

### ASHRAE 90.1 COMPLIANT PACKAGED ROOFTOP ELECTRIC COOLING UNITS, VERTICAL SUPPLY AND RETURN CONFIGURATION ONLY R-410A, 17.5 – 27.5 TONS

#### BUILT TO LAST, EASY TO INSTALL AND SERVICE

- One-piece, standard efficiency electric cooling with a low profile, prewired, tested, and charged at the factory
- Dedicated vertical air flow duct configuration models.
- Full perimeter base rail with built-in rigging adapters and fork truck slots
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Fully insulated cabinet
- Two-stage cooling with independent circuits and control on all models
- Scroll compressors with internal line-break connections on all models
- All units have high and low pressure switches
- Two inch disposable fiberglass type return air filters in dedicated rack
- Refrigerant circuits contain a liquid line filter drier to trap dirt and moisture
- Round tube plate fin evaporator and condenser coil design
- Exclusive non-corrosive composite condensate pan in accordance with ASHRAE 62 Standard, sloping design; end drain
- Belt drive evaporator-fan motor and pulley combinations available to meet most applications
- Access panels with easy grip handles provide quick and easy access to the blower and blower motor, control box, and compressors.
- "No-strip" screw system has superior holding power and guides screws into position while preventing the screw from stripping the unit's metal.
- Newly designed terminal board facilitates simple safety circuit troubleshooting and simplified control box arrangement
- Standard outdoor temperature cooling operation range up to 115°F (46°C) and down to 35°F (2°C)
- Fixed orifice metering devices on all models to precisely control refrigerant flow
- Large, laminated control wiring and power wiring drawings are affixed to unit to make troubleshooting easy
- Single point electrical connections

#### WARRANTY

- 5 Year compressor limited warranty
- 1 Year parts limited warranty



17.5 Ton



20 & 25 Ton



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org).



#### UNIT PERFORMANCE DATA – Two Stage Cooling

| UNIT           | Dedicated Airflow | Nominal Tons | COOLING         |      | Total Power (kW) | Unit Dimensions<br>H x W x L | Unit Weight<br>lb. [kg] |
|----------------|-------------------|--------------|-----------------|------|------------------|------------------------------|-------------------------|
|                |                   |              | Net Cap. (Btuh) | EER  |                  |                              |                         |
| RAS210*0AA0AAA | Vertical          | 17.5         | 208,000         | 11.0 | 18.9             | 49-3/8" x 86-5/8" x 127-7/8" | 2243 [1017]             |
| RAS240*0AA0AAA | Vertical          | 20           | 242,000         | 10.0 | 24.2             | 49-3/8" x 86-5/8" x 141-1/2" | 2277 [1033]             |
| RAS300*0AA0AAA | Vertical          | 25           | 280,000         | 10.0 | 28.0             | 57-3/8" x 86-5/8" x 141-1/2" | 2525 [1145]             |
| RAS336*0AA0AAA | Vertical          | 27.5         | 330,000         | 10.4 | 31.7             | 57-3/8" x 86-5/8" x 157-3/4" | 2513 [1142]             |

\* Indicates Unit voltage: H = 208/230-3-60, L = 460-3-60, S = 575-3-60

NOTE: BASE MODEL NUMBERS LISTED. SEE MODEL NOMENCLATURE LISTING FOR ADDITIONAL OPTIONS

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| 3 to 27.5 TON ROOFTOP UNIT FIOP CODES (Use with Model Nomenclature on next page) |                              |                      |            |
|----------------------------------------------------------------------------------|------------------------------|----------------------|------------|
| OPTION                                                                           | DESCRIPTION                  | NOMENCLATURE<br>CODE | OPTIONS    |
| 2                                                                                | Non-Fused Disconnect Switch  | 0A                   | None       |
| 4                                                                                | Easy Access Hinged Panels    | 4B                   | 2          |
| 5                                                                                | Unpowered Convenience Outlet | 7C                   | 2, 5       |
| 9                                                                                | Supply Air Smoke Detector    | 7K                   | 2, 5, 9    |
|                                                                                  |                              | 8A                   | 2, 9       |
|                                                                                  |                              | AT                   | 5          |
|                                                                                  |                              | BA                   | 5, 9       |
|                                                                                  |                              | AA                   | 4          |
|                                                                                  |                              | 6C                   | 2, 4       |
|                                                                                  |                              | 6D                   | 2, 4, 5    |
|                                                                                  |                              | 6L                   | 2, 4, 5, 9 |
|                                                                                  |                              | 7B                   | 2, 4, 9    |
|                                                                                  |                              | AB                   | 4, 5       |
|                                                                                  |                              | AJ                   | 4, 5, 9    |
|                                                                                  |                              | CH                   | 4, 9       |
|                                                                                  |                              | BR                   | 9          |

## MODEL NOMENCLATURE

| MODEL SERIES                                                                                 | R | A | S | 2 | 1 | 0 | H | 0 | A | B  | 0  | A  | A  | A  |
|----------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| Position Number                                                                              | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| R = Rooftop                                                                                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Air Conditioning (Cooling Only)                                                          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| G = Gas/Electric                                                                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Type                                                                                         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| S = Standard ASHRAE 90.1-2010 Efficiency                                                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Efficiency                                                                                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 210 = 210,000 = 17.5 Tons Dedicated Vertical SA/RA = Supply Air, RA = Return Air             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 240 = 240,000 = 20 Tons Dedicated Vertical SA/RA                                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 300 = 300,000 = 25 Tons Dedicated Vertical SA/RA                                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 336 = 300,000 = 25 Tons Dedicated Vertical SA/RA                                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Nominal Cooling Capacity                                                                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| H = 208/230-3-60                                                                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| L = 460-3-60                                                                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| S = 575-3-60                                                                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Voltage                                                                                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 0 = No Heat                                                                                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Heating Capacity                                                                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Standard Static Option (All models)                                                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| B = High Static High Efficiency Option (All models with 2 speed IFM)                         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| C = Medium Static Option (17.5 Ton Only with 1 speed IFM, 17.5 to 27.5 ton with 2 speed IFM) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| E = High Static High Efficiency Option (All Models with 1 speed IFM)                         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| F = Medium Static High Efficiency Option (20 to 27.5 Ton with 1 speed IFM)                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| G = High Static Motor with Hot Gas Reheat (17.5 to 25 Ton with 1 speed IFM)                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| H = High Static Motor with Hot Gas Reheat (17.5 to 25 Ton with 2 speed IFM)                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Motor Option                                                                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = None                                                                                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| B = Economizer w/Bara-relief, OA Temp sensor (1-speed IFM only)                              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| E = Economizer w/Bara-relief + CO <sub>2</sub> sensor, OA Temp sensor (1-speed IFM only)     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| H = Economizer w/Bara-relief, Enthalpy sensor (1-speed IFM only)                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| L = Economizer w/Bara-relief + CO <sub>2</sub> sensor, Enthalpy sensor (1-speed IFM only)    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| U = Ultra Low Leak Temp Economizer w/Baro relief (2-speed IFM only)                          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| W = Ultra Low Leak Enthalpy Economizer w/Baro relief (2-speed IFM only)                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| P = 2-Position damper w/Baro-relief (1-speed IFM only)                                       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Outdoor Air Options / Control                                                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| OA = No Options                                                                              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| AT = Non-powered 115v C.O.                                                                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| BR = Sup. Air Smoke Detector                                                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| AA = Easy Access Hinged Panels                                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 4B = Non fused disconnect                                                                    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Factory Installed Options                                                                    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Alum / Cu Cond & Alum / Cu Evap                                                          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| B = Pre coated Alum / Cu Cond & Alum / Cu Evap                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| C = E-coated Alum / Cu Cond & Alum / Cu Evap                                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| D = E-coated Alum / Cu Cond & E-coated Alum / Cu Evap                                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| E = Cu / Cu Cond & Alum / Cu Evap                                                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| F = Cu / Cu Cond, Cu / Cu Evap                                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Condenser / Evaporator Coil Configuration                                                    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Standard 1 Speed IFM                                                                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| T = 2 Speed IFM with VFD Controller (For 2-stage units only)                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| Motor Type Option                                                                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

**Table 1 – FACTORY INSTALLED OPTIONS AND FIELD INSTALLED ACCESSORIES**

| CATEGORY                                             | ITEM                                                                                                                                                             | FACTORY<br>INSTALLED<br>OPTION | FIELD INSTALLED<br>ACCESSORY |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------|
| <b>Cabinet</b>                                       | Dedicated Vertical Air Flow Duct Configuration                                                                                                                   | X                              |                              |
| <b>Coil Options</b>                                  | Cu/Cu (indoor) Coils                                                                                                                                             | X                              |                              |
|                                                      | Pre-Coat (outdoor) Coils                                                                                                                                         | X                              |                              |
|                                                      | E-coated (outdoor & indoor) coils                                                                                                                                | X                              |                              |
| <b>Humidity Control</b>                              | Hot Gas Reheat                                                                                                                                                   | X                              |                              |
| <b>Condenser Protection</b>                          | Condenser coil hail guard (louvered design)                                                                                                                      |                                | X                            |
| <b>Controls</b>                                      | Smoke detector (supply air)                                                                                                                                      | X                              | X                            |
|                                                      | Time Guard II compressor delay control circuit                                                                                                                   |                                | X                            |
|                                                      | Phase Monitor                                                                                                                                                    |                                | X                            |
| <b>Economizers<br/>&amp; Outdoor Air<br/>Dampers</b> | Economizer IV                                                                                                                                                    | X                              | X                            |
|                                                      | Motorized 2 position outdoor-air damper                                                                                                                          | X                              | X                            |
|                                                      | Manual outdoor-air damper (25%)                                                                                                                                  |                                | X                            |
|                                                      | Barometric relief <sup>1</sup>                                                                                                                                   | X                              | X                            |
|                                                      | Power exhaust-centrifugal blower                                                                                                                                 |                                | X                            |
|                                                      | Ultra Low Leak Economizer X (for 2-Speed Indoor Fan Motor System only, 17 to 30 sizes with 2 stages of cooling), horizontal and vertical supply and return air . | X                              | X                            |
| <b>Economizer Sensors<br/>&amp;<br/>IAQ Devices</b>  | Single dry bulb temperature sensors <sup>2</sup>                                                                                                                 | X                              | X                            |
|                                                      | Single enthalpy sensors <sup>2</sup>                                                                                                                             | X                              | X                            |
|                                                      | Differential enthalpy sensors <sup>2</sup>                                                                                                                       |                                | X                            |
|                                                      | Duct mounted CO <sub>2</sub> sensor <sup>2</sup>                                                                                                                 |                                | X                            |
|                                                      | 4-in Filter Track Assembly                                                                                                                                       |                                | X                            |
| <b>Heat</b>                                          | Electric Resistance Heaters                                                                                                                                      |                                | X                            |
|                                                      | Single Point Kit                                                                                                                                                 |                                | X                            |
| <b>Indoor Motor &amp; Drive</b>                      | Multiple motor and drive packages                                                                                                                                | X                              |                              |
|                                                      | 2-Speed Indoor Fan Motor System w/VFD controller (2-stage cool only with electrical mechanical controls)                                                         | X                              |                              |
| <b>Low Ambient<br/>Control</b>                       | Winter start kit <sup>3</sup>                                                                                                                                    |                                | X                            |
|                                                      | Motormaster head pressure controller <sup>3</sup>                                                                                                                |                                | X                            |
| <b>Power<br/>Options</b>                             | Convenience outlet (unpowered)                                                                                                                                   | X                              |                              |
|                                                      | Non-fused disconnect <sup>4</sup>                                                                                                                                | X                              |                              |
| <b>Roof Curbs</b>                                    | Roof curb 14-in (356mm)                                                                                                                                          |                                | X                            |
|                                                      | Roof curb 24-in (610mm)                                                                                                                                          |                                | X                            |

**NOTES:**

1. Included with economizer.

2. Sensors used to optimize economizer performance.

3. See application data for assistance.

4. Non-fused disconnect switch cannot be used when MOCP electrical rating exceeds 70 amps at 460/575 volt and 150 amps at 208/230 volt.

## FACTORY OPTIONS AND/OR ACCESSORIES

### Economizer (dry–bulb or enthalpy)

Economizers save energy, money and improve comfort levels in the conditioned space: They bring in fresh, outside air for ventilation; and provide cool outside air to cool your building. This also is the preferred method of low ambient cooling. When integrated with CO<sub>2</sub> sensors, economizers can provide even more savings by coupling the ventilation air to only that amount required based on space occupancy.

Economizers are available, installed and tested by the factory, with either enthalpy or temperature dry – bulb inputs. There are also models for electromechanical, direct digital controllers and single speed fan or 2 speed indoor fan motors. Additional sensors are available as accessories to optimize the economizer. Economizers include gravity controlled barometric relief that helps equalize building pressure and ambient air pressures. This can be a cost effective solution to prevent building pressurization.

Economizers are available in Ultra Low Leak and standard low leak versions.

### CO<sub>2</sub> Sensor

Improves productivity and saves money by working with the economizer to intake only the correct amount of outside air for ventilation. As occupants fill your building, the CO<sub>2</sub> sensor detects their presence through increasing CO<sub>2</sub> levels, and opens the economizer appropriately.

When the occupants leave, the CO<sub>2</sub> levels decrease, and the sensor appropriately closes the economizer. This intelligent control of the ventilation air, called Demand Control Ventilation (DCV) reduces the overall load on the rooftop.

### Smoke Detector

Smoke detectors make your application safer and your job easier. Smoke detectors immediately shut down the rooftop unit when smoke is detected. It is available for supply air.

### Louvered Hail Guards (accessory only)

Sleek, louvered panels protect the condenser coil from hail damage, foreign objects, and incidental contact.

### Convenience Outlet (un–powered)

Reduce service and/or installation costs by including a convenience outlet in your specification. The convenience outlet provides a 15 amp, 115v GFCI receptacle with “Wet in Use” cover. This option is to be powered from a separate 115/120v power source.

### Non–Fused Disconnect

This OSHA–compliant, factory–installed, safety switch allows a service technician to locally secure power to the rooftop capable of providing protection to a MOCP maximum of 200A.

### Power Exhaust with Barometric Relief

Superior internal building pressure control. This field–installed accessory may eliminate the need for costly, external pressure control fans.

### Time Guard II Control Circuit

This accessory protects your compressor by preventing short–cycling in the event of some other failure, prevents the compressor from restarting for 30 seconds after stopping.

### Motorized 2–Position Damper

The new 2–position, motorized outdoor air damper admits up to 100% outside air. Using reliable, gear–driven technology, the 2–position damper opens to allow ventilation air and closes when the rooftop stops, stopping unwanted infiltration.

### Manual OA Damper (accessory only)

Manual outdoor air dampers are an economical way to bring in ventilation air. The dampers are available in 25% versions.

### Motormaster Head Pressure Controller

The Motormaster motor controller is a low ambient, head pressure controller kit that is designed to maintain the unit's condenser head pressure during periods of low ambient cooling operation. This device should be used as an alternative to economizer free cooling not when economizer usage is either not appropriate or desired. The Motormaster will either cycle the outdoor–fan motors or operate them at reduced speed to maintain the unit operation, depending on the model.

### Winter Start Kit (accessory only)

The winter start kit extends the low ambient limit of your rooftop to 25°F (–4°C). The kit bypasses the low pressure switch, preventing nuisance tripping of the low pressure switch. Other low ambient precautions may still be prudent.

### High Static Motors and Drives

Some applications need larger horsepower motors, some need more airflow, and some need both. Regardless of the case, your dealer has a factory installed combination to meet your application. A wide selection of motors and pulleys (drives) are available, factory installed, to handle nearly any application.

### Filter or Fan Status Switches

Use these differential pressure switches to detect a filter clog or indoor fan motor failure. When used in conjunction with a compatible unit controller/thermostat, the switches will activate an alarm to warn the appropriate personnel.

### Electric Heaters / Single Point Kit

A full–line of field–installed accessory heaters and single point kits are available when required. The heaters are very easy to use, install and are all pre–engineered and certified.

## FACTORY OPTIONS AND/OR ACCESSORIES (CONT.)

### Hot Gas Reheat System

Hot Gas Reheat is an all-inclusive factory installed option that can be ordered with RAS units.

This system expands the envelope of operation of rooftop products to provide unprecedented flexibility to meet year round comfort conditions.

The Hot Gas Reheat has the industry's only dual dehumidification mode setting. The Hot Gas Reheat System includes two new modes of operation.

RAS rooftop units coupled with the Hot Gas Reheat is capable of operating in normal design cooling mode, subcooling mode, and hot gas reheat mode. Normal design cooling mode is when the unit will operate under its normal sequence of operation by cycling compressors to maintain comfort conditions.

Subcooling mode will operate to satisfy part load type conditions when the space requires combined sensible and a higher proportion of latent load control. Hot Gas Reheat mode will operate when outdoor temperatures diminish and the need for latent capacity is required for sole humidity control. Hot Gas Reheat mode will provide neutral air for maximum dehumidification operation.

### 2-Speed Indoor Fan Motor System

The 2-Speed Indoor Fan Motor System saves energy and installation time by utilizing a Variable Frequency Drive (VFD) to automatically adjust the indoor fan motor speed in sequence with the units cooling operation. Per ASHRAE 90.1 2010 standard section 6.4.3.10.b, during the first stage of cooling operation the VFD will adjust the fan motor to provide 2/3rd of the total cfm established for the unit. When a call for the second stage of cooling is required, the VFD will allow the total cfm for the unit established (100%). During the heating mode the VFD will allow total design cfm (100%) operation and during the ventilation mode the VFD will allow operation to 2/3rd of total cfm.

Compared to single speed indoor fan motor systems, the 2-Speed Indoor Fan Motor System can save substantial energy, 25%+\*, versus single speed indoor fan motor systems.

The VFD used in the 2-Speed Indoor Fan Motor System has soft start capabilities to slowly ramp up the speeds, thus eliminating any high inrush air volume during initial start-up. It also has internal over current protection for the fan motor and a field installed display kit that allows adjustment and in depth diagnostics of the VFD.

This 2-Speed Indoor Fan Motor System is available on models with 2-stage cooling operation with electrical mechanical or RTU Open, Multi Protocol controls. Both space sensor and conventional thermostats controls can be used to provide accurate control in any application.

The 2-Speed Indoor Fan Motor System is very flexible for initial fan performance set up and adjustment. The standard factory shipped VFD is pre-programmed to automatically stage the fan speed between the first and second stage of cooling. The unit fan performance static pressure and cfm can be easily adjusted using the traditional means of pulley adjustments. The other means to adjust the unit static and cfm performance is to utilize the field installed Display Kit and adjust the frequency and voltage in the VFD to required performance requirements. In either case, once set up, the VFD will automatically adjust the speed between the cooling stage operations.

## ACCESSORIES – RAS210–336

| FLAT ROOF CURBS |                                                                                                                                                      |                     |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Model Number    | Description                                                                                                                                          | Use With Model Size |
| CRRFCURB045A00  | 14" High Roof Curb – 14-inch Tall Roof Curb. Complies with NRCA standards. Ductwork attaches to the roof curb. Includes thru-the -bottom capability. | 210                 |
| CRRFCURB047A00  |                                                                                                                                                      | 240 – 300           |
| CRRFCURB046A00  | 24" High Roof Curb – 24-inch Tall Roof Curb. Complies with NRCA standards. Ductwork attaches to the roof curb. Includes thru-the -bottom capability. | 210                 |
| CRRFCURB048A00  |                                                                                                                                                      | 240 – 300           |
| CRRFCURB049A00  | 14" High Roof Curb – 14-inch Tall Roof Curb. Complies with NRCA standards. Ductwork attaches to the roof curb. Includes thru-the -bottom capability. | 336                 |
| CRRFCURB050A00  | 24" High Roof Curb – 24-inch Tall Roof Curb. Complies with NRCA standards. Ductwork attaches to the roof curb. Includes thru-the -bottom capability. | 336                 |

| ECONOMIZERS*1, 2 |                                                                                                                                                                                                                          |                     |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Model Number     | Description                                                                                                                                                                                                              | Use With Model Size |
| DNECOMZR052A00   | Economizer IV, Vertical with solid state controller                                                                                                                                                                      | 210 – 240           |
| DNECOMZR053A00   | Economizer IV, Vertical with solid state controller                                                                                                                                                                      | 300 – 336           |
| CRECOMZR074A00   | Ultra Low Leak Vertical Economizer X with solid-state controller, gear-driven, fully modulating damper, spring return actuator, up to 100% barometric relief, supply and outdoor air sensors, and CO2 sensor compatible. | 210 – 240           |
| CRECOMZR075A00   | Ultra Low Leak Vertical Economizer X with solid-state controller, gear-driven, fully modulating damper, spring return actuator, up to 100% barometric relief, supply and outdoor air sensors, and CO2 sensor compatible. | 300 – 336           |

\* Barometric relief hood is not included in the horizontal economizer and must be installed in return ductwork on Horizontal configured models. Order separately, see below CRBARHOD001A00.

<sup>1</sup> Economizer X cannot be installed with Economizer IV, manual damper, or motorized damper.

<sup>2</sup> Can only be used on electrical mechanical units with 2-stage cooling and 2-speed fan control.

| ECONOMIZER SENSORS |                                                                           |                     |
|--------------------|---------------------------------------------------------------------------|---------------------|
| Model Number       | Description                                                               | Use With Model Size |
| DNTEMPSN002A00     | Single (dry bulb) Control                                                 | Economizer IV       |
| DNCBDIOX005A00     | CO2 Sensor and aspirator box for use in return airstream.                 | Economizer IV & X   |
| DNENTDIF004A00     | Return Air Enthalpy Sensor                                                | Economizer IV       |
| AXB078ENT          | Enthalpy Control                                                          | Economizer IV       |
| CRTEMPSN005A00     | Outdoor or Return Dry Bulb Temp Sensor                                    | Economizer X        |
| HH57AC081          | Enthalpy control (One required for single enthalpy, two for differential) | Economizer X        |

| POWER EXHAUST* |                        |                     |
|----------------|------------------------|---------------------|
| Model Number   | Description            | Use With Model Size |
| CRPWREXH068A00 | Vertical, 208/230–3–60 | 210–240–300–336     |
| CRPWREXH069A00 | Vertical, 460–3–60     | 210–240–300–336     |
| CRPWREXH070A00 | Vertical, 575–3–60     | 210–240–300–336     |

\* Power exhaust can be used with Economizer IV or X, controlled by the Economizer controller.

| MANUAL OUTDOOR AIR DAMPERS |                                  |                     |
|----------------------------|----------------------------------|---------------------|
| Model Number               | Description                      | Use With Model Size |
| CRMANDPR009A00             | 25% Open Manual Fresh Air Damper | 210 – 240           |
| CRMANDPR010A00             | 25% Open Manual Fresh Air Damper | 300 – 336           |

| MOTORIZED OUTDOOR AIR DAMPERS |                                         |                     |
|-------------------------------|-----------------------------------------|---------------------|
| Model Number                  | Description                             | Use With Model Size |
| CRTWOPOS012A00                | Motorized 2 position outdoor air damper | 210 – 240           |
| CRTWOPOS013A00                | Motorized 2 position outdoor air damper | 300 – 336           |

## ACCESSORIES – RAS210–336 (cont.)

| LOW AMBIENT CONTROLS        |                                                                                                                              |                     |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Model Number                | Description                                                                                                                  | Use With Model Size |
| CRLOWAMB041A00 <sup>1</sup> | Motormaster® I –20° Low Ambient Control 208/230–3–60                                                                         | 210–240–300–336     |
| CRLOWAMB042A00 <sup>1</sup> | Motormaster® I –20° Low Ambient Control 460–3–60, 575–3–60                                                                   | 210–240–300–336     |
| CRTRXKIT001A00              | Motormaster® I –20° Transformer 575–3–60 Must be used in conjunction with Low Ambient Controller if used on 575–3–60 models. | 210–240–300–336     |

<sup>1</sup> Also requires one DNWINSTR001A00 winter start kit per circuit.

| CONTROL UPGRADE KITS |                                                                                                                                                                       |                             |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Model Number         | Description                                                                                                                                                           | Use With Model Size         |
| CRDISKIT001A00       | 2-Speed VFD display kit provides the field capability to set up points and troubleshooting codes on the VFD controller. Can be used for any associated unit with VFD. | All 2-Speed VFD Controllers |
| CRPHASE3001A02       | Electronic Phase Monitor – All 208/230/460–3–60 models                                                                                                                | 210–240–300–336             |
| CRPHASE3002A00       | Electronic Phase Monitor – All 575–3–60 models                                                                                                                        | 210–240–300–336             |
| CRSTATUS005A00       | Fan/filter Status Switch – Indicator light not included                                                                                                               | 210–240–300–336             |
| NRTIMEGD001A00       | Time Guard II                                                                                                                                                         | 210–240–300–336             |
| CRSDTEST001A00       | Smoke detector remote Test/Reset/Alarm indicator kit                                                                                                                  | 210–240–300–336             |
| CRSMKSEN002A00       | Smoke Detector Control Module                                                                                                                                         | 210–240–300–336             |
| CRSMKKIT002A00       | Smoke Detector Control Module (Smoke Detector Sensor with sampling tube & exhaust tube)                                                                               | 210–240–300–336             |
| DNWINSTR001A00       | Winter Start Kit – Contains time delay relay for timed bypass of low pressure switch on start-up                                                                      | 210–240–300–336             |

| 4" FILTER TRACK UPGRADE KIT |                         |                     |
|-----------------------------|-------------------------|---------------------|
| Model Number                | Description             | Use With Model Size |
| CRFLTTRK001A00              | 4" Field Conversion Kit | 210–240–300–336     |

| LOUVERED HAIL GUARDS |                                    |                     |
|----------------------|------------------------------------|---------------------|
| Model Number         | Description                        | Use With Model Size |
| CRLVHLGD017A00       | Louvered Condenser Coil Hail Guard | 210                 |
| CRLVHLGD027A00       | Louvered Condenser Coil Hail Guard | 240                 |
| CRLVHLGD028A00       | Louvered Condenser Coil Hail Guard | 300                 |
| CRLVHLGD029A00       | Louvered Condenser Coil Hail Guard | 336                 |

| ELECTRIC HEAT – VERTICAL DUCT CONFIGURATION |            |                                   |
|---------------------------------------------|------------|-----------------------------------|
| Model Number                                | Nominal kW | Use With Model Size               |
| CRHEATER279A00                              | 25.0       | All Vertical Duct 208/230v Models |
| CRHEATER280A00                              | 50.0       |                                   |
| CRHEATER281A00                              | 75.0       |                                   |
| CRHEATER282A00                              | 25.0       | All Vertical Duct 460v Models     |
| CRHEATER283A00                              | 50.0       |                                   |
| CRHEATER284A00                              | 75.0       |                                   |
| CRHEATER285A00                              | 25.0       | All Vertical Duct 575v Models     |
| CRHEATER286A00                              | 50.0       |                                   |
| CRHEATER287A00                              | 75.0       |                                   |

| SINGLE POINT CONNECTION KIT |                                                      |                                  |
|-----------------------------|------------------------------------------------------|----------------------------------|
| Model Number                | Description                                          | Use With Electric Heater         |
| CRSINGLE056A00              | Single Point Connection for 208/230V 75kW Heaters    | CRHEATER279A00<br>CRHEATER281A00 |
| CRSINGLE057A00              | Single Point Connection for 460V & 575V 75kW Heaters | CRHEATER284A00<br>CRHEATER287A00 |

**Table 2 – AHRI COOLING RATING TABLE**

| MODEL RAS | COOLING STAGES | NOMINAL CAPACITY (TONS) | NET COOLING CAPACITY (MBH) | TOTAL POWER (kW) | EER  | IEER WITH 1-SPEED IFM | IEER WITH 2-SPEED IFM |
|-----------|----------------|-------------------------|----------------------------|------------------|------|-----------------------|-----------------------|
| 210       | 2              | 17.5                    | 208.0                      | 18.9             | 11.0 | 11.9                  | 12.9                  |
| 240       | 2              | 20                      | 242.0                      | 24.2             | 10.0 | 10.8                  | 11.9                  |
| 300       | 2              | 25                      | 280.0                      | 28.0             | 10.0 | 10.6                  | 11.7                  |
| 336       | 2              | 27.5                    | 330.0                      | 31.7             | 10.4 | 10.6                  | 11.7                  |

**LEGEND**

AHRI – Air-Conditioning, Heating & Refrigeration Institute  
 ASHRAE – American Society of Heating, Refrigerating and Air Conditioning, Inc.  
 EER – Integrated Energy Efficiency Ratio  
 IPLV – Integrated Part Load Value

**NOTES:**

1. Rated and certified under AHRI Standard 340/360-04, as appropriate.
2. Ratings are based on:  
**Cooling Standard:** 80°F (27°C) db, 67°F (19°C) wb indoor air temp and 95°F (35°C) db outdoor air temp.  
**IPLV Standard:** 80°F (27°C) db, 67°F (19°C) wb indoor air temp and 80°F (27°C) db outdoor air temp.
3. All RAS units comply with ASHRAE 90.1 2001, 2004 Energy Standard for minimum SEER and EER requirements.
4. RAS units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes or visit the following website: <http://bcap-energy.org> to determine if compliance with this standard pertains to your state, territory, or municipality.



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org).

**Table 3 – MINIMUM AIRFLOWS ELECTRIC HEAT**

| MODEL SIZE | COOLING |         | ELECTRIC HEATERS |         | NOMINAL kW |
|------------|---------|---------|------------------|---------|------------|
|            | MINIMUM | MAXIMUM | MINIMUM          | MAXIMUM |            |
| 210        | 5250    | 9000    | 5200             | 9000    | 25         |
|            |         |         |                  |         | 50         |
|            |         |         |                  |         | 75         |
| 240        | 6000    | 10000   | 6000             | 10000   | 25         |
|            |         |         |                  |         | 50         |
|            |         |         |                  |         | 75         |
| 300        | 7500    | 12500   | 7000             | 12500   | 25         |
|            |         |         |                  |         | 50         |
|            |         |         |                  |         | 75         |
| 336        | 8250    | 13750   | 8500             | 13750   | 25         |
|            |         |         |                  |         | 50         |
|            |         |         |                  |         | 75         |

**Table 4 – SOUND PERFORMANCE TABLE**

| MODEL RAS | COOLING STAGES | Outdoor Sound (dB) |                 |      |      |      |      |      |      |      |      |
|-----------|----------------|--------------------|-----------------|------|------|------|------|------|------|------|------|
|           |                | A-Wtg.             | AHRI 370 Rating | 63   | 125  | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
| 210       | 2              | 84.1               | 84              | 92.2 | 83.9 | 80.4 | 81.8 | 78.7 | 76.5 | 72.2 | 65.4 |
| 240       | 2              | 86.5               | 87              | 95.6 | 87.5 | 84.2 | 84.2 | 81.7 | 77.9 | 73.2 | 66.3 |
| 300       | 2              | 85.9               | 86              | 97.1 | 88.3 | 84.4 | 83.3 | 80.7 | 77.4 | 73.4 | 67.3 |
| 336       | 2              | 85.9               | 86              | 97.1 | 88.3 | 84.4 | 83.3 | 80.7 | 77.4 | 73.4 | 67.3 |

**LEGEND**

dB – Decibel

**NOTES:**

1. Outdoor sound data is measured in accordance with AHRI standard 270-2008.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements are taken in accordance with AHRI standard 270-2008.

