow = 1380 CFM. HE = 25,300 Btuh.

$TD = 25,300 / (4.5 \times 485) = 11.6$  oF

LWT = 40 - 11.6 = 28.4 oF

Water flow rate must be increased to avoid freezing.

**PERFORMANCE DATA NOTES**

1. Capacity data is based on 15% (by mass) methanol antifreeze solution (multiplier: 485).
2. Heating data is based on 70°F EAT. Cooling data is based on 80/67°F EAT. Any condition outside performance table(s) requires correction factor(s).
3. Performance data accurate within  $\pm 15\%$ .
4. Unit performance test is run without hot water generation.
5. Desuperheater capacity is based upon 2.0 GPM water flow at 70 oF entering water temperature.
6. Capacity data includes fan power but not pump power and it does not reflect fan or pump power correction for AHRI/ISO conditions.
7. Performance data is based upon the lower voltage of dual voltage rated units.
8. Interpolation of unit performance data is permissible; extrapolation is not.
9. Performance data is a result of lab testing and is not related to warranty.
10. Due to variations in installation, actual unit performance may vary from the tabulated data.
11. See Flow Rate Selection above for proper application.
12. Continuous research and development may result in a change to the current product design and specifications without notice.

# ENGINEERING SPECIFICATIONS:

## MODEL 024, 2 TON, WITH MPD024 FULL LOAD HEATING PERFORMANCE:

| EWT<br>°F | Flow<br>GPM | WPD |     | LWT<br>°F | Heating       |           |             |             |      |            |                   |                 |                  |                 |
|-----------|-------------|-----|-----|-----------|---------------|-----------|-------------|-------------|------|------------|-------------------|-----------------|------------------|-----------------|
|           |             | PSI | FT  |           | Aiflow<br>CFM | LAT<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 |
| 25        | 6.0         | 3.8 | 8.8 | 20.9      | 850           | 87.9      | 16.4        | 12.0        | 1.30 | 3.70       | 287.5             | 73.3            | 3.5              | 0.0             |
|           |             |     |     | 20.8      | 950           | 86.0      | 16.4        | 12.1        | 1.27 | 3.78       | 284.0             | 73.2            | 3.2              | 0.1             |
| 30        | 3.0         | 1.1 | 2.5 | 21.7      | 850           | 88.0      | 16.5        | 12.1        | 1.29 | 3.75       | 286.0             | 75.7            | 3.6              | 1.2             |
|           |             |     |     | 21.6      | 950           | 86.1      | 16.5        | 12.2        | 1.27 | 3.81       | 282.5             | 75.6            | 3.2              | 1.2             |
|           | 4.5         | 2.4 | 5.6 | 24.1      | 850           | 89.0      | 17.4        | 12.9        | 1.32 | 3.86       | 292.8             | 80.0            | 3.7              | 0.4             |
|           |             |     |     | 24.0      | 950           | 87.0      | 17.4        | 13.0        | 1.29 | 3.95       | 289.2             | 79.9            | 3.4              | 0.5             |
|           | 6.0         | 3.9 | 9.1 | 25.4      | 850           | 89.6      | 18.0        | 13.5        | 1.33 | 3.97       | 295.9             | 82.5            | 3.6              | 0.1             |
|           |             |     |     | 25.4      | 950           | 87.5      | 18.0        | 13.5        | 1.31 | 4.03       | 292.2             | 82.4            | 3.3              | 0.1             |
| 40        | 3.0         | 1.0 | 2.3 | 30.0      | 850           | 90.9      | 19.2        | 14.6        | 1.35 | 4.17       | 302.1             | 91.4            | 3.5              | 1.2             |
|           |             |     |     | 29.9      | 950           | 88.7      | 19.2        | 14.7        | 1.32 | 4.26       | 298.3             | 91.3            | 3.3              | 1.3             |
|           | 4.5         | 2.2 | 5.2 | 32.9      | 850           | 92.0      | 20.2        | 15.5        | 1.38 | 4.29       | 309.2             | 96.6            | 3.6              | 1.2             |
|           |             |     |     | 32.9      | 950           | 89.7      | 20.2        | 15.6        | 1.35 | 4.39       | 305.4             | 96.4            | 3.4              | 1.3             |
|           | 6.0         | 3.6 | 8.4 | 34.4      | 850           | 92.8      | 20.9        | 16.2        | 1.39 | 4.41       | 312.4             | 99.6            | 3.5              | 1.3             |
|           |             |     |     | 34.4      | 950           | 90.4      | 20.9        | 16.3        | 1.36 | 4.50       | 308.6             | 99.4            | 3.2              | 1.4             |
| 50        | 3.0         | 0.9 | 2.1 | 38.2      | 850           | 93.9      | 21.9        | 17.1        | 1.41 | 4.55       | 318.0             | 107.2           | 3.4              | 2.3             |
|           |             |     |     | 38.2      | 950           | 91.3      | 21.9        | 17.2        | 1.38 | 4.65       | 314.1             | 107.1           | 3.1              | 2.4             |
|           | 4.5         | 2.0 | 4.7 | 41.7      | 850           | 95.1      | 23.0        | 18.1        | 1.44 | 4.68       | 325.5             | 113.3           | 3.4              | 3.0             |
|           |             |     |     | 41.7      | 950           | 92.4      | 23.0        | 18.2        | 1.41 | 4.78       | 321.5             | 113.1           | 3.2              | 3.1             |
|           | 6.0         | 3.3 | 7.7 | 43.5      | 850           | 96.0      | 23.9        | 19.0        | 1.45 | 4.83       | 328.9             | 116.8           | 3.2              | 3.5             |
|           |             |     |     | 43.5      | 950           | 93.3      | 23.9        | 19.0        | 1.43 | 4.90       | 324.9             | 116.6           | 3.0              | 3.6             |
| 60        | 3.0         | 0.9 | 2.0 | 46.6      | 850           | 96.8      | 24.6        | 19.5        | 1.49 | 4.84       | 333.8             | 123.8           | 3.2              | 4.0             |
|           |             |     |     | 46.5      | 950           | 94.0      | 24.6        | 19.6        | 1.46 | 4.94       | 329.7             | 123.6           | 3.1              | 4.1             |
|           | 4.5         | 2.0 | 4.5 | 50.5      | 850           | 98.2      | 25.9        | 20.7        | 1.52 | 4.99       | 341.7             | 130.7           | 3.2              | 5.4             |
|           |             |     |     | 50.5      | 950           | 95.2      | 25.9        | 20.8        | 1.49 | 5.09       | 337.5             | 130.5           | 2.9              | 5.5             |
|           | 6.0         | 3.2 | 7.4 | 52.6      | 850           | 99.2      | 26.8        | 21.6        | 1.53 | 5.13       | 345.3             | 134.8           | 2.9              | 6.4             |
|           |             |     |     | 52.5      | 950           | 96.1      | 26.8        | 21.7        | 1.50 | 5.24       | 341.1             | 134.6           | 2.8              | 6.4             |
| 70        | 3.0         | 0.8 | 2.0 | 54.9      | 850           | 99.7      | 27.3        | 21.9        | 1.58 | 5.06       | 349.5             | 140.6           | 3.1              | 6.0             |
|           |             |     |     | 54.9      | 950           | 96.6      | 27.3        | 22.0        | 1.55 | 5.16       | 345.2             | 140.4           | 2.9              | 6.1             |
|           | 4.5         | 1.9 | 4.4 | 59.4      | 850           | 101.3     | 28.7        | 23.2        | 1.61 | 5.22       | 357.7             | 148.6           | 2.9              | 7.9             |
|           |             |     |     | 59.3      | 950           | 98.0      | 28.7        | 23.3        | 1.58 | 5.32       | 353.3             | 148.3           | 2.7              | 8.1             |
|           | 6.0         | 3.1 | 7.1 | 61.7      | 850           | 102.5     | 29.8        | 24.2        | 1.63 | 5.36       | 361.5             | 153.2           | 2.6              | 9.3             |
|           |             |     |     | 61.6      | 950           | 99.0      | 29.8        | 24.3        | 1.60 | 5.46       | 357.1             | 153.0           | 2.5              | 9.4             |
| 80        | 3.0         | 0.8 | 1.7 | 63.4      | 850           | 102.5     | 29.8        | 24.1        | 1.68 | 5.20       | 365.0             | 157.4           | 2.8              | 7.9             |
|           |             |     |     | 63.4      | 950           | 99.0      | 29.8        | 24.2        | 1.65 | 5.29       | 360.5             | 157.1           | 2.6              | 8.0             |
|           | 4.5         | 1.7 | 3.9 | 68.3      | 850           | 104.2     | 31.4        | 25.5        | 1.72 | 5.35       | 373.6             | 166.2           | 2.5              | 10.5            |
|           |             |     |     | 68.3      | 950           | 100.6     | 31.4        | 25.6        | 1.69 | 5.45       | 369.0             | 166.0           | 2.3              | 10.5            |
|           | 6.0         | 2.7 | 6.3 | 70.9      | 850           | 105.4     | 32.5        | 26.6        | 1.74 | 5.47       | 377.5             | 171.5           | 2.2              | 12.1            |
|           |             |     |     | 70.8      | 950           | 101.7     | 32.5        | 26.7        | 1.70 | 5.60       | 372.9             | 171.2           | 2.0              | 12.2            |
| 90        | 3.0         | 0.7 | 1.5 | 72.0      | 850           | 105.2     | 32.3        | 26.2        | 1.79 | 5.29       | 380.4             | 174.3           | 2.3              | 9.9             |
|           |             |     |     | 71.9      | 950           | 101.5     | 32.3        | 26.3        | 1.76 | 5.38       | 375.7             | 174.0           | 2.1              | 10.0            |
|           | 4.5         | 1.5 | 3.4 | 77.3      | 850           | 107.0     | 34.0        | 27.8        | 1.83 | 5.45       | 389.3             | 184.1           | 1.9              | 13.0            |
|           |             |     |     | 77.2      | 950           | 103.1     | 34.0        | 27.9        | 1.80 | 5.54       | 384.5             | 183.8           | 1.8              | 13.1            |
|           | 6.0         | 2.4 | 5.5 | 80.1      | 850           | 108.3     | 35.2        | 28.9        | 1.85 | 5.58       | 393.4             | 189.9           | 1.6              | 15.0            |
|           |             |     |     | 80.0      | 950           | 104.3     | 35.2        | 29.0        | 1.81 | 5.70       | 388.6             | 189.6           | 1.5              | 15.1            |