**Table 5 – PHYSICAL DATA (COOLING) 17.5 – 27.5 TONS**

| Refrigeration System               |                                    | RAS | 210                | 210 with Hot Gas Reheat |
|------------------------------------|------------------------------------|-----|--------------------|-------------------------|
|                                    |                                    |     | RTPF               | RTPF                    |
| # Circuits / # Comp. / Type        |                                    |     | 2 / 2 / Scroll     | 2 / 2 / Scroll          |
| R—410a charge A/B (lbs)            |                                    |     | 16.3/17.5          | 25.9/25.7               |
| Metering device                    |                                    |     | Acutrol            | TXV                     |
| High—press. Trip / Reset (psig)    |                                    |     | 630 / 505          | 630 / 505               |
| Low—press. Trip / Reset (psig)     |                                    |     | 54 / 117           | 27 / 44                 |
| Evap. Coil                         |                                    |     |                    |                         |
| Material                           |                                    |     | Cu / Al            | Cu / Al                 |
| Tube Diameter                      |                                    |     | 3/8"               | 3/8"                    |
| Rows / FPI                         |                                    |     | 4 / 15             | 4 / 15                  |
| total face area (ft <sup>2</sup> ) |                                    |     | 22.00              | 22.00                   |
| Condensate drain conn. size        |                                    |     | 3/4"               | 3/4"                    |
| Hot Gas Reheat Coil                |                                    |     |                    |                         |
| Material                           |                                    |     | n/a                | Cu / Al                 |
| Tube Diameter                      |                                    |     | n/a                | 3/8"                    |
| Rows / FPI                         |                                    |     | n/a                | 1 / 17                  |
| total face area (ft <sup>2</sup> ) |                                    |     | n/a                | 22.00                   |
| Evap. fan and motor                |                                    |     |                    |                         |
| VERTICAL                           |                                    |     |                    |                         |
| Standard Static                    | Motor Qty / Belt Qty / Driver Type |     | 1 / 1 / Belt       | 1 / 1 / Belt            |
|                                    | Max BHP                            |     | 3.3                | 3.3                     |
|                                    | RPM range                          |     | 622–822            | 622–822                 |
|                                    | motor frame size                   |     | 56                 | 56                      |
|                                    | Fan Qty / Type                     |     | 2 / Centrifugal    | 2 / Centrifugal         |
|                                    | Fan Diameter (in)                  |     | 15 x 15            | 15 x 15                 |
| Medium Static                      | Motor Qty / Belt Qty / Driver Type |     | 1 / 1 / Belt       | 1 / 1 / Belt            |
|                                    | Max BHP                            |     | 4.9                | 4.9                     |
|                                    | RPM range                          |     | 713–879            | 713–879                 |
|                                    | motor frame size                   |     | 56                 | 56                      |
|                                    | Fan Qty / Type                     |     | 2 / Centrifugal    | 2 / Centrifugal         |
|                                    | Fan Diameter (in)                  |     | 15 x 15            | 15 x 15                 |
| High Static                        | Motor Qty / Belt Qty / Driver Type |     | n/a                | n/a                     |
|                                    | Max BHP                            |     | n/a                | n/a                     |
|                                    | RPM range                          |     | n/a                | n/a                     |
|                                    | motor frame size                   |     | n/a                | n/a                     |
|                                    | Fan Qty / Type                     |     | n/a                | n/a                     |
|                                    | Fan Diameter (in)                  |     | n/a                | n/a                     |
| High Static— High Eff.             | Motor Qty / Belt Qty / Driver Type |     | 1 / 1 / Belt       | 1 / 1 / Belt            |
|                                    | Max BHP (208/230/460/575v)         |     | 6.5/ 6.9/ 7.0/ 8.3 | 6.5/ 6.9/ 7.0/ 8.3      |
|                                    | RPM range                          |     | 882–1078           | 882–1078                |
|                                    | motor frame size                   |     | 184T               | 184T                    |
|                                    | Fan Qty / Type                     |     | 2 / Centrifugal    | 2 / Centrifugal         |
|                                    | Fan Diameter (in)                  |     | 15 x 15            | 15 x 15                 |

**Table 5 (Cont.) – PHYSICAL DATA (COOLING) 17.5 – 27.5 TONS**

| RAS                                |                                    | 240                | 240 with Hot Gas Reheat | 300                | 300 with Hot Gas Reheat | 336                 |
|------------------------------------|------------------------------------|--------------------|-------------------------|--------------------|-------------------------|---------------------|
| <b>Refrigeration System</b>        |                                    | RTPF               | RTPF                    | RTPF               | RTPF                    | RTPF                |
| # Circuits / # Comp. / Type        |                                    | 2 / 2 / Scroll     | 2 / 2 / Scroll          | 2 / 2 / Scroll     | 2 / 2 / Scroll          | 2 / 2 / Scroll      |
| R-410a charge A/B (lbs)            |                                    | 20.6/14.7          | 27.9/20.5               | 19.8/ 20.4         | 27.9/ 28.9              | 27.0/ 28.5          |
| Metering device                    |                                    | Acutrol            | TXV                     | Acutrol            | TXV                     | Acutrol             |
| High—press. Trip / Reset (psig)    |                                    | 630 / 505          | 630 / 505               | 630 / 505          | 630 / 505               | 630 / 505           |
| Low—press. Trip / Reset (psig)     |                                    | 54 / 117           | 27 / 44                 | 54 / 117           | 27 / 44                 | 54 / 117            |
| <b>Evap. Coil</b>                  |                                    |                    |                         |                    |                         |                     |
| Material                           |                                    | Cu / Al            | Cu / Al                 | Cu / Al            | Cu / Al                 | Cu / Al             |
| Tube Diameter                      |                                    | 3/8"               | 3/8"                    | 3/8"               | 3/8"                    | 3/8"                |
| Rows / FPI                         |                                    | 4 / 15             | 4 / 15                  | 4 / 15             | 4 / 15                  | 4 / 15              |
| total face area (ft <sup>2</sup> ) |                                    | 22.00              | 22.00                   | 23.11              | 23.11                   | 26                  |
| Condensate drain conn. size        |                                    | 3/4"               | 3/4"                    | 3/4"               | 3/4"                    | 3/4"                |
| <b>Humidimizer Coil</b>            |                                    |                    |                         |                    |                         |                     |
| Material                           |                                    | n/a                | Cu / Al                 | n/a                | Cu / Al                 | n/a                 |
| Tube Diameter                      |                                    | n/a                | 3/8"                    | n/a                | 3/8"                    | n/a                 |
| Rows / FPI                         |                                    | n/a                | 1 / 17                  | n/a                | 1 / 17                  | n/a                 |
| total face area (ft <sup>2</sup> ) |                                    | n/a                | 22.00                   | n/a                | 23.11                   | n/a                 |
| <b>Evap. fan and motor</b>         |                                    |                    |                         |                    |                         |                     |
| <b>VERTICAL</b>                    |                                    |                    |                         |                    |                         |                     |
| Standard Static                    | Motor Qty / Belt Qty / Driver Type | 1 / 1 / Belt       | 1 / 1 / Belt            | 1 / 1 / Belt       | 1 / 1 / Belt            | n/a                 |
|                                    | Max BHP                            | 4.9                | 4.9                     | 4.9                | 4.9                     | n/a                 |
|                                    | RPM range                          | 690–863            | 690–863                 | 717–911            | 717–911                 | n/a                 |
|                                    | motor frame size                   | 56                 | 56                      | 56                 | 56                      | n/a                 |
|                                    | Fan Qty / Type                     | 2 / Centrifugal    | 2 / Centrifugal         | 2 / Centrifugal    | 2 / Centrifugal         | n/a                 |
|                                    |                                    | Fan Diameter (in)  | 15 x 15                 | 15 x 15            | 15 x 15                 | n/a                 |
| Standard Static – High Eff.        | Motor Qty / Belt Qty / Driver Type | n/a                | n/a                     | n/a                | n/a                     | 1 / 1 / Belt        |
|                                    | Max BHP                            | n/a                | n/a                     | n/a                | n/a                     | 6.5/ 6.9/ 7.0/ 8.3  |
|                                    | RPM range                          | n/a                | n/a                     | n/a                | n/a                     | 751–954             |
|                                    | motor frame size                   | n/a                | n/a                     | n/a                | n/a                     | 184T                |
|                                    | Fan Qty / Type                     | n/a                | n/a                     | n/a                | n/a                     | 2 / Centrifugal     |
|                                    |                                    | Fan Diameter (in)  | n/a                     | n/a                | n/a                     | 15 x 15             |
| Medium Static – High Eff.          | Motor Qty / Belt Qty / Driver Type | 1 / 1 / Belt       | 1 / 1 / Belt            | 1 / 1 / Belt       | 1 / 1 / Belt            | 1 / 1 / Belt        |
|                                    | Max BHP (208/230/460/575v)         | 6.5/ 6.9/ 7.0/ 8.3 | 6.5/ 6.9/ 7.0/ 8.3      | 6.5/ 6.9/ 7.0/ 8.3 | 6.5/ 6.9/ 7.0/ 8.3      | 10.5/11.9/11.9/11   |
|                                    | RPM range                          | 835–1021           | 835–1021                | 913–1116           | 913–1116                | 920–1190            |
|                                    | motor frame size                   | 184T               | 184T                    | 184T               | 184T                    | 213T                |
|                                    | Fan Qty / Type                     | 2 / Centrifugal    | 2 / Centrifugal         | 2 / Centrifugal    | 2 / Centrifugal         | 2 / Centrifugal     |
|                                    |                                    | Fan Diameter (in)  | 15 x 15                 | 15 x 15            | 15 x 15                 | 15 x 15             |
| High Static– High Eff.             | Motor Qty / Belt Qty / Driver Type | 1 / 1 / Belt       | 1 / 1 / Belt            | 1 / 1 / Belt       | 1 / 1 / Belt            | 1 / 2 Belt          |
|                                    | Max BHP (208/230/460/575v)         | 10.5/11.9/11.9/11  | 10.5/11.9/11.9/11       | 10.5/11.9/11.9/11  | 10.5/11.9/11.9/11       | 11.9/12.9/12.9/14.1 |
|                                    | RPM range                          | 941–1176           | 941–1176                | 941–1176           | 941–1176                | 1116–1400           |
|                                    | motor frame size                   | 213T               | 213T                    | 213T               | 213T                    | 215T                |
|                                    | Fan Qty / Type                     | 2 / Centrifugal    | 2 / Centrifugal         | 2 / Centrifugal    | 2 / Centrifugal         | 2 / Centrifugal     |
|                                    |                                    | Fan Diameter (in)  | 15 x 15                 | 15 x 15            | 15 x 15                 | 15 x 15             |

**Table 5 (Cont.) – PHYSICAL DATA (COOLING) 17.5 – 27.5 TONS**

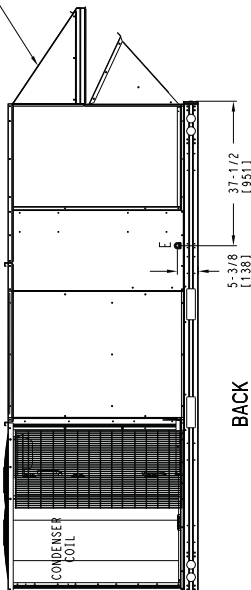
| <b>RAS</b>                    | <b>210</b>      | <b>240</b>      | <b>300</b>      | <b>336</b>      |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|
| <b>Cond. Coil (Circuit A)</b> |                 |                 |                 |                 |
| Coil type                     | RTPF            | RTPF            | RTPF            | RTPF            |
| Coil Length (in)              | 70              | 82              | 75              | 95              |
| Coil Height (in)              | 44              | 44              | 52              | 52              |
| Rows / FPI                    | 2 /17           | 2 /17           | 2 /17           | 2 /17           |
| total face area (ft2)         | 21.4            | 25.1            | 27.1            | 34.3            |
| <b>Cond. Coil (Circuit B)</b> |                 |                 |                 |                 |
| Coil type                     | RTPF            | RTPF            | RTPF            | RTPF            |
| Coil Length (in)              | 70              | 57              | 75              | 95              |
| Coil Height (in)              | 44              | 44              | 52              | 52              |
| Rows / FPI                    | 2 /17           | 2 /17           | 2 /17           | 2 /17           |
| total face area (ft2)         | 21.4            | 17.4            | 27.1            | 34.3            |
| <b>Cond. fan / motor</b>      |                 |                 |                 |                 |
| Qty / Motor drive type        | 3 / direct      | 4 / direct      | 4 / direct      | 6 / direct      |
| Motor HP / RPM                | 1/4 / 1100      | 1/4 / 1100      | 1/4 / 1100      | 1/4 / 1100      |
| Fan diameter (in)             | 22              | 22              | 22              | 22              |
| <b>Filters</b>                |                 |                 |                 |                 |
| RA Filter # / size (in)       | 6 / 20 x 25 x 2 | 6 / 20 x 25 x 2 | 9 / 16 x 25 x 2 | 9 / 16 x 25 x 2 |
| OA inlet screen # / size (in) | 4 / 16 x 25 x 1 | 4 / 16 x 25 x 1 | 4 / 16 x 25 x 1 | 4 / 16 x 25 x 1 |

# BASE UNIT DIMENSIONS – RAS210

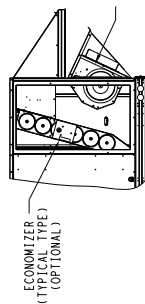
| CONNECTION SIZES |                                             |
|------------------|---------------------------------------------|
| A                | 1 3/8" DIA [35] FIELD POWER SUPPLY KNOCKOUT |
| B                | 3" DIA [76] FIELD POWER SUPPLY KNOCKOUT     |
| C                | 3 5/8" DIA [92] FIELD POWER SUPPLY KNOCKOUT |
| D                | 7/8" DIA [22] FIELD CONTROL WIRING HOLE     |
| E                | 3/4" -14 NPT CONDENSATE DRAIN               |
| G                | 7/8" DIA [22] FIELD CONTROL WIRING KNOCKOUT |

- NOTES:
1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
  2.  CENTER OF GRAVITY
  3.  DIRECTION OF AIR FLOW

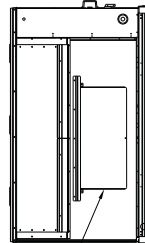
HOOD WITH ECONOMIZER  
OR POWER EXHAUST OPTIONS



BACK

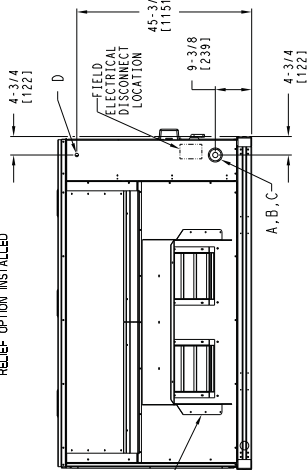


PANELS REMOVED TO SHOW ECONOMIZER  
AND POWER EXHAUST OPTIONS



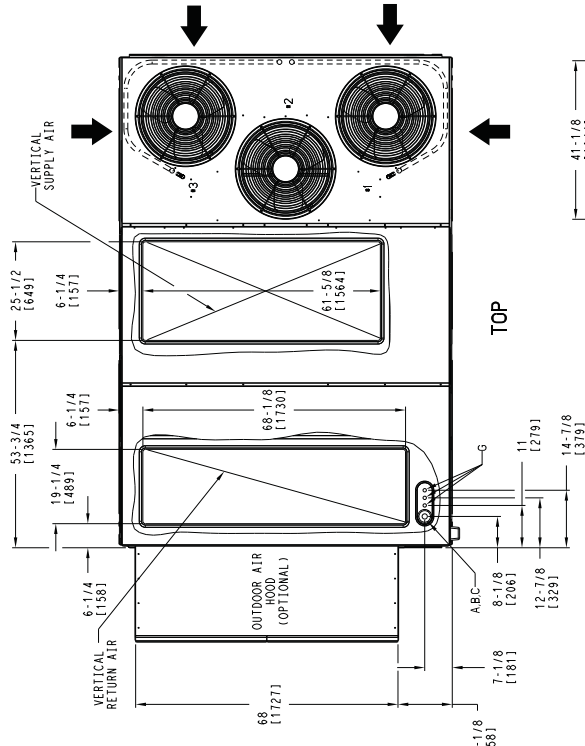
LEFT

SHOWN WITH THE BAROMETRIC  
RELIEF OPTION INSTALLED

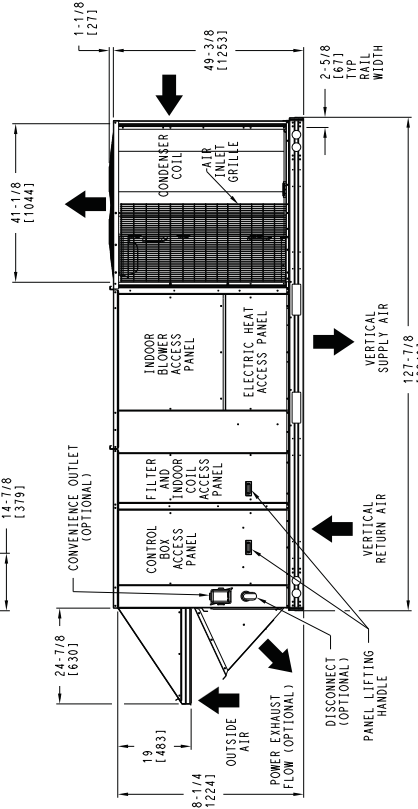


LEFT

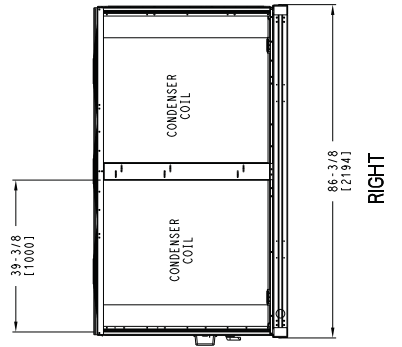
SHOWN WITH THE POWER EXHAUST  
OPTION INSTALLED



TOP



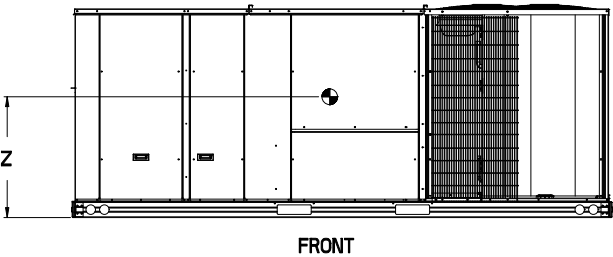
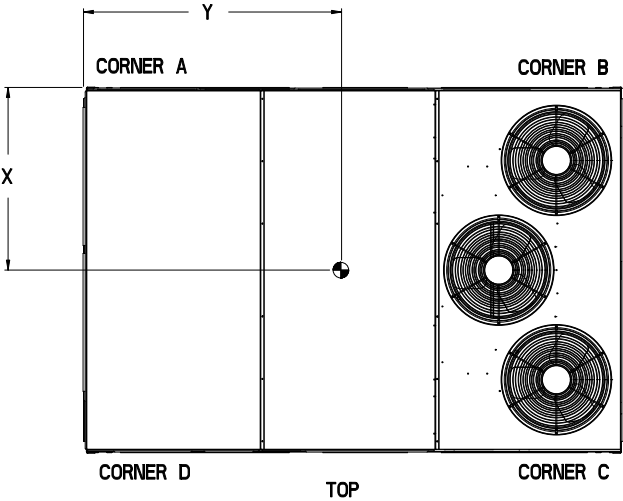
FRONT



RIGHT

WEIGHT & DIMENSIONS – RAS210 (cont.)

| UNIT<br>RAS | MAX UNIT<br>WEIGHT |     | Corner<br>Weight<br>A |     | Corner<br>Weight<br>B |     | Corner<br>Weight<br>C |     | Corner<br>Weight<br>D |     | Center of Gravity<br>In [mm] |               |              |
|-------------|--------------------|-----|-----------------------|-----|-----------------------|-----|-----------------------|-----|-----------------------|-----|------------------------------|---------------|--------------|
|             | LBS                | KG  | LBS                   | KG  | LBS                   | KG  | LBS                   | KG  | LBS                   | KG  | X                            | Y             | Z            |
| 17.5 Ton    | 1823               | 829 | 419                   | 190 | 496                   | 225 | 493                   | 224 | 415                   | 188 | 42-7/8 [1090]                | 69-1/4 [1759] | 16-1/2 [419] |

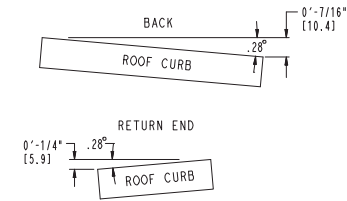
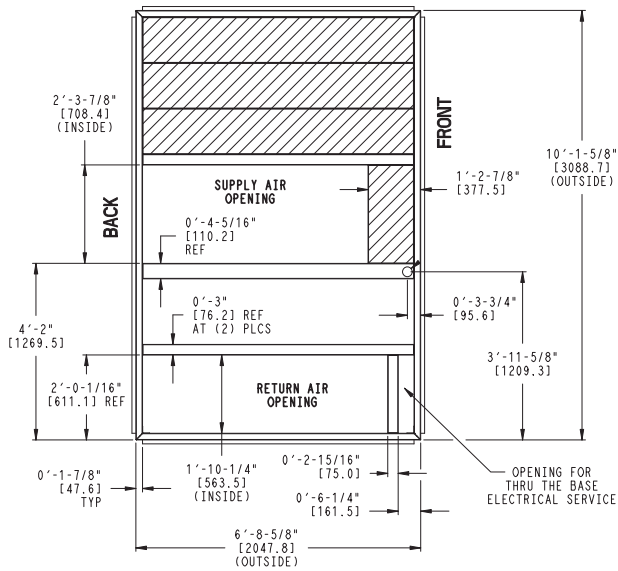


# ROOF CURB DETAILS – RAS210

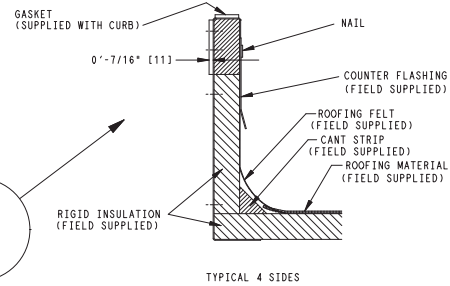
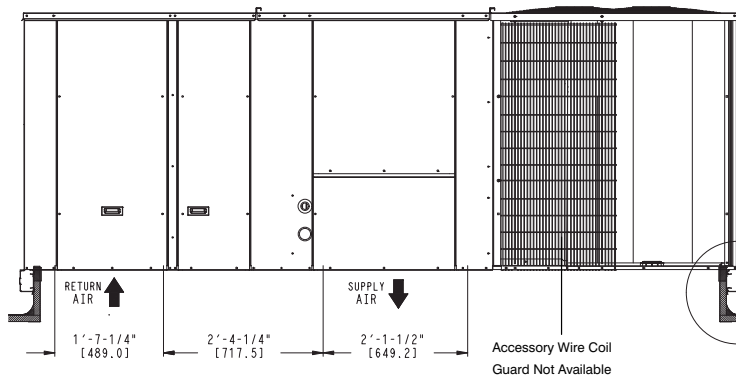
| RoofCurb Accessory | A           | Unit Size |
|--------------------|-------------|-----------|
| CRRFCURB045A01     | 1' 2" [356] | RAS210    |
| CRRFCURB046A01     | 2' 0" [610] |           |

## NOTES:

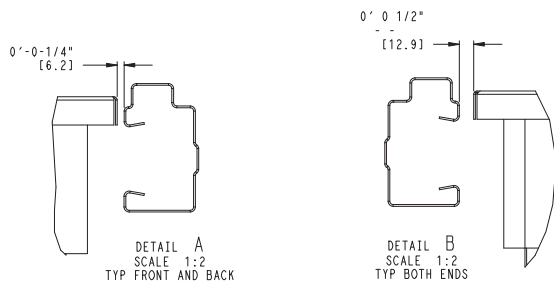
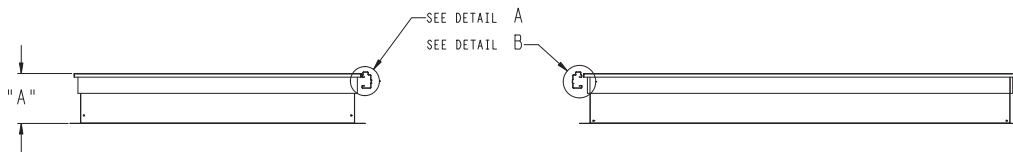
1. Roofcurb accessory is shipped disassembled.
  2. Dimensions in. [ ] in millimeters.
  3. Roofcurb galvanized steel.
  4. Attach ductwork to curb (Flanges of duct rest on curb)
  5. Service clearance 4' on each side.
- ➡ Direction of airflow.



MAX CURB LEVELING TOLERANCES

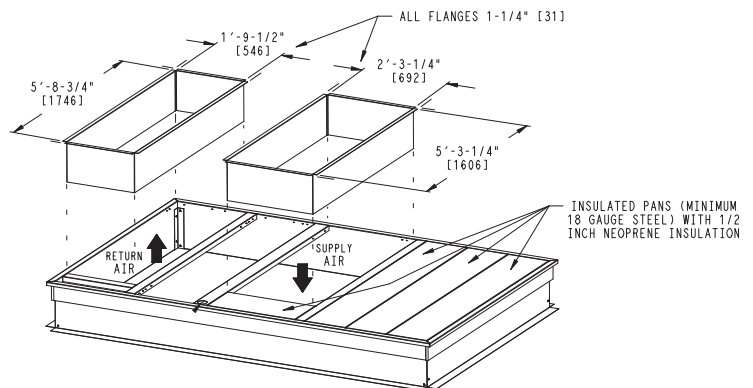


TYPICAL 4 SIDES



DETAIL A  
SCALE 1:2  
TYP FRONT AND BACK

DETAIL B  
SCALE 1:2  
TYP BOTH ENDS



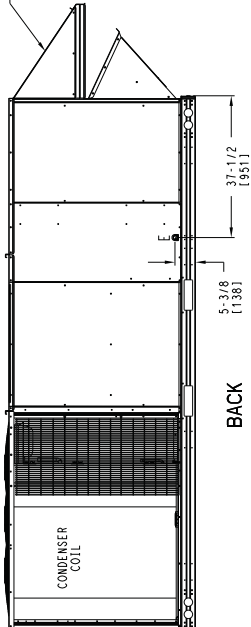
# BASE UNIT DIMENSIONS – RAS240 – 300

| CONNECTION SIZES |                                             |
|------------------|---------------------------------------------|
| A                | 1 3/8" DIA [35] FIELD POWER SUPPLY KNOCKOUT |
| B                | 3" DIA [76] FIELD POWER SUPPLY KNOCKOUT     |
| C                | 3 5/8" DIA [92] FIELD POWER SUPPLY KNOCKOUT |
| D                | 7/8" DIA [22] FIELD CONTROL WIRING HOLE     |
| E                | 3/4" - 1/4 NPT CONDENSATE DRAIN             |
| G                | 7/8" DIA [22] FIELD CONTROL WIRING KNOCKOUT |

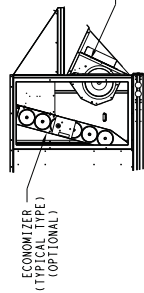
| UNIT   | H             |
|--------|---------------|
| 20 Ton | 49-3/8 [1253] |
| 25 Ton | 57-3/8 [1456] |

- NOTES:
1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
  2.  CENTER OF GRAVITY
  3.  DIRECTION OF AIR FLOW

HOOD WITH ECONOMIZER  
OR POWER EXHAUST OPTIONS



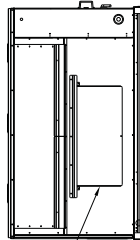
BACK



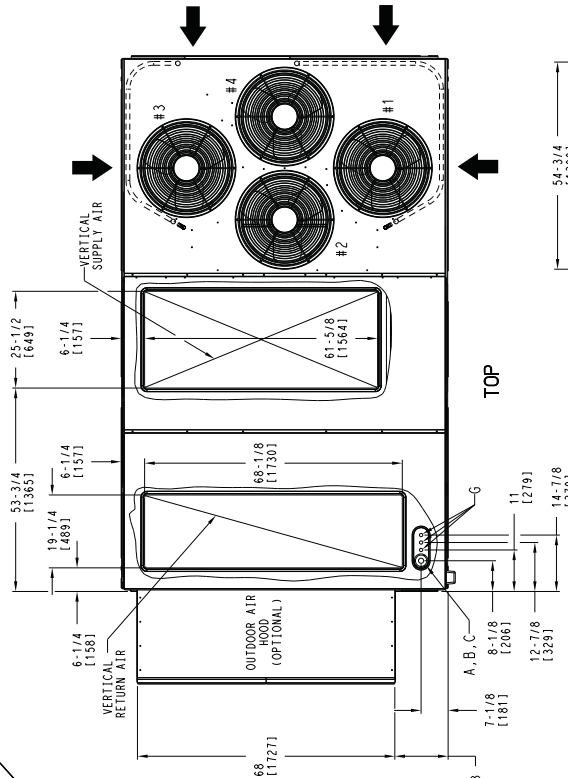
ECONOMIZER  
(TYPICAL TYPE)  
(OPTIONAL)

BACK

(PANELS REMOVED TO SHOW ECONOMIZER  
AND POWER EXHAUST OPTIONS)



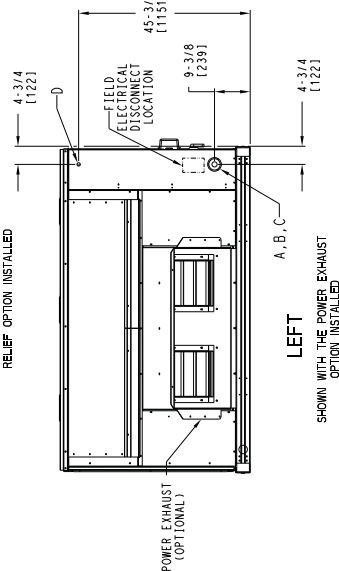
BAROMETRIC RELIEF  
OPTION INCLUDED WITH  
ECONOMIZER



TOP

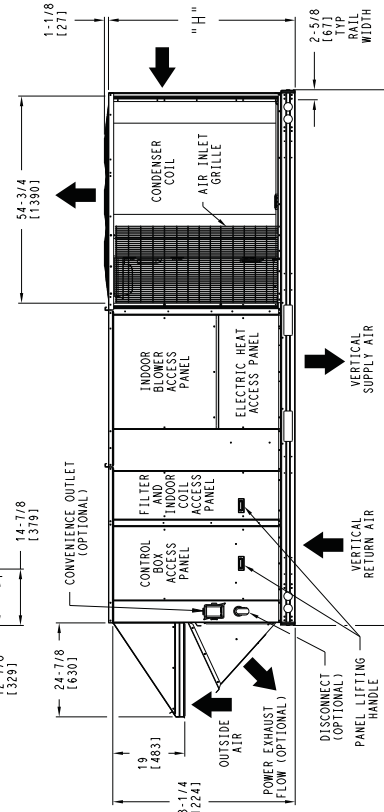
LEFT

SHOWN WITH THE BAROMETRIC  
RELIEF OPTION INSTALLED

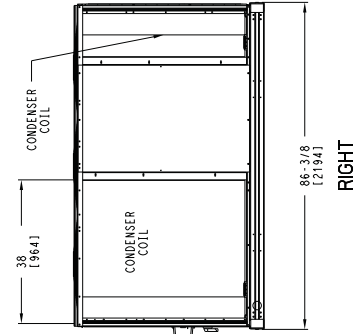


LEFT

SHOWN WITH THE POWER EXHAUST  
OPTION INSTALLED



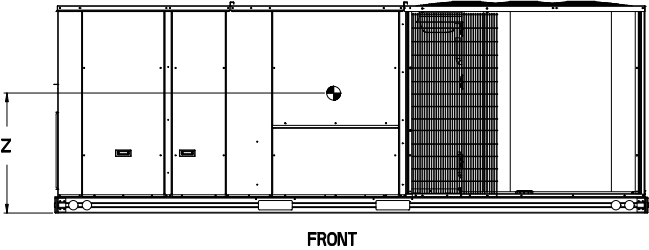
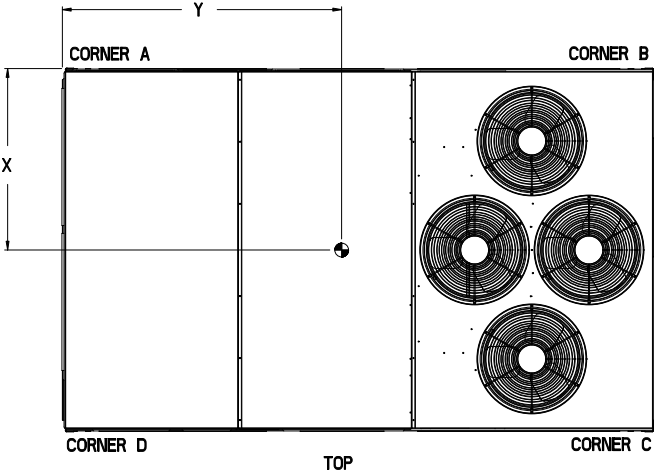
FRONT



RIGHT

**WEIGHT & CLEARANCE DIMENSIONS – RAS240–300 (cont.)**

| UNIT   | Max Unit Weight |     | Corner Weight (A) |     | Corner Weight (B) |     | Corner Weight (C) |     | Corner Weight (D) |     | Center of Gravity In [mm] |               |              |
|--------|-----------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|---------------------------|---------------|--------------|
|        | Lb              | Kg  | Lb                | Kg  | Lb                | Kg  | Lb                | Kg  | Lb                | Kg  | X                         | Y             | Z            |
| 20 Ton | 1973            | 897 | 532               | 241 | 522               | 237 | 456               | 207 | 464               | 210 | 40-1/8 [1020]             | 70 [1778]     | 16-1/2 [419] |
| 25 Ton | 2098            | 954 | 545               | 247 | 539               | 245 | 504               | 229 | 510               | 231 | 41-5/8 [1058]             | 70-1/4 [1784] | 19 [483]     |

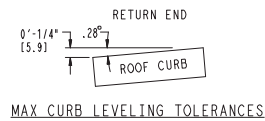
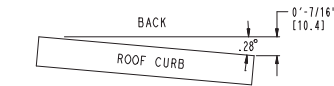
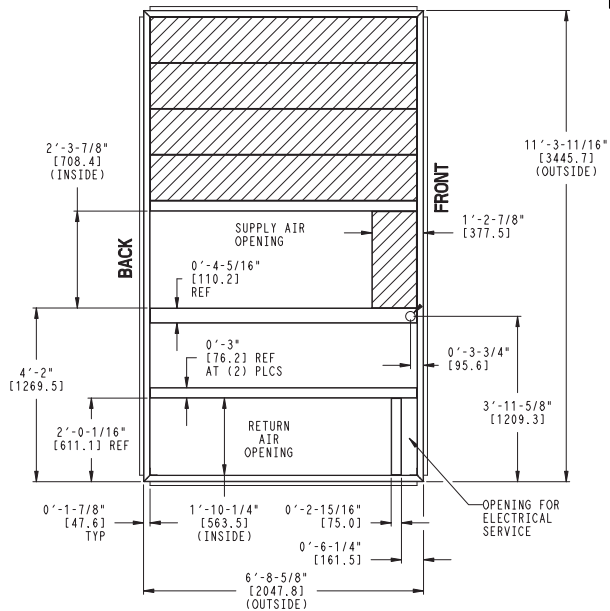


# ROOF CURB DETAILS – RAS240 – 300

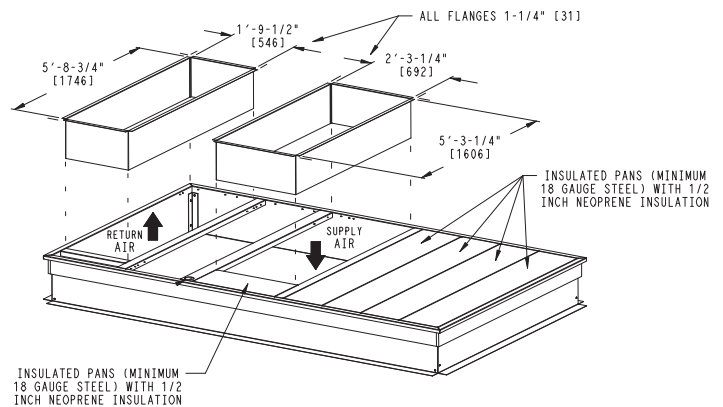
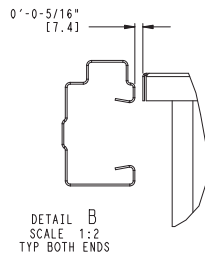
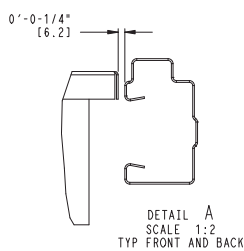
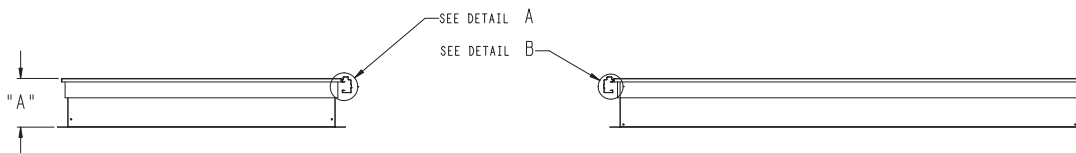
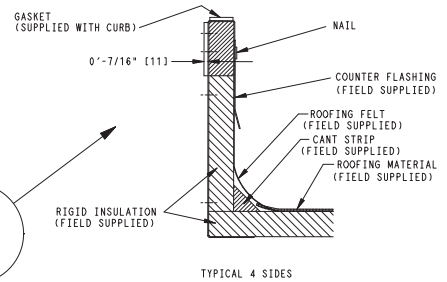
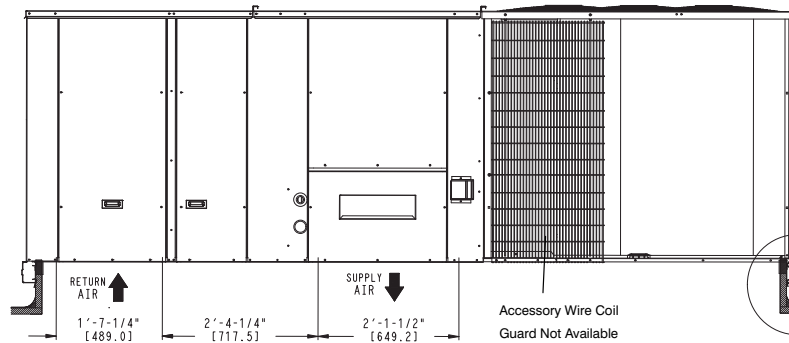
| RoofCurb Accessory | A           | Unit Size |
|--------------------|-------------|-----------|
| CRRFCURB047A01     | 1' 2" [356] | RAS240    |
| CRRFCURB048A01     | 2' 0" [610] | RAS300    |

## NOTES:

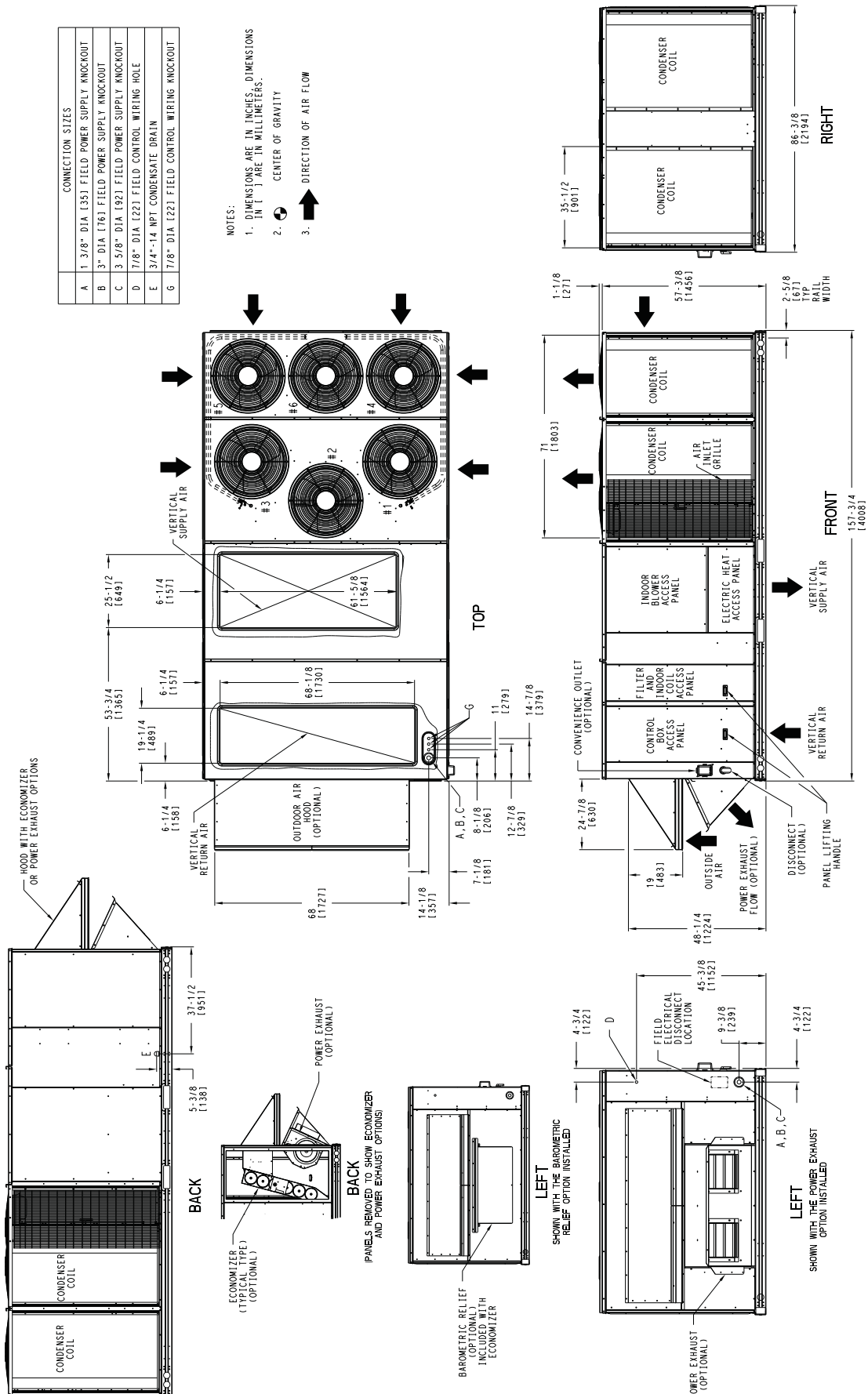
1. Roofcurb accessory is shipped disassembled.
  2. Dimensions in. [ ] in millimeters.
  3. Roofcurb galvanized steel.
  4. Attach ductwork to curb (Flanges of duct rest on curb)
  5. Service clearance 4' on each side.
- ➡ Direction of airflow.



MAX CURB LEVELING TOLERANCES

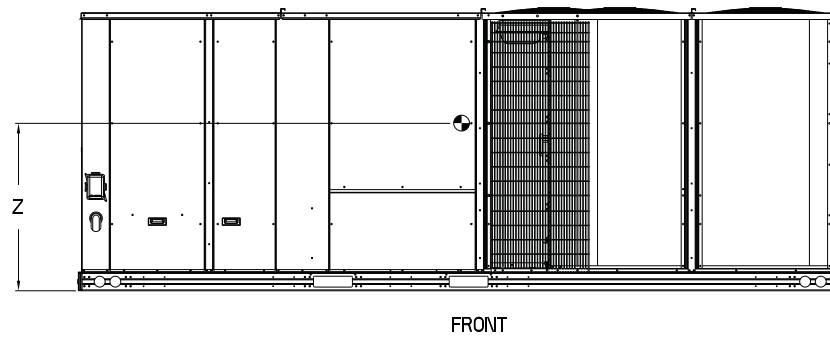
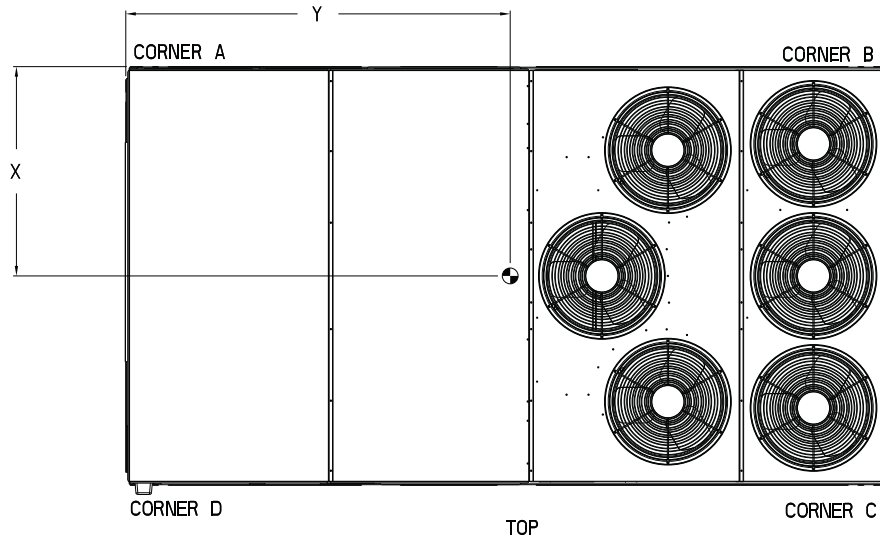


# BASE UNIT DIMENSIONS – RAS336



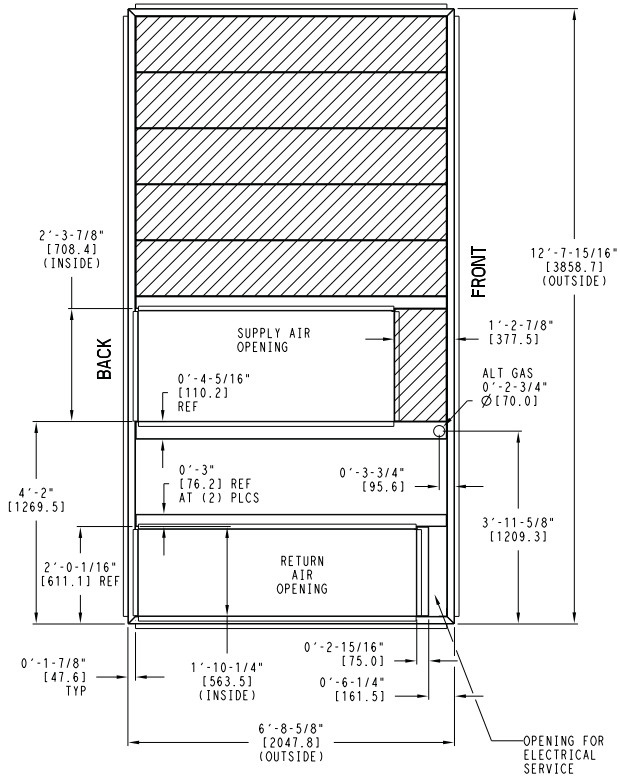
## BASE UNIT DIMENSIONS – RAS336 (cont.)

| UNIT   | Max Unit Weight |      | Corner Weight (A) |     | Corner Weight (B) |     | Corner Weight (C) |     | Corner Weight (D) |     | Center of Gravity In [mm] |               |          |
|--------|-----------------|------|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|---------------------------|---------------|----------|
|        | Lb              | Kg   | Lb                | Kg  | Lb                | Kg  | Lb                | Kg  | Lb                | Kg  | X                         | Y             | Z        |
| 30 Ton | 2513            | 1142 | 664               | 302 | 566               | 257 | 591               | 269 | 693               | 315 | 44 [1118]                 | 72-1/2 [1842] | 19 [483] |

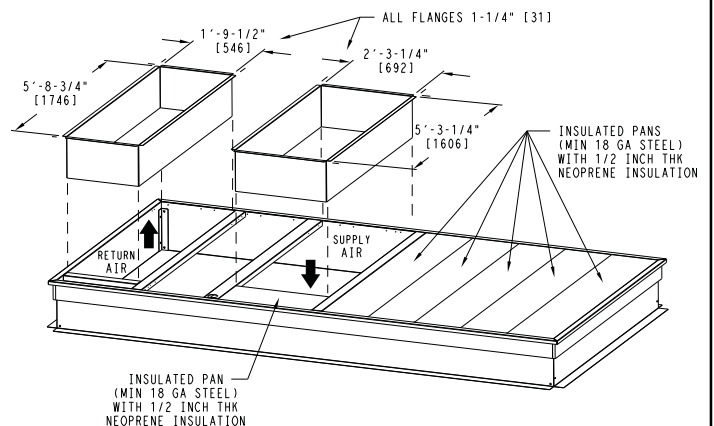
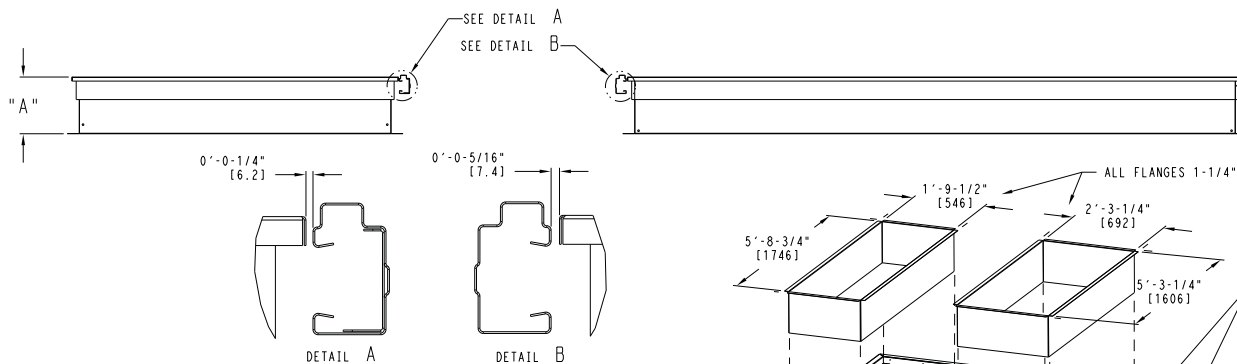
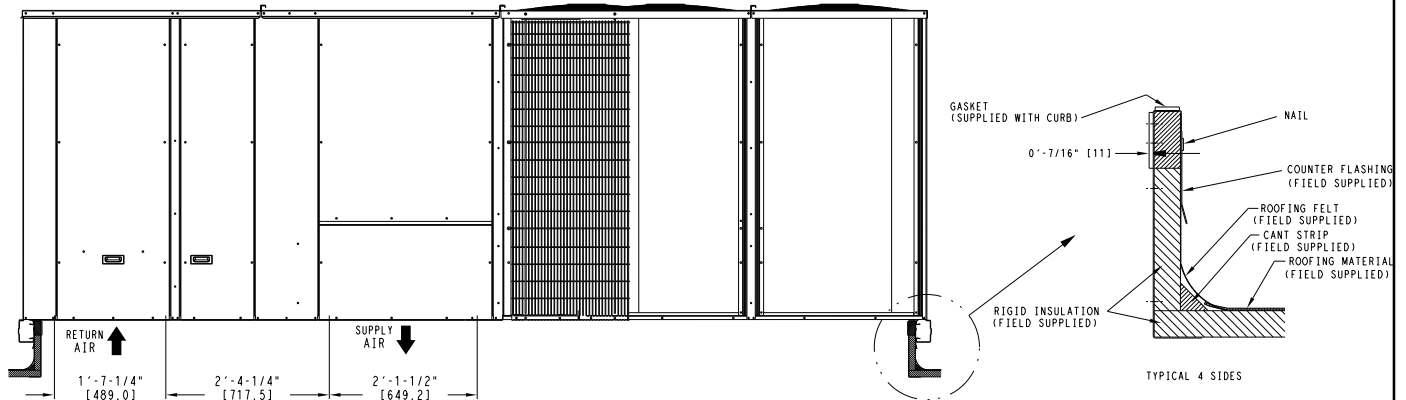
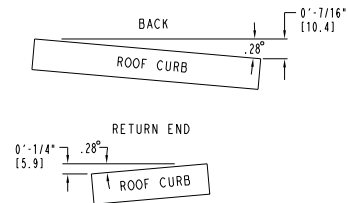


# ROOF CURB DETAILS – RAS336

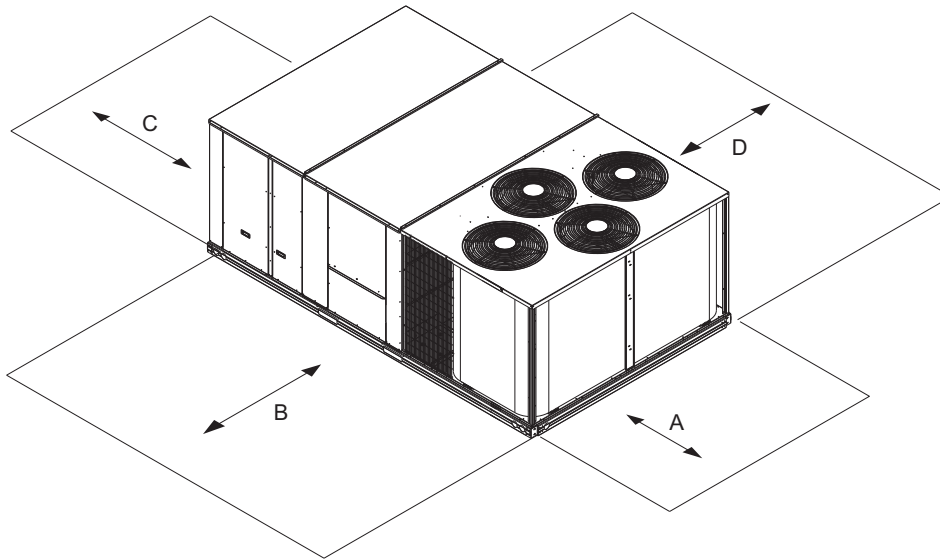
| UNIT SIZE | "A"                            | ROOF CURB ACCESSORY              |
|-----------|--------------------------------|----------------------------------|
| 30        | 1'-2" [356.0]<br>2'-0" [610.0] | CRRFCURB049A00<br>CRRFCURB050A00 |



- NOTES:
- 1 ROOF CURB ACCESSORY IS SHIPPED UNASSEMBLED.
  - 2 BOLT HEADS TO BE ON INSIDE OF FLANGE. CLEARANCE IS [11] 0-0-7/16" TYP ALL CORNERS.
  - 3 DIMENSIONS IN ( ) ARE IN MILLIMETERS.
  - 4 ROOF CURB GALVANIZED STEEL.
  - 5 ATTACH DUCTWORK TO CURB (FLANGES ON DUCT REST ON CURB)
  - 6 SERVICE CLEARANCE 4 ft ON EACH SIDE
- ➔ DIRECTION OF AIR FLOW



## SERVICE CLEARANCE DIMENSIONS



| LOCATION | DIMENSION       | CONDITION                                                                                                                                       |
|----------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| A        | 36-in (914 mm)  | • Recommended clearance for air flow and service                                                                                                |
| B        | 42-in (1067 mm) | • Recommended clearance for air flow and service                                                                                                |
| C        | 18-in (457 mm)  | • No Convenience Outlet<br>• No Economizer<br>• No field installed disconnect on economizer hood side (Factory-installed disconnect installed). |
|          | 36-in (914 mm)  | • Convenience Outlet installed.<br>• Vertical surface behind servicer is electrically non-conductive (e.g.: wood, fiberglass).                  |
|          | 42-in (1067 mm) | • Convenience Outlet installed.<br>• Vertical surface behind servicer is electrically conductive (e.g.: metal, masonry).                        |
|          | 96-in (2438 mm) | • Economizer and/or Power Exhaust installed.<br>• Check for sources of flue products with 10 feet (3 meters) of economizer fresh air intake.    |
| D        | 42-in (1067 mm) | • Recommended clearance for service.                                                                                                            |

**NOTE:** Unit not designed to have overhead obstruction. Contact Application Engineering for guidance on any application planning overhead obstruction or for vertical clearances.

**Fig. 9Service Clearance Dimensional Drawing**

## OPTIONS AND ACCESSORIES WEIGHT ADDERS

| BASE UNIT WITH OPTIONS AND ACCESSORIES<br>(Weight Adders) | MAX WEIGHT ADDER |     |        |     |        |     |        |      |
|-----------------------------------------------------------|------------------|-----|--------|-----|--------|-----|--------|------|
|                                                           | RAS210           |     | RAS240 |     | RAS300 |     | RAS336 |      |
|                                                           | lb               | kg  | lb     | kg  | lb     | kg  | lb     | kg   |
| Hot Gas Reheat <sup>1</sup>                               | 110              | 50  | 120    | 55  | 120    | 55  | ---    | ---  |
| Base Unit Operating Weight                                | 1922             | 872 | 2072   | 940 | 2197   | 997 | 2640   | 1197 |
| Power Exhaust                                             | 125              | 57  | 125    | 57  | 125    | 57  | 125    | 57   |
| EconoMi\$er (IV or X)                                     | 246              | 112 | 246    | 112 | 246    | 112 | 246    | 112  |
| Cu/Cu Condenser Coil                                      | 28               | 13  | 30     | 14  | 34     | 15  | 34     | 15   |
| Cu/Cu Condenser and Evaporator Coils                      | 53               | 24  | 58     | 26  | 64     | 29  | 64     | 29   |
| Roof Curb 14-in (356mm)                                   | 240              | 109 | 240    | 109 | 240    | 109 | 255    | 116  |
| Roof Curb 24-in (610mm)                                   | 340              | 154 | 340    | 154 | 340    | 154 | 355    | 161  |
| Louvered Hail Guard                                       | 60               | 27  | 120    | 54  | 135    | 61  | 150    | 68   |
| CO <sub>2</sub> sensor                                    | 5                | 2   | 5      | 2   | 5      | 2   | 5      | 2    |
| Supply Smoke Detector                                     | 5                | 2   | 5      | 2   | 5      | 2   | 5      | 2    |
| Fan/Filter Status Switch                                  | 2                | 1   | 2      | 1   | 2      | 1   | 2      | 1    |
| Non-Fused Disconnect                                      | 15               | 7   | 15     | 7   | 15     | 7   | 15     | 7    |
| Non-Powered Convenience Outlet                            | 5                | 2   | 5      | 2   | 5      | 2   | 5      | 2    |
| Enthalpy Sensor                                           | 2                | 1   | 2      | 1   | 2      | 1   | 2      | 1    |
| Differential Enthalpy Sensor                              | 3                | 1   | 3      | 1   | 3      | 1   | 3      | 1    |
| Two Position Motorized Damper                             | 50               | 23  | 50     | 23  | 65     | 29  | 65     | 29   |
| Manual Damper                                             | 35               | 16  | 35     | 16  | 40     | 18  | 40     | 18   |
| Field Filter Track 4-in (102mm)                           | 22               | 10  | 22     | 10  | 22     | 10  | 22     | 10   |
| MotorMaster Controller                                    | 35               | 16  | 35     | 16  | 35     | 16  | 35     | 16   |
| Medium Static Motor/Drive                                 | 6                | 3   | 6      | 3   | 6      | 3   | 10     | 5    |
| High Static Motor/Drive                                   | 12               | 5   | 16     | 7   | 16     | 7   | 20     | 9    |
| 2-Speed Indoor Fan Motor System w/VFD                     | 20               | 9   | 20     | 9   | 20     | 9   | 20     | 9    |

<sup>1</sup> Hot Gas Reheat add MotorMaster Controller.

# APPLICATION DATA

## Min operating ambient temp (cooling):

In mechanical cooling mode, your rooftop unit can safely operate down to an outdoor ambient temperature of 30°F (-1°C). It is possible to provide cooling at lower outdoor ambient temperatures by using less outside air, economizers, and/or accessory low ambient kits.

## Max operating ambient temp (cooling):

The maximum operating ambient temperature for cooling mode is 115°F (46°C). While cooling operation above 115°F (46°C) may be possible, it could cause either a reduction in performance, reliability, or a protective action by the unit's internal safety devices.

## Min and max airflow (cooling):

To maintain safe and reliable operation of your rooftop, operate within the cooling airflow limits. Operating above the max may cause blow-off, undesired airflow noise, or airflow related problems with the rooftop unit. Operating below the min may cause problems with coil freeze-up.

## Airflow:

All units are draw-through in cooling mode.

## Outdoor air application strategies:

Economizers reduce operating expenses and compressor run time by providing a free source of cooling and a means of ventilation to match application changing needs. In fact, they should be considered for most applications. Also, consider the various economizer control methods and their benefits, as well as sensors required to accomplish your application goals.

## Motor limits, break horsepower (BHP):

Due to internal design of units, the air path, and specially designed motors, the full horsepower (maximum continuous BHP) band can be used with the utmost confidence. There is no need for extra safety factors, as motors are designed and rigorously tested to use the entire, listed BHP range without either nuisance tripping or premature motor failure.

## Sizing a rooftop

While an air conditioner needs to have enough capacity to meet the design loads, it doesn't need excess capacity. In fact, excess capacity typically results in very poor part load performance and humidity control.

Using higher design temperatures than ASHRAE recommends for your location, adding "safety factors" to the calculated load, are all signs of oversizing air conditioners. Oversizing the air conditioner leads to poor humidity control, reduced efficiency, higher utility bills, larger indoor temperature swings, excessive noise, and increased wear and tear on the air conditioner.

Rather than oversizing an air conditioner, engineers should "right-size" or even slightly undersize air conditioners. Correctly sizing an air conditioner controls humidity better; promotes efficiency; reduces utility bills; extends equipment life, and maintains even, comfortable temperatures.

## Low ambient applications

The optional economizer can adequately cool your space by bringing in fresh, cool outside air. In fact, when so equipped, accessory low-ambient kit may not be necessary. In low ambient conditions, unless the outdoor air is excessively humid or contaminated, economizer-based "free cooling" is the preferred less costly and energy conscious method.

In low ambient applications where outside air might not be desired (such as contaminated or excessively humid outdoor environments), your rooftop can operate to ambient temperatures down to -20°F (-29°C) using the recommended accessory Motormaster low ambient controller.

## Winter start

The winter start kit extends the low ambient limit of your rooftop to 25°F (-4°C). The kit bypasses the low pressure switch, preventing nuisance tripping of the low pressure switch. Other low ambient precautions may still be prudent.

## 2-Speed Indoor Fan Motor System with Variable Frequency Drive (VFD)

The 2-Speed Indoor Fan Motor System utilizes a Variable Frequency Drive (VFD) to automatically adjust the indoor fan motor speed in sequence with the units cooling operation. Per ASHRAE 90.1 2010 standard section 6.4.3.10.b, during the first stage of cooling operation the VFD will adjust the fan motor to provide 2/3rd of the total cfm established for the unit. When a call for the second stage of cooling is required, the VFD will allow the total cfm for the unit established (100%). During the heating mode, the VFD will allow total design cfm (100%) operation and during the ventilation mode the VFD will allow operation to 2/3rd of total cfm.

The VFD used in the 2-Speed Indoor Fan Motor System has soft start capabilities to slowly ramp up the speeds, thus eliminating any high inrush air volume during initial start-up. It also has internal over current protection for the fan motor and a field installed display kit that allows adjustment and in depth diagnostics of the VFD.