**ENGINEERING SPECIFICATIONS:**

**MODEL 024, 2 TON, WITH MPD024 FULL LOAD COOLING PERFORMANCE:**

| EWT<br>°F | Flow<br>GPM | WPD |     | LWT<br>°F | Cooling |       |       |      |       |      |        |           |         |            |           |
|-----------|-------------|-----|-----|-----------|---------|-------|-------|------|-------|------|--------|-----------|---------|------------|-----------|
|           |             | PSI | FT  |           | Aiflow  | TC    | SC    |      | HR    |      | EER    | Discharge | Suction | Subcooling | Superheat |
|           |             |     |     |           | CFM     | MBtuh | MBtuh | S/T  | MBtuh | kW   | Btuh/W | PSIG      | PSIG    | °F         | °F        |
| 50        | 3.0         | 1.0 | 2.4 | 72.7      | 850     | 29.5  | 20.6  | 0.70 | 33.1  | 1.06 | 27.8   | 218.3     | 135.1   | 20.3       | 14.8      |
|           |             |     |     | 72.7      | 950     | 29.5  | 21.1  | 0.72 | 33.1  | 1.06 | 27.8   | 218.6     | 136.6   | 20.2       | 14.7      |
|           | 4.5         | 2.0 | 4.6 | 65.2      | 850     | 29.7  | 20.5  | 0.69 | 33.1  | 0.99 | 30.0   | 201.8     | 134.1   | 16.3       | 15.3      |
|           |             |     |     | 65.2      | 950     | 29.7  | 21.1  | 0.71 | 33.1  | 0.99 | 30.0   | 202.0     | 135.6   | 16.2       | 15.3      |
|           | 6.0         | 3.2 | 7.3 | 61.3      | 850     | 29.8  | 20.6  | 0.69 | 33.0  | 0.95 | 31.4   | 193.5     | 134.2   | 14.1       | 15.4      |
|           |             |     |     | 61.4      | 950     | 29.8  | 21.1  | 0.71 | 33.1  | 0.96 | 31.0   | 193.7     | 135.7   | 14.0       | 15.3      |
| 60        | 3.0         | 1.0 | 2.3 | 82.4      | 850     | 28.6  | 20.3  | 0.71 | 32.6  | 1.18 | 24.2   | 255.6     | 137.5   | 21.0       | 13.7      |
|           |             |     |     | 82.4      | 950     | 28.6  | 20.8  | 0.73 | 32.6  | 1.18 | 24.2   | 255.9     | 139.0   | 20.7       | 13.7      |
|           | 4.5         | 1.9 | 4.3 | 74.9      | 850     | 28.8  | 20.3  | 0.70 | 32.6  | 1.10 | 26.2   | 236.2     | 136.5   | 16.6       | 14.2      |
|           |             |     |     | 74.9      | 950     | 28.8  | 20.8  | 0.72 | 32.6  | 1.10 | 26.2   | 236.5     | 138.0   | 16.4       | 14.3      |
|           | 6.0         | 3.0 | 6.8 | 71.2      | 850     | 28.9  | 20.3  | 0.70 | 32.5  | 1.06 | 27.3   | 226.5     | 136.6   | 14.1       | 14.3      |
|           |             |     |     | 71.2      | 950     | 28.9  | 20.8  | 0.72 | 32.6  | 1.07 | 27.0   | 226.8     | 138.1   | 14.0       | 14.3      |
| 70        | 3.0         | 0.9 | 2.1 | 92.1      | 850     | 27.6  | 20.0  | 0.72 | 32.1  | 1.32 | 20.9   | 296.5     | 139.9   | 21.5       | 12.8      |
|           |             |     |     | 92.1      | 950     | 27.6  | 20.5  | 0.74 | 32.1  | 1.33 | 20.8   | 296.9     | 141.4   | 21.3       | 12.8      |
|           | 4.5         | 1.7 | 4.0 | 84.7      | 850     | 27.8  | 20.0  | 0.72 | 32.0  | 1.24 | 22.4   | 274.0     | 138.9   | 17.0       | 13.3      |
|           |             |     |     | 84.7      | 950     | 27.8  | 20.5  | 0.74 | 32.0  | 1.24 | 22.4   | 274.4     | 140.4   | 16.8       | 13.4      |
|           | 6.0         | 2.7 | 6.3 | 81.0      | 850     | 27.9  | 20.0  | 0.72 | 32.0  | 1.19 | 23.4   | 262.8     | 139.0   | 14.5       | 13.4      |
|           |             |     |     | 81.0      | 950     | 27.9  | 20.5  | 0.73 | 32.0  | 1.20 | 23.3   | 263.1     | 140.5   | 14.3       | 13.5      |
| 80        | 3.0         | 0.8 | 1.9 | 101.7     | 850     | 26.5  | 19.5  | 0.74 | 31.6  | 1.49 | 17.8   | 341.3     | 141.4   | 22.4       | 12.5      |
|           |             |     |     | 101.7     | 950     | 26.5  | 20.0  | 0.75 | 31.6  | 1.49 | 17.8   | 341.7     | 142.9   | 22.1       | 12.6      |
|           | 4.5         | 1.6 | 3.6 | 94.4      | 850     | 26.7  | 19.4  | 0.73 | 31.4  | 1.39 | 19.2   | 315.4     | 140.4   | 18.1       | 13.1      |
|           |             |     |     | 94.4      | 950     | 26.7  | 19.9  | 0.75 | 31.4  | 1.39 | 19.2   | 315.8     | 141.9   | 17.9       | 13.1      |
|           | 6.0         | 2.5 | 5.8 | 90.8      | 850     | 26.8  | 19.5  | 0.73 | 31.4  | 1.34 | 20.0   | 302.5     | 140.4   | 15.5       | 13.2      |
|           |             |     |     | 90.8      | 950     | 26.8  | 20.0  | 0.75 | 31.4  | 1.34 | 20.0   | 302.8     | 142.0   | 15.3       | 13.2      |
| 90        | 3.0         | 0.7 | 1.7 | 111.3     | 850     | 25.2  | 18.9  | 0.75 | 31.0  | 1.71 | 14.7   | 395.2     | 142.9   | 23.4       | 12.6      |
|           |             |     |     | 111.4     | 950     | 25.2  | 19.4  | 0.77 | 31.1  | 1.72 | 14.7   | 395.7     | 144.4   | 23.0       | 12.6      |
|           | 4.5         | 1.4 | 3.2 | 104.2     | 850     | 25.4  | 18.8  | 0.74 | 30.9  | 1.60 | 15.9   | 365.2     | 141.8   | 19.4       | 13.2      |
|           |             |     |     | 104.2     | 950     | 25.4  | 19.3  | 0.76 | 30.9  | 1.61 | 15.8   | 365.7     | 143.4   | 19.2       | 13.2      |
|           | 6.0         | 2.2 | 5.1 | 100.6     | 850     | 25.5  | 18.9  | 0.74 | 30.8  | 1.55 | 16.5   | 350.3     | 141.9   | 17.0       | 13.2      |
|           |             |     |     | 100.6     | 950     | 25.5  | 19.4  | 0.76 | 30.8  | 1.55 | 16.5   | 350.7     | 143.5   | 16.8       | 13.3      |
| 100       | 3.0         | 0.7 | 1.5 | 121.0     | 850     | 23.7  | 18.4  | 0.78 | 30.6  | 2.03 | 11.7   | 460.8     | 145.3   | 24.2       | 12.8      |
|           |             |     |     | 121.0     | 950     | 23.7  | 18.9  | 0.80 | 30.6  | 2.03 | 11.7   | 461.4     | 146.9   | 23.9       | 12.8      |
|           | 4.5         | 1.3 | 2.9 | 113.9     | 850     | 23.9  | 18.4  | 0.77 | 30.3  | 1.89 | 12.6   | 425.9     | 144.3   | 20.2       | 13.4      |
|           |             |     |     | 113.9     | 950     | 23.9  | 18.8  | 0.79 | 30.4  | 1.90 | 12.6   | 426.4     | 145.9   | 19.9       | 13.4      |
|           | 6.0         | 2.0 | 4.6 | 110.3     | 850     | 23.9  | 18.4  | 0.77 | 30.1  | 1.83 | 13.1   | 408.4     | 144.4   | 18.0       | 13.4      |
|           |             |     |     | 110.3     | 950     | 23.9  | 18.9  | 0.79 | 30.1  | 1.83 | 13.1   | 408.9     | 146.0   | 17.6       | 13.5      |
| 110       | 3.0         | 0.6 | 1.3 | 130.8     | 850     | 22.1  | 17.9  | 0.81 | 30.2  | 2.37 | 9.3    | 530.1     | 147.8   | 26.3       | 13.1      |
|           |             |     |     | 130.8     | 950     | 22.1  | 18.3  | 0.83 | 30.2  | 2.38 | 9.3    | 530.8     | 149.4   | 26.0       | 13.2      |
|           | 4.5         | 1.1 | 2.5 | 123.7     | 850     | 22.3  | 17.8  | 0.80 | 29.8  | 2.21 | 10.1   | 489.9     | 146.8   | 21.0       | 13.7      |
|           |             |     |     | 123.7     | 950     | 22.3  | 18.3  | 0.82 | 29.9  | 2.22 | 10.0   | 490.6     | 148.4   | 20.8       | 13.7      |
|           | 6.0         | 1.7 | 4.0 | 120.2     | 850     | 22.3  | 17.9  | 0.80 | 29.6  | 2.13 | 10.5   | 469.8     | 146.9   | 18.3       | 13.7      |
|           |             |     |     | 120.2     | 950     | 22.3  | 18.3  | 0.82 | 29.6  | 2.14 | 10.4   | 470.4     | 148.5   | 18.0       | 13.8      |

**ENGINEERING SPECIFICATIONS:**

**MODEL 036, 3 TON, WITH MPD036 FULL LOAD HEATING PERFORMANCE:**

| EWT<br>°F | Flow<br>GPM | WPD |     | LWT<br>°F | Heating       |           |             |             |      |            |                   |                 |                  |                 |
|-----------|-------------|-----|-----|-----------|---------------|-----------|-------------|-------------|------|------------|-------------------|-----------------|------------------|-----------------|
|           |             | PSI | FT  |           | Aiflow<br>CFM | LAT<br>°F | HC<br>MBtuh | HE<br>MBtuh |      | COP<br>W/W | Discharge<br>PSIG | Suction<br>PSIG | Subcooling<br>°F | Superheat<br>°F |
| 25        | 9.0         | 3.5 | 8.1 | 20.8      | 1200          | 89.2      | 24.9        | 18.5        | 1.89 | 3.86       | 303.2             | 71.1            | 7.4              | 37.1            |
|           |             |     |     | 20.7      | 1350          | 87.1      | 24.9        | 18.9        | 1.76 | 4.15       | 290.4             | 69.0            | 8.3              | 34.8            |
| 30        | 4.5         | 1.3 | 3.1 | 21.5      | 1200          | 89.4      | 25.2        | 18.5        | 1.95 | 3.79       | 303.2             | 74.2            | 8.1              | 36.1            |
|           |             |     |     | 21.3      | 1350          | 87.3      | 25.2        | 19.0        | 1.81 | 4.08       | 290.4             | 71.9            | 9.0              | 33.8            |
|           | 7.0         | 2.5 | 5.8 | 24.2      | 1200          | 90.4      | 26.4        | 19.7        | 1.97 | 3.93       | 308.7             | 79.3            | 7.5              | 33.5            |
|           |             |     |     | 24.1      | 1350          | 88.1      | 26.4        | 20.1        | 1.84 | 4.20       | 295.7             | 76.9            | 8.5              | 31.1            |
|           | 9.0         | 3.6 | 8.4 | 25.4      | 1200          | 90.8      | 26.9        | 20.1        | 1.98 | 3.98       | 310.9             | 81.1            | 7.1              | 32.1            |
|           |             |     |     | 25.3      | 1350          | 88.4      | 26.9        | 20.6        | 1.85 | 4.26       | 297.9             | 78.6            | 8.1              | 29.8            |
| 40        | 4.5         | 1.3 | 2.9 | 30.0      | 1200          | 92.2      | 28.8        | 21.9        | 2.03 | 4.16       | 317.5             | 88.8            | 6.6              | 27.2            |
|           |             |     |     | 29.7      | 1350          | 89.8      | 28.9        | 22.5        | 1.89 | 4.48       | 304.2             | 86.0            | 7.7              | 25.1            |
|           | 7.0         | 2.4 | 5.5 | 33.2      | 1200          | 93.3      | 30.2        | 23.2        | 2.06 | 4.30       | 323.3             | 94.9            | 5.9              | 24.5            |
|           |             |     |     | 33.0      | 1350          | 90.7      | 30.2        | 23.6        | 1.92 | 4.61       | 309.8             | 92.0            | 7.1              | 22.3            |
|           | 9.0         | 3.4 | 7.9 | 34.6      | 1200          | 93.8      | 30.8        | 23.7        | 2.07 | 4.36       | 325.7             | 97.0            | 5.4              | 23.1            |
|           |             |     |     | 34.5      | 1350          | 91.1      | 30.8        | 24.2        | 1.93 | 4.68       | 312.0             | 94.0            | 6.7              | 21.0            |
| 50        | 4.5         | 1.2 | 2.7 | 38.4      | 1200          | 95.1      | 32.5        | 25.3        | 2.12 | 4.49       | 332.2             | 103.5           | 5.2              | 20.0            |
|           |             |     |     | 38.2      | 1350          | 92.3      | 32.5        | 25.7        | 1.98 | 4.81       | 318.3             | 100.3           | 6.6              | 17.9            |
|           | 7.0         | 2.2 | 5.1 | 42.1      | 1200          | 96.2      | 34.0        | 26.7        | 2.15 | 4.63       | 338.3             | 110.6           | 4.4              | 17.3            |
|           |             |     |     | 42.0      | 1350          | 93.3      | 34.0        | 27.2        | 2.00 | 4.98       | 324.1             | 107.2           | 5.8              | 15.1            |
|           | 9.0         | 3.2 | 7.4 | 43.7      | 1200          | 96.8      | 34.7        | 27.3        | 2.16 | 4.71       | 340.7             | 113.0           | 3.9              | 15.9            |
|           |             |     |     | 43.6      | 1350          | 93.8      | 34.7        | 27.8        | 2.01 | 5.06       | 326.4             | 109.6           | 5.3              | 13.6            |
| 60        | 4.5         | 1.1 | 2.6 | 46.9      | 1200          | 97.9      | 36.2        | 28.5        | 2.26 | 4.69       | 347.9             | 119.8           | 4.4              | 15.3            |
|           |             |     |     | 46.7      | 1350          | 94.8      | 36.2        | 29.0        | 2.11 | 5.03       | 333.3             | 116.1           | 6.0              | 13.0            |
|           | 7.0         | 2.2 | 5.0 | 51.2      | 1200          | 99.2      | 37.8        | 30.0        | 2.29 | 4.84       | 354.3             | 128.0           | 3.4              | 12.5            |
|           |             |     |     | 51.0      | 1350          | 96.0      | 37.9        | 30.6        | 2.14 | 5.19       | 339.4             | 124.1           | 5.1              | 10.2            |
|           | 9.0         | 3.1 | 7.1 | 52.9      | 1200          | 99.8      | 38.6        | 30.8        | 2.30 | 4.92       | 356.8             | 130.9           | 2.9              | 11.1            |
|           |             |     |     | 52.8      | 1350          | 96.5      | 38.6        | 31.3        | 2.15 | 5.26       | 341.8             | 126.9           | 4.6              | 8.7             |
| 70        | 4.5         | 1.1 | 2.5 | 55.5      | 1200          | 100.8     | 39.9        | 31.6        | 2.42 | 4.83       | 364.5             | 136.4           | 4.0              | 12.9            |
|           |             |     |     | 55.2      | 1350          | 97.4      | 39.9        | 32.2        | 2.25 | 5.20       | 349.1             | 132.2           | 5.8              | 10.4            |
|           | 7.0         | 2.0 | 4.7 | 60.2      | 1200          | 102.2     | 41.7        | 33.3        | 2.45 | 4.99       | 371.1             | 145.8           | 2.9              | 9.9             |
|           |             |     |     | 60.0      | 1350          | 98.6      | 41.7        | 33.9        | 2.29 | 5.34       | 355.5             | 141.3           | 4.8              | 7.5             |
|           | 9.0         | 2.9 | 6.7 | 62.2      | 1200          | 102.9     | 42.6        | 34.2        | 2.46 | 5.08       | 373.8             | 149.0           | 2.3              | 8.4             |
|           |             |     |     | 62.0      | 1350          | 99.2      | 42.6        | 34.8        | 2.30 | 5.43       | 358.1             | 144.5           | 4.3              | 5.9             |
| 80        | 4.5         | 0.9 | 2.1 | 64.0      | 1200          | 103.6     | 43.6        | 34.9        | 2.56 | 4.99       | 381.5             | 152.0           | 3.7              | 11.8            |
|           |             |     |     | 63.7      | 1350          | 99.9      | 43.6        | 35.5        | 2.38 | 5.37       | 365.4             | 147.4           | 5.6              | 9.0             |
|           | 7.0         | 1.7 | 4.0 | 69.2      | 1200          | 105.2     | 45.6        | 36.8        | 2.59 | 5.16       | 388.5             | 162.4           | 2.5              | 8.8             |
|           |             |     |     | 69.0      | 1350          | 101.3     | 45.6        | 37.3        | 2.42 | 5.52       | 372.1             | 157.5           | 4.6              | 6.1             |
|           | 9.0         | 2.5 | 5.8 | 71.4      | 1200          | 105.9     | 46.5        | 37.6        | 2.61 | 5.22       | 391.2             | 166.1           | 1.9              | 7.2             |
|           |             |     |     | 71.2      | 1350          | 101.9     | 46.5        | 38.2        | 2.43 | 5.61       | 374.8             | 161.0           | 4.0              | 4.5             |
| 90        | 4.5         | 0.8 | 1.8 | 72.5      | 1200          | 106.5     | 47.3        | 38.1        | 2.70 | 5.13       | 398.8             | 167.7           | 3.4              | 11.7            |
|           |             |     |     | 72.3      | 1350          | 102.4     | 47.3        | 38.7        | 2.52 | 5.50       | 382.1             | 162.6           | 5.5              | 8.7             |
|           | 7.0         | 1.4 | 3.3 | 78.2      | 1200          | 108.2     | 49.5        | 40.2        | 2.74 | 5.29       | 406.1             | 179.3           | 2.1              | 8.6             |
|           |             |     |     | 78.0      | 1350          | 104.0     | 49.5        | 40.8        | 2.56 | 5.67       | 389.1             | 173.8           | 4.4              | 5.6             |
|           | 9.0         | 2.1 | 4.8 | 80.6      | 1200          | 109.0     | 50.5        | 41.1        | 2.75 | 5.38       | 409.0             | 183.3           | 1.5              | 6.9             |
|           |             |     |     | 80.4      | 1350          | 104.6     | 50.5        | 41.7        | 2.57 | 5.76       | 391.9             | 177.7           | 3.8              | 3.8             |