This 2-Speed Indoor Fan Motor System is available on models with 2-stage cooling operation with electrical mechanical controls. Both space sensor and conventional thermostats/controls can be used to provide accurate control in any application.

The 2-Speed Indoor Fan Motor System is very flexible for initial fan performance set up and adjustment. The standard factory shipped VFD is pre programmed to automatically stage the fan speed between the first and second stage of cooling. The unit fan performance static pressure and cfm can be easily adjusted using the traditional means of pulley adjustments. The other means to adjust the unit static and cfm performance is to utilize the field installed display module and adjust the frequency and voltage in the VFD to required performance requirements. In either case, once set up the VFD will automatically adjust the speed between the cooling stage operation.

**Table 6 – COOLING CAPACITIES      17.5 TONS (2 Stage Cooling)**

| RAS210   |          |    |     | AMBIENT TEMPERATURE |       |       |          |       |       |          |       |       |          |       |       |
|----------|----------|----|-----|---------------------|-------|-------|----------|-------|-------|----------|-------|-------|----------|-------|-------|
|          |          |    |     | 85                  |       |       | 95       |       |       | 105      |       |       | 115      |       |       |
|          |          |    |     | EAT (DB)            |       |       | EAT (DB) |       |       | EAT (DB) |       |       | EAT (DB) |       |       |
|          |          |    |     | 75                  | 80    | 85    | 75       | 80    | 85    | 75       | 80    | 85    | 75       | 80    | 85    |
| 5250 Cfm | EAT (wb) | 58 | THC | 180.4               | 185.6 | 196.3 | 167.7    | 176.1 | 186.9 | 154.7    | 165.3 | 176.6 | 142.2    | 153.6 | 164.9 |
|          |          |    | SHC | 166.5               | 185.6 | 196.3 | 160.6    | 176.1 | 186.9 | 152.7    | 165.3 | 176.6 | 142.2    | 153.6 | 164.9 |
|          |          | 62 | THC | 196.2               | 195.5 | 196.9 | 183.6    | 182.9 | 187.2 | 169.3    | 168.7 | 176.9 | 153.4    | 154.1 | 165.2 |
|          |          |    | SHC | 146.8               | 172.1 | 194.7 | 141.4    | 166.6 | 187.2 | 135.4    | 160.5 | 176.9 | 128.6    | 152.5 | 165.2 |
|          |          | 67 | THC | 216.7               | 215.9 | 215.2 | 204.9    | 204.1 | 203.1 | 190.6    | 189.7 | 189.0 | 174.8    | 174.0 | 173.3 |
|          |          |    | SHC | 120.0               | 146.1 | 171.8 | 115.4    | 141.5 | 167.1 | 109.8    | 136.1 | 161.7 | 103.8    | 130.2 | 155.6 |
|          |          | 72 | THC | 237.4               | 236.8 | 236.0 | 226.0    | 225.1 | 224.2 | 212.8    | 211.9 | 211.0 | 197.3    | 196.4 | 195.5 |
|          |          |    | SHC | 92.0                | 118.3 | 144.3 | 87.8     | 114.3 | 140.4 | 83.0     | 109.6 | 135.8 | 77.6     | 104.2 | 130.6 |
|          |          | 76 | THC | —                   | 252.9 | 253.0 | —        | 242.5 | 241.6 | —        | 229.1 | 228.2 | —        | 214.1 | 213.1 |
|          |          |    | SHC | —                   | 95.1  | 121.4 | —        | 91.7  | 118.0 | —        | 87.3  | 113.8 | —        | 82.5  | 107.1 |
| 6125 Cfm | EAT (wb) | 58 | THC | 188.8               | 198.5 | 209.3 | 176.5    | 188.2 | 200.2 | 164.5    | 176.7 | 189.0 | 151.9    | 164.2 | 176.7 |
|          |          |    | SHC | 180.4               | 198.5 | 209.3 | 174.4    | 188.2 | 200.2 | 164.5    | 176.7 | 189.0 | 151.9    | 164.2 | 176.7 |
|          |          | 62 | THC | 205.2               | 204.6 | 209.6 | 191.8    | 191.5 | 200.4 | 176.6    | 177.6 | 189.2 | 159.9    | 164.2 | 176.9 |
|          |          |    | SHC | 159.9               | 188.7 | 209.6 | 154.2    | 183.0 | 200.4 | 147.9    | 174.8 | 189.2 | 141.0    | 164.2 | 176.9 |
|          |          | 67 | THC | 225.5               | 224.5 | 223.5 | 213.5    | 212.5 | 211.7 | 199.1    | 198.3 | 197.4 | 182.3    | 181.4 | 180.9 |
|          |          |    | SHC | 128.3               | 158.4 | 187.8 | 123.8    | 154.1 | 183.5 | 118.4    | 148.9 | 178.1 | 112.2    | 142.7 | 171.6 |
|          |          | 72 | THC | 245.6               | 245.3 | 244.6 | 234.7    | 233.6 | 232.6 | 220.9    | 219.9 | 218.8 | 205.5    | 204.4 | 203.4 |
|          |          |    | SHC | 95.4                | 125.9 | 155.7 | 91.7     | 122.2 | 152.4 | 86.9     | 117.7 | 148.1 | 81.7     | 112.5 | 143.1 |
|          |          | 76 | THC | —                   | 262.0 | 261.2 | —        | 250.7 | 250.1 | —        | 237.3 | 236.2 | —        | 221.6 | 220.6 |
|          |          |    | SHC | —                   | 99.5  | 129.4 | —        | 95.9  | 126.2 | —        | 91.8  | 122.4 | —        | 87.0  | 117.8 |
| 7000 Cfm | EAT (wb) | 58 | THC | 197.4               | 209.8 | 221.3 | 186.1    | 199.1 | 211.7 | 173.8    | 186.9 | 200.1 | 160.3    | 173.5 | 186.9 |
|          |          |    | SHC | 196.8               | 209.8 | 221.3 | 186.1    | 199.1 | 211.7 | 173.8    | 186.9 | 200.1 | 160.3    | 173.5 | 186.9 |
|          |          | 62 | THC | 212.7               | 212.4 | 221.5 | 198.4    | 199.8 | 212.0 | 182.3    | 186.9 | 200.3 | 164.7    | 173.8 | 187.1 |
|          |          |    | SHC | 173.4               | 205.1 | 221.5 | 167.4    | 197.4 | 212.0 | 160.8    | 186.8 | 200.3 | 153.4    | 173.8 | 187.1 |
|          |          | 67 | THC | 233.7               | 232.5 | 231.4 | 220.8    | 219.8 | 218.9 | 205.6    | 204.5 | 204.1 | 187.8    | 186.8 | 188.0 |
|          |          |    | SHC | 138.0               | 172.0 | 205.0 | 133.4    | 167.6 | 200.4 | 127.8    | 162.0 | 194.4 | 121.3    | 155.6 | 185.6 |
|          |          | 72 | THC | 254.3               | 253.3 | 252.8 | 242.7    | 241.5 | 240.3 | 228.0    | 226.8 | 225.7 | 211.8    | 210.6 | 209.3 |
|          |          |    | SHC | 101.3               | 135.4 | 169.2 | 97.3     | 131.8 | 165.9 | 92.3     | 127.2 | 161.5 | 86.9     | 121.8 | 156.3 |
|          |          | 76 | THC | —                   | 270.7 | 269.9 | —        | 259.0 | 258.1 | —        | 245.0 | 243.6 | —        | 228.5 | 227.1 |
|          |          |    | SHC | —                   | 106.1 | 140.0 | —        | 102.4 | 136.5 | —        | 98.2  | 132.7 | —        | 93.2  | 127.9 |
| 7875 Cfm | EAT (wb) | 58 | THC | 205.0               | 217.2 | 229.1 | 193.4    | 206.9 | 219.3 | 180.6    | 194.3 | 207.9 | 166.6    | 180.5 | 194.5 |
|          |          |    | SHC | 205.0               | 217.2 | 229.1 | 193.4    | 206.9 | 219.3 | 180.6    | 194.3 | 207.9 | 166.6    | 180.5 | 194.5 |
|          |          | 62 | THC | 216.7               | 217.4 | 229.4 | 202.5    | 207.1 | 219.6 | 185.9    | 194.5 | 208.4 | 168.4    | 180.7 | 194.7 |
|          |          |    | SHC | 183.9               | 217.4 | 229.4 | 178.2    | 207.1 | 219.6 | 171.5    | 194.5 | 208.4 | 141.2    | 180.7 | 194.7 |
|          |          | 67 | THC | 237.8               | 236.7 | 235.7 | 224.7    | 223.5 | 223.0 | 209.5    | 208.3 | 209.2 | 191.5    | 190.3 | 195.0 |
|          |          |    | SHC | 144.6               | 182.4 | 219.3 | 140.3    | 178.2 | 213.7 | 134.9    | 172.7 | 205.9 | 113.6    | 166.2 | 195.0 |
|          |          | 72 | THC | 258.6               | 257.5 | 256.5 | 246.8    | 245.7 | 244.3 | 231.8    | 230.5 | 229.2 | 215.3    | 213.9 | 212.5 |
|          |          |    | SHC | 103.9               | 141.8 | 179.2 | 100.0    | 138.3 | 176.1 | 95.1     | 133.9 | 172.1 | 89.7     | 128.6 | 142.0 |
|          |          | 76 | THC | —                   | 275.4 | 274.2 | —        | 262.7 | 261.8 | —        | 248.7 | 247.6 | —        | 231.9 | 230.5 |
|          |          |    | SHC | —                   | 109.5 | 147.0 | —        | 105.7 | 143.6 | —        | 101.5 | 139.9 | —        | 96.6  | 135.4 |
| 8750 Cfm | EAT (wb) | 58 | THC | 211.3               | 223.6 | 235.9 | 199.7    | 213.4 | 225.7 | 186.4    | 200.7 | 214.3 | 172.1    | 186.5 | 200.9 |
|          |          |    | SHC | 211.3               | 223.6 | 235.9 | 199.7    | 213.4 | 225.7 | 186.4    | 200.7 | 214.3 | 172.1    | 186.5 | 200.9 |
|          |          | 62 | THC | 220.0               | 223.7 | 236.3 | 206.0    | 213.6 | 226.1 | 189.3    | 200.9 | 214.5 | 172.2    | 186.7 | 201.2 |
|          |          |    | SHC | 194.0               | 223.7 | 236.3 | 188.5    | 213.6 | 226.1 | 181.3    | 200.9 | 214.5 | 172.2    | 186.7 | 201.2 |
|          |          | 67 | THC | 241.1               | 240.1 | 239.7 | 227.9    | 226.6 | 226.9 | 212.7    | 211.4 | 214.9 | 194.4    | 193.0 | 201.4 |
|          |          |    | SHC | 151.0               | 192.1 | 230.2 | 146.9    | 188.3 | 225.2 | 141.6    | 182.9 | 214.8 | 135.3    | 176.3 | 201.4 |
|          |          | 72 | THC | 262.2               | 261.0 | 259.7 | 250.0    | 248.8 | 247.7 | 235.0    | 233.5 | 232.1 | 218.1    | 216.6 | 215.2 |
|          |          |    | SHC | 106.5               | 148.1 | 189.0 | 102.5    | 144.5 | 186.0 | 97.8     | 140.4 | 182.1 | 92.4     | 135.3 | 177.1 |
|          |          | 76 | THC | —                   | 278.9 | 277.4 | —        | 266.0 | 264.8 | —        | 251.5 | 250.6 | —        | 234.7 | 233.0 |
|          |          |    | SHC | —                   | 112.7 | 153.7 | —        | 108.9 | 150.4 | —        | 104.7 | 146.7 | —        | 100.0 | 142.4 |

NOTE: See Minimum—Maximum Airflow Ratings in Table 3. Do not operate outside these limits.

**LEGEND:**

- Do not operate
- Cfm — Cubic feet per minute (supply air)
- EAT(db) — Entering air temperature (dry bulb)
- EAT(wb) — Entering air temperature (wet bulb)
- SHC — Sensible heat capacity
- TC — Total capacity

**Table 7 – COOLING CAPACITIES      17.5 TONS (2 Stage Cooling)**

| RAS210 (17.5 TONS) – UNIT WITH HOT GAS REHEAT IN SUBCOOLING MODE |     |                                   |       |       |       |       |       |       |       |       |
|------------------------------------------------------------------|-----|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Temp (F) Air Ent<br>Condenser (Edb)                              |     | AIR ENTERING EVAPORATOR – CFM     |       |       |       |       |       |       |       |       |
|                                                                  |     | 5,250                             |       |       | 7,000 |       |       | 8,750 |       |       |
|                                                                  |     | Air Entering Evaporator – Ewb (F) |       |       |       |       |       |       |       |       |
|                                                                  |     | 72                                | 67    | 62    | 72    | 67    | 62    | 72    | 67    | 62    |
| 75                                                               | TC  | 218.7                             | 199.6 | 180.5 | 241.4 | 219.4 | 197.4 | 261.7 | 237.2 | 212.7 |
|                                                                  | SHC | 99.9                              | 123.9 | 147.8 | 112.7 | 136.9 | 161.1 | 122.9 | 147.3 | 171.7 |
|                                                                  | kW  | 11.81                             | 11.56 | 11.20 | 13.81 | 13.48 | 13.16 | 14.82 | 14.58 | 14.16 |
| 85                                                               | TC  | 206.6                             | 187.9 | 169.1 | 224.9 | 203.4 | 181.9 | 241.3 | 217.3 | 193.4 |
|                                                                  | SHC | 78.9                              | 108.4 | 137.9 | 92.2  | 122.1 | 152.0 | 103.0 | 133.1 | 163.3 |
|                                                                  | kW  | 13.18                             | 12.53 | 12.53 | 15.18 | 14.85 | 14.52 | 16.21 | 15.85 | 15.54 |
| 95                                                               | TC  | 194.7                             | 176.2 | 157.8 | 208.4 | 187.4 | 166.4 | 220.8 | 197.4 | 174.1 |
|                                                                  | SHC | 57.8                              | 92.9  | 128.0 | 71.7  | 107.3 | 142.9 | 83.0  | 118.9 | 154.9 |
|                                                                  | kW  | 14.56                             | 14.21 | 13.88 | 16.56 | 16.21 | 15.87 | 17.56 | 17.22 | 16.01 |
| 105                                                              | TC  | 182.7                             | 164.5 | 146.4 | 191.9 | 171.4 | 150.8 | 200.3 | 177.6 | 154.8 |
|                                                                  | SHC | 36.8                              | 77.4  | 118.1 | 51.3  | 92.5  | 133.8 | 63.0  | 104.7 | 146.4 |
|                                                                  | kW  | 15.93                             | 15.58 | 15.20 | 17.94 | 17.58 | 17.22 | 18.95 | 18.59 | 18.24 |
| 115                                                              | TC  | 170.6                             | 152.8 | 135.0 | 175.4 | 155.4 | 135.3 | 179.8 | 157.7 | 135.5 |
|                                                                  | SHC | 15.7                              | 62.0  | 108.2 | 30.8  | 77.8  | 124.7 | 43.0  | 90.5  | 128.0 |
|                                                                  | kW  | 17.31                             | 16.95 | 16.58 | 19.32 | 18.95 | 18.58 | 20.32 | 19.96 | 19.59 |

| RAS210 (17.5 TONS) – UNIT WITH HOT GAS REHEAT IN HOT GAS REHEAT MODE |     |                                   |        |        |                |        |        |                |        |        |
|----------------------------------------------------------------------|-----|-----------------------------------|--------|--------|----------------|--------|--------|----------------|--------|--------|
| Temp (F) Air Ent<br>Condenser (Edb)                                  |     | AIR ENTERING EVAPORATOR – Ewb (F) |        |        |                |        |        |                |        |        |
|                                                                      |     | 75 Dry Bulb                       |        |        | 75 Dry Bulb    |        |        | 75 Dry Bulb    |        |        |
|                                                                      |     | 62.5 Wet Bulb                     |        |        | 64 Wet Bulb    |        |        | 65.3 Wet Bulb  |        |        |
|                                                                      |     | (50% Relative)                    |        |        | (56% Relative) |        |        | (60% Relative) |        |        |
|                                                                      |     | Air Entering Evaporator – Cfm     |        |        |                |        |        |                |        |        |
|                                                                      |     | 5,250                             | 7,000  | 8,750  | 5,250          | 7,000  | 8,750  | 5,250          | 7,000  | 8,750  |
| 80                                                                   | TC  | 82.20                             | 90.50  | 92.40  | 86.70          | 96.40  | 97.80  | 91.60          | 99.80  | 101.20 |
|                                                                      | SHC | 18.20                             | 29.40  | 41.60  | 8.60           | 17.20  | 27.50  | 0.50           | 9.30   | 13.20  |
|                                                                      | kW  | 12.64                             | 12.73  | 12.88  | 12.78          | 13.06  | 13.15  | 12.96          | 13.07  | 13.22  |
| 75                                                                   | TC  | 84.40                             | 92.70  | 94.40  | 88.80          | 98.60  | 99.70  | 93.70          | 102.00 | 103.40 |
|                                                                      | SHC | 19.70                             | 31.30  | 43.50  | 10.10          | 18.80  | 29.20  | 12.10          | 10.80  | 15.30  |
|                                                                      | kW  | 12.60                             | 12.71  | 12.85  | 12.75          | 13.02  | 13.12  | 12.93          | 13.03  | 13.19  |
| 70                                                                   | TC  | 86.70                             | 94.90  | 96.60  | 91.00          | 100.70 | 102.00 | 95.90          | 104.10 | 105.40 |
|                                                                      | SHC | 21.30                             | 32.80  | 44.80  | 11.60          | 20.40  | 30.70  | 3.80           | 12.30  | 16.50  |
|                                                                      | kW  | 12.56                             | 12.66  | 12.82  | 12.70          | 12.99  | 13.08  | 12.89          | 13.00  | 13.14  |
| 60                                                                   | TC  | 90.90                             | 99.10  | 100.80 | 95.20          | 105.00 | 106.30 | 100.20         | 108.30 | 109.70 |
|                                                                      | SHC | 24.80                             | 36.00  | 48.20  | 14.90          | 23.90  | 35.90  | 7.20           | 15.60  | 19.60  |
|                                                                      | kW  | 12.49                             | 12.60  | 12.75  | 12.64          | 12.92  | 13.02  | 12.83          | 12.93  | 13.09  |
| 50                                                                   | TC  | 95.00                             | 103.40 | 105.10 | 99.50          | 109.40 | 110.50 | 104.40         | 112.50 | 113.90 |
|                                                                      | SHC | 28.10                             | 39.30  | 51.30  | 18.20          | 27.20  | 37.40  | 10.30          | 18.90  | 23.20  |
|                                                                      | kW  | 12.43                             | 12.53  | 12.67  | 12.57          | 12.86  | 12.95  | 12.76          | 12.87  | 13.02  |
| 40                                                                   | TC  | 99.20                             | 107.70 | 109.30 | 103.70         | 113.70 | 114.70 | 108.60         | 116.70 | 118.10 |
|                                                                      | SHC | 31.40                             | 42.50  | 54.40  | 21.30          | 30.40  | 40.50  | 13.40          | 22.00  | 26.50  |
|                                                                      | kW  | 12.35                             | 12.45  | 12.61  | 12.50          | 12.79  | 12.87  | 12.68          | 12.80  | 12.94  |

**LEGEND**

Edb – Entering Dry–Bulb  
Ewb – Entering Wet–Bulb  
kW – Compressor Motor Power Input  
ldb – Leaving Dry–Bulb  
lwb – Leaving Wet–Bulb  
SHC – Sensible Heat Capacity (1000 Btuh) Gross  
TC – Total Capacity (1000 Btuh) Gross

**NOTES:**

1. Direct interpolation is permissible. Do not extrapolate.
1. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$$t_{lwb} = \text{Wet–bulb temperature corresponding to enthalpy of air leaving evaporator coil } (h_{lwb})$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where:  $h_{ewb}$  = Enthalpy of air entering evaporator coil

**Table 8 – COOLING CAPACITIES      20 TONS (2 Stage Cooling)**

| RAS240     |          |    |     | AMBIENT TEMPERATURE |       |       |          |       |       |          |       |       |          |       |       |
|------------|----------|----|-----|---------------------|-------|-------|----------|-------|-------|----------|-------|-------|----------|-------|-------|
|            |          |    |     | 85                  |       |       | 95       |       |       | 105      |       |       | 115      |       |       |
|            |          |    |     | EAT (DB)            |       |       | EAT (DB) |       |       | EAT (DB) |       |       | EAT (DB) |       |       |
|            |          |    |     | 75                  | 80    | 85    | 75       | 80    | 85    | 75       | 80    | 85    | 75       | 80    | 85    |
| 6000 Cfm   | EAT (wb) | 58 | THC | 213.1               | 217.2 | 228.7 | 199.9    | 207.5 | 219.4 | 184.8    | 195.8 | 208.4 | 169.6    | 182.6 | 195.6 |
|            |          |    | SHC | 194.3               | 217.2 | 228.7 | 188.0    | 207.5 | 219.4 | 179.0    | 195.8 | 208.4 | 169.6    | 182.6 | 195.6 |
|            |          | 62 | THC | 230.0               | 229.4 | 230.4 | 217.5    | 217.0 | 219.7 | 202.5    | 201.9 | 208.8 | 184.9    | 184.9 | 195.9 |
|            |          |    | SHC | 170.0               | 199.9 | 225.9 | 164.6    | 194.5 | 219.7 | 158.3    | 187.8 | 208.8 | 150.9    | 178.7 | 195.9 |
|            |          | 67 | THC | 251.5               | 251.1 | 250.6 | 239.4    | 238.7 | 238.1 | 225.4    | 224.7 | 224.0 | 208.8    | 208.2 | 207.4 |
|            |          |    | SHC | 137.5               | 168.1 | 198.4 | 132.9    | 163.4 | 193.7 | 127.5    | 158.1 | 188.2 | 121.1    | 151.9 | 181.9 |
|            |          | 72 | THC | 274.0               | 273.8 | 273.5 | 262.3    | 261.7 | 261.0 | 248.2    | 247.4 | 246.6 | 232.2    | 231.3 | 230.5 |
|            |          |    | SHC | 104.3               | 135.1 | 165.6 | 100.1    | 130.9 | 161.4 | 95.1     | 125.9 | 156.6 | 89.6     | 120.5 | 151.3 |
|            |          | 76 | THC | —                   | 292.9 | 292.2 | —        | 280.5 | 279.9 | —        | 266.3 | 265.6 | —        | 250.6 | 249.8 |
|            |          |    | SHC | —                   | 108.1 | 138.6 | —        | 104.1 | 134.9 | —        | 99.6  | 130.4 | —        | 94.6  | 125.5 |
| 7000 Cfm   | EAT (wb) | 58 | THC | 220.8               | 229.7 | 241.7 | 208.4    | 219.7 | 232.2 | 194.3    | 208.1 | 221.0 | 180.1    | 194.2 | 207.9 |
|            |          |    | SHC | 211.0               | 229.7 | 241.7 | 203.1    | 219.7 | 232.2 | 194.3    | 208.1 | 221.0 | 180.1    | 194.2 | 207.9 |
|            |          | 62 | THC | 237.8               | 237.3 | 241.9 | 225.1    | 224.6 | 232.3 | 209.6    | 210.2 | 221.3 | 191.3    | 196.0 | 208.2 |
|            |          |    | SHC | 183.3               | 217.8 | 241.9 | 178.2    | 212.1 | 232.3 | 171.8    | 203.8 | 221.3 | 164.3    | 196.0 | 208.2 |
|            |          | 67 | THC | 260.0               | 259.2 | 258.5 | 247.2    | 246.4 | 245.7 | 232.7    | 231.9 | 231.7 | 215.8    | 215.0 | 214.3 |
|            |          |    | SHC | 146.0               | 181.0 | 215.7 | 141.3    | 176.5 | 211.2 | 136.0    | 171.3 | 206.3 | 129.8    | 165.3 | 199.4 |
|            |          | 72 | THC | 283.3               | 282.5 | 281.8 | 270.6    | 269.8 | 268.9 | 255.9    | 255.0 | 254.1 | 240.0    | 238.9 | 238.0 |
|            |          |    | SHC | 107.9               | 143.2 | 178.1 | 103.6    | 139.0 | 174.1 | 98.6     | 134.2 | 169.5 | 93.2     | 129.0 | 164.4 |
|            |          | 76 | THC | —                   | 302.3 | 301.6 | —        | 289.1 | 288.4 | —        | 274.4 | 273.6 | —        | 257.9 | 256.8 |
|            |          |    | SHC | —                   | 112.3 | 147.5 | —        | 108.3 | 143.7 | —        | 103.9 | 139.4 | —        | 98.9  | 134.5 |
| 8000 Cfm   | EAT (wb) | 58 | THC | 232.1               | 243.6 | 256.1 | 219.8    | 233.4 | 246.0 | 206.9    | 221.3 | 234.5 | 192.1    | 206.8 | 221.2 |
|            |          |    | SHC | 227.5               | 243.6 | 256.1 | 219.8    | 233.4 | 246.0 | 206.9    | 221.3 | 234.5 | 192.1    | 206.8 | 221.2 |
|            |          | 62 | THC | 247.8               | 247.1 | 256.4 | 234.7    | 235.5 | 246.2 | 218.7    | 221.1 | 234.7 | 199.5    | 207.0 | 221.4 |
|            |          |    | SHC | 199.5               | 236.7 | 256.4 | 194.3    | 229.1 | 246.2 | 187.8    | 221.1 | 234.7 | 179.9    | 207.0 | 221.4 |
|            |          | 67 | THC | 270.2               | 269.3 | 268.3 | 257.0    | 256.1 | 255.2 | 242.1    | 241.0 | 240.3 | 224.5    | 223.5 | 223.1 |
|            |          |    | SHC | 157.6               | 197.1 | 235.6 | 152.7    | 192.6 | 231.0 | 147.3    | 187.2 | 225.3 | 141.0    | 181.0 | 215.6 |
|            |          | 72 | THC | 294.1               | 293.1 | 292.2 | 280.7    | 279.7 | 278.4 | 265.9    | 264.7 | 263.8 | 248.9    | 247.6 | 246.6 |
|            |          |    | SHC | 114.8               | 154.6 | 193.9 | 110.3    | 150.4 | 190.0 | 105.4    | 145.6 | 185.5 | 99.7     | 140.1 | 180.2 |
|            |          | 76 | THC | —                   | 313.1 | 312.3 | —        | 299.3 | 298.2 | —        | 283.8 | 282.8 | —        | 266.7 | 265.4 |
|            |          |    | SHC | —                   | 120.2 | 159.6 | —        | 116.0 | 155.9 | —        | 111.4 | 151.5 | —        | 106.2 | 146.6 |
| 9000 Cfm   | EAT (wb) | 58 | THC | 238.5               | 252.5 | 266.0 | 226.8    | 241.6 | 255.6 | 213.1    | 228.2 | 243.0 | 197.5    | 213.0 | 229.2 |
|            |          |    | SHC | 238.5               | 252.5 | 266.0 | 226.8    | 241.6 | 255.6 | 213.1    | 228.2 | 243.0 | 197.5    | 213.0 | 229.2 |
|            |          | 62 | THC | 253.0               | 254.1 | 266.3 | 238.6    | 241.6 | 255.7 | 221.0    | 228.4 | 243.3 | 201.1    | 213.2 | 229.4 |
|            |          |    | SHC | 211.9               | 249.1 | 266.3 | 206.2    | 241.6 | 255.7 | 199.2    | 228.4 | 243.3 | 164.2    | 213.2 | 229.4 |
|            |          | 67 | THC | 276.9               | 275.8 | 274.8 | 263.0    | 261.8 | 261.0 | 246.5    | 245.2 | 246.6 | 228.2    | 225.9 | 229.6 |
|            |          |    | SHC | 165.6               | 209.9 | 252.2 | 160.7    | 205.1 | 247.0 | 154.9    | 199.3 | 238.5 | 132.3    | 192.7 | 229.6 |
|            |          | 72 | THC | 302.2               | 301.0 | 299.7 | 287.9    | 286.6 | 285.4 | 272.3    | 270.9 | 269.6 | 254.3    | 252.9 | 251.6 |
|            |          |    | SHC | 118.2               | 162.8 | 206.8 | 113.5    | 158.4 | 202.9 | 108.5    | 153.4 | 198.0 | 102.7    | 147.8 | 165.1 |
|            |          | 76 | THC | —                   | 322.0 | 320.8 | —        | 307.7 | 306.1 | —        | 291.4 | 289.9 | —        | 275.1 | 272.5 |
|            |          |    | SHC | —                   | 124.5 | 168.7 | —        | 120.4 | 164.9 | —        | 115.6 | 160.5 | —        | 110.9 | 155.3 |
| 10,000 Cfm | EAT (wb) | 58 | THC | 245.7               | 259.8 | 273.9 | 233.8    | 248.7 | 263.2 | 219.8    | 235.3 | 250.5 | 203.7    | 219.8 | 236.5 |
|            |          |    | SHC | 245.7               | 259.8 | 273.9 | 233.8    | 248.7 | 263.2 | 219.8    | 235.3 | 250.5 | 203.7    | 219.8 | 236.5 |
|            |          | 62 | THC | 256.8               | 260.7 | 274.2 | 242.2    | 249.0 | 263.3 | 224.6    | 235.6 | 250.6 | 205.6    | 220.0 | 236.8 |
|            |          |    | SHC | 223.8               | 258.4 | 274.2 | 218.1    | 249.0 | 263.3 | 211.0    | 235.6 | 250.6 | 199.3    | 220.0 | 236.8 |
|            |          | 67 | THC | 280.8               | 279.6 | 266.3 | 266.6    | 265.4 | 265.8 | 249.9    | 248.6 | 251.0 | 231.4    | 229.8 | 237.3 |
|            |          |    | SHC | 173.2               | 221.8 | 266.3 | 168.3    | 217.0 | 258.7 | 162.6    | 211.4 | 250.7 | 156.4    | 204.7 | 237.3 |
|            |          | 72 | THC | 306.4               | 305.0 | 274.8 | 292.1    | 290.6 | 289.3 | 276.0    | 274.3 | 273.0 | 257.5    | 256.0 | 254.6 |
|            |          |    | SHC | 121.2               | 170.1 | 252.2 | 116.6    | 165.9 | 214.8 | 111.5    | 161.0 | 210.0 | 105.7    | 155.4 | 204.5 |
|            |          | 76 | THC | —                   | 326.2 | 299.7 | —        | 311.4 | 310.0 | —        | 295.2 | 293.2 | —        | 277.0 | 275.3 |
|            |          |    | SHC | —                   | 128.2 | 206.8 | —        | 124.0 | 172.9 | —        | 119.5 | 168.9 | —        | 114.3 | 163.8 |

NOTE: See Minimum—Maximum Airflow Ratings in Table 3. Do not operate outside these limits.