**MODEL 036, 3 TON, WITH MPD036 FULL LOAD COOLING PERFORMANCE:**

| EWT<br>°F | Flow<br>GPM | WPD |     | LWT<br>°F | Cooling |       |       |      |       |      |        |           |         |            |           |
|-----------|-------------|-----|-----|-----------|---------|-------|-------|------|-------|------|--------|-----------|---------|------------|-----------|
|           |             | PSI | FT  |           | Aiflow  | TC    | SC    |      | HR    |      | EER    | Discharge | Suction | Subcooling | Superheat |
|           |             |     |     |           | CFM     | MBtuh | MBtuh | S/T  | MBtuh | kW   | Btuh/W | PSIG      | PSIG    | °F         | °F        |
| 50        | 4.5         | 1.4 | 3.1 | 69.1      | 1250    | 36.1  | 24.2  | 0.67 | 41.6  | 1.61 | 22.4   | 233.1     | 112.3   | 27.0       | 33.9      |
|           |             |     |     | 68.8      | 1350    | 35.9  | 24.2  | 0.67 | 41.1  | 1.52 | 23.6   | 213.8     | 112.3   | 24.7       | 33.8      |
|           | 7.0         | 2.4 | 5.6 | 62.0      | 1250    | 35.8  | 23.7  | 0.66 | 40.9  | 1.49 | 24.0   | 214.0     | 110.3   | 22.6       | 36.2      |
|           |             |     |     | 61.9      | 1350    | 35.6  | 23.7  | 0.67 | 40.4  | 1.41 | 25.2   | 196.3     | 110.3   | 20.6       | 36.1      |
|           | 9.0         | 3.1 | 7.1 | 59.4      | 1250    | 36.2  | 24.0  | 0.66 | 41.1  | 1.45 | 25.0   | 207.4     | 111.1   | 20.5       | 35.1      |
|           |             |     |     | 59.3      | 1350    | 36.0  | 24.0  | 0.67 | 40.7  | 1.37 | 26.3   | 190.3     | 111.1   | 18.5       | 35.0      |
| 60        | 4.5         | 1.2 | 2.8 | 79.9      | 1250    | 37.3  | 25.5  | 0.68 | 43.4  | 1.80 | 20.7   | 269.5     | 121.7   | 26.4       | 26.5      |
|           |             |     |     | 79.7      | 1350    | 37.1  | 25.5  | 0.69 | 42.9  | 1.70 | 21.8   | 247.2     | 121.7   | 24.3       | 26.4      |
|           | 7.0         | 2.2 | 5.1 | 72.6      | 1250    | 37.0  | 25.0  | 0.68 | 42.7  | 1.67 | 22.2   | 247.4     | 119.5   | 21.7       | 28.9      |
|           |             |     |     | 72.4      | 1350    | 36.8  | 25.0  | 0.68 | 42.2  | 1.58 | 23.3   | 226.9     | 119.5   | 19.8       | 28.8      |
|           | 9.0         | 2.8 | 6.4 | 69.9      | 1250    | 37.4  | 25.3  | 0.68 | 43.0  | 1.63 | 22.9   | 239.8     | 120.5   | 19.4       | 27.7      |
|           |             |     |     | 69.7      | 1350    | 37.2  | 25.3  | 0.68 | 42.4  | 1.53 | 24.3   | 220.0     | 120.5   | 17.6       | 27.6      |
| 70        | 4.5         | 1.1 | 2.5 | 90.7      | 1250    | 38.2  | 26.6  | 0.70 | 45.1  | 2.02 | 18.9   | 308.7     | 130.4   | 25.5       | 20.0      |
|           |             |     |     | 90.4      | 1350    | 38.0  | 26.6  | 0.70 | 44.5  | 1.91 | 19.9   | 283.1     | 130.4   | 23.9       | 19.9      |
|           | 7.0         | 2.0 | 4.6 | 83.0      | 1250    | 37.8  | 26.0  | 0.69 | 44.2  | 1.88 | 20.1   | 283.3     | 128.0   | 20.8       | 22.4      |
|           |             |     |     | 82.8      | 1350    | 37.6  | 26.0  | 0.69 | 43.6  | 1.77 | 21.2   | 259.9     | 128.0   | 19.3       | 22.3      |
|           | 9.0         | 2.5 | 5.7 | 80.2      | 1250    | 38.2  | 26.4  | 0.69 | 44.4  | 1.82 | 21.0   | 274.6     | 129.0   | 18.4       | 21.3      |
|           |             |     |     | 80.1      | 1350    | 38.0  | 26.4  | 0.69 | 43.9  | 1.72 | 22.1   | 251.9     | 129.0   | 17.0       | 21.2      |
| 80        | 4.5         | 1.0 | 2.3 | 100.7     | 1250    | 37.5  | 26.6  | 0.71 | 45.2  | 2.26 | 16.6   | 352.3     | 135.0   | 24.8       | 16.4      |
|           |             |     |     | 100.4     | 1350    | 37.3  | 26.6  | 0.71 | 44.6  | 2.13 | 17.5   | 323.2     | 135.0   | 23.9       | 16.3      |
|           | 7.0         | 1.8 | 4.1 | 93.0      | 1250    | 37.1  | 26.1  | 0.70 | 44.3  | 2.10 | 17.7   | 323.4     | 132.5   | 20.5       | 18.7      |
|           |             |     |     | 92.9      | 1350    | 36.9  | 26.1  | 0.71 | 43.7  | 1.98 | 18.6   | 296.7     | 132.5   | 19.5       | 18.6      |
|           | 9.0         | 2.2 | 5.2 | 90.2      | 1250    | 37.5  | 26.4  | 0.70 | 44.5  | 2.04 | 18.4   | 313.5     | 133.6   | 18.1       | 17.6      |
|           |             |     |     | 90.1      | 1350    | 37.3  | 26.4  | 0.71 | 43.9  | 1.92 | 19.4   | 287.6     | 133.6   | 17.0       | 17.4      |
| 90        | 4.5         | 0.9 | 2.1 | 110.4     | 1250    | 35.8  | 26.1  | 0.73 | 44.5  | 2.55 | 14.0   | 402.8     | 137.5   | 24.0       | 14.5      |
|           |             |     |     | 110.1     | 1350    | 35.6  | 26.1  | 0.73 | 43.8  | 2.41 | 14.8   | 369.5     | 137.5   | 24.1       | 14.4      |
|           | 7.0         | 1.6 | 3.7 | 102.8     | 1250    | 35.5  | 25.6  | 0.72 | 43.6  | 2.37 | 15.0   | 369.7     | 135.0   | 20.2       | 16.7      |
|           |             |     |     | 102.6     | 1350    | 35.3  | 25.6  | 0.73 | 42.9  | 2.23 | 15.8   | 339.1     | 135.0   | 19.9       | 16.6      |
|           | 9.0         | 2.0 | 4.7 | 100.0     | 1250    | 35.9  | 25.9  | 0.72 | 43.7  | 2.30 | 15.6   | 358.4     | 136.1   | 17.8       | 15.6      |
|           |             |     |     | 99.9      | 1350    | 35.7  | 25.9  | 0.73 | 43.1  | 2.17 | 16.5   | 328.8     | 136.1   | 17.6       | 15.5      |
| 100       | 4.5         | 0.8 | 1.9 | 120.2     | 1250    | 34.1  | 25.7  | 0.75 | 44.0  | 2.91 | 11.7   | 460.3     | 140.6   | 23.3       | 12.5      |
|           |             |     |     | 119.8     | 1350    | 33.9  | 25.7  | 0.76 | 43.3  | 2.75 | 12.3   | 422.2     | 140.6   | 23.7       | 12.4      |
|           | 7.0         | 1.5 | 3.4 | 112.6     | 1250    | 33.7  | 25.2  | 0.75 | 42.9  | 2.70 | 12.5   | 422.5     | 138.1   | 19.5       | 14.8      |
|           |             |     |     | 112.5     | 1350    | 33.6  | 25.2  | 0.75 | 42.3  | 2.55 | 13.2   | 387.5     | 138.1   | 20.0       | 14.7      |
|           | 9.0         | 1.8 | 4.3 | 109.9     | 1250    | 34.1  | 25.5  | 0.75 | 43.0  | 2.62 | 13.0   | 409.5     | 139.2   | 17.0       | 13.6      |
|           |             |     |     | 109.7     | 1350    | 33.9  | 25.5  | 0.75 | 42.3  | 2.47 | 13.7   | 375.7     | 139.2   | 17.6       | 13.5      |
| 110       | 4.5         | 0.7 | 1.7 | 129.7     | 1250    | 31.9  | 25.1  | 0.79 | 43.1  | 3.29 | 9.7    | 520.5     | 142.9   | 23.7       | 11.3      |
|           |             |     |     | 129.4     | 1350    | 31.8  | 25.1  | 0.79 | 42.4  | 3.11 | 10.2   | 477.4     | 142.9   | 23.4       | 11.2      |
|           | 7.0         | 1.3 | 3.1 | 122.4     | 1250    | 31.6  | 24.6  | 0.78 | 42.0  | 3.05 | 10.4   | 477.7     | 140.4   | 18.7       | 13.5      |
|           |             |     |     | 122.2     | 1350    | 31.5  | 24.6  | 0.78 | 41.3  | 2.88 | 10.9   | 438.2     | 140.4   | 19.3       | 13.4      |
|           | 9.0         | 1.7 | 3.9 | 119.6     | 1250    | 32.0  | 24.9  | 0.78 | 42.1  | 2.96 | 10.8   | 463.1     | 141.5   | 16.0       | 12.4      |
|           |             |     |     | 119.5     | 1350    | 31.8  | 24.9  | 0.78 | 41.4  | 2.80 | 11.4   | 424.8     | 141.5   | 16.8       | 12.3      |

# ENGINEERING SPECIFICATIONS:

## MODEL 048, 4 TON, WITH MPD060 FULL LOAD HEATING PERFORMANCE DATA:

| EWT<br>°F | Flow<br>GPM | WPD |      | LWT<br>°F | Heating       |           |             |             |      |            |                   |                 |                  |                 |
|-----------|-------------|-----|------|-----------|---------------|-----------|-------------|-------------|------|------------|-------------------|-----------------|------------------|-----------------|
|           |             | PSI | FT   |           | Aiflow<br>CFM | LAT<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 |
| 25        | 12.0        | 6.0 | 13.8 | 20.8      | 1500          | 90.4      | 33.0        | 24.4        | 2.52 | 3.84       | 278.5             | 72.2            | 0.8              | 3.4             |
|           |             |     |      | 20.8      | 1700          | 88.0      | 33.0        | 24.6        | 2.47 | 3.92       | 273.1             | 72.2            | 0.7              | 3.4             |
| 30        | 6.0         | 1.9 | 4.4  | 21.5      | 1500          | 90.6      | 33.3        | 24.7        | 2.51 | 3.89       | 278.9             | 73.8            | 0.9              | 3.7             |
|           |             |     |      | 21.4      | 1700          | 88.1      | 33.3        | 24.9        | 2.46 | 3.97       | 273.4             | 73.8            | 0.9              | 3.7             |
|           | 9.0         | 3.7 | 8.5  | 24.1      | 1500          | 91.4      | 34.6        | 25.9        | 2.54 | 3.99       | 282.0             | 77.6            | 1.0              | 3.4             |
|           |             |     |      | 24.0      | 1700          | 88.8      | 34.6        | 26.1        | 2.49 | 4.07       | 276.5             | 77.6            | 0.9              | 3.4             |
|           | 12.0        | 5.8 | 13.5 | 25.4      | 1500          | 91.9      | 35.4        | 26.7        | 2.56 | 4.05       | 283.7             | 80.0            | 0.9              | 3.1             |
|           |             |     |      | 25.4      | 1700          | 89.3      | 35.4        | 26.8        | 2.51 | 4.13       | 278.2             | 80.0            | 0.9              | 3.1             |
| 40        | 6.0         | 1.8 | 4.1  | 29.8      | 1500          | 93.8      | 38.5        | 29.6        | 2.61 | 4.32       | 290.4             | 88.3            | 1.0              | 4.8             |
|           |             |     |      | 29.8      | 1700          | 91.0      | 38.5        | 29.8        | 2.56 | 4.41       | 284.7             | 88.3            | 1.0              | 4.8             |
|           | 9.0         | 3.4 | 8.0  | 32.9      | 1500          | 94.6      | 39.9        | 30.9        | 2.65 | 4.41       | 293.7             | 92.9            | 1.0              | 5.2             |
|           |             |     |      | 32.9      | 1700          | 91.7      | 39.9        | 31.0        | 2.60 | 4.50       | 287.9             | 92.9            | 1.0              | 5.2             |
|           | 12.0        | 5.5 | 12.7 | 34.5      | 1500          | 95.2      | 40.9        | 31.8        | 2.67 | 4.49       | 295.5             | 95.7            | 0.9              | 5.4             |
|           |             |     |      | 34.5      | 1700          | 92.3      | 40.9        | 32.0        | 2.61 | 4.59       | 289.7             | 95.7            | 0.9              | 5.4             |
| 50        | 6.0         | 1.7 | 3.9  | 38.3      | 1500          | 96.7      | 43.2        | 34.0        | 2.71 | 4.67       | 301.1             | 101.7           | 1.0              | 7.4             |
|           |             |     |      | 38.2      | 1700          | 93.5      | 43.2        | 34.2        | 2.65 | 4.78       | 295.2             | 101.7           | 1.0              | 7.4             |
|           | 9.0         | 3.2 | 7.5  | 41.9      | 1500          | 97.7      | 44.9        | 35.5        | 2.75 | 4.79       | 304.5             | 107.0           | 1.0              | 8.6             |
|           |             |     |      | 41.8      | 1700          | 94.5      | 44.9        | 35.7        | 2.69 | 4.89       | 298.5             | 107.0           | 1.0              | 8.6             |
|           | 12.0        | 5.2 | 11.9 | 43.7      | 1500          | 98.4      | 46.0        | 36.5        | 2.77 | 4.87       | 306.3             | 110.3           | 0.9              | 9.0             |
|           |             |     |      | 43.7      | 1700          | 95.1      | 46.0        | 36.8        | 2.71 | 4.97       | 300.3             | 110.3           | 1.0              | 9.0             |
| 60        | 6.0         | 1.6 | 3.7  | 47.1      | 1500          | 99.0      | 46.9        | 37.4        | 2.79 | 4.93       | 309.6             | 113.0           | 1.1              | 10.7            |
|           |             |     |      | 47.1      | 1700          | 95.5      | 46.9        | 37.6        | 2.73 | 5.03       | 303.6             | 113.0           | 1.1              | 10.7            |
|           | 9.0         | 3.1 | 7.1  | 51.1      | 1500          | 100.1     | 48.7        | 39.0        | 2.83 | 5.04       | 313.1             | 118.9           | 1.1              | 12.6            |
|           |             |     |      | 51.0      | 1700          | 96.5      | 48.7        | 39.2        | 2.77 | 5.15       | 307.0             | 118.9           | 1.1              | 12.6            |
|           | 12.0        | 4.9 | 11.3 | 53.1      | 1500          | 100.8     | 49.9        | 40.2        | 2.85 | 5.13       | 315.0             | 122.5           | 1.0              | 13.5            |
|           |             |     |      | 53.1      | 1700          | 97.2      | 49.9        | 40.4        | 2.79 | 5.24       | 308.9             | 122.5           | 1.0              | 13.5            |
| 70        | 6.0         | 1.5 | 3.5  | 56.3      | 1500          | 100.6     | 49.6        | 39.9        | 2.85 | 5.10       | 316.1             | 121.6           | 1.2              | 15.0            |
|           |             |     |      | 56.2      | 1700          | 97.0      | 49.6        | 40.1        | 2.79 | 5.21       | 309.9             | 121.6           | 1.2              | 15.0            |
|           | 9.0         | 2.9 | 6.8  | 60.5      | 1500          | 101.8     | 51.5        | 41.6        | 2.89 | 5.22       | 319.6             | 128.0           | 1.1              | 17.6            |
|           |             |     |      | 60.4      | 1700          | 98.1      | 51.5        | 41.8        | 2.83 | 5.33       | 313.3             | 128.0           | 1.2              | 17.6            |
|           | 12.0        | 4.7 | 10.8 | 62.6      | 1500          | 102.6     | 52.8        | 42.9        | 2.91 | 5.32       | 321.6             | 131.9           | 1.1              | 18.8            |
|           |             |     |      | 62.6      | 1700          | 98.8      | 52.8        | 43.1        | 2.85 | 5.43       | 315.3             | 131.9           | 1.2              | 18.8            |
| 80        | 6.0         | 1.4 | 3.3  | 65.7      | 1500          | 101.9     | 51.6        | 41.7        | 2.90 | 5.21       | 321.1             | 127.9           | 1.3              | 20.7            |
|           |             |     |      | 65.6      | 1700          | 98.1      | 51.6        | 41.9        | 2.84 | 5.32       | 314.8             | 127.9           | 1.4              | 20.7            |
|           | 9.0         | 2.8 | 6.5  | 70.0      | 1500          | 103.1     | 53.6        | 43.6        | 2.94 | 5.34       | 324.7             | 134.6           | 1.3              | 24.0            |
|           |             |     |      | 70.0      | 1700          | 99.2      | 53.6        | 43.8        | 2.88 | 5.45       | 318.3             | 134.6           | 1.4              | 24.0            |
|           | 12.0        | 4.5 | 10.3 | 72.3      | 1500          | 103.9     | 54.9        | 44.8        | 2.96 | 5.44       | 326.7             | 138.7           | 1.2              | 25.6            |
|           |             |     |      | 72.3      | 1700          | 99.9      | 54.9        | 45.0        | 2.90 | 5.55       | 320.3             | 138.7           | 1.3              | 25.6            |
| 90        | 6.0         | 1.4 | 3.2  | 75.2      | 1500          | 102.8     | 53.2        | 43.2        | 2.94 | 5.30       | 325.2             | 133.2           | 1.4              | 26.8            |
|           |             |     |      | 75.1      | 1700          | 99.0      | 53.2        | 43.4        | 2.88 | 5.41       | 318.9             | 133.2           | 1.5              | 26.8            |
|           | 9.0         | 2.7 | 6.2  | 79.7      | 1500          | 104.1     | 55.3        | 45.1        | 2.98 | 5.44       | 328.9             | 140.1           | 1.4              | 30.8            |
|           |             |     |      | 79.6      | 1700          | 100.1     | 55.3        | 45.3        | 2.92 | 5.55       | 322.4             | 140.1           | 1.5              | 30.8            |
|           | 12.0        | 4.3 | 9.9  | 82.0      | 1500          | 104.9     | 56.6        | 46.4        | 3.00 | 5.53       | 330.9             | 144.4           | 1.3              | 32.7            |
|           |             |     |      | 82.0      | 1700          | 100.8     | 56.6        | 46.6        | 2.94 | 5.64       | 324.4             | 144.4           | 1.4              | 32.7            |