**LEGEND:**

- Do not operate
- Cfm — Cubic feet per minute (supply air)
- EAT(db) — Entering air temperature (dry bulb)
- EAT(wb) — Entering air temperature (wet bulb)
- SHC — Sensible heat capacity
- TC — Total capacity

**Table 9 – COOLING CAPACITIES      20 TONS (2 Stage Cooling)**

| RAS240 (20 TONS) – UNIT WITH HOT GAS REHEAT IN SUBCOOLING MODE |     |                                   |       |       |       |       |       |        |       |       |
|----------------------------------------------------------------|-----|-----------------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| Temp (F) Air Ent<br>Condenser (Edb)                            |     | AIR ENTERING EVAPORATOR – CFM     |       |       |       |       |       |        |       |       |
|                                                                |     | 6,000                             |       |       | 8,000 |       |       | 10,000 |       |       |
|                                                                |     | Air Entering Evaporator – Ewb (F) |       |       |       |       |       |        |       |       |
|                                                                |     | 72                                | 67    | 62    | 72    | 67    | 62    | 72     | 67    | 62    |
| 75                                                             | TC  | 263.0                             | 240.4 | 217.7 | 301.0 | 274.0 | 246.9 | 336.9  | 305.6 | 274.4 |
|                                                                | SHC | 125.3                             | 151.6 | 178.0 | 144.4 | 171.1 | 198.0 | 160.0  | 186.9 | 213.9 |
|                                                                | kW  | 15.63                             | 15.20 | 14.65 | 15.91 | 15.62 | 14.98 | 16.26  | 15.92 | 15.21 |
| 85                                                             | TC  | 248.2                             | 226.1 | 204.0 | 279.2 | 252.9 | 226.6 | 308.4  | 278.2 | 248.0 |
|                                                                | SHC | 98.9                              | 131.7 | 164.5 | 118.6 | 152.0 | 185.3 | 134.6  | 168.4 | 202.2 |
|                                                                | kW  | 17.50                             | 17.04 | 16.50 | 17.74 | 17.51 | 16.75 | 18.08  | 17.73 | 17.03 |
| 95                                                             | TC  | 233.4                             | 211.8 | 190.2 | 257.3 | 231.8 | 206.4 | 279.8  | 250.7 | 221.5 |
|                                                                | SHC | 72.4                              | 111.8 | 151.1 | 92.7  | 132.8 | 172.9 | 109.3  | 149.9 | 190.6 |
|                                                                | kW  | 19.36                             | 18.96 | 18.35 | 19.61 | 19.37 | 18.67 | 20.02  | 19.62 | 18.97 |
| 105                                                            | TC  | 218.6                             | 197.5 | 176.5 | 235.4 | 210.7 | 186.1 | 251.3  | 223.2 | 195.1 |
|                                                                | SHC | 46.0                              | 91.8  | 137.7 | 66.9  | 113.6 | 160.4 | 83.9   | 131.4 | 178.9 |
|                                                                | kW  | 21.23                             | 20.76 | 20.18 | 21.53 | 21.22 | 20.52 | 21.91  | 21.52 | 20.77 |
| 115                                                            | TC  | 203.7                             | 183.3 | 162.8 | 213.5 | 189.7 | 165.8 | 222.7  | 195.7 | 168.7 |
|                                                                | SHC | 19.5                              | 71.9  | 124.2 | 41.0  | 94.4  | 147.9 | 58.5   | 112.9 | 157.2 |
|                                                                | kW  | 23.02                             | 22.58 | 22.02 | 23.42 | 23.02 | 22.38 | 23.73  | 23.41 | 22.57 |

| RAS240 (20 TONS) – UNIT WITH HOT GAS REHEAT IN HOT GAS REHEAT MODE |     |                                   |        |        |                |        |        |                |        |        |
|--------------------------------------------------------------------|-----|-----------------------------------|--------|--------|----------------|--------|--------|----------------|--------|--------|
| Temp (F) Air Ent<br>Condenser (Edb)                                |     | AIR ENTERING EVAPORATOR – Ewb (F) |        |        |                |        |        |                |        |        |
|                                                                    |     | 75 Dry Bulb                       |        |        | 75 Dry Bulb    |        |        | 75 Dry Bulb    |        |        |
|                                                                    |     | 62.5 Wet Bulb                     |        |        | 64 Wet Bulb    |        |        | 65.3 Wet Bulb  |        |        |
|                                                                    |     | (50% Relative)                    |        |        | (56% Relative) |        |        | (60% Relative) |        |        |
|                                                                    |     | Air Entering Evaporator – Cfm     |        |        |                |        |        |                |        |        |
|                                                                    |     | 6,000                             | 8,000  | 10,000 | 6,000          | 8,000  | 10,000 | 6,000          | 8,000  | 10,000 |
| 80                                                                 | TC  | 91.50                             | 100.80 | 109.50 | 95.80          | 105.70 | 112.40 | 102.30         | 110.80 | 118.60 |
|                                                                    | SHC | 12.30                             | 31.20  | 44.50  | 0.90           | 15.10  | 25.70  | –6.50          | 3.60   | 13.90  |
|                                                                    | kW  | 14.82                             | 15.01  | 15.24  | 15.35          | 15.45  | 15.52  | 15.56          | 15.65  | 15.73  |
| 75                                                                 | TC  | 94.00                             | 103.40 | 112.00 | 98.70          | 108.10 | 115.10 | 104.70         | 113.10 | 121.10 |
|                                                                    | SHC | 13.60                             | 32.40  | 45.70  | 2.00           | 16.00  | 26.60  | –5.60          | 4.70   | 15.10  |
|                                                                    | kW  | 14.90                             | 15.07  | 15.33  | 15.43          | 15.56  | 15.64  | 15.69          | 15.77  | 15.85  |
| 70                                                                 | TC  | 96.50                             | 106.00 | 114.30 | 100.90         | 110.60 | 117.20 | 107.20         | 115.80 | 123.50 |
|                                                                    | SHC | 14.50                             | 33.20  | 45.70  | 3.30           | 17.30  | 28.00  | –4.00          | 5.90   | 16.20  |
|                                                                    | kW  | 14.97                             | 15.17  | 15.41  | 15.50          | 15.66  | 15.75  | 15.80          | 15.87  | 15.94  |
| 60                                                                 | TC  | 101.80                            | 111.30 | 119.30 | 106.20         | 115.60 | 122.20 | 112.60         | 119.40 | 128.00 |
|                                                                    | SHC | 16.70                             | 35.50  | 48.60  | 5.60           | 19.40  | 30.30  | –1.80          | 8.20   | 18.50  |
|                                                                    | kW  | 15.14                             | 15.32  | 15.58  | 15.66          | 15.88  | 15.97  | 16.05          | 16.10  | 16.19  |
| 50                                                                 | TC  | 107.20                            | 116.40 | 124.30 | 111.50         | 120.70 | 127.30 | 117.70         | 125.20 | 132.90 |
|                                                                    | SHC | 18.60                             | 37.60  | 50.70  | 8.00           | 22.00  | 32.70  | 0.50           | 10.50  | 21.00  |
|                                                                    | kW  | 15.27                             | 15.46  | 15.76  | 15.81          | 16.10  | 16.23  | 16.27          | 16.34  | 16.41  |
| 40                                                                 | TC  | 112.20                            | 121.80 | 129.20 | 116.60         | 125.70 | 132.00 | 123.20         | 130.00 | 138.00 |
|                                                                    | SHC | 21.80                             | 39.50  | 52.90  | 10.20          | 24.40  | 35.20  | 2.90           | 13.00  | 23.40  |
|                                                                    | kW  | 15.42                             | 15.63  | 15.93  | 15.96          | 16.32  | 16.44  | 16.52          | 16.57  | 16.65  |

**LEGEND**

Edb – Entering Dry–Bulb  
Ewb – Entering Wet–Bulb  
kW – Compressor Motor Power Input  
ldb – Leaving Dry–Bulb  
lwb – Leaving Wet–Bulb  
SHC – Sensible Heat Capacity (1000 Btuh) Gross  
TC – Total Capacity (1000 Btuh) Gross

**NOTES:**

1. Direct interpolation is permissible. Do not extrapolate.
1. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$t_{lwb}$  = Wet–bulb temperature corresponding to enthalpy of air leaving evaporator coil ( $h_{lwb}$ )

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where:  $h_{ewb}$  = Enthalpy of air entering evaporator coil

**Table 10 – COOLING CAPACITIES      25 TONS (2 Stage Cooling)**

| RAS300     |          |    |     | AMBIENT TEMPERATURE |       |       |          |       |       |          |       |       |          |       |       |
|------------|----------|----|-----|---------------------|-------|-------|----------|-------|-------|----------|-------|-------|----------|-------|-------|
|            |          |    |     | 85                  |       |       | 95       |       |       | 105      |       |       | 115      |       |       |
|            |          |    |     | EAT (DB)            |       |       | EAT (DB) |       |       | EAT (DB) |       |       | EAT (DB) |       |       |
|            |          |    |     | 75                  | 80    | 85    | 75       | 80    | 85    | 75       | 80    | 85    | 75       | 80    | 85    |
| 7,500 Cfm  | EAT (wb) | 58 | THC | 257.3               | 266.5 | 279.6 | 247.5    | 255.4 | 269.0 | 231.5    | 243.3 | 257.2 | 214.3    | 229.2 | 243.7 |
|            |          |    | SHC | 247.5               | 266.5 | 279.6 | 231.1    | 255.4 | 269.0 | 223.5    | 243.3 | 257.2 | 213.2    | 229.2 | 243.7 |
|            |          | 62 | THC | 281.4               | 280.5 | 280.6 | 267.5    | 267.0 | 269.3 | 251.3    | 251.0 | 257.6 | 232.7    | 232.5 | 244.1 |
|            |          |    | SHC | 208.2               | 244.0 | 278.0 | 202.3    | 238.4 | 269.3 | 195.8    | 231.5 | 257.6 | 188.1    | 223.4 | 244.1 |
|            |          | 67 | THC | 307.4               | 306.4 | 305.7 | 293.0    | 292.2 | 291.4 | 276.9    | 276.2 | 275.4 | 259.7    | 259.2 | 258.8 |
|            |          |    | SHC | 168.7               | 205.7 | 242.3 | 163.2    | 200.3 | 236.9 | 157.1    | 194.4 | 230.7 | 150.6    | 188.4 | 224.8 |
|            |          | 72 | THC | 333.9               | 333.2 | 332.5 | 320.1    | 319.3 | 318.6 | 304.5    | 303.7 | 302.7 | 287.2    | 285.3 | 284.5 |
|            |          |    | SHC | 128.1               | 165.4 | 202.3 | 123.1    | 160.6 | 197.8 | 117.6    | 155.1 | 192.5 | 111.5    | 149.0 | 186.6 |
|            |          | 76 | THC | —                   | 356.0 | 355.2 | —        | 342.0 | 341.2 | —        | 326.0 | 325.2 | —        | 308.0 | 307.4 |
|            |          |    | SHC | —                   | 132.7 | 169.9 | —        | 128.1 | 165.6 | —        | 123.0 | 160.7 | —        | 117.3 | 154.5 |
| 8,750 Cfm  | EAT (wb) | 58 | THC | 269.8               | 280.2 | 294.4 | 255.3    | 268.9 | 283.2 | 241.1    | 256.1 | 270.7 | 225.5    | 241.3 | 257.3 |
|            |          |    | SHC | 257.9               | 280.2 | 294.4 | 250.4    | 268.9 | 283.2 | 241.1    | 256.1 | 270.7 | 225.5    | 241.3 | 257.3 |
|            |          | 62 | THC | 289.9               | 289.3 | 294.6 | 275.3    | 274.9 | 283.6 | 258.7    | 258.2 | 271.0 | 238.8    | 241.6 | 257.6 |
|            |          |    | SHC | 224.2               | 265.0 | 294.6 | 218.6    | 258.6 | 283.6 | 212.0    | 251.7 | 271.0 | 203.9    | 241.6 | 257.6 |
|            |          | 67 | THC | 316.2               | 315.7 | 314.5 | 301.7    | 300.8 | 299.8 | 285.1    | 284.2 | 283.4 | 266.7    | 266.0 | 265.2 |
|            |          |    | SHC | 179.0               | 221.6 | 263.1 | 173.5    | 216.4 | 257.9 | 167.5    | 210.5 | 251.9 | 161.0    | 204.5 | 245.1 |
|            |          | 72 | THC | 343.7               | 342.7 | 341.6 | 315.3    | 327.9 | 327.0 | 313.1    | 311.4 | 310.4 | 294.3    | 293.2 | 292.2 |
|            |          |    | SHC | 132.4               | 175.4 | 217.7 | 127.6    | 170.7 | 213.3 | 122.0    | 165.3 | 208.3 | 115.6    | 159.2 | 202.5 |
|            |          | 76 | THC | —                   | 366.0 | 364.9 | —        | 351.2 | 350.1 | —        | 334.2 | 333.2 | —        | 315.4 | 314.3 |
|            |          |    | SHC | —                   | 138.0 | 180.7 | —        | 133.4 | 176.5 | —        | 128.2 | 171.6 | —        | 122.5 | 166.1 |
| 10,000 Cfm | EAT (wb) | 58 | THC | 277.1               | 291.8 | 306.8 | 264.9    | 280.2 | 295.3 | 251.2    | 267.0 | 282.3 | 235.1    | 252.2 | 268.1 |
|            |          |    | SHC | 275.3               | 291.8 | 306.8 | 264.9    | 280.2 | 295.3 | 251.2    | 267.0 | 282.3 | 235.1    | 252.2 | 268.1 |
|            |          | 62 | THC | 296.8               | 296.0 | 307.2 | 281.8    | 281.8 | 295.6 | 264.7    | 267.1 | 282.6 | 244.9    | 252.4 | 268.4 |
|            |          |    | SHC | 239.8               | 283.9 | 307.2 | 234.0    | 276.8 | 295.6 | 227.5    | 267.1 | 282.6 | 219.4    | 252.4 | 268.4 |
|            |          | 67 | THC | 323.5               | 322.6 | 321.4 | 308.5    | 307.4 | 306.5 | 291.3    | 290.2 | 289.3 | 272.5    | 271.5 | 270.8 |
|            |          |    | SHC | 188.8               | 236.9 | 282.9 | 183.5    | 231.9 | 277.4 | 177.5    | 226.1 | 271.2 | 171.2    | 219.7 | 264.3 |
|            |          | 72 | THC | 351.8               | 350.5 | 349.2 | 336.6    | 335.4 | 334.1 | 319.7    | 318.3 | 317.1 | 300.2    | 298.9 | 297.8 |
|            |          |    | SHC | 136.6               | 185.1 | 232.8 | 131.6    | 180.4 | 228.6 | 126.0    | 175.1 | 223.7 | 119.7    | 169.1 | 217.9 |
|            |          | 76 | THC | —                   | 374.2 | 372.8 | —        | 358.6 | 357.3 | —        | 340.9 | 339.7 | —        | 321.3 | 320.1 |
|            |          |    | SHC | —                   | 143.1 | 191.2 | —        | 138.5 | 187.1 | —        | 133.3 | 182.3 | —        | 127.6 | 176.8 |
| 11,250 Cfm | EAT (wb) | 58 | THC | 285.8               | 301.5 | 317.0 | 273.8    | 289.0 | 305.1 | 259.8    | 276.1 | 291.7 | 244.0    | 260.9 | 277.4 |
|            |          |    | SHC | 285.8               | 301.5 | 317.0 | 273.8    | 289.0 | 305.1 | 259.8    | 276.1 | 291.7 | 244.0    | 260.9 | 277.4 |
|            |          | 62 | THC | 302.2               | 302.3 | 317.4 | 286.3    | 289.5 | 305.4 | 269.6    | 276.4 | 208.4 | 249.3    | 261.1 | 277.6 |
|            |          |    | SHC | 254.3               | 300.2 | 317.4 | 245.8    | 289.5 | 305.4 | 242.1    | 276.4 | 208.4 | 201.5    | 261.1 | 277.6 |
|            |          | 67 | THC | 328.7               | 327.7 | 326.7 | 313.5    | 312.2 | 311.1 | 296.0    | 294.8 | 294.3 | 277.5    | 275.7 | 277.9 |
|            |          |    | SHC | 197.9               | 251.1 | 301.0 | 192.8    | 246.4 | 295.4 | 187.0    | 240.4 | 288.0 | 160.9    | 234.6 | 277.9 |
|            |          | 72 | THC | 357.4               | 355.9 | 354.4 | 341.8    | 340.3 | 339.0 | 324.4    | 322.8 | 321.6 | 304.8    | 303.2 | 302.0 |
|            |          |    | SHC | 140.2               | 193.9 | 246.7 | 135.2    | 189.4 | 242.8 | 129.7    | 184.3 | 238.2 | 123.5    | 178.4 | 198.1 |
|            |          | 76 | THC | —                   | 379.7 | 378.2 | —        | 363.9 | 362.3 | —        | 345.7 | 344.2 | —        | 327.5 | 324.0 |
|            |          |    | SHC | —                   | 147.6 | 200.8 | —        | 143.1 | 196.9 | —        | 138.0 | 192.3 | —        | 132.9 | 187.1 |
| 12,500 Cfm | EAT (wb) | 58 | THC | 293.7               | 309.8 | 325.6 | 280.3    | 297.3 | 313.5 | 267.0    | 283.5 | 299.8 | 250.8    | 268.3 | 284.8 |
|            |          |    | SHC | 293.7               | 309.8 | 325.6 | 280.3    | 297.3 | 313.5 | 267.0    | 283.5 | 299.8 | 250.8    | 268.3 | 284.8 |
|            |          | 62 | THC | 310.5               | 310.2 | 326.1 | 290.7    | 297.6 | 313.9 | 273.7    | 283.7 | 300.1 | 253.1    | 268.5 | 285.0 |
|            |          |    | SHC | 264.9               | 310.1 | 326.1 | 262.1    | 297.6 | 313.9 | 255.7    | 283.7 | 300.1 | 246.9    | 268.5 | 285.0 |
|            |          | 67 | THC | 333.1               | 331.7 | 330.9 | 317.5    | 316.2 | 315.9 | 299.8    | 298.7 | 300.3 | 280.7    | 279.6 | 285.5 |
|            |          |    | SHC | 206.6               | 264.7 | 317.6 | 201.9    | 260.2 | 311.0 | 196.2    | 254.9 | 300.3 | 190.0    | 248.1 | 285.5 |
|            |          | 72 | THC | 362.1               | 360.3 | 358.7 | 346.0    | 344.3 | 343.0 | 328.2    | 326.6 | 325.1 | 308.4    | 306.6 | 305.3 |
|            |          |    | SHC | 143.6               | 202.4 | 260.2 | 138.7    | 198.1 | 256.5 | 133.2    | 193.2 | 252.1 | 127.1    | 187.5 | 246.5 |
|            |          | 76 | THC | —                   | 384.3 | 382.5 | —        | 368.1 | 366.3 | —        | 349.5 | 347.8 | —        | 331.0 | 328.7 |
|            |          |    | SHC | —                   | 151.9 | 210.1 | —        | 147.5 | 206.4 | —        | 142.5 | 201.9 | —        | 137.4 | 195.2 |

NOTE: See Minimum—Maximum Airflow Ratings in Table 3. Do not operate outside these limits.

**LEGEND:**

- Do not operate
- Cfm — Cubic feet per minute (supply air)
- EAT(db) — Entering air temperature (dry bulb)
- EAT(wb) — Entering air temperature (wet bulb)
- SHC — Sensible heat capacity
- TC — Total capacity

**Table 11 – COOLING CAPACITIES      25 TONS (2 Stage Cooling)**

| RAS300 (25 TONS) – UNIT WITH HOT GAS REHEAT IN SUBCOOLING MODE |     |                                   |       |       |        |       |       |        |       |       |
|----------------------------------------------------------------|-----|-----------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|
| Temp (F) Air Ent<br>Condenser (Edb)                            |     | AIR ENTERING EVAPORATOR – CFM     |       |       |        |       |       |        |       |       |
|                                                                |     | 7,500                             |       |       | 10,000 |       |       | 12,500 |       |       |
|                                                                |     | Air Entering Evaporator – Ewb (F) |       |       |        |       |       |        |       |       |
|                                                                |     | 72                                | 67    | 62    | 72     | 67    | 62    | 72     | 67    | 62    |
| 75                                                             | TC  | 335.3                             | 305.5 | 275.8 | 368.3  | 334.4 | 300.5 | 398.1  | 360.5 | 322.9 |
|                                                                | SHC | 149.6                             | 181.7 | 213.7 | 172.8  | 205.5 | 238.2 | 191.7  | 224.9 | 258.2 |
|                                                                | kW  | 19.50                             | 18.70 | 17.70 | 19.50  | 18.70 | 17.70 | 19.70  | 18.80 | 17.90 |
| 85                                                             | TC  | 316.3                             | 287.0 | 257.7 | 341.5  | 308.4 | 275.3 | 364.3  | 327.8 | 291.2 |
|                                                                | SHC | 120.8                             | 160.5 | 200.2 | 144.6  | 185.2 | 225.8 | 164.0  | 205.4 | 246.7 |
|                                                                | kW  | 21.90                             | 21.30 | 20.10 | 22.30  | 21.30 | 20.30 | 22.50  | 21.70 | 20.60 |
| 95                                                             | TC  | 297.3                             | 268.5 | 239.6 | 314.7  | 282.4 | 250.1 | 330.5  | 295.0 | 259.5 |
|                                                                | SHC | 92.1                              | 139.4 | 186.7 | 116.4  | 164.9 | 213.5 | 136.3  | 185.8 | 235.3 |
|                                                                | kW  | 24.30                             | 23.50 | 22.50 | 24.40  | 23.50 | 22.60 | 24.40  | 23.60 | 22.50 |
| 105                                                            | TC  | 278.2                             | 249.9 | 221.6 | 287.9  | 256.4 | 224.9 | 296.7  | 262.3 | 227.8 |
|                                                                | SHC | 63.3                              | 118.2 | 173.2 | 88.3   | 144.7 | 201.1 | 108.7  | 166.3 | 223.9 |
|                                                                | kW  | 26.70                             | 26.00 | 25.00 | 27.30  | 26.00 | 25.00 | 27.30  | 26.10 | 25.10 |
| 115                                                            | TC  | 259.2                             | 231.4 | 203.5 | 261.1  | 230.4 | 199.7 | 262.9  | 229.5 | 196.1 |
|                                                                | SHC | 34.5                              | 97.1  | 159.7 | 60.1   | 124.4 | 188.7 | 81.0   | 146.7 | 191.2 |
|                                                                | kW  | 28.70                             | 28.00 | 27.10 | 29.30  | 28.10 | 26.90 | 29.10  | 27.90 | 27.20 |

| RAS300 (25 TONS) – UNIT WITH HOT GAS REHEAT IN HOT GAS REHEAT MODE |     |                                   |        |        |                |        |        |                |        |        |
|--------------------------------------------------------------------|-----|-----------------------------------|--------|--------|----------------|--------|--------|----------------|--------|--------|
| Temp (F) Air Ent<br>Condenser (Edb)                                |     | AIR ENTERING EVAPORATOR – Ewb (F) |        |        |                |        |        |                |        |        |
|                                                                    |     | 75 Dry Bulb                       |        |        | 75 Dry Bulb    |        |        | 75 Dry Bulb    |        |        |
|                                                                    |     | 62.5 Wet Bulb                     |        |        | 64 Wet Bulb    |        |        | 65.3 Wet Bulb  |        |        |
|                                                                    |     | (50% Relative)                    |        |        | (56% Relative) |        |        | (60% Relative) |        |        |
|                                                                    |     | Air Entering Evaporator – Cfm     |        |        |                |        |        |                |        |        |
|                                                                    |     | 7,500                             | 10,000 | 12,500 | 7,500          | 10,000 | 12,500 | 7,500          | 10,000 | 12,500 |
| 80                                                                 | TC  | 132.40                            | 136.80 | 148.40 | 138.20         | 142.40 | 154.60 | 144.30         | 146.40 | 162.50 |
|                                                                    | SHC | 37.80                             | 61.50  | 85.50  | 21.80          | 44.40  | 52.40  | 16.10          | 32.10  | 48.90  |
|                                                                    | kW  | 17.90                             | 18.15  | 18.21  | 18.05          | 18.33  | 18.43  | 18.26          | 18.55  | 18.62  |
| 75                                                                 | TC  | 138.00                            | 142.20 | 154.10 | 143.50         | 148.00 | 160.30 | 148.90         | 151.00 | 167.10 |
|                                                                    | SHC | 44.20                             | 68.00  | 91.80  | 28.10          | 51.50  | 58.80  | 22.70          | 38.20  | 56.00  |
|                                                                    | kW  | 17.77                             | 18.00  | 18.07  | 17.92          | 18.19  | 18.29  | 18.14          | 18.40  | 18.48  |
| 70                                                                 | TC  | 143.80                            | 148.10 | 160.00 | 149.30         | 154.00 | 165.90 | 155.50         | 157.60 | 173.80 |
|                                                                    | SHC | 50.50                             | 73.80  | 98.10  | 34.20          | 56.50  | 65.30  | 28.30          | 44.00  | 62.30  |
|                                                                    | kW  | 17.63                             | 17.86  | 17.93  | 17.78          | 18.04  | 18.14  | 18.03          | 18.26  | 18.34  |
| 60                                                                 | TC  | 154.80                            | 159.50 | 171.10 | 160.20         | 165.20 | 177.20 | 166.70         | 168.80 | 185.10 |
|                                                                    | SHC | 63.10                             | 84.50  | 110.10 | 46.50          | 69.50  | 75.70  | 41.40          | 56.50  | 74.30  |
|                                                                    | kW  | 17.35                             | 17.58  | 17.65  | 17.50          | 17.76  | 17.85  | 17.70          | 17.97  | 18.04  |
| 50                                                                 | TC  | 166.30                            | 170.50 | 181.20 | 171.30         | 176.40 | 188.40 | 178.00         | 180.00 | 196.40 |
|                                                                    | SHC | 75.80                             | 96.50  | 122.20 | 58.30          | 79.80  | 87.80  | 53.70          | 69.10  | 85.90  |
|                                                                    | kW  | 17.06                             | 17.30  | 17.37  | 17.22          | 17.46  | 17.56  | 17.42          | 17.69  | 17.76  |
| 40                                                                 | TC  | 177.50                            | 181.70 | 192.30 | 182.40         | 187.60 | 199.70 | 189.30         | 191.20 | 207.70 |
|                                                                    | SHC | 85.70                             | 109.80 | 134.30 | 71.50          | 92.30  | 100.50 | 66.10          | 79.50  | 97.90  |
|                                                                    | kW  | 16.76                             | 17.01  | 17.09  | 16.93          | 17.18  | 17.28  | 17.14          | 17.41  | 17.47  |

**LEGEND**

Edb – Entering Dry–Bulb  
Ewb – Entering Wet–Bulb  
kW – Compressor Motor Power Input  
ldb – Leaving Dry–Bulb  
lwb – Leaving Wet–Bulb  
SHC – Sensible Heat Capacity (1000 Btuh) Gross  
TC – Total Capacity (1000 Btuh) Gross

**NOTES:**

1. Direct interpolation is permissible. Do not extrapolate.
1. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$t_{lwb}$  = Wet–bulb temperature corresponding to enthalpy of air leaving evaporator coil ( $h_{lwb}$ )

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where:  $h_{ewb}$  = Enthalpy of air entering evaporator coil