**ENGINEERING SPECIFICATIONS:**

**MODEL 048, 4 TON, WITH MPD060 FULL LOAD COOLING PERFORMANCE:**

| EWT<br>°F | Flow<br>GPM | WPD |      | LWT<br>°F | Cooling |       |       |      |       |      |        |           |         |            |           |
|-----------|-------------|-----|------|-----------|---------|-------|-------|------|-------|------|--------|-----------|---------|------------|-----------|
|           |             | PSI | FT   |           | Aiflow  | TC    | SC    |      | HR    |      | EER    | Discharge | Suction | Subcooling | Superheat |
|           |             |     |      |           | CFM     | MBtuh | MBtuh | S/T  | MBtuh | kW   | Btuh/W | PSIG      | PSIG    | °F         | °F        |
| 50        | 6.0         | 1.8 | 4.0  | 72.1      | 1600    | 57.3  | 40.0  | 0.70 | 64.4  | 2.07 | 27.7   | 216.1     | 136.5   | 11.4       | 14.5      |
|           |             |     |      | 72.2      | 1750    | 57.5  | 40.5  | 0.70 | 64.6  | 2.08 | 27.6   | 216.1     | 137.4   | 11.2       | 14.6      |
|           | 9.0         | 3.2 | 7.3  | 64.8      | 1600    | 57.9  | 40.0  | 0.69 | 64.5  | 1.92 | 30.2   | 197.4     | 135.9   | 7.2        | 15.0      |
|           |             |     |      | 64.8      | 1750    | 58.1  | 40.5  | 0.70 | 64.7  | 1.93 | 30.1   | 197.4     | 136.7   | 7.1        | 15.1      |
|           | 12.0        | 4.9 | 11.4 | 61.1      | 1600    | 58.1  | 40.1  | 0.69 | 64.4  | 1.86 | 31.2   | 188.5     | 135.5   | 5.4        | 15.4      |
|           |             |     |      | 61.1      | 1750    | 58.4  | 40.6  | 0.70 | 64.8  | 1.87 | 31.2   | 188.5     | 136.3   | 5.2        | 15.5      |
| 60        | 6.0         | 1.7 | 3.9  | 81.9      | 1600    | 55.6  | 39.4  | 0.71 | 63.6  | 2.33 | 23.9   | 256.1     | 138.6   | 14.3       | 13.8      |
|           |             |     |      | 81.9      | 1750    | 55.8  | 39.9  | 0.72 | 63.8  | 2.33 | 23.9   | 256.2     | 139.4   | 14.0       | 13.9      |
|           | 9.0         | 3.1 | 7.1  | 74.6      | 1600    | 56.2  | 39.4  | 0.70 | 63.6  | 2.16 | 26.0   | 234.0     | 137.9   | 9.8        | 14.2      |
|           |             |     |      | 74.6      | 1750    | 56.4  | 39.9  | 0.71 | 63.8  | 2.17 | 26.0   | 234.1     | 138.7   | 9.6        | 14.3      |
|           | 12.0        | 4.8 | 11.0 | 70.9      | 1600    | 56.4  | 39.5  | 0.70 | 63.6  | 2.10 | 26.9   | 223.5     | 137.5   | 7.8        | 14.7      |
|           |             |     |      | 71.0      | 1750    | 56.6  | 40.0  | 0.71 | 63.8  | 2.10 | 27.0   | 223.5     | 138.4   | 7.6        | 14.7      |
| 70        | 6.0         | 1.6 | 3.7  | 91.5      | 1600    | 53.8  | 38.7  | 0.72 | 62.7  | 2.62 | 20.5   | 299.4     | 140.6   | 16.9       | 13.2      |
|           |             |     |      | 91.6      | 1750    | 54.0  | 39.2  | 0.73 | 63.0  | 2.63 | 20.5   | 299.5     | 141.5   | 16.6       | 13.3      |
|           | 9.0         | 2.9 | 6.8  | 84.4      | 1600    | 54.4  | 38.7  | 0.71 | 62.7  | 2.44 | 22.3   | 273.6     | 139.9   | 12.2       | 13.7      |
|           |             |     |      | 84.4      | 1750    | 54.6  | 39.2  | 0.72 | 62.9  | 2.44 | 22.4   | 273.6     | 140.8   | 12.0       | 13.7      |
|           | 12.0        | 4.6 | 10.5 | 80.8      | 1600    | 54.6  | 38.8  | 0.71 | 62.7  | 2.36 | 23.1   | 261.2     | 139.6   | 10.1       | 14.1      |
|           |             |     |      | 80.8      | 1750    | 54.8  | 39.3  | 0.72 | 62.9  | 2.37 | 23.1   | 261.3     | 140.4   | 9.9        | 14.2      |
| 80        | 6.0         | 1.6 | 3.6  | 101.3     | 1600    | 51.8  | 37.8  | 0.73 | 61.9  | 2.95 | 17.6   | 347.8     | 142.5   | 19.5       | 12.9      |
|           |             |     |      | 101.3     | 1750    | 52.0  | 38.3  | 0.74 | 62.1  | 2.95 | 17.6   | 347.9     | 143.4   | 19.3       | 13.0      |
|           | 9.0         | 2.8 | 6.6  | 94.1      | 1600    | 52.3  | 37.8  | 0.72 | 61.6  | 2.74 | 19.1   | 317.8     | 141.8   | 15.2       | 13.4      |
|           |             |     |      | 94.2      | 1750    | 52.6  | 38.3  | 0.73 | 62.0  | 2.75 | 19.1   | 317.8     | 142.7   | 14.9       | 13.5      |
|           | 12.0        | 4.4 | 10.2 | 90.6      | 1600    | 52.5  | 37.9  | 0.72 | 61.5  | 2.65 | 19.8   | 303.4     | 141.4   | 13.1       | 13.8      |
|           |             |     |      | 90.6      | 1750    | 52.7  | 38.4  | 0.73 | 61.8  | 2.66 | 19.8   | 303.5     | 142.3   | 12.8       | 13.8      |
| 90        | 6.0         | 1.5 | 3.5  | 111.0     | 1600    | 49.5  | 36.8  | 0.74 | 61.0  | 3.36 | 14.7   | 404.2     | 144.3   | 21.7       | 13.1      |
|           |             |     |      | 111.0     | 1750    | 49.7  | 37.3  | 0.75 | 61.2  | 3.37 | 14.7   | 404.3     | 145.2   | 21.4       | 13.2      |
|           | 9.0         | 2.8 | 6.4  | 103.9     | 1600    | 50.0  | 36.8  | 0.74 | 60.7  | 3.13 | 16.0   | 369.3     | 143.6   | 17.9       | 13.5      |
|           |             |     |      | 104.0     | 1750    | 50.2  | 37.3  | 0.74 | 60.9  | 3.13 | 16.0   | 369.4     | 144.5   | 17.6       | 13.6      |
|           | 12.0        | 4.3 | 9.9  | 100.4     | 1600    | 50.2  | 36.9  | 0.74 | 60.5  | 3.03 | 16.6   | 352.7     | 143.2   | 16.0       | 14.0      |
|           |             |     |      | 100.4     | 1750    | 50.4  | 37.4  | 0.74 | 60.7  | 3.03 | 16.6   | 352.8     | 144.1   | 15.7       | 14.0      |
| 100       | 6.0         | 1.5 | 3.4  | 120.7     | 1600    | 46.8  | 35.6  | 0.76 | 60.1  | 3.90 | 12.0   | 469.4     | 146.4   | 23.3       | 13.7      |
|           |             |     |      | 120.7     | 1750    | 47.0  | 36.1  | 0.77 | 60.3  | 3.91 | 12.0   | 469.5     | 147.3   | 23.0       | 13.8      |
|           | 9.0         | 2.7 | 6.2  | 113.7     | 1600    | 47.3  | 35.6  | 0.75 | 59.7  | 3.62 | 13.1   | 428.8     | 145.7   | 19.2       | 14.2      |
|           |             |     |      | 113.7     | 1750    | 47.5  | 36.1  | 0.76 | 59.9  | 3.63 | 13.1   | 428.9     | 146.6   | 18.9       | 14.3      |
|           | 12.0        | 4.2 | 9.7  | 110.2     | 1600    | 47.5  | 35.7  | 0.75 | 59.5  | 3.51 | 13.5   | 409.5     | 145.3   | 17.4       | 14.6      |
|           |             |     |      | 110.3     | 1750    | 47.7  | 36.1  | 0.76 | 59.7  | 3.52 | 13.6   | 409.6     | 146.2   | 17.2       | 14.7      |
| 110       | 6.0         | 1.5 | 3.4  | 130.4     | 1600    | 44.0  | 34.3  | 0.78 | 59.3  | 4.47 | 9.8    | 537.7     | 148.5   | 26.1       | 14.7      |
|           |             |     |      | 130.4     | 1750    | 44.2  | 34.7  | 0.79 | 59.5  | 4.48 | 9.9    | 537.8     | 149.4   | 25.7       | 14.8      |
|           | 9.0         | 2.6 | 6.1  | 123.4     | 1600    | 44.5  | 34.3  | 0.77 | 58.7  | 4.15 | 10.7   | 491.3     | 147.7   | 20.6       | 15.2      |
|           |             |     |      | 123.5     | 1750    | 44.7  | 34.7  | 0.78 | 58.9  | 4.16 | 10.7   | 491.4     | 148.6   | 20.3       | 15.2      |
|           | 12.0        | 4.1 | 9.5  | 120.0     | 1600    | 44.7  | 34.4  | 0.77 | 58.4  | 4.02 | 11.1   | 469.1     | 147.3   | 18.5       | 15.6      |
|           |             |     |      | 120.1     | 1750    | 44.8  | 34.8  | 0.78 | 58.6  | 4.03 | 11.1   | 469.2     | 148.2   | 18.1       | 15.7      |