**Table 12 – COOLING CAPACITIES      27.5 TONS (2 Stage Cooling)**

| RAS336     |          |    |     | Ambient Temperature |       |       |         |       |       |         |       |       |         |       |       |         |       |       |
|------------|----------|----|-----|---------------------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|
|            |          |    |     | 85                  |       |       | 95      |       |       | 105     |       |       | 115     |       |       | 125     |       |       |
|            |          |    |     | EA (dB)             |       |       | EA (dB) |       |       | EA (dB) |       |       | EA (dB) |       |       | EA (dB) |       |       |
|            |          |    |     | 75                  | 80    | 85    | 75      | 80    | 85    | 75      | 80    | 85    | 75      | 80    | 85    | 75      | 80    | 85    |
| 7,500 CFM  | EAT (wb) | 58 | THC | 298                 | 298   | 336.8 | 285.3   | 285.3 | 322.4 | 270.1   | 270.1 | 305.3 | 253.5   | 253.5 | 286.5 | 235     | 235   | 265.5 |
|            |          |    | SHC | 259.2               | 298   | 336.8 | 248.2   | 285.3 | 322.4 | 235     | 270.1 | 305.3 | 220.5   | 253.5 | 286.5 | 204.4   | 235   | 265.5 |
|            |          | 62 | THC | 318.3               | 318.3 | 318.3 | 301.9   | 301.9 | 309   | 282.4   | 282.4 | 299.5 | 260.5   | 260.5 | 288.5 | 237.1   | 237.1 | 273.1 |
|            |          |    | SHC | 233.5               | 275.2 | 316.9 | 225.8   | 267.4 | 309   | 216.6   | 258.1 | 299.5 | 206.1   | 247.3 | 288.5 | 193     | 233.1 | 273.1 |
|            |          | 67 | THC | 352.3               | 352.3 | 352.3 | 335.9   | 335.9 | 335.9 | 317.1   | 317.1 | 317.1 | 294     | 294   | 294   | 268.9   | 268.9 | 268.9 |
|            |          |    | SHC | 193.3               | 235   | 276.8 | 186.4   | 228.3 | 270.1 | 178.7   | 220.5 | 262.4 | 169.3   | 211.1 | 252.9 | 159.3   | 201.1 | 242.9 |
|            |          | 72 | THC | 383.6               | 383.6 | 383.6 | 368.5   | 368.5 | 368.5 | 350.7   | 350.7 | 350.7 | 329.6   | 329.6 | 329.6 | 304.6   | 304.6 | 304.6 |
|            |          |    | SHC | 149.7               | 191.9 | 234.2 | 144     | 186.2 | 228.4 | 137.3   | 179.5 | 221.7 | 129.6   | 171.7 | 213.8 | 120.6   | 162.5 | 204.5 |
|            |          | 76 | THC | —                   | 404   | 404   | —       | 390.3 | 390.3 | —       | 373.1 | 373.1 | —       | 353.4 | 353.4 | —       | 349.5 | 349.5 |
|            |          |    | SHC | —                   | 154.8 | 200.2 | —       | 150.2 | 195.6 | —       | 144.5 | 189.9 | —       | 138   | 183.2 | —       | 135.9 | 181.3 |
| 8,750 CFM  | EAT (wb) | 58 | THC | 315.7               | 315.7 | 356.8 | 302.4   | 302.4 | 341.8 | 286.8   | 286.8 | 324.1 | 269.2   | 269.2 | 304.3 | 250.1   | 250.1 | 282.6 |
|            |          |    | SHC | 274.6               | 315.7 | 356.8 | 263     | 302.4 | 341.8 | 249.4   | 286.8 | 324.1 | 234.2   | 269.2 | 304.3 | 217.5   | 250.1 | 282.6 |
|            |          | 62 | THC | 329.7               | 329.7 | 346.7 | 312.7   | 312.7 | 338.3 | 293     | 293   | 328   | 271.1   | 271.1 | 314.6 | 250.4   | 250.4 | 293.8 |
|            |          |    | SHC | 251.3               | 299   | 346.7 | 243.3   | 290.8 | 338.3 | 233.7   | 280.9 | 328   | 222     | 268.3 | 314.6 | 206.9   | 250.4 | 293.8 |
|            |          | 67 | THC | 363.1               | 363.1 | 363.1 | 346.4   | 346.4 | 346.4 | 327.1   | 327.1 | 327.1 | 303.7   | 303.7 | 303.7 | 277.4   | 277.4 | 277.4 |
|            |          |    | SHC | 204.4               | 252.2 | 299.9 | 197.8   | 245.7 | 293.6 | 190.2   | 238.3 | 286.3 | 181     | 229.1 | 277.2 | 170.9   | 219   | 267   |
|            |          | 72 | THC | 392.4               | 392.4 | 392.4 | 377.4   | 377.4 | 377.4 | 359.5   | 359.5 | 359.5 | 338.6   | 338.6 | 338.6 | 313.2   | 313.2 | 313.2 |
|            |          |    | SHC | 153.8               | 201.6 | 249.3 | 148.4   | 196.3 | 244.3 | 141.9   | 190   | 238   | 134.5   | 182.7 | 230.8 | 119     | 167.2 | 215.4 |
|            |          | 76 | THC | —                   | 410.9 | 410.9 | —       | 397.4 | 397.4 | —       | 380   | 380   | —       | 359.9 | 359.9 | —       | 350.6 | 350.6 |
|            |          |    | SHC | —                   | 160.7 | 213.6 | —       | 156.2 | 208.9 | —       | 150.1 | 201.8 | —       | 143.2 | 194.1 | —       | 139   | 189.7 |
| 10,000 CFM | EAT (wb) | 58 | THC | 330.4               | 330.4 | 373.4 | 316.6   | 316.6 | 357.8 | 300.7   | 300.7 | 339.9 | 282.3   | 282.3 | 319   | 262.3   | 262.3 | 296.4 |
|            |          |    | SHC | 287.4               | 330.4 | 373.4 | 275.4   | 316.6 | 357.8 | 261.6   | 300.7 | 339.9 | 245.6   | 282.3 | 319   | 228.2   | 262.3 | 296.4 |
|            |          | 62 | THC | 338.9               | 338.9 | 373.5 | 321.8   | 321.8 | 364.5 | 301.9   | 301.9 | 354.3 | 282.6   | 282.6 | 331.6 | 262.6   | 262.6 | 308.2 |
|            |          |    | SHC | 267.2               | 320.3 | 373.5 | 258.9   | 311.7 | 364.5 | 249.5   | 301.9 | 354.3 | 233.5   | 282.6 | 331.6 | 217     | 262.6 | 308.2 |
|            |          | 67 | THC | 371.1               | 371.1 | 371.1 | 354.3   | 354.3 | 354.3 | 334.7   | 334.7 | 334.7 | 310.9   | 310.9 | 310.9 | 284.1   | 284.1 | 289.8 |
|            |          |    | SHC | 214.5               | 267.9 | 321.3 | 208.2   | 262   | 315.7 | 200.9   | 254.9 | 308.9 | 191.9   | 246   | 300.1 | 181.7   | 235.7 | 289.8 |
|            |          | 72 | THC | 398.6               | 398.6 | 398.6 | 383.8   | 383.8 | 383.8 | 365.7   | 365.7 | 365.7 | 344.9   | 344.9 | 344.9 | 319.5   | 319.5 | 319.5 |
|            |          |    | SHC | 157.3               | 210.1 | 262.8 | 152.2   | 205.4 | 258.7 | 145.8   | 199.4 | 252.9 | 138.7   | 192.5 | 246.3 | 122.5   | 176.2 | 230   |
|            |          | 76 | THC | —                   | 415.7 | 415.7 | —       | 402.3 | 402.3 | —       | 384.9 | 384.9 | —       | 364.5 | 364.5 | —       | 355.1 | 355.1 |
|            |          |    | SHC | —                   | 165.2 | 223.6 | —       | 160.5 | 218   | —       | 154.6 | 211.3 | —       | 147.8 | 203.9 | —       | 143.3 | 199.4 |
| 11,250 CFM | EAT (wb) | 58 | THC | 342.7               | 342.7 | 387.3 | 328.7   | 328.7 | 371.4 | 312.7   | 312.7 | 353.3 | 293.5   | 293.5 | 331.7 | 272.7   | 272.7 | 308.2 |
|            |          |    | SHC | 298.1               | 342.7 | 387.3 | 285.9   | 328.7 | 371.4 | 272     | 312.7 | 353.3 | 255.3   | 293.5 | 331.7 | 237.2   | 272.7 | 308.2 |
|            |          | 62 | THC | 346.8               | 346.8 | 396.7 | 329.7   | 329.7 | 387   | 313     | 313   | 367.3 | 293.8   | 293.8 | 344.8 | 273     | 273   | 320.4 |
|            |          |    | SHC | 281.1               | 338.9 | 396.7 | 272.5   | 329.7 | 387   | 258.6   | 313   | 367.3 | 242.8   | 293.8 | 344.8 | 225.6   | 273   | 320.4 |
|            |          | 67 | THC | 377.2               | 377.2 | 377.2 | 360.4   | 360.4 | 360.4 | 340.7   | 340.7 | 340.7 | 316.6   | 316.6 | 321.8 | 289.3   | 289.3 | 311.2 |
|            |          |    | SHC | 223.7               | 282.5 | 341.2 | 217.9   | 277.2 | 336.5 | 210.8   | 270.5 | 330.2 | 202.1   | 261.9 | 321.8 | 191.7   | 251.4 | 311.2 |
|            |          | 72 | THC | 403.1               | 403.1 | 403.1 | 388.6   | 388.6 | 388.6 | 370.3   | 370.3 | 370.3 | 349.5   | 349.5 | 349.5 | 324     | 324   | 324   |
|            |          |    | SHC | 160.3               | 217.7 | 275.1 | 155.5   | 213.7 | 271.9 | 149.3   | 208   | 266.7 | 142.4   | 201.4 | 260.5 | 125.3   | 184.4 | 243.6 |
|            |          | 76 | THC | —                   | 419.3 | 419.3 | —       | 406   | 406   | —       | 388.5 | 388.5 | —       | 367.8 | 367.8 | —       | 358.4 | 358.4 |
|            |          |    | SHC | —                   | 168.8 | 231.3 | —       | 164.4 | 226.3 | —       | 158.6 | 220   | —       | 151.9 | 212.8 | —       | 147.2 | 147.9 |
| 12,500 CFM | EAT (wb) | 58 | THC | 353                 | 353   | 398.9 | 338.8   | 338.8 | 382.9 | 322.5   | 322.5 | 364.5 | 303.1   | 303.1 | 342.5 | 281.8   | 281.8 | 318.4 |
|            |          |    | SHC | 307.1               | 353   | 398.9 | 294.7   | 338.8 | 382.9 | 280.6   | 322.5 | 364.5 | 263.7   | 303.1 | 342.5 | 245.1   | 281.8 | 318.4 |
|            |          | 62 | THC | 353.9               | 353.9 | 415.3 | 339.1   | 339.1 | 397.9 | 322.8   | 322.8 | 378.9 | 303.4   | 303.4 | 356   | 282     | 282   | 331   |
|            |          |    | SHC | 292.4               | 353.9 | 415.3 | 280.2   | 339.1 | 397.9 | 266.8   | 322.8 | 378.9 | 250.7   | 303.4 | 356   | 233.1   | 282   | 331   |
|            |          | 67 | THC | 381.9               | 381.9 | 381.9 | 365.2   | 365.2 | 365.2 | 345.3   | 345.3 | 350.4 | 321.3   | 321.3 | 342.2 | 293.9   | 293.9 | 331   |
|            |          |    | SHC | 232.3               | 296.1 | 360   | 227     | 291.6 | 356.3 | 220.1   | 285.2 | 350.4 | 211.5   | 276.8 | 342.2 | 200.9   | 266   | 331   |
|            |          | 72 | THC | 406.6               | 406.6 | 406.6 | 392.2   | 392.2 | 392.2 | 373.9   | 373.9 | 373.9 | 352.9   | 352.9 | 352.9 | 327.5   | 327.5 | 327.5 |
|            |          |    | SHC | 163.1               | 224.8 | 286.6 | 158.5   | 221.4 | 284.3 | 152.5   | 216.1 | 279.6 | 145.7   | 209.8 | 273.9 | 128.2   | 192   | 255.7 |
|            |          | 76 | THC | —                   | 422.1 | 422.1 | —       | 408.9 | 408.9 | —       | 391.2 | 391.2 | —       | 370.3 | 370.3 | —       | 360.9 | 360.9 |
|            |          |    | SHC | —                   | 172.2 | 238.5 | —       | 167.9 | 234   | —       | 162.3 | 228.1 | —       | 155.7 | 221.2 | —       | 150.8 | 215.9 |

NOTE: 1. See Minimum–Maximum Airflow Ratings in Table 3. Do not operate outside these limits.

2. Hot Gas Reheat available for 17.5–25 ton only

**LEGEND:**

|         |                                       |
|---------|---------------------------------------|
| —       | — Do not operate                      |
| Cfm     | — Cubic feet per minute (supply air)  |
| EAT(db) | — Entering air temperature (dry bulb) |
| EAT(wb) | — Entering air temperature (wet bulb) |
| SHC     | — Sensible heat capacity              |
| TC      | — Total capacity                      |

**Table 13 – STATIC PRESSURE ADDERS (Factory Options and/or Accessories)**

**Economizer – Vertical Duct Donfiguration**

| Model Sizes 210 – 336 |       |       |       |       |       |       |       |       |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| CFM                   | 4500  | 5000  | 5500  | 6000  | 6500  | 7000  | 7500  | 8000  |
| Vertical              | 0.047 | 0.052 | 0.057 | 0.062 | 0.067 | 0.072 | 0.077 | 0.082 |

| Model Sizes 210 – 336 |       |       |       |       |       |       |       |       |       |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| CFM                   | 8500  | 9000  | 9500  | 10000 | 10500 | 11000 | 11500 | 12000 | 12500 |
| Vertical              | 0.088 | 0.093 | 0.098 | 0.103 | 0.109 | 0.114 | 0.119 | 0.125 | 0.131 |

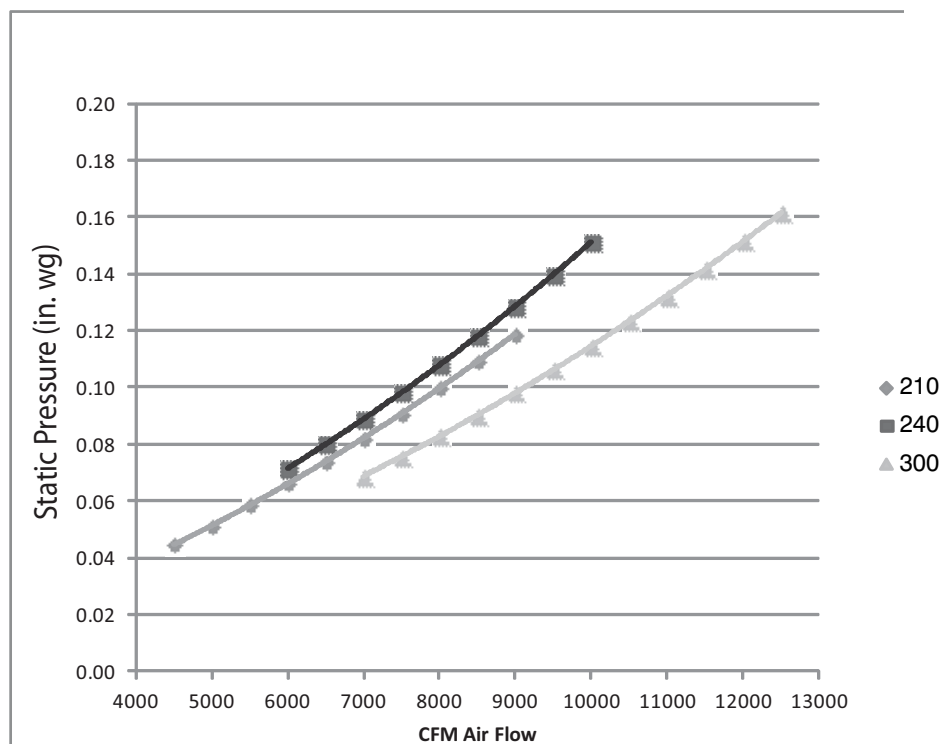
**Electric Heaters – Vertical Duct Configuration**

| Model Sizes 210 – 336 |       |       |       |       |       |       |       |       |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| CFM                   | 4800  | 5000  | 6000  | 7000  | 8000  | 9000  | 10000 | 11500 |
| 25 kW Heater          | 0.010 | 0.010 | 0.020 | 0.030 | 0.040 | 0.050 | 0.060 | 0.090 |
| 50 kW Heater          | 0.020 | 0.020 | 0.040 | 0.060 | 0.080 | 0.100 | 0.130 | 0.180 |
| 75 kW Heater          | 0.030 | 0.040 | 0.060 | 0.080 | 0.120 | 0.150 | 0.200 | 0.270 |

**General fan performance notes:**

1. Interpolation is permissible. Do not extrapolate.
2. External static pressure is the static pressure difference between the return duct and the supply duct plus the static pressure caused by any FIOPs or accessories.
3. Tabular data accounts for pressure loss due to clean filters, high gas heat, unit casing, and wet coils. Factory options and accessories may add static pressure losses, as shown in Table 13.
4. The Fan Performance tables offer motor/drive recommendations. In cases when two motor/drive combinations would work, the lower horsepower option is recommended.
5. For information on the electrical properties of motors, please see the Electrical information section of this book.
6. For more information on the performance limits of motors, see the application data section of this book.

**Hot Gas Reheat Coil**



# FAN PERFORMANCE

Table 14 – RAS210, 17.5 TON VERTICAL SUPPLY / RETURN

| CFM                                                     | Available External Static Pressure (in. wg) |             |             |             |                                                          |             |             |             |             |             |
|---------------------------------------------------------|---------------------------------------------|-------------|-------------|-------------|----------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|
|                                                         | 0.2                                         |             | 0.4         |             | 0.6                                                      |             | 0.8         |             | 1.0         |             |
|                                                         | RPM                                         | BHP         | RPM         | BHP         | RPM                                                      | BHP         | RPM         | BHP         | RPM         | BHP         |
| 5250                                                    | <b>541</b>                                  | <b>1.08</b> | <b>618</b>  | <b>1.42</b> | 688                                                      | 1.79        | 754         | 2.19        | 817         | 2.62        |
| 5700                                                    | <b>573</b>                                  | <b>1.31</b> | 645         | 1.67        | 712                                                      | 2.06        | 775         | 2.48        | 835         | 2.93        |
| 6100                                                    | <b>602</b>                                  | <b>1.55</b> | 670         | 1.93        | 734                                                      | 2.34        | 795         | 2.77        | 852         | 3.23        |
| 6500                                                    | 631                                         | 1.81        | 696         | 2.21        | 757                                                      | 2.64        | 815         | 3.09        | 871         | 3.57        |
| 7000                                                    | 668                                         | 2.19        | 729         | 2.61        | 787                                                      | 3.06        | 843         | 3.53        | 896         | 4.03        |
| 7500                                                    | 706                                         | 2.62        | 763         | 3.06        | 819                                                      | 3.54        | 871         | 4.03        | 922         | 4.55        |
| 7900                                                    | 736                                         | 3.00        | 791         | 3.47        | 844                                                      | 3.96        | 895         | 4.47        | 944         | 5.00        |
| 8300                                                    | 767                                         | 3.42        | 819         | 3.90        | 870                                                      | 4.41        | 919         | 4.94        | 967         | 5.49        |
| 8750                                                    | 801                                         | 3.94        | 852         | 4.44        | 900                                                      | 4.97        | 948         | 5.52        | 993         | 6.09        |
| CFM                                                     | Available External Static Pressure (in. wg) |             |             |             |                                                          |             |             |             |             |             |
|                                                         | 1.2                                         |             | 1.4         |             | 1.6                                                      |             | 1.8         |             | 2.0         |             |
|                                                         | RPM                                         | BHP         | RPM         | BHP         | RPM                                                      | BHP         | RPM         | BHP         | RPM         | BHP         |
| 5250                                                    | 876                                         | 3.08        | 932         | 3.56        | 986                                                      | 4.07        | 1038        | 4.60        | <b>1088</b> | <b>5.15</b> |
| 5700                                                    | 892                                         | 3.40        | 946         | 3.90        | 998                                                      | 4.42        | 1049        | 4.96        | <b>1097</b> | <b>5.52</b> |
| 6100                                                    | 907                                         | 3.72        | 960         | 4.23        | 1011                                                     | 4.76        | 1060        | 5.31        | <b>1107</b> | <b>5.89</b> |
| 6500                                                    | 924                                         | 4.07        | 975         | 4.59        | 1025                                                     | 5.13        | 1072        | 5.70        | <b>1119</b> | <b>6.28</b> |
| 7000                                                    | 947                                         | 4.55        | 996         | 5.09        | 1044                                                     | 5.65        | <b>1090</b> | <b>6.23</b> | <i>1135</i> | <i>6.83</i> |
| 7500                                                    | 971                                         | 5.08        | 1019        | 5.64        | 1064                                                     | 6.22        | <i>1109</i> | <i>6.82</i> | <i>1152</i> | <i>7.44</i> |
| 7900                                                    | 992                                         | 5.55        | 1038        | 6.13        | <i>1082</i>                                              | <i>6.72</i> | 1126        | 7.34        | -----       | -----       |
| 8300                                                    | <b>1013</b>                                 | <b>6.06</b> | <i>1057</i> | <i>6.65</i> | <i>1101</i>                                              | <i>7.26</i> | -----       | -----       | -----       | -----       |
| 8750                                                    | <i>1038</i>                                 | <i>6.68</i> | <i>1081</i> | <i>7.29</i> | -----                                                    | -----       | -----       | -----       | -----       | -----       |
| Std Static Motor and Drive – 622–822 RPM, Max BHP 3.3   |                                             |             |             |             | Medium Static Motor and Drive – 713–879 RPM, Max BHP 4.9 |             |             |             |             |             |
| High Static Motor and Drive – 882–1078 RPM, Max BHP 6.5 |                                             |             |             |             | ----- Outside operating range                            |             |             |             |             |             |
| <b>Boldface</b> – Field-supplied Drive                  |                                             |             |             |             | ITALIC – Field Supplied Motor and Drive                  |             |             |             |             |             |

Table 15 – RAS240, 20 TON VERTICAL SUPPLY / RETURN

| CFM                                                     | Available External Static Pressure (in. wg) |             |            |             |                                                           |             |      |      |       |       |
|---------------------------------------------------------|---------------------------------------------|-------------|------------|-------------|-----------------------------------------------------------|-------------|------|------|-------|-------|
|                                                         | 0.2                                         |             | 0.4        |             | 0.6                                                       |             | 0.8  |      | 1.0   |       |
|                                                         | RPM                                         | BHP         | RPM        | BHP         | RPM                                                       | BHP         | RPM  | BHP  | RPM   | BHP   |
| 6000                                                    | <b>506</b>                                  | <b>1.12</b> | <b>593</b> | <b>1.43</b> | <b>668</b>                                                | <b>1.74</b> | 736  | 2.07 | 798   | 2.40  |
| 6500                                                    | <b>533</b>                                  | <b>1.36</b> | <b>616</b> | <b>1.70</b> | 689                                                       | 2.04        | 754  | 2.39 | 815   | 2.74  |
| 7000                                                    | <b>561</b>                                  | <b>1.64</b> | <b>640</b> | <b>2.01</b> | 710                                                       | 2.37        | 774  | 2.74 | 833   | 3.11  |
| 7500                                                    | <b>588</b>                                  | <b>1.96</b> | <b>664</b> | <b>2.35</b> | 732                                                       | 2.74        | 795  | 3.13 | 852   | 3.53  |
| 8000                                                    | <b>617</b>                                  | <b>2.32</b> | 689        | 2.74        | 755                                                       | 3.15        | 816  | 3.57 | 872   | 3.99  |
| 8500                                                    | <b>645</b>                                  | <b>2.73</b> | 715        | 3.17        | 779                                                       | 3.60        | 837  | 4.04 | 892   | 4.49  |
| 9000                                                    | <b>674</b>                                  | <b>3.18</b> | 741        | 3.64        | 803                                                       | 4.10        | 860  | 4.57 | 913   | 5.04  |
| 9500                                                    | 703                                         | 3.67        | 767        | 4.16        | 827                                                       | 4.65        | 883  | 5.14 | 935   | 5.64  |
| 10000                                                   | 732                                         | 4.22        | 794        | 4.74        | 852                                                       | 5.25        | 906  | 5.77 | 957   | 6.29  |
| CFM                                                     | Available External Static Pressure (in. wg) |             |            |             |                                                           |             |      |      |       |       |
|                                                         | 1.2                                         |             | 1.4        |             | 1.6                                                       |             | 1.8  |      | 2.0   |       |
|                                                         | RPM                                         | BHP         | RPM        | BHP         | RPM                                                       | BHP         | RPM  | BHP  | RPM   | BHP   |
| 6000                                                    | 855                                         | 2.75        | 909        | 3.11        | 959                                                       | 3.47        | 1008 | 3.85 | 1054  | 4.24  |
| 6500                                                    | 871                                         | 3.11        | 924        | 3.48        | 974                                                       | 3.87        | 1022 | 4.26 | 1067  | 4.67  |
| 7000                                                    | 888                                         | 3.50        | 940        | 3.89        | 989                                                       | 4.30        | 1036 | 4.71 | 1081  | 5.13  |
| 7500                                                    | 906                                         | 3.94        | 957        | 4.35        | 1005                                                      | 4.77        | 1052 | 5.20 | 1096  | 5.64  |
| 8000                                                    | 925                                         | 4.42        | 975        | 4.85        | 1022                                                      | 5.29        | 1068 | 5.74 | 1111  | 6.20  |
| 8500                                                    | 944                                         | 4.94        | 993        | 5.40        | 1040                                                      | 5.86        | 1084 | 6.33 | 1127  | 6.81  |
| 9000                                                    | 964                                         | 5.51        | 1012       | 5.99        | 1058                                                      | 6.48        | 1102 | 6.97 | 1144  | 7.46  |
| 9500                                                    | 984                                         | 6.13        | 1032       | 6.64        | 1077                                                      | 7.14        | 1120 | 7.65 | 1161  | 8.17  |
| 10000                                                   | 1006                                        | 6.81        | 1052       | 7.33        | 1096                                                      | 7.86        | 1138 | 8.40 | ----- | ----- |
| Std Static Motor and Drive – 690–863 RPM, Max BHP 4.9   |                                             |             |            |             | Medium Static Motor and Drive – 835–1021 RPM, Max BHP 6.5 |             |      |      |       |       |
| High Static Motor and Drive – 941–1176 RPM, Max BHP 8.7 |                                             |             |            |             | ----- Outside operating range                             |             |      |      |       |       |
| <b>Boldface</b> – Field-supplied Drive                  |                                             |             |            |             |                                                           |             |      |      |       |       |

# FAN PERFORMANCE (cont.)

Table 16 – RAS300, 25 TON VERTICAL SUPPLY / RETURN

| CFM                                                     | Available External Static Pressure (in. wg) |       |       |       |                                                           |       |       |       |       |       |
|---------------------------------------------------------|---------------------------------------------|-------|-------|-------|-----------------------------------------------------------|-------|-------|-------|-------|-------|
|                                                         | 0.2                                         |       | 0.4   |       | 0.6                                                       |       | 0.8   |       | 1.0   |       |
|                                                         | RPM                                         | BHP   | RPM   | BHP   | RPM                                                       | BHP   | RPM   | BHP   | RPM   | BHP   |
| 7500                                                    | 541                                         | 1.50  | 636   | 1.88  | 716                                                       | 2.27  | 787   | 2.66  | 850   | 3.06  |
| 8000                                                    | 563                                         | 1.76  | 656   | 2.17  | 735                                                       | 2.58  | 804   | 3.00  | 867   | 3.42  |
| 8500                                                    | 585                                         | 2.05  | 676   | 2.50  | 753                                                       | 2.93  | 822   | 3.37  | 884   | 3.81  |
| 9000                                                    | 608                                         | 2.37  | 697   | 2.85  | 772                                                       | 3.31  | 840   | 3.77  | 901   | 4.24  |
| 9500                                                    | 631                                         | 2.73  | 717   | 3.24  | 791                                                       | 3.73  | 858   | 4.21  | 918   | 4.70  |
| 10000                                                   | 654                                         | 3.12  | 738   | 3.66  | 811                                                       | 4.18  | 876   | 4.69  | 936   | 5.20  |
| 10500                                                   | 678                                         | 3.56  | 759   | 4.12  | 831                                                       | 4.67  | 895   | 5.21  | 954   | 5.74  |
| 11000                                                   | 701                                         | 4.02  | 781   | 4.62  | 851                                                       | 5.20  | 914   | 5.76  | 972   | 6.33  |
| 11500                                                   | 725                                         | 4.53  | 802   | 5.16  | 871                                                       | 5.77  | 933   | 6.36  | 991   | 6.95  |
| 12000                                                   | 748                                         | 5.09  | 824   | 5.75  | 892                                                       | 6.38  | 953   | 7.00  | 1010  | 7.62  |
| 12500                                                   | 772                                         | 5.68  | 846   | 6.38  | 912                                                       | 7.04  | 973   | 7.69  | 1029  | 8.34  |
| CFM                                                     | Available External Static Pressure (in. wg) |       |       |       |                                                           |       |       |       |       |       |
|                                                         | 1.2                                         |       | 1.4   |       | 1.6                                                       |       | 1.8   |       | 2.0   |       |
|                                                         | RPM                                         | BHP   | RPM   | BHP   | RPM                                                       | BHP   | RPM   | BHP   | RPM   | BHP   |
| 7500                                                    | 909                                         | 3.47  | 963   | 3.89  | 1014                                                      | 4.32  | 1062  | 4.77  | 1108  | 5.23  |
| 8000                                                    | 925                                         | 3.85  | 978   | 4.29  | 1029                                                      | 4.74  | 1077  | 5.20  | 1122  | 5.68  |
| 8500                                                    | 941                                         | 4.26  | 994   | 4.72  | 1044                                                      | 5.19  | 1092  | 5.67  | 1137  | 6.16  |
| 9000                                                    | 957                                         | 4.71  | 1010  | 5.19  | 1060                                                      | 5.67  | 1107  | 6.17  | 1152  | 6.68  |
| 9500                                                    | 974                                         | 5.19  | 1027  | 5.69  | 1076                                                      | 6.20  | 1123  | 6.72  | 1167  | 7.24  |
| 10000                                                   | 991                                         | 5.72  | 1043  | 6.24  | 1092                                                      | 6.77  | 1138  | 7.30  | ----- | ----- |
| 10500                                                   | 1009                                        | 6.28  | 1060  | 6.83  | 1109                                                      | 7.37  | 1155  | 7.93  | ----- | ----- |
| 11000                                                   | 1026                                        | 6.89  | 1077  | 7.46  | 1125                                                      | 8.03  | 1171  | 8.60  | ----- | ----- |
| 11500                                                   | 1044                                        | 7.54  | 1095  | 8.13  | 1142                                                      | 8.72  | ----- | ----- | ----- | ----- |
| 12000                                                   | 1062                                        | 8.23  | 1112  | 8.85  | -----                                                     | ----- | ----- | ----- | ----- | ----- |
| 12500                                                   | -----                                       | ----- | ----- | ----- | -----                                                     | ----- | ----- | ----- | ----- | ----- |
| Std Static Motor and Drive – 717–911 RPM, Max BHP 4.9   |                                             |       |       |       | Medium Static Motor and Drive – 913–1116 RPM, Max BHP 6.5 |       |       |       |       |       |
| High Static Motor and Drive – 941–1176 RPM, Max BHP 8.7 |                                             |       |       |       | ----- Outside operating range                             |       |       |       |       |       |
| Boldface – Field-supplied Drive                         |                                             |       |       |       |                                                           |       |       |       |       |       |

Table 17 – RAS336, 27.5 TON VERTICAL SUPPLY / RETURN

| CFM                                                     | Available External Static Pressure (in. wg) |       |      |       |                                                            |       |       |       |       |       |
|---------------------------------------------------------|---------------------------------------------|-------|------|-------|------------------------------------------------------------|-------|-------|-------|-------|-------|
|                                                         | 0.2                                         |       | 0.4  |       | 0.6                                                        |       | 0.8   |       | 1.0   |       |
|                                                         | RPM                                         | BHP   | RPM  | BHP   | RPM                                                        | BHP   | RPM   | BHP   | RPM   | BHP   |
| 8250                                                    | 620                                         | 1.85  | 705  | 2.31  | 778                                                        | 2.77  | 843   | 3.22  | 903   | 3.68  |
| 8800                                                    | 650                                         | 2.18  | 731  | 2.67  | 802                                                        | 3.16  | 866   | 3.64  | 925   | 4.13  |
| 9350                                                    | 679                                         | 2.54  | 758  | 3.07  | 828                                                        | 3.59  | 890   | 4.10  | 948   | 4.62  |
| 9900                                                    | 710                                         | 2.95  | 786  | 3.51  | 853                                                        | 4.06  | 915   | 4.60  | 971   | 5.15  |
| 10450                                                   | 740                                         | 3.40  | 814  | 3.99  | 879                                                        | 4.57  | 939   | 5.15  | 995   | 5.73  |
| 11000                                                   | 771                                         | 3.90  | 842  | 4.52  | 906                                                        | 5.14  | 965   | 5.75  | 1020  | 6.35  |
| 11550                                                   | 802                                         | 4.45  | 871  | 5.10  | 933                                                        | 5.75  | 991   | 6.39  | 1044  | 7.03  |
| 12100                                                   | 833                                         | 5.04  | 900  | 5.73  | 961                                                        | 6.41  | 1017  | 7.09  | 1070  | 7.76  |
| 12650                                                   | 865                                         | 5.70  | 930  | 6.42  | 989                                                        | 7.13  | 1044  | 7.84  | 1095  | 8.54  |
| 13200                                                   | 897                                         | 6.40  | 959  | 7.16  | 1017                                                       | 7.90  | 1071  | 8.64  | 1121  | 9.38  |
| 13750                                                   | 929                                         | 7.17  | 990  | 7.96  | 1046                                                       | 8.74  | 1098  | 9.51  | 1148  | 10.27 |
| CFM                                                     | Available External Static Pressure (in. wg) |       |      |       |                                                            |       |       |       |       |       |
|                                                         | 1.2                                         |       | 1.4  |       | 1.6                                                        |       | 1.8   |       | 2.0   |       |
|                                                         | RPM                                         | BHP   | RPM  | BHP   | RPM                                                        | BHP   | RPM   | BHP   | RPM   | BHP   |
| 8250                                                    | 959                                         | 4.14  | 1011 | 4.61  | 1059                                                       | 5.08  | 1106  | 5.56  | 1150  | 6.05  |
| 8800                                                    | 980                                         | 4.62  | 1031 | 5.11  | 1080                                                       | 5.61  | 1126  | 6.12  | 1169  | 6.63  |
| 9350                                                    | 1002                                        | 5.14  | 1052 | 5.66  | 1100                                                       | 6.18  | 1146  | 6.72  | 1189  | 7.25  |
| 9900                                                    | 1024                                        | 5.70  | 1074 | 6.25  | 1121                                                       | 6.80  | 1166  | 7.36  | 1209  | 7.92  |
| 10450                                                   | 1047                                        | 6.30  | 1096 | 6.88  | 1143                                                       | 7.47  | 1187  | 8.05  | 1230  | 8.64  |
| 11000                                                   | 1071                                        | 6.96  | 1119 | 7.57  | 1165                                                       | 8.18  | 1209  | 8.79  | 1251  | 9.41  |
| 11550                                                   | 1095                                        | 7.66  | 1142 | 8.30  | 1188                                                       | 8.94  | 1231  | 9.58  | 1273  | 10.23 |
| 12100                                                   | 1119                                        | 8.42  | 1166 | 9.09  | 1211                                                       | 9.76  | 1253  | 10.43 | 1295  | 11.10 |
| 12650                                                   | 1144                                        | 9.24  | 1190 | 9.93  | 1234                                                       | 10.63 | 1276  | 11.33 | ----- | ----- |
| 13200                                                   | 1169                                        | 10.10 | 1215 | 10.83 | 1258                                                       | 11.56 | 1300  | 12.29 | ----- | ----- |
| 13750                                                   | 1195                                        | 11.03 | 1240 | 11.79 | 1282                                                       | 12.55 | ----- | ----- | ----- | ----- |
| Std Static Motor and Drive – 751–954 RPM, Max BHP 6.5   |                                             |       |      |       | Medium Static Motor and Drive – 920–1190 RPM, Max BHP 10.5 |       |       |       |       |       |
| High Static Motor & Drive – 1116–1400 RPM, Max BHP 11.9 |                                             |       |      |       | ----- Outside operating range                              |       |       |       |       |       |
| <b>Boldface</b> – Field Supplied Drive                  |                                             |       |      |       | <i>ITALIC</i> – Field Supplied Motor                       |       |       |       |       |       |