# ENGINEERING SPECIFICATIONS:

## MODEL 060, 5 TON, WITH MPD060 FULL LOAD HEATING PERFORMANCE:

| EWT<br>°F | Flow<br>GPM | WPD  |      | LWT<br>°F | Heating |       |       |       |      |      |           |         |            |           |
|-----------|-------------|------|------|-----------|---------|-------|-------|-------|------|------|-----------|---------|------------|-----------|
|           |             | PSI  | FT   |           | Aiflow  | LAT   | HC    | HE    |      | COP  | Discharge | Suction | Subcooling | Superheat |
|           |             |      |      |           | CFM     | °F    | MBtuh | MBtuh | kW   | W/W  | PSIG      | PSIG    | °F         | °F        |
| 25        | 15.0        | 10.8 | 25.0 | 21.0      | 1700    | 91.6  | 39.7  | 28.8  | 3.20 | 3.64 | 289.4     | 65.7    | 0.7        | 4.7       |
|           |             |      |      | 21.0      | 1850    | 89.9  | 39.7  | 28.9  | 3.17 | 3.67 | 286.8     | 65.4    | 0.6        | 4.9       |
| 30        | 7.5         | 3.4  | 7.9  | 21.4      | 1700    | 93.1  | 42.4  | 31.2  | 3.29 | 3.78 | 293.1     | 73.3    | 0.8        | 2.2       |
|           |             |      |      | 21.4      | 1850    | 91.2  | 42.4  | 31.3  | 3.26 | 3.81 | 290.5     | 73.0    | 0.8        | 2.3       |
|           | 11.5        | 6.6  | 15.3 | 24.1      | 1700    | 94.0  | 44.1  | 32.7  | 3.33 | 3.88 | 296.2     | 76.9    | 1.0        | 1.7       |
|           |             |      |      | 24.1      | 1850    | 92.1  | 44.1  | 32.8  | 3.30 | 3.92 | 293.5     | 76.5    | 0.8        | 1.9       |
|           | 15.0        | 10.6 | 24.4 | 25.4      | 1700    | 94.6  | 45.1  | 33.7  | 3.35 | 3.95 | 297.9     | 79.1    | 0.9        | 1.2       |
|           |             |      |      | 25.4      | 1850    | 92.6  | 45.1  | 33.7  | 3.33 | 3.97 | 295.2     | 78.8    | 0.9        | 1.4       |
| 40        | 7.5         | 3.2  | 7.4  | 30.0      | 1700    | 96.3  | 48.2  | 36.5  | 3.44 | 4.11 | 305.6     | 88.0    | 1.0        | 3.0       |
|           |             |      |      | 30.0      | 1850    | 94.1  | 48.2  | 36.5  | 3.42 | 4.13 | 302.9     | 87.6    | 1.0        | 3.1       |
|           | 11.5        | 6.2  | 14.3 | 33.2      | 1700    | 97.3  | 50.1  | 38.2  | 3.48 | 4.22 | 308.8     | 92.2    | 1.1        | 3.2       |
|           |             |      |      | 33.1      | 1850    | 95.1  | 50.1  | 38.3  | 3.46 | 4.24 | 306.1     | 91.9    | 1.1        | 3.2       |
|           | 15.0        | 9.9  | 22.8 | 34.6      | 1700    | 97.9  | 51.2  | 39.2  | 3.51 | 4.27 | 310.6     | 95.0    | 1.0        | 3.0       |
|           |             |      |      | 34.6      | 1850    | 95.6  | 51.2  | 39.3  | 3.48 | 4.31 | 307.8     | 94.6    | 1.0        | 3.1       |
| 50        | 7.5         | 3.0  | 6.9  | 38.6      | 1700    | 99.2  | 53.7  | 41.5  | 3.59 | 4.38 | 317.4     | 102.1   | 1.1        | 5.0       |
|           |             |      |      | 38.6      | 1850    | 96.9  | 53.7  | 41.6  | 3.56 | 4.42 | 314.5     | 101.7   | 1.0        | 5.1       |
|           | 11.5        | 5.8  | 13.4 | 42.2      | 1700    | 100.4 | 55.8  | 43.4  | 3.63 | 4.51 | 320.7     | 107.0   | 1.1        | 5.8       |
|           |             |      |      | 42.2      | 1850    | 97.9  | 55.8  | 43.5  | 3.61 | 4.53 | 317.8     | 106.6   | 1.0        | 5.9       |
|           | 15.0        | 9.2  | 21.3 | 43.9      | 1700    | 101.0 | 57.0  | 44.5  | 3.66 | 4.56 | 322.6     | 110.2   | 1.0        | 6.1       |
|           |             |      |      | 43.9      | 1850    | 98.5  | 57.0  | 44.6  | 3.63 | 4.60 | 319.6     | 109.8   | 0.9        | 6.2       |
| 60        | 7.5         | 2.8  | 6.5  | 47.0      | 1700    | 102.8 | 60.2  | 47.3  | 3.78 | 4.67 | 329.3     | 118.9   | 1.1        | 6.4       |
|           |             |      |      | 47.0      | 1850    | 100.1 | 60.2  | 47.4  | 3.76 | 4.69 | 326.3     | 118.5   | 1.0        | 6.4       |
|           | 11.5        | 5.5  | 12.6 | 51.1      | 1700    | 104.0 | 62.5  | 49.4  | 3.83 | 4.78 | 332.8     | 124.7   | 1.0        | 7.8       |
|           |             |      |      | 51.1      | 1850    | 101.3 | 62.5  | 49.5  | 3.80 | 4.82 | 329.8     | 124.2   | 1.1        | 7.9       |
|           | 15.0        | 8.7  | 20.1 | 53.0      | 1700    | 104.8 | 63.9  | 50.7  | 3.86 | 4.85 | 334.7     | 128.4   | 1.0        | 8.3       |
|           |             |      |      | 53.0      | 1850    | 102.0 | 63.9  | 50.8  | 3.83 | 4.89 | 331.7     | 127.9   | 1.0        | 8.4       |
| 70        | 7.5         | 2.7  | 6.1  | 55.6      | 1700    | 105.9 | 65.9  | 52.4  | 3.96 | 4.88 | 339.5     | 134.4   | 1.1        | 8.7       |
|           |             |      |      | 55.6      | 1850    | 103.0 | 65.9  | 52.5  | 3.93 | 4.91 | 336.4     | 133.9   | 1.1        | 8.8       |
|           | 11.5        | 5.2  | 11.9 | 60.2      | 1700    | 107.3 | 68.4  | 54.7  | 4.01 | 5.00 | 343.0     | 140.9   | 1.0        | 10.8      |
|           |             |      |      | 60.2      | 1850    | 104.2 | 68.4  | 54.8  | 3.98 | 5.04 | 339.9     | 140.3   | 1.0        | 10.9      |
|           | 15.0        | 8.3  | 19.0 | 62.3      | 1700    | 108.1 | 70.0  | 56.2  | 4.04 | 5.08 | 345.0     | 145.1   | 1.0        | 11.7      |
|           |             |      |      | 62.3      | 1850    | 105.0 | 70.0  | 56.3  | 4.01 | 5.12 | 341.9     | 144.5   | 1.0        | 11.8      |
| 80        | 7.5         | 2.5  | 5.8  | 64.8      | 1700    | 107.7 | 69.3  | 55.4  | 4.08 | 4.98 | 346.4     | 144.8   | 1.0        | 13.3      |
|           |             |      |      | 64.7      | 1850    | 104.7 | 69.3  | 55.5  | 4.05 | 5.01 | 343.3     | 144.3   | 1.1        | 13.3      |
|           | 11.5        | 4.9  | 11.3 | 69.6      | 1700    | 109.2 | 72.0  | 57.9  | 4.12 | 5.12 | 350.1     | 151.8   | 1.1        | 16.0      |
|           |             |      |      | 69.6      | 1850    | 106.0 | 72.0  | 58.0  | 4.09 | 5.16 | 346.9     | 151.2   | 1.0        | 16.0      |
|           | 15.0        | 7.8  | 18.0 | 71.8      | 1700    | 110.1 | 73.6  | 59.4  | 4.15 | 5.20 | 352.0     | 156.4   | 1.0        | 17.1      |
|           |             |      |      | 71.8      | 1850    | 106.8 | 73.6  | 59.5  | 4.12 | 5.24 | 348.9     | 155.7   | 0.9        | 17.2      |
| 90        | 7.5         | 2.4  | 5.5  | 74.0      | 1700    | 109.4 | 72.4  | 58.1  | 4.18 | 5.08 | 352.6     | 154.7   | 1.1        | 18.1      |
|           |             |      |      | 74.0      | 1850    | 106.2 | 72.4  | 58.2  | 4.15 | 5.11 | 349.4     | 154.1   | 1.0        | 18.1      |
|           | 11.5        | 4.6  | 10.7 | 79.1      | 1700    | 111.0 | 75.2  | 60.8  | 4.23 | 5.21 | 356.3     | 162.2   | 1.0        | 21.4      |
|           |             |      |      | 79.1      | 1850    | 107.6 | 75.2  | 60.9  | 4.20 | 5.25 | 353.1     | 161.5   | 1.1        | 21.4      |
|           | 15.0        | 7.4  | 17.0 | 81.4      | 1700    | 111.9 | 76.9  | 62.4  | 4.26 | 5.29 | 358.4     | 167.0   | 0.9        | 22.9      |
|           |             |      |      | 81.4      | 1850    | 108.5 | 76.9  | 62.5  | 4.23 | 5.33 | 355.1     | 166.4   | 1.0        | 22.9      |