## FAN PERFORMANCE (cont.)

**Table 18 – PULLEY ADJUSTMENT – VERTICAL**

| UNIT<br>RAS | MOTOR/DRIVE COMBO | MOTOR PULLEY TURNS OPEN |      |      |      |      |      |      |      |      |      |      |
|-------------|-------------------|-------------------------|------|------|------|------|------|------|------|------|------|------|
|             |                   | 0                       | 0.5  | 1    | 1.5  | 2    | 2.5  | 3    | 3.5  | 4    | 4.5  | 5    |
| 210         | Standard Static   | 822                     | 802  | 782  | 762  | 742  | 722  | 702  | 682  | 662  | 642  | 622  |
|             | Medium Static     | 879                     | 862  | 846  | 829  | 813  | 796  | 779  | 763  | 746  | 730  | 713  |
|             | High Static       | 1078                    | 1058 | 1039 | 1019 | 1000 | 980  | 960  | 941  | 921  | 902  | 882  |
| 240         | Standard Static   | 863                     | 846  | 828  | 811  | 794  | 777  | 759  | 742  | 725  | 707  | 690  |
|             | Medium Static     | 1021                    | 1002 | 984  | 965  | 947  | 928  | 909  | 891  | 872  | 854  | 835  |
|             | High Static       | 1176                    | 1153 | 1129 | 1106 | 1082 | 1059 | 1035 | 1012 | 988  | 965  | 941  |
| 300         | Standard Static   | 911                     | 892  | 872  | 853  | 833  | 814  | 795  | 775  | 756  | 736  | 717  |
|             | Medium Static     | 1116                    | 1096 | 1075 | 1055 | 1035 | 1015 | 994  | 974  | 954  | 933  | 913  |
|             | High Static       | 1176                    | 1153 | 1129 | 1106 | 1082 | 1059 | 1035 | 1012 | 988  | 965  | 941  |
| 336         | Standard Static   | 954                     | 934  | 913  | 893  | 873  | 853  | 832  | 812  | 792  | 771  | 751  |
|             | Medium Static     | 1190                    | 1163 | 1136 | 1109 | 1082 | 1055 | 1028 | 1001 | 974  | 947  | 920  |
|             | High Static       | 1400                    | 1372 | 1343 | 1315 | 1286 | 1258 | 1230 | 1201 | 1173 | 1144 | 1116 |

**NOTE:** Do not adjust pulley further than 5 turns open.

■ – Factory settings

DAMPER, BAROMETRIC RELIEF, AND PERFORMANCE, 17.5 TO 25 Ton

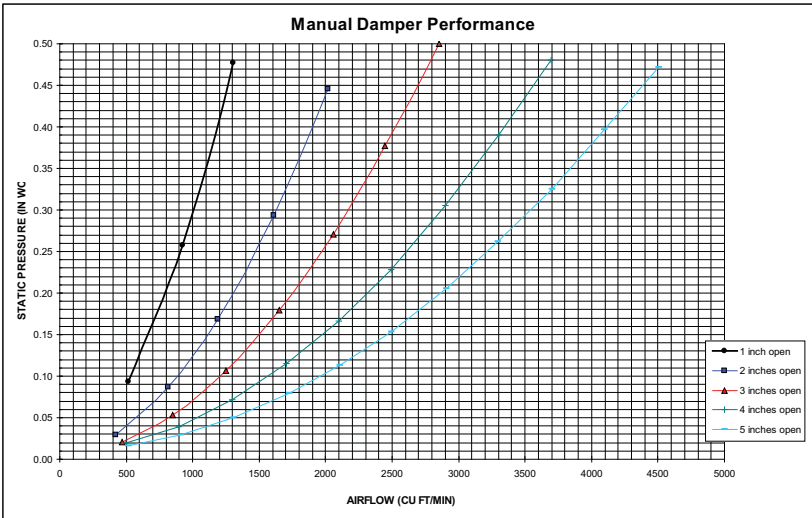


Fig 1 – Manual Damper Performance

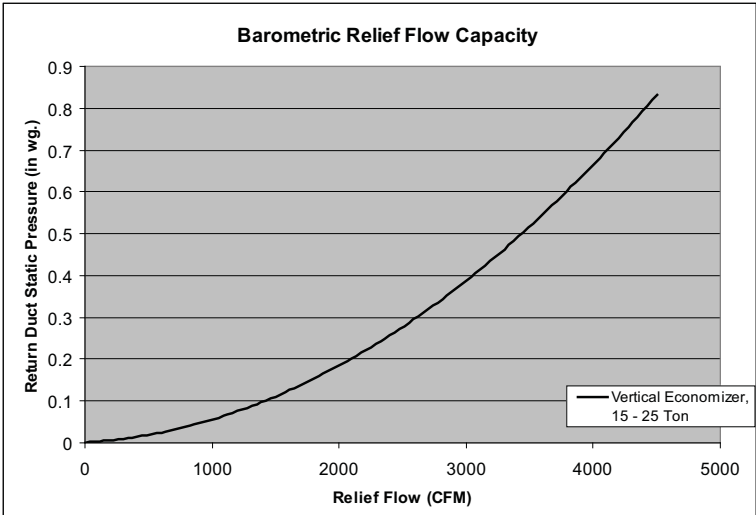


Fig 2 – Barametric Relief Flow Capacity

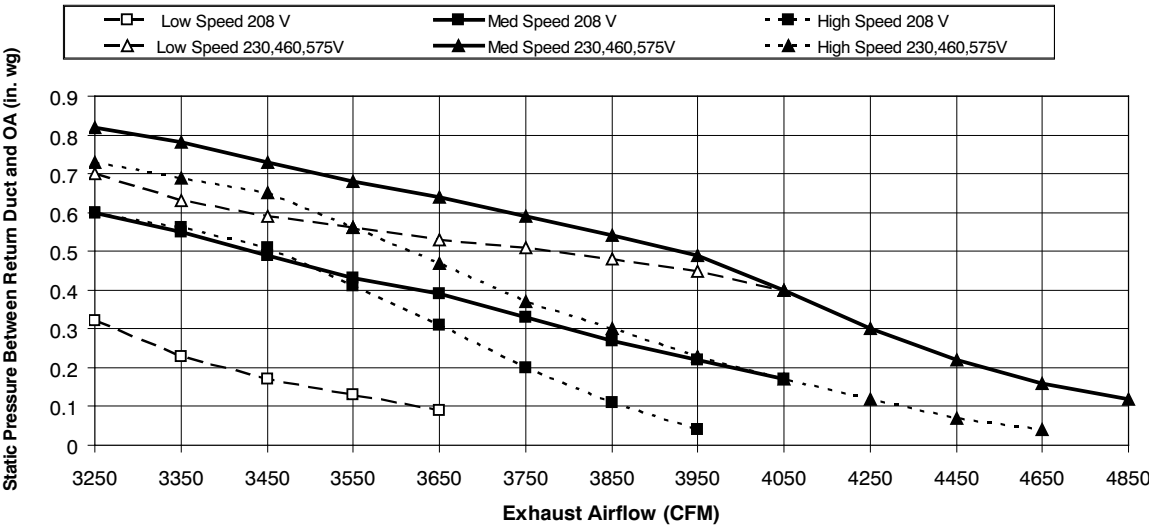


Fig 3 – Power Exhaust Fan Performance

# ELECTRICAL DATA FOR UNITS PRODUCED ON OR AFTER JULY 30, 2012

**NOTE:** Check the serial number of unit to verify production date.

## SERIAL NUMBER

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|
| U | 1 | 2 | 3 | 1 | 1 | 2 | 3 | 4 | 5  |

Manufacture Location

Week of Manufacture  
(fiscal calendar)

Sequence Number

Year of Manufacture  
(12 = 2012)

### LEGEND AND NOTES FOR TABLES 19 – 50.

#### LEGEND:

|          |   |                             |
|----------|---|-----------------------------|
| BRKR     | – | Circuit breaker             |
| CO       | – | Convenience outlet          |
| DISC     | – | Disconnect                  |
| FLA      | – | Full load amps              |
| IFM      | – | Indoor fan motor            |
| LRA      | – | Locked rotor amps           |
| MCA      | – | Minimum circuit amps        |
| MOCP     | – | MAX FUSE or HACR BRKR       |
| PE       | – | Power exhaust               |
| PWRD CO  | – | Powered convenient outlet   |
| UNPWR CO | – | Unpowered convenient outlet |



#### NOTES:

1. In compliance with NEC requirements for multimotor and combination (to NEC Articles 430 and 440), the overcurrent protective device (fuse or HACR breaker). Canadian units may be fuse or circuit breaker.

#### 1. Unbalanced 3-Phase Supply Voltage

Never operate a motor where a phase imbalance in supply voltage. Use the following formula to determine the percentage of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

#### Example: Supply voltage is 230-3-60



AB = 224 v  
BC = 231 v  
AC = 226 v

$$\text{Average Voltage} = \frac{(224 + 231 + 226)}{3} = \frac{681}{3} = 227$$

Determine maximum deviation from average voltage.

(AB) 227 – 224 = 3 v

(BC) 231 – 227 = 4 v

(AC) 227 – 226 = 1 v

Maximum deviation is 4 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{4}{227} = 1.76\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012)

**TABLE 19 – 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

**17.5 – 27.5 TONS**

| UNIT<br>RAS | V–Ph–Hz  | VOLTAGE RANGE |     | COMP 1 |     | COMP 2 |     | OFM (ea) |     | IFM        |                     |      |
|-------------|----------|---------------|-----|--------|-----|--------|-----|----------|-----|------------|---------------------|------|
|             |          | MIN           | MAX | RLA    | LRA | RLA    | LRA | WATTS    | FLA | TYPE       | EFF at<br>Full Load | FLA  |
| 210         | 208–3–60 | 187           | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD        | 87.0%               | 10.6 |
|             |          |               |     |        |     |        |     |          |     | MED        | 82.9%               | 13.6 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff. | 89.5%               | 17.1 |
|             | 230–3–60 | 187           | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD        | 87.0%               | 10.6 |
|             |          |               |     |        |     |        |     |          |     | MED        | 82.9%               | 12.7 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 89.5%               | 17.1 |
|             | 460–3–60 | 414           | 506 | 14.7   | 95  | 16.7   | 114 | 277      | 0.9 | STD        | 87.0%               | 5.3  |
|             |          |               |     |        |     |        |     |          |     | MED        | 82.9%               | 6.4  |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 89.5%               | 8.6  |
|             | 575–3–60 | 518           | 633 | 12.2   | 80  | 12.2   | 80  | 397      | 0.6 | STD        | 81.1%               | 2.8  |
|             |          |               |     |        |     |        |     |          |     | MED        | 83.6%               | 5.6  |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 89.5%               | 7.6  |
| 240         | 208–3–60 | 187           | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD        | 82.9%               | 13.6 |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 28.5 |
|             | 230–3–60 | 187           | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD        | 82.9%               | 12.7 |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 28.5 |
|             | 460–3–60 | 414           | 506 | 18.6   | 125 | 14.7   | 95  | 277      | 0.9 | STD        | 82.9%               | 6.4  |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 8.6  |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 14.3 |
|             | 575–3–60 | 518           | 633 | 14.7   | 100 | 12.2   | 80  | 397      | 0.6 | STD        | 83.6%               | 5.6  |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 7.6  |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 9.5  |
| 300         | 208–3–60 | 187           | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD        | 82.9%               | 13.6 |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 28.5 |
|             | 230–3–60 | 187           | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD        | 82.9%               | 12.7 |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 28.5 |
|             | 460–3–60 | 414           | 506 | 18.6   | 125 | 18.6   | 125 | 277      | 0.9 | STD        | 82.9%               | 6.4  |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 8.6  |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 14.3 |
|             | 575–3–60 | 518           | 633 | 14.7   | 100 | 14.7   | 100 | 397      | 0.6 | STD        | 83.6%               | 5.6  |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 89.5%               | 7.6  |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 9.5  |
| 336         | 208–3–60 | 187           | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD        | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 91.7%               | 28.5 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 30.4 |
|             | 230–3–60 | 187           | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD        | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 91.7%               | 28.5 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 30.4 |
|             | 460–3–60 | 414           | 506 | 23.1   | 150 | 23.1   | 150 | 277      | 0.9 | STD        | 89.5%               | 8.6  |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 91.7%               | 14.3 |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 15.2 |
|             | 575–3–60 | 518           | 633 | 19.9   | 109 | 19.9   | 109 | 397      | 0.6 | STD        | 89.5%               | 7.6  |
|             |          |               |     |        |     |        |     |          |     | MED–HI Eff | 91.7%               | 9.5  |
|             |          |               |     |        |     |        |     |          |     | HI–HI Eff  | 91.7%               | 12.4 |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 20 – 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

**17.5 – 27.5 TONS**

| UNIT<br>RAS | V—Ph—Hz  | VOLTAGE RANGE |     | COMP 1 |     | COMP 2 |     | OFM (ea) |     | IFM  |                     |      |
|-------------|----------|---------------|-----|--------|-----|--------|-----|----------|-----|------|---------------------|------|
|             |          | MIN           | MAX | RLA    | LRA | RLA    | LRA | WATTS    | FLA | TYPE | EFF at<br>Full Load | FLA  |
| 210         | 208-3-60 | 187           | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD  | 81.5%               | 10.8 |
|             |          |               |     |        |     |        |     |          |     | MED  | 83.6%               | 13.6 |
|             |          |               |     |        |     |        |     |          |     | HI   | 89.5%               | 17.1 |
|             | 230-3-60 | 187           | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD  | 81.5%               | 9.8  |
|             |          |               |     |        |     |        |     |          |     | MED  | 83.6%               | 12.7 |
|             |          |               |     |        |     |        |     |          |     | HI   | 89.5%               | 17.1 |
|             | 460-3-60 | 414           | 506 | 14.7   | 95  | 16.7   | 114 | 277      | 0.9 | STD  | 81.5%               | 4.9  |
|             |          |               |     |        |     |        |     |          |     | MED  | 83.6%               | 6.4  |
|             |          |               |     |        |     |        |     |          |     | HI   | 89.5%               | 8.6  |
|             | 575-3-60 | 518           | 633 | 12.2   | 80  | 12.2   | 80  | 397      | 0.6 | STD  | 81.1%               | 4.5  |
|             |          |               |     |        |     |        |     |          |     | MED  | 83.6%               | 6.2  |
|             |          |               |     |        |     |        |     |          |     | HI   | 89.5%               | 7.6  |
| 240         | 208-3-60 | 187           | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD  | 83.6%               | 13.6 |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 230-3-60 | 187           | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD  | 83.6%               | 12.7 |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 460-3-60 | 414           | 506 | 18.6   | 125 | 14.7   | 95  | 277      | 0.9 | STD  | 83.6%               | 6.4  |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 8.6  |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 14.3 |
|             | 575-3-60 | 518           | 633 | 14.7   | 100 | 12.2   | 80  | 397      | 0.6 | STD  | 83.6%               | 6.2  |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 7.6  |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 9.5  |
| 300         | 208-3-60 | 187           | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD  | 83.6%               | 13.6 |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 230-3-60 | 187           | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD  | 83.6%               | 12.7 |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 460-3-60 | 414           | 506 | 18.6   | 125 | 18.6   | 125 | 277      | 0.9 | STD  | 83.6%               | 6.4  |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 8.6  |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 14.3 |
|             | 575-3-60 | 518           | 633 | 14.7   | 100 | 14.7   | 100 | 397      | 0.6 | STD  | 83.6%               | 6.2  |
|             |          |               |     |        |     |        |     |          |     | MED  | 89.5%               | 7.6  |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 9.5  |
| 336         | 208-3-60 | 187           | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD  | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | MED  | 91.7%               | 28.5 |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 30.4 |
|             | 230-3-60 | 187           | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD  | 89.5%               | 17.1 |
|             |          |               |     |        |     |        |     |          |     | MED  | 91.7%               | 28.5 |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 30.4 |
|             | 460-3-60 | 414           | 506 | 23.1   | 150 | 23.1   | 150 | 277      | 0.9 | STD  | 89.5%               | 8.6  |
|             |          |               |     |        |     |        |     |          |     | MED  | 91.7%               | 14.3 |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 15.2 |
|             | 575-3-60 | 518           | 633 | 19.9   | 109 | 19.9   | 109 | 397      | 0.6 | STD  | 89.5%               | 7.6  |
|             |          |               |     |        |     |        |     |          |     | MED  | 91.7%               | 9.5  |
|             |          |               |     |        |     |        |     |          |     | HI   | 91.7%               | 12.4 |

# ELECTRIC HEAT – ELECTRICAL INFORMATION (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 21 – RAS210**

**1–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | Application Output<br>(MBH) | SINGLE POINT KIT PART NUMBER<br>CRSINGLE |                           |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|-----------------------------|------------------------------------------|---------------------------|
|                  |             |                                            |                    |                    |                             | NO C.O. or UNPWRD C.O.                   |                           |
|                  |             |                                            |                    |                    |                             | NO P.E.                                  | w/P.E.<br>(pwrdr fr/unit) |
| 208/230–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | —                                        | —                         |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                      | 056                       |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                      | 056                       |
|                  | MED         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | —                                        | —                         |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                      | 056                       |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                      | 056                       |
|                  | HI–HI Eff   | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | —                                        | —                         |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                      | 056                       |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                      | 056                       |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | 78.3                        | —                                        | —                         |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                      | 057                       |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                      | 057                       |
|                  | MED         | 282A00                                     | 25.0               | 23.0               | 78.3                        | —                                        | —                         |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                      | 057                       |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                      | 057                       |
|                  | HI–HI Eff   | 282A00                                     | 25.0               | 23.0               | 78.3                        | —                                        | —                         |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                      | 057                       |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                      | 057                       |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | 77.7                        | —                                        | —                         |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | —                                        | —                         |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                      | 057                       |
|                  | MED         | 285A00                                     | 24.8               | 22.8               | 77.7                        | —                                        | —                         |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | —                                        | 057                       |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                      | 057                       |
|                  | HI–HI Eff   | 285A00                                     | 24.8               | 22.8               | 77.7                        | —                                        | —                         |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | —                                        | 057                       |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                      | 057                       |

# ELECTRIC HEAT – ELECTRICAL INFORMATION (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 22 – RAS240**

**1–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | Application Output<br>(MBH) | SINGLE POINT KIT PART<br>NUMBER<br>CRSINGLE |                         |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|-----------------------------|---------------------------------------------|-------------------------|
|                  |             |                                            |                    |                    |                             | NO C.O. or UNPWRD C.O.                      |                         |
|                  |             |                                            |                    |                    |                             | NO P.E.                                     | w/P.E.<br>(pwr fr/unit) |
| 208/203–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
|                  | MEDI–HI Eff | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
|                  | HII–HI Eff  | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | –                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
|                  | MEDI–HI Eff | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | –                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
|                  | HII–HI Eff  | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | 057                     |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |
|                  | MEDI–HI Eff | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |
|                  | HII–HI Eff  | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | 057                                         | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |

**ELECTRIC HEAT – ELECTRICAL INFORMATION  
(UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.**

**TABLE 23 – RAS300**

**1–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | Application Output<br>(MBH) | SINGLE POINT KIT PART<br>NUMBER<br>CRSINGLE |                         |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|-----------------------------|---------------------------------------------|-------------------------|
|                  |             |                                            |                    |                    |                             | NO C.O. or UNPWRD C.O.                      |                         |
|                  |             |                                            |                    |                    |                             | NO P.E.                                     | w/P.E.<br>(pwr fr/unit) |
| 208/230–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
|                  | MED–HI Eff  | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
|                  | HI–HI Eff   | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | –                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
|                  | MED–HI Eff  | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | –                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
|                  | HI–HI Eff   | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | 057                     |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |
|                  | MED–HI Eff  | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |
|                  | HI–HI Eff   | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | 057                                         | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |

# ELECTRIC HEAT – ELECTRICAL INFORMATION (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 24 – RAS336**

**1–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | Application Output<br>(MBH) | SINGLE POINT KIT PART<br>NUMBER<br>CRSINGLE |                          |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|-----------------------------|---------------------------------------------|--------------------------|
|                  |             |                                            |                    |                    |                             | NO C.O. or UNPWRD C.O.                      |                          |
|                  |             |                                            |                    |                    |                             | NO P.E.                                     | w/P.E.<br>(pwrd fr/unit) |
| 208/230–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
|                  | MED–HI Eff  | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
|                  | HI–HI Eff   | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | 78.3                        | 057                                         | 057                      |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
|                  | MED–HI Eff  | 282A00                                     | 25.0               | 23.0               | 78.3                        | 057                                         | 057                      |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
|                  | HI–HI Eff   | 282A00                                     | 25.0               | 23.0               | 78.3                        | 057                                         | 057                      |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | 057                      |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |
|                  | MED–HI Eff  | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | 057                      |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | 057                                         | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |
|                  | HI–HI Eff   | 285A00                                     | 24.8               | 22.8               | 77.7                        | 057                                         | 057                      |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | 057                                         | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |

**ELECTRIC HEAT – ELECTRICAL INFORMATION  
(UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.**

**TABLE 25 – RAS210**

**2–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | Application Output<br>(MBH) | SINGLE POINT KIT PART<br>NUMBER<br>CRSINGLE |                         |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|-----------------------------|---------------------------------------------|-------------------------|
|                  |             |                                            |                    |                    |                             | NO C.O. or UNPWRD C.O.                      |                         |
|                  |             |                                            |                    |                    |                             | NO P.E.                                     | w/P.E.<br>(pwr fr/unit) |
| 208/230–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | —                                           | —                       |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
|                  | MED         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | —                                           | —                       |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
|                  | HI–HI Eff   | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | —                                           | —                       |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                     |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | 78.3                        | —                                           | —                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
|                  | MED         | 282A00                                     | 25.0               | 23.0               | 78.3                        | —                                           | —                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
|                  | HI–HI Eff   | 282A00                                     | 25.0               | 23.0               | 78.3                        | —                                           | —                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                     |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | 77.7                        | —                                           | —                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | —                                           | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |
|                  | MED         | 285A00                                     | 24.8               | 22.8               | 77.7                        | —                                           | —                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | —                                           | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |
|                  | HI–HI Eff   | 285A00                                     | 24.8               | 22.8               | 77.7                        | —                                           | —                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | —                                           | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                     |

**ELECTRIC HEAT – ELECTRICAL INFORMATION  
(UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.**

**TABLE 26 – RAS240**

**2–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | SINGLE POINT KIT PART NUMBER<br>CRSINGLE |                         |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|------------------------------------------|-------------------------|
|                  |             |                                            |                    |                    | NO C.O. or UNPWRD C.O.                   |                         |
|                  |             |                                            |                    |                    | NO P.E.                                  | w/P.E.<br>(pwr fr/unit) |
| 208/203–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 056                                      | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 056                                      | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 056                                      | 056                     |
|                  | MED–HI Eff  | 279A00                                     | 25.0               | 18.8/23.0          | 056                                      | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 056                                      | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 056                                      | 056                     |
|                  | HI–HI Eff   | 279A00                                     | 25.0               | 18.8/23.0          | 056                                      | 056                     |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 056                                      | 056                     |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 056                                      | 056                     |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | –                                        | –                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 057                                      | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 057                                      | 057                     |
|                  | MED–HI Eff  | 282A00                                     | 25.0               | 23.0               | –                                        | –                       |
|                  |             | 283A00                                     | 50.0               | 45.9               | 057                                      | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 057                                      | 057                     |
|                  | HI–HI Eff   | 282A00                                     | 25.0               | 23.0               | –                                        | 057                     |
|                  |             | 283A00                                     | 50.0               | 45.9               | 057                                      | 057                     |
|                  |             | 284A00                                     | 75.0               | 68.9               | 057                                      | 057                     |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | –                                        | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | –                                        | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 057                                      | 057                     |
|                  | MED–HI Eff  | 285A00                                     | 24.8               | 22.8               | –                                        | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | –                                        | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 057                                      | 057                     |
|                  | HI–HI Eff   | 285A00                                     | 24.8               | 22.8               | –                                        | –                       |
|                  |             | 286A00                                     | 49.6               | 45.6               | 057                                      | 057                     |
|                  |             | 287A00                                     | 74.4               | 68.3               | 057                                      | 057                     |

**ELECTRIC HEAT – ELECTRICAL INFORMATION  
(UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.**

**TABLE 27 – RAS300**

**2–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | Application Output<br>(MBH) | SINGLE POINT KIT PART<br>NUMBER<br>CRSINGLE |                          |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|-----------------------------|---------------------------------------------|--------------------------|
|                  |             |                                            |                    |                    |                             | NO C.O. or UNPWRD C.O.                      |                          |
|                  |             |                                            |                    |                    |                             | NO P.E.                                     | w/P.E.<br>(pwrd fr/unit) |
| 208/230–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
|                  | MED–HI Eff  | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
|                  | HI–HI Eff   | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | –                        |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
|                  | MED–HI Eff  | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | –                        |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
|                  | HI–HI Eff   | 282A00                                     | 25.0               | 23.0               | 78.3                        | –                                           | 057                      |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                        |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |
|                  | MED–HI Eff  | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                        |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |
|                  | HI–HI Eff   | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | –                        |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | 057                                         | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |

# ELECTRIC HEAT – ELECTRICAL INFORMATION (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 28 – RAS336**

**2–SPEED INDOOR FAN MOTOR**

| NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER<br>PART NUMBER<br>CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | Application Output<br>(MBH) | SINGLE POINT KIT PART<br>NUMBER<br>CRSINGLE |                          |
|------------------|-------------|--------------------------------------------|--------------------|--------------------|-----------------------------|---------------------------------------------|--------------------------|
|                  |             |                                            |                    |                    |                             | NO C.O. or UNPWRD C.O.                      |                          |
|                  |             |                                            |                    |                    |                             | NO P.E.                                     | w/P.E.<br>(pwrd fr/unit) |
| 208/230–3–60     | STD         | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
|                  | MED–HI Eff  | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
|                  | HI–HI Eff   | 279A00                                     | 25.0               | 18.8/23.0          | 64.1/78.3                   | 056                                         | 056                      |
|                  |             | 280A00                                     | 50.0               | 37.6/45.9          | 128.1/156.7                 | 056                                         | 056                      |
|                  |             | 281A00                                     | 75.0               | 56.3/68.9          | 192.2/235.0                 | 056                                         | 056                      |
| 460–3–60         | STD         | 282A00                                     | 25.0               | 23.0               | 78.3                        | 057                                         | 057                      |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
|                  | MED–HI Eff  | 282A00                                     | 25.0               | 23.0               | 78.3                        | 057                                         | 057                      |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
|                  | HI–HI Eff   | 282A00                                     | 25.0               | 23.0               | 78.3                        | 057                                         | 057                      |
|                  |             | 283A00                                     | 50.0               | 45.9               | 156.7                       | 057                                         | 057                      |
|                  |             | 284A00                                     | 75.0               | 68.9               | 235.0                       | 057                                         | 057                      |
| 575–3–60         | STD         | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | 057                      |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | –                                           | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |
|                  | MED–HI Eff  | 285A00                                     | 24.8               | 22.8               | 77.7                        | –                                           | 057                      |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | 057                                         | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |
|                  | HI–HI Eff   | 285A00                                     | 24.8               | 22.8               | 77.7                        | 057                                         | 057                      |
|                  |             | 286A00                                     | 49.6               | 45.6               | 155.4                       | 057                                         | 057                      |
|                  |             | 287A00                                     | 74.4               | 68.3               | 233.1                       | 057                                         | 057                      |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 29 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR**

| Unit<br>RAS | NO M. V-L-Ph-HZ | IFM<br>TYPE   | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                            |            |         |                         |                            |            |         |
|-------------|-----------------|---------------|----------------|-------------|-------------|-----------------------|----------------------------|------------|---------|-------------------------|----------------------------|------------|---------|
|             |                 |               | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                            |            |         | w/ P.E. (pwrdr fr/unit) |                            |            |         |
|             |                 |               |                |             |             | MCA                   | FUSE<br>or<br>HACR<br>BRKR | DISC. SIZE |         | MCA                     | FUSE<br>or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |                 |               |                |             |             |                       |                            | FLA        | LRA     |                         |                            | FLA        | LRA     |
| 210         | 208/230-3-60    | STD           | NONE           | —           | —           | 82.2                  | 100                        | 86         | 515     | 94.0                    | 110                        | 99         | 535     |
|             |                 |               | 279A00         | 18.8/25.0   | 52.1/60.1   | 82.2/88.4             | 100/100                    | 86/86      | 515/515 | 94.0/103.1              | 110/110                    | 99/99      | 535/535 |
|             |                 |               | 280A00         | 37.6/50.0   | 104.2/120.3 | 143.5/133.6           | 150/150                    | 132/151    | 515/515 | 158.3/148.3             | 175/175                    | 146/164    | 535/535 |
|             |                 |               | 281A00         | 56.3/75.0   | 156.4/180.4 | 169.7/193.7           | 200/225                    | 192/220    | 515/515 | 184.4/208.4             | 200/225                    | 206/233    | 535/535 |
|             |                 | MED           | NONE           | —           | —           | 85.2/84.3             | 100/100                    | 89/88      | 517     | 97.0/96.1               | 125/125                    | 103/102    | 537     |
|             |                 |               | 279A00         | 18.8/25.0   | 52.1/60.1   | 85.2/91.0             | 100/100                    | 89/88      | 517/517 | 97.0/105.8              | 125/125                    | 103/102    | 537/537 |
|             |                 |               | 280A00         | 37.6/50.0   | 104.2/120.3 | 147.3/136.2           | 150/150                    | 135/153    | 517/517 | 162.0/150.9             | 175/175                    | 149/167    | 537/537 |
|             |                 |               | 281A00         | 56.3/75.0   | 156.4/180.4 | 173.4/196.3           | 200/225                    | 196/222    | 517/517 | 188.2/211.0             | 200/225                    | 209/236    | 537/537 |
|             |                 | HI-HI<br>Eff. | NONE           | —           | —           | 88.7                  | 100                        | 93         | 513     | 100.5                   | 125                        | 107        | 533     |
|             |                 |               | 279A00         | 18.8/25.0   | 52.1/60.1   | 88.7/96.5             | 100/100                    | 93/93      | 513/513 | 101.3/111.3             | 125/125                    | 107/107    | 533/533 |
|             |                 |               | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                    | 139/158    | 513/513 | 166.4/156.4             | 175/175                    | 153/172    | 533/533 |
|             |                 |               | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                    | 200/227    | 513/513 | 192.5/216.5             | 200/250                    | 213/241    | 533/533 |
|             | 460-3-60        | STD           | NONE           | —           | —           | 43.6                  | 60                         | 45         | 258     | 49.8                    | 60                         | 52         | 270     |
|             |                 |               | 282A00         | 25          | 30.1        | 44.3                  | 60                         | 45         | 258     | 52                      | 60                         | 52         | 270     |
|             |                 |               | 283A00         | 50          | 60.1        | 66.7                  | 80                         | 75         | 258     | 74.5                    | 80                         | 82         | 270     |
|             |                 |               | 284A00         | 75          | 90.2        | 96.8                  | 100                        | 110        | 258     | 104.6                   | 110                        | 117        | 270     |
|             |                 | MED           | NONE           | —           | —           | 44.7                  | 60                         | 47         | 259     | 50.9                    | 60                         | 54         | 271     |
|             |                 |               | 282A00         | 25          | 30.1        | 45.6                  | 60                         | 47         | 259     | 53.4                    | 60                         | 54         | 271     |
|             |                 |               | 283A00         | 50          | 60.1        | 68.1                  | 80                         | 76         | 259     | 75.9                    | 80                         | 84         | 271     |
|             |                 |               | 284A00         | 75          | 90.2        | 98.2                  | 100                        | 111        | 259     | 106                     | 125                        | 118        | 271     |
|             |                 | HI-HI<br>Eff. | NONE           | —           | —           | 46.9                  | 60                         | 49         | 257     | 53.1                    | 60                         | 56         | 269     |
|             |                 |               | 282A00         | 25          | 30.1        | 48.4                  | 60                         | 49         | 257     | 56.1                    | 60                         | 56         | 269     |
|             |                 |               | 283A00         | 50          | 60.1        | 70.9                  | 80                         | 79         | 257     | 78.6                    | 80                         | 86         | 269     |
|             |                 |               | 284A00         | 75          | 90.2        | 101                   | 110                        | 114        | 257     | 108.7                   | 125                        | 121        | 269     |
|             | 575-3-60        | STD           | NONE           | —           | —           | 32.1                  | 40                         | 33         | 188     | 36.9                    | 45                         | 39         | 196     |
|             |                 |               | 285A00         | 24.8        | 23.9        | 33.4                  | 40                         | 33         | 188     | 39.4                    | 45                         | 39         | 196     |
|             |                 |               | 286A00         | 49.6        | 47.7        | 63.1                  | 70                         | 58         | 188     | 69.1                    | 70                         | 64         | 196     |
|             |                 |               | 287A00         | 74.4        | 71.6        | 75.1                  | 80                         | 86         | 188     | 81.1                    | 90                         | 91         | 196     |
|             |                 | MED           | NONE           | —           | —           | 34.9                  | 45                         | 37         | 202     | 39.7                    | 50                         | 42         | 210     |
|             |                 |               | 285A00         | 24.8        | 23.9        | 36.9                  | 45                         | 37         | 202     | 42.9                    | 50                         | 42         | 210     |
|             |                 |               | 286A00         | 49.6        | 47.7        | 66.6                  | 70                         | 61         | 202     | 72.6                    | 80                         | 67         | 210     |
|             |                 |               | 287A00         | 74.4        | 71.6        | 78.6                  | 90                         | 89         | 202     | 84.6                    | 90                         | 94         | 210     |
|             |                 | HI-HI<br>Eff. | NONE           | —           | —           | 36.9                  | 45                         | 39         | 200     | 41.7                    | 50                         | 44         | 208     |
|             |                 |               | 285A00         | 24.8        | 23.9        | 39.4                  | 45                         | 39         | 200     | 45.4                    | 50                         | 44         | 208     |
|             |                 |               | 286A00         | 49.6        | 47.7        | 69.1                  | 70                         | 64         | 200     | 75.1                    | 80                         | 69         | 208     |
|             |                 |               | 287A00         | 74.4        | 71.6        | 81.1                  | 90                         | 91         | 200     | 87.1                    | 90                         | 97         | 208     |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 30 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR**