**ENGINEERING SPECIFICATIONS:**

**MODEL 060, 5 TON, WITH MPD060 FULL LOAD COOLING PERFORMANCE:**

| EWT<br>°F | Flow<br>GPM | WPD |      | LWT<br>°F | Cooling |       |       |      |       |      |        |           |         |            |           |
|-----------|-------------|-----|------|-----------|---------|-------|-------|------|-------|------|--------|-----------|---------|------------|-----------|
|           |             | PSI | FT   |           | Aiflow  | TC    | SC    |      | HR    |      | EER    | Discharge | Suction | Subcooling | Superheat |
|           |             |     |      |           | CFM     | MBtuh | MBtuh | S/T  | MBtuh | kW   | Btuh/W | PSIG      | PSIG    | °F         | °F        |
| 50        | 7.5         | 3.0 | 7.0  | 71.3      | 1750    | 68.6  | 45.2  | 0.66 | 77.4  | 2.57 | 26.7   | 204.6     | 126.7   | 17.6       | 19.5      |
|           |             |     |      | 71.2      | 1950    | 68.4  | 45.8  | 0.67 | 77.2  | 2.59 | 26.4   | 203.1     | 127.4   | 19.2       | 12.8      |
|           | 11.5        | 5.6 | 12.9 | 63.8      | 1750    | 68.7  | 45.2  | 0.66 | 77.0  | 2.42 | 28.4   | 188.6     | 126.3   | 12.7       | 20.3      |
|           |             |     |      | 63.8      | 1950    | 68.5  | 45.8  | 0.67 | 76.8  | 2.43 | 28.2   | 187.3     | 127.0   | 14.4       | 13.6      |
|           | 15.0        | 8.9 | 20.5 | 60.6      | 1750    | 69.1  | 45.5  | 0.66 | 77.1  | 2.34 | 29.5   | 180.1     | 126.0   | 10.0       | 20.2      |
|           |             |     |      | 60.6      | 1950    | 68.9  | 46.2  | 0.67 | 77.0  | 2.36 | 29.2   | 178.8     | 126.7   | 11.7       | 13.4      |
| 60        | 7.5         | 2.9 | 6.6  | 81.1      | 1750    | 67.1  | 45.0  | 0.67 | 76.9  | 2.86 | 23.5   | 242.8     | 130.0   | 18.9       | 16.2      |
|           |             |     |      | 81.1      | 1950    | 66.9  | 45.6  | 0.68 | 76.7  | 2.87 | 23.3   | 241.1     | 130.7   | 21.0       | 9.7       |
|           | 11.5        | 5.3 | 12.2 | 73.7      | 1750    | 67.2  | 45.0  | 0.67 | 76.4  | 2.69 | 25.0   | 223.9     | 129.6   | 13.6       | 17.1      |
|           |             |     |      | 73.7      | 1950    | 67.1  | 45.6  | 0.68 | 76.3  | 2.71 | 24.8   | 222.3     | 130.3   | 15.6       | 10.5      |
|           | 15.0        | 8.4 | 19.4 | 70.5      | 1750    | 67.6  | 45.4  | 0.67 | 76.5  | 2.60 | 26.0   | 213.7     | 129.3   | 10.6       | 16.9      |
|           |             |     |      | 70.5      | 1950    | 67.4  | 46.0  | 0.68 | 76.3  | 2.62 | 25.7   | 212.2     | 130.0   | 12.6       | 10.3      |
| 70        | 7.5         | 2.7 | 6.3  | 91.0      | 1750    | 65.4  | 44.7  | 0.68 | 76.3  | 3.18 | 20.6   | 283.8     | 133.1   | 20.1       | 13.4      |
|           |             |     |      | 90.9      | 1950    | 65.3  | 45.3  | 0.69 | 76.2  | 3.20 | 20.4   | 281.7     | 133.9   | 22.5       | 7.1       |
|           | 11.5        | 5.0 | 11.6 | 83.6      | 1750    | 65.5  | 44.7  | 0.68 | 75.7  | 3.00 | 21.8   | 261.6     | 132.7   | 14.4       | 14.3      |
|           |             |     |      | 83.6      | 1950    | 65.4  | 45.3  | 0.69 | 75.7  | 3.01 | 21.7   | 259.7     | 133.4   | 16.8       | 7.8       |
|           | 15.0        | 8.0 | 18.4 | 80.4      | 1750    | 65.9  | 45.1  | 0.68 | 75.8  | 2.90 | 22.7   | 249.7     | 132.4   | 11.2       | 14.1      |
|           |             |     |      | 80.4      | 1950    | 65.7  | 45.7  | 0.70 | 75.7  | 2.92 | 22.5   | 247.9     | 133.1   | 13.6       | 7.7       |
| 80        | 7.5         | 2.6 | 6.0  | 100.6     | 1750    | 62.9  | 43.6  | 0.69 | 75.0  | 3.55 | 17.7   | 329.7     | 135.3   | 21.9       | 12.7      |
|           |             |     |      | 100.6     | 1950    | 62.7  | 44.2  | 0.70 | 74.9  | 3.57 | 17.6   | 327.3     | 136.1   | 24.6       | 6.3       |
|           | 11.5        | 4.8 | 11.1 | 93.3      | 1750    | 63.0  | 43.6  | 0.69 | 74.4  | 3.34 | 18.9   | 303.9     | 134.9   | 16.0       | 13.4      |
|           |             |     |      | 93.3      | 1950    | 62.8  | 44.2  | 0.70 | 74.3  | 3.36 | 18.7   | 301.8     | 135.7   | 18.8       | 7.0       |
|           | 15.0        | 7.6 | 17.5 | 90.2      | 1750    | 63.3  | 43.9  | 0.69 | 74.3  | 3.23 | 19.6   | 290.1     | 134.6   | 12.7       | 13.3      |
|           |             |     |      | 90.2      | 1950    | 63.2  | 44.5  | 0.70 | 74.3  | 3.25 | 19.4   | 288.1     | 135.4   | 15.5       | 6.9       |
| 90        | 7.5         | 2.5 | 5.8  | 110.2     | 1750    | 59.8  | 42.1  | 0.70 | 73.4  | 4.00 | 15.0   | 382.4     | 137.2   | 23.3       | 13.2      |
|           |             |     |      | 110.2     | 1950    | 59.7  | 42.7  | 0.72 | 73.5  | 4.03 | 14.8   | 379.6     | 138.0   | 26.3       | 6.7       |
|           | 11.5        | 4.6 | 10.6 | 103.1     | 1750    | 59.9  | 42.1  | 0.70 | 72.8  | 3.77 | 15.9   | 352.5     | 136.8   | 17.8       | 13.9      |
|           |             |     |      | 103.0     | 1950    | 59.7  | 42.7  | 0.72 | 72.6  | 3.79 | 15.8   | 350.0     | 137.5   | 20.8       | 7.5       |
|           | 15.0        | 7.3 | 16.9 | 100.0     | 1750    | 60.2  | 42.4  | 0.70 | 72.7  | 3.65 | 16.5   | 336.5     | 136.5   | 14.5       | 13.8      |
|           |             |     |      | 100.0     | 1950    | 60.1  | 43.0  | 0.72 | 72.6  | 3.67 | 16.4   | 334.1     | 137.2   | 17.5       | 7.3       |
| 100       | 7.5         | 2.4 | 5.6  | 119.9     | 1750    | 56.8  | 40.9  | 0.72 | 72.4  | 4.57 | 12.4   | 441.6     | 139.4   | 23.6       | 13.8      |
|           |             |     |      | 119.9     | 1950    | 56.7  | 41.5  | 0.73 | 72.4  | 4.60 | 12.3   | 438.4     | 140.2   | 27.1       | 7.2       |
|           | 11.5        | 4.5 | 10.3 | 112.8     | 1750    | 56.9  | 40.9  | 0.72 | 71.6  | 4.30 | 13.2   | 407.1     | 139.0   | 18.1       | 14.6      |
|           |             |     |      | 112.8     | 1950    | 56.8  | 41.5  | 0.73 | 71.6  | 4.33 | 13.1   | 404.2     | 139.8   | 21.6       | 7.9       |
|           | 15.0        | 7.1 | 16.4 | 109.8     | 1750    | 57.2  | 41.2  | 0.72 | 71.4  | 4.16 | 13.8   | 388.6     | 138.7   | 14.9       | 14.4      |
|           |             |     |      | 109.8     | 1950    | 57.1  | 41.8  | 0.73 | 71.4  | 4.19 | 13.6   | 385.8     | 139.4   | 18.4       | 7.8       |
| 110       | 7.5         | 2.4 | 5.4  | 129.6     | 1750    | 53.7  | 39.6  | 0.74 | 71.3  | 5.17 | 10.4   | 503.5     | 141.5   | 24.5       | 14.9      |
|           |             |     |      | 129.6     | 1950    | 53.5  | 40.2  | 0.75 | 71.2  | 5.20 | 10.3   | 499.9     | 142.3   | 28.2       | 8.1       |
|           | 11.5        | 4.4 | 10.1 | 122.6     | 1750    | 53.8  | 39.6  | 0.74 | 70.4  | 4.87 | 11.0   | 464.2     | 141.0   | 17.9       | 15.8      |
|           |             |     |      | 122.6     | 1950    | 53.6  | 40.2  | 0.75 | 70.3  | 4.90 | 10.9   | 460.8     | 141.8   | 21.6       | 8.9       |
|           | 15.0        | 6.9 | 16.0 | 119.6     | 1750    | 54.1  | 39.9  | 0.74 | 70.2  | 4.71 | 11.5   | 443.1     | 140.7   | 14.5       | 15.6      |
|           |             |     |      | 119.6     | 1950    | 53.9  | 40.5  | 0.75 | 70.1  | 4.74 | 11.4   | 439.9     | 141.5   | 18.3       | 8.7       |

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