| Unit<br>RAS | NO M. V. Ph-HZ | IFM<br>TYPE     | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                         |            |                       |             |                         |            |         |
|-------------|----------------|-----------------|----------------|-------------|-------------|-----------------------|-------------------------|------------|-----------------------|-------------|-------------------------|------------|---------|
|             |                |                 | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                         |            | w/ R.E. (pwr fr/unit) |             |                         |            |         |
|             |                |                 |                |             |             | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |                       | MCA         | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |                |                 |                |             |             |                       |                         | FLA        | LRA                   |             |                         | FLA        | LRA     |
| 240         | 208/230—3—60   | STD             | NONE           | —           | —           | 109.2/108.3           | 150/150                 | 112/111    | 540                   | 121.0/120.1 | 150/150                 | 125/124    | 560     |
|             |                |                 | 279A00         | 18.8/25.0   | 52.1/60.1   | 109.2/108.3           | 150/150                 | 112/111    | 540/540               | 121.0/120.1 | 150/150                 | 125/124    | 560/560 |
|             |                |                 | 280A00         | 37.6/50.0   | 104.2/120.3 | 147.3/136.2           | 150/150                 | 135/153    | 540/540               | 162.0/150.9 | 175/175                 | 149/167    | 560/560 |
|             |                |                 | 281A00         | 56.3/75.0   | 156.4/180.4 | 173.4/196.3           | 200/225                 | 196/222    | 540/540               | 188.2/211.0 | 200/225                 | 209/236    | 560/560 |
|             |                | MED—<br>HI Eff. | NONE           | —           | —           | 112.7                 | 150                     | 116        | 536                   | 124.5       | 150                     | 129        | 556     |
|             |                |                 | 279A00         | 18.8/25.0   | 52.1/60.1   | 112.7/112.7           | 150/150                 | 116/116    | 536/536               | 124.5/124.5 | 150/150                 | 129/129    | 556/556 |
|             |                |                 | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                 | 139/158    | 536/536               | 166.4/156.4 | 175/175                 | 153/172    | 556/556 |
|             |                |                 | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                 | 200/227    | 536/536               | 192.5/216.5 | 200/250                 | 213/241    | 556/556 |
|             |                | HI—HI<br>Eff.   | NONE           | —           | —           | 124.1                 | 150                     | 129        | 615                   | 135.9       | 175                     | 142        | 635     |
|             |                |                 | 279A00         | 18.8/25.0   | 52.1/60.1   | 124.1/124.1           | 150/150                 | 129/129    | 615/615               | 135.9/135.9 | 175/175                 | 142/142    | 635/635 |
|             |                |                 | 280A00         | 37.6/50.0   | 104.2/120.3 | 165.9/155.9           | 175/175                 | 153/171    | 615/615               | 180.6/170.7 | 200/175                 | 166/185    | 635/635 |
|             |                |                 | 281A00         | 56.3/75.0   | 156.4/180.4 | 192.0/216.0           | 200/250                 | 213/240    | 615/615               | 206.8/230.8 | 225/250                 | 226/254    | 635/635 |
|             | 460—3—60       | STD             | NONE           | —           | —           | 48.0                  | 60                      | 50         | 272                   | 54.2        | 60                      | 57         | 284     |
|             |                |                 | 282A00         | 25          | 30.1        | 48                    | 60                      | 50         | 272                   | 54.2        | 60                      | 57         | 284     |
|             |                |                 | 283A00         | 50          | 60.1        | 68.1                  | 80                      | 76         | 272                   | 75.9        | 80                      | 84         | 284     |
|             |                |                 | 284A00         | 75          | 90.2        | 98.2                  | 100                     | 111        | 272                   | 106         | 125                     | 118        | 284     |
|             |                | MED—<br>HI Eff. | NONE           | —           | —           | 50.2                  | 60                      | 52         | 270                   | 56.4        | 70                      | 59         | 282     |
|             |                |                 | 282A00         | 25          | 30.1        | 50.2                  | 60                      | 52         | 270                   | 56.4        | 70                      | 59         | 282     |
|             |                |                 | 283A00         | 50          | 60.1        | 70.9                  | 80                      | 79         | 270                   | 78.6        | 80                      | 86         | 282     |
|             |                |                 | 284A00         | 75          | 90.2        | 101                   | 110                     | 114        | 270                   | 108.7       | 125                     | 121        | 282     |
|             |                | HI—HI<br>Eff.   | NONE           | —           | —           | 55.9                  | 70                      | 59         | 310                   | 62.1        | 80                      | 66         | 322     |
|             |                |                 | 282A00         | 25          | 30.1        | 55.9                  | 70                      | 59         | 310                   | 63.3        | 80                      | 66         | 322     |
|             |                |                 | 283A00         | 50          | 60.1        | 78                    | 90                      | 86         | 310                   | 85.7        | 90                      | 93         | 322     |
|             |                |                 | 284A00         | 75          | 90.2        | 108.1                 | 125                     | 120        | 310                   | 115.8       | 125                     | 127        | 322     |
|             | 575—3—60       | STD             | NONE           | —           | —           | 38.6                  | 50                      | 40         | 224                   | 43.4        | 50                      | 46         | 232     |
|             |                |                 | 285A00         | 24.8        | 23.9        | 38.6                  | 50                      | 40         | 224                   | 43.4        | 50                      | 46         | 232     |
|             |                |                 | 286A00         | 49.6        | 47.7        | 66.6                  | 70                      | 61         | 224                   | 72.6        | 80                      | 67         | 232     |
|             |                |                 | 287A00         | 74.4        | 71.6        | 78.6                  | 90                      | 89         | 224                   | 84.6        | 90                      | 94         | 232     |
|             |                | MED—<br>HI Eff. | NONE           | —           | —           | 40.6                  | 50                      | 42         | 222                   | 45.4        | 60                      | 48         | 230     |
|             |                |                 | 285A00         | 24.8        | 23.9        | 40.6                  | 50                      | 42         | 222                   | 45.4        | 60                      | 48         | 230     |
|             |                |                 | 286A00         | 49.6        | 47.7        | 69.1                  | 70                      | 64         | 222                   | 75.1        | 80                      | 69         | 230     |
|             |                |                 | 287A00         | 74.4        | 71.6        | 81.1                  | 90                      | 91         | 222                   | 87.1        | 90                      | 97         | 230     |
|             |                | HI—HI<br>Eff.   | NONE           | —           | —           | 42.5                  | 50                      | 45         | 249                   | 47.3        | 60                      | 50         | 257     |
|             |                |                 | 285A00         | 24.8        | 23.9        | 42.5                  | 50                      | 45         | 249                   | 47.8        | 60                      | 50         | 257     |
|             |                |                 | 286A00         | 49.6        | 47.7        | 71.5                  | 80                      | 66         | 249                   | 77.5        | 80                      | 71         | 257     |
|             |                |                 | 287A00         | 74.4        | 71.6        | 83.5                  | 90                      | 93         | 249                   | 89.5        | 100                     | 99         | 257     |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 31 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR**

| Unit<br>RAS | NO M. V. Ph-HZ | IFM<br>TYPE     | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                         |            |         |                       |                         |            |         |
|-------------|----------------|-----------------|----------------|-------------|-------------|-----------------------|-------------------------|------------|---------|-----------------------|-------------------------|------------|---------|
|             |                |                 | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                         |            |         | w/ P.E. (pwr fr/unit) |                         |            |         |
|             |                |                 |                |             |             | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |                |                 |                |             |             |                       |                         | FLA        | LRA     |                       |                         | FLA        | LRA     |
| 300         | 208/230–3–60   | STD             | NONE           | —           | —           | 127.8/126.9           | 175/175                 | 133/132    | 590     | 139.6/138.7           | 175/175                 | 147/146    | 610     |
|             |                |                 | 279A00         | 18.8/25.0   | 52.1/60.1   | 127.8/126.9           | 175/175                 | 133/132    | 590/590 | 139.6/138.7           | 175/175                 | 147/146    | 610/610 |
|             |                |                 | 280A00         | 37.6/50.0   | 104.2/120.3 | 147.3/136.2           | 175/175                 | 135/153    | 590/590 | 162.0/150.9           | 175/175                 | 149/167    | 610/610 |
|             |                |                 | 281A00         | 56.3/75.0   | 156.4/180.4 | 173.4/196.3           | 200/225                 | 196/222    | 590/590 | 188.2/211.0           | 200/225                 | 209/236    | 610/610 |
|             |                | MED—<br>HI Eff. | NONE           | —           | —           | 131.3                 | 175                     | 137        | 586     | 143.1                 | 175                     | 151        | 606     |
|             |                |                 | 279A00         | 18.8/25.0   | 52.1/60.1   | 131.3/131.3           | 175/175                 | 137/137    | 586/586 | 143.1/143.1           | 175/175                 | 151/151    | 606/606 |
|             |                |                 | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                 | 139/158    | 586/586 | 166.4/156.4           | 175/175                 | 153/172    | 606/606 |
|             |                |                 | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                 | 200/227    | 586/586 | 192.5/216.5           | 200/250                 | 213/241    | 606/606 |
|             |                | HI—HI<br>Eff.   | NONE           | —           | —           | 142.7                 | 175                     | 150        | 665     | 154.5                 | 200                     | 164        | 685     |
|             |                |                 | 279A00         | 18.8/25.0   | 52.1/60.1   | 142.7/142.7           | 175/175                 | 150/150    | 665/665 | 154.5/154.5           | 200/200                 | 164/164    | 685/685 |
|             |                |                 | 280A00         | 37.6/50.0   | 104.2/120.3 | 165.9/155.9           | 175/175                 | 153/171    | 665/665 | 180.6/170.7           | 200/200                 | 166/185    | 685/685 |
|             |                |                 | 281A00         | 56.3/75.0   | 156.4/180.4 | 192.0/216.0           | 200/250                 | 213/240    | 665/665 | 206.8/230.8           | 225/250                 | 226/254    | 685/685 |
|             | 460–3–60       | STD             | NONE           | —           | —           | 51.9                  | 60                      | 54         | 302     | 58.1                  | 70                      | 61         | 314     |
|             |                |                 | 282A00         | 25          | 30.1        | 51.9                  | 60                      | 54         | 302     | 58.1                  | 70                      | 61         | 314     |
|             |                |                 | 283A00         | 50          | 60.1        | 68.1                  | 80                      | 76         | 302     | 75.9                  | 80                      | 84         | 314     |
|             |                |                 | 284A00         | 75          | 90.2        | 98.2                  | 100                     | 111        | 302     | 106                   | 125                     | 118        | 314     |
|             |                | MED—<br>HI Eff. | NONE           | —           | —           | 54.1                  | 60                      | 57         | 300     | 60.3                  | 70                      | 64         | 312     |
|             |                |                 | 282A00         | 25          | 30.1        | 54.1                  | 60                      | 57         | 300     | 60.3                  | 70                      | 64         | 312     |
|             |                |                 | 283A00         | 50          | 60.1        | 70.9                  | 80                      | 79         | 300     | 78.6                  | 80                      | 86         | 312     |
|             |                |                 | 284A00         | 75          | 90.2        | 101                   | 110                     | 114        | 300     | 108.7                 | 125                     | 121        | 312     |
|             |                | HI—HI<br>Eff.   | NONE           | —           | —           | 59.8                  | 70                      | 63         | 340     | 66.0                  | 80                      | 70         | 352     |
|             |                |                 | 282A00         | 25          | 30.1        | 59.8                  | 70                      | 63         | 340     | 66                    | 80                      | 70         | 352     |
|             |                |                 | 283A00         | 50          | 60.1        | 78                    | 90                      | 86         | 340     | 85.7                  | 90                      | 93         | 352     |
|             |                |                 | 284A00         | 75          | 90.2        | 108.1                 | 125                     | 120        | 340     | 115.8                 | 125                     | 127        | 352     |
|             | 575–3–60       | STD             | NONE           | —           | —           | 41.1                  | 50                      | 43         | 244     | 45.9                  | 60                      | 49         | 252     |
|             |                |                 | 285A00         | 24.8        | 23.9        | 41.1                  | 50                      | 43         | 244     | 45.9                  | 60                      | 49         | 252     |
|             |                |                 | 286A00         | 49.6        | 47.7        | 66.6                  | 70                      | 61         | 244     | 72.6                  | 80                      | 67         | 252     |
|             |                |                 | 287A00         | 74.4        | 71.6        | 78.6                  | 90                      | 89         | 244     | 84.6                  | 90                      | 94         | 252     |
|             |                | MED—<br>HI Eff. | NONE           | —           | —           | 43.1                  | 50                      | 45         | 242     | 47.9                  | 60                      | 51         | 250     |
|             |                |                 | 285A00         | 24.8        | 23.9        | 43.1                  | 50                      | 45         | 242     | 47.9                  | 60                      | 51         | 250     |
|             |                |                 | 286A00         | 49.6        | 47.7        | 69.1                  | 70                      | 64         | 242     | 75.1                  | 80                      | 69         | 250     |
|             |                |                 | 287A00         | 74.4        | 71.6        | 81.1                  | 90                      | 91         | 242     | 87.1                  | 90                      | 97         | 250     |
|             |                | HI—HI<br>Eff.   | NONE           | —           | —           | 45.0                  | 50                      | 47         | 269     | 49.8                  | 60                      | 53         | 277     |
|             |                |                 | 285A00         | 24.8        | 23.9        | 45                    | 50                      | 47         | 269     | 49.8                  | 60                      | 53         | 277     |
|             |                |                 | 286A00         | 49.6        | 47.7        | 71.5                  | 80                      | 66         | 269     | 77.5                  | 80                      | 71         | 277     |
|             |                |                 | 287A00         | 74.4        | 71.6        | 83.5                  | 90                      | 93         | 269     | 89.5                  | 100                     | 99         | 277     |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 32 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR**

| Unit<br>RAS | NO M. V.-Ph-HZ | IFM<br>TYPE    | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                         |            |         |                       |                         |            |         |
|-------------|----------------|----------------|----------------|-------------|-------------|-----------------------|-------------------------|------------|---------|-----------------------|-------------------------|------------|---------|
|             |                |                | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                         |            |         | w/ P.E. (pwr fr/unit) |                         |            |         |
|             |                |                |                |             |             | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |                |                |                |             |             |                       |                         | FLA        | LRA     |                       |                         | FLA        | LRA     |
| 336         | 208/230-3-60   | STD            | NONE           | —           | —           | 141.5                 | 175                     | 148        | 702     | 153.3                 | 200                     | 162        | 722     |
|             |                |                | 279A00         | 18.8/25.0   | 52.1/60.1   | 141.5/141.5           | 175/175                 | 148/148    | 702/702 | 153.3/153.3           | 200/200                 | 162/162    | 722/722 |
|             |                |                | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                 | 148/158    | 702/702 | 166.4/156.4           | 200/200                 | 162/172    | 722/722 |
|             |                |                | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                 | 200/227    | 702/702 | 192.5/216.5           | 200/250                 | 213/241    | 722/722 |
|             |                | MED-HI<br>Eff. | NONE           | —           | —           | 152.9                 | 200                     | 161        | 781     | 164.7                 | 200                     | 175        | 801     |
|             |                |                | 279A00         | 18.8/25.0   | 52.1/60.1   | 152.9/152.9           | 200/200                 | 161/161    | 781/781 | 164.7/164.7           | 200/200                 | 175/175    | 801/801 |
|             |                |                | 280A00         | 37.6/50.0   | 104.2/120.3 | 165.9/155.9           | 200/200                 | 161/171    | 781/781 | 180.6/170.7           | 200/200                 | 175/185    | 801/801 |
|             |                |                | 281A00         | 56.3/75.0   | 156.4/180.4 | 192.0/216.0           | 200/250                 | 213/240    | 781/781 | 206.8/230.8           | 225/250                 | 226/254    | 801/801 |
|             |                | HI-HI<br>Eff.  | NONE           | —           | —           | 154.8                 | 200                     | 163        | 812     | 166.6                 | 200                     | 177        | 832     |
|             |                |                | 279A00         | 18.8/25.0   | 52.1/60.1   | 154.8/154.8           | 200/200                 | 163/163    | 812/812 | 166.6/166.6           | 200/200                 | 177/177    | 832/832 |
|             |                |                | 280A00         | 37.6/50.0   | 104.2/120.3 | 168.3/158.3           | 200/200                 | 163/173    | 812/812 | 183.0/173.1           | 200/200                 | 177/187    | 832/832 |
|             |                |                | 281A00         | 56.3/75.0   | 156.4/180.4 | 194.4/218.4           | 225/250                 | 215/242    | 812/812 | 209.2/233.2           | 225/250                 | 228/256    | 832/832 |
|             | 460-3-60       | STD            | NONE           | —           | —           | 66.0                  | 80                      | 69         | 354     | 72.2                  | 90                      | 76         | 366     |
|             |                |                | 282A00         | 25          | 30.1        | 66                    | 80                      | 69         | 354     | 72.2                  | 90                      | 76         | 366     |
|             |                |                | 283A00         | 50          | 60.1        | 70.9                  | 80                      | 79         | 354     | 78.6                  | 90                      | 86         | 366     |
|             |                |                | 284A00         | 75          | 90.2        | 101                   | 110                     | 114        | 354     | 108.7                 | 125                     | 121        | 366     |
|             |                | MED-HI<br>Eff. | NONE           | —           | —           | 71.7                  | 90                      | 76         | 394     | 77.9                  | 100                     | 83         | 406     |
|             |                |                | 282A00         | 25          | 30.1        | 71.7                  | 90                      | 76         | 394     | 77.9                  | 100                     | 83         | 406     |
|             |                |                | 283A00         | 50          | 60.1        | 78                    | 90                      | 86         | 394     | 85.7                  | 100                     | 93         | 406     |
|             |                |                | 284A00         | 75          | 90.2        | 108.1                 | 125                     | 120        | 394     | 115.8                 | 125                     | 127        | 406     |
|             |                | HI-HI<br>Eff.  | NONE           | —           | —           | 72.6                  | 90                      | 77         | 409     | 78.8                  | 100                     | 84         | 421     |
|             |                |                | 282A00         | 25          | 30.1        | 72.6                  | 90                      | 77         | 409     | 78.8                  | 100                     | 84         | 421     |
|             |                |                | 283A00         | 50          | 60.1        | 79.1                  | 90                      | 87         | 409     | 86.9                  | 100                     | 94         | 421     |
|             |                |                | 284A00         | 75          | 90.2        | 109.2                 | 125                     | 121        | 409     | 117                   | 125                     | 128        | 421     |
|             | 575-3-60       | STD            | NONE           | —           | —           | 56.0                  | 70                      | 59         | 264     | 60.8                  | 80                      | 64         | 272     |
|             |                |                | 285A00         | 24.8        | 23.9        | 56                    | 70                      | 59         | 264     | 60.8                  | 80                      | 64         | 272     |
|             |                |                | 286A00         | 49.6        | 47.7        | 69.1                  | 70                      | 64         | 264     | 75.1                  | 80                      | 69         | 272     |
|             |                |                | 287A00         | 74.4        | 71.6        | 81.1                  | 90                      | 91         | 264     | 87.1                  | 90                      | 97         | 272     |
|             |                | MED-HI<br>Eff. | NONE           | —           | —           | 57.9                  | 70                      | 61         | 291     | 62.7                  | 80                      | 66         | 299     |
|             |                |                | 285A00         | 24.8        | 23.9        | 57.9                  | 70                      | 61         | 291     | 62.7                  | 80                      | 66         | 299     |
|             |                |                | 286A00         | 49.6        | 47.7        | 71.5                  | 80                      | 66         | 291     | 77.5                  | 80                      | 71         | 299     |
|             |                |                | 287A00         | 74.4        | 71.6        | 83.5                  | 90                      | 93         | 291     | 89.5                  | 100                     | 99         | 299     |
|             |                | HI-HI<br>Eff.  | NONE           | —           | —           | 60.8                  | 80                      | 64         | 302     | 65.6                  | 80                      | 70         | 310     |
|             |                |                | 285A00         | 24.8        | 23.9        | 60.8                  | 80                      | 64         | 302     | 65.6                  | 80                      | 70         | 310     |
|             |                |                | T286A00        | 49.6        | 47.7        | 75.1                  | 80                      | 69         | 302     | 81.1                  | 90                      | 75         | 310     |
|             |                |                | 287A00         | 74.4        | 71.6        | 87.1                  | 100                     | 97         | 302     | 93.1                  | 100                     | 102        | 310     |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 33 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH 2 SPEED INDOOR FAN**

| Unit<br>RAS | NO M. V-Ph-HZ | IFM<br>TYPE | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                         |            |         |                       |                         |            |         |
|-------------|---------------|-------------|----------------|-------------|-------------|-----------------------|-------------------------|------------|---------|-----------------------|-------------------------|------------|---------|
|             |               |             | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                         |            |         | w/ P.E. (pwr fr/unit) |                         |            |         |
|             |               |             |                |             |             | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |               |             |                |             |             |                       |                         | FLA        | LRA     |                       |                         | FLA        | LRA     |
| 210         | 208/230-3-60  | STD         | NONE           | —           | —           | 82.4/81.4             | 100/100                 | 86/85      | 506     | 94.2/93.2             | 110/110                 | 100/99     | 526     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 82.4/87.4             | 100/100                 | 86/85      | 506/506 | 94.2/102.1            | 110/110                 | 100/99     | 526/526 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 143.8/132.6           | 150/150                 | 132/150    | 506/506 | 158.5/147.3           | 175/175                 | 146/163    | 526/526 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 169.9/192.7           | 200/225                 | 192/219    | 506/506 | 184.7/207.4           | 200/225                 | 206/232    | 526/526 |
|             |               | MED         | NONE           | —           | —           | 85.2/84.3             | 100/100                 | 89/88      | 517     | 97.0/96.1             | 125/125                 | 103/102    | 537     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 85.2/91.0             | 100/100                 | 89/88      | 517/517 | 97.0/105.8            | 125/125                 | 103/102    | 537/537 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 147.3/136.2           | 150/150                 | 135/153    | 517/517 | 162.0/150.9           | 175/175                 | 149/167    | 537/537 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 173.4/196.3           | 200/225                 | 196/222    | 517/517 | 188.2/211.0           | 200/225                 | 209/236    | 537/537 |
|             |               | HI          | NONE           | —           | —           | 88.7                  | 100                     | 93         | 513     | 100.5                 | 125                     | 107        | 533     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 88.7/96.5             | 100/100                 | 93/93      | 513/513 | 101.3/111.3           | 125/125                 | 107/107    | 533/533 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                 | 139/158    | 513/513 | 166.4/156.4           | 175/175                 | 153/172    | 533/533 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                 | 200/227    | 513/513 | 192.5/216.5           | 200/250                 | 213/241    | 533/533 |
|             | 460-3-60      | STD         | NONE           | —           | —           | 43.2                  | 50                      | 45         | 254     | 49.4                  | 60                      | 52         | 266     |
|             |               |             | 282A00         | 25.0        | 30.1        | 43.8                  | 50                      | 45         | 254     | 51.5                  | 60                      | 52         | 266     |
|             |               |             | 283A00         | 50.0        | 60.1        | 66.2                  | 80                      | 75         | 254     | 74.0                  | 80                      | 82         | 266     |
|             |               |             | 284A00         | 75.0        | 90.2        | 96.3                  | 100                     | 109        | 254     | 104.1                 | 110                     | 116        | 266     |
|             |               | MED         | NONE           | —           | —           | 44.7                  | 60                      | 47         | 259     | 50.9                  | 60                      | 54         | 271     |
|             |               |             | 282A00         | 25.0        | 30.1        | 45.6                  | 60                      | 47         | 259     | 53.4                  | 60                      | 54         | 271     |
|             |               |             | 283A00         | 50.0        | 60.1        | 68.1                  | 80                      | 76         | 259     | 75.9                  | 80                      | 84         | 271     |
|             |               |             | 284A00         | 75.0        | 90.2        | 98.2                  | 100                     | 111        | 259     | 106.0                 | 125                     | 118        | 271     |
|             |               | HI          | NONE           | —           | —           | 46.9                  | 60                      | 49         | 257     | 53.1                  | 60                      | 56         | 269     |
|             |               |             | 282A00         | 25.0        | 30.1        | 48.4                  | 60                      | 49         | 257     | 56.1                  | 60                      | 56         | 269     |
|             |               |             | 283A00         | 50.0        | 60.1        | 70.9                  | 80                      | 79         | 257     | 78.6                  | 80                      | 86         | 269     |
|             |               |             | 284A00         | 75.0        | 90.2        | 101.0                 | 110                     | 114        | 257     | 108.7                 | 125                     | 121        | 269     |
|             | 575-3-60      | STD         | NONE           | —           | —           | 33.8                  | 45                      | 35         | 188     | 38.6                  | 50                      | 41         | 196     |
|             |               |             | 285A00         | 24.8        | 23.9        | 35.5                  | 45                      | 35         | 188     | 41.5                  | 50                      | 41         | 196     |
|             |               |             | 286A00         | 49.6        | 47.7        | 65.3                  | 70                      | 60         | 188     | 71.3                  | 80                      | 66         | 196     |
|             |               |             | 287A00         | 74.4        | 71.6        | 77.2                  | 90                      | 88         | 188     | 83.2                  | 90                      | 93         | 196     |
|             |               | MED         | NONE           | —           | —           | 35.5                  | 45                      | 37         | 202     | 40.3                  | 50                      | 43         | 210     |
|             |               |             | 285A00         | 24.8        | 23.9        | 37.6                  | 45                      | 37         | 202     | 43.6                  | 50                      | 43         | 210     |
|             |               |             | 286A00         | 49.6        | 47.7        | 67.4                  | 70                      | 62         | 202     | 73.4                  | 80                      | 68         | 210     |
|             |               |             | 287A00         | 74.4        | 71.6        | 79.4                  | 90                      | 89         | 202     | 85.4                  | 90                      | 95         | 210     |
|             |               | HI          | NONE           | —           | —           | 36.9                  | 45                      | 39         | 200     | 41.7                  | 50                      | 44         | 208     |
|             |               |             | 285A00         | 24.8        | 23.9        | 39.4                  | 45                      | 39         | 200     | 45.4                  | 50                      | 44         | 208     |
|             |               |             | 286A00         | 49.6        | 47.7        | 69.1                  | 70                      | 64         | 200     | 75.1                  | 80                      | 69         | 208     |
|             |               |             | 287A00         | 74.4        | 71.6        | 81.1                  | 90                      | 91         | 200     | 87.1                  | 90                      | 97         | 208     |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 34 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH 2 SPEED INDOOR FAN**

| Unit<br>RAS | NO M. V-Ph-HZ | IFM<br>TYPE | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                         |            |         |                         |                         |            |         |
|-------------|---------------|-------------|----------------|-------------|-------------|-----------------------|-------------------------|------------|---------|-------------------------|-------------------------|------------|---------|
|             |               |             | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                         |            |         | w/ P.E. (pwrdr fr/unit) |                         |            |         |
|             |               |             |                |             |             | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         | MCA                     | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |               |             |                |             |             |                       |                         | FLA        | LRA     |                         |                         | FLA        | LRA     |
| 240         | 208/230-3-60  | STD         | NONE           | —           | —           | 109.2/108.3           | 150/150                 | 112/111    | 540     | 121.0/120.1             | 150/150                 | 125/124    | 560     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 109.2/108.3           | 150/150                 | 112/111    | 540/540 | 121.0/120.1             | 150/150                 | 125/124    | 560/560 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 147.3/136.2           | 150/150                 | 135/153    | 540/540 | 162.0/150.9             | 175/175                 | 149/167    | 560/560 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 173.4/196.3           | 200/225                 | 196/222    | 540/540 | 188.2/211.0             | 200/225                 | 209/236    | 560/560 |
|             |               | MED         | NONE           | —           | —           | 112.7                 | 150                     | 116        | 536     | 124.5                   | 150                     | 129        | 556     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 112.7/112.7           | 150/150                 | 116/116    | 536/536 | 124.5/124.5             | 150/150                 | 129/129    | 556/556 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                 | 139/158    | 536/536 | 166.4/156.4             | 175/175                 | 153/172    | 556/556 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                 | 200/227    | 536/536 | 192.5/216.5             | 200/250                 | 213/241    | 556/556 |
|             |               | HI          | NONE           | —           | —           | 124.1                 | 150                     | 129        | 615     | 135.9                   | 175                     | 142        | 635     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 124.1/124.1           | 150/150                 | 129/129    | 615/615 | 135.9/135.9             | 175/175                 | 142/142    | 635/635 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 165.9/155.9           | 175/175                 | 153/171    | 615/615 | 180.6/170.7             | 200/175                 | 166/185    | 635/635 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 192.0/216.0           | 200/250                 | 213/240    | 615/615 | 206.8/230.8             | 225/250                 | 226/254    | 635/635 |
|             | 460-3-60      | STD         | NONE           | —           | —           | 48.0                  | 60                      | 50         | 272     | 54.2                    | 60                      | 57         | 284     |
|             |               |             | 282A00         | 25.0        | 30.1        | 48.0                  | 60                      | 50         | 272     | 54.2                    | 60                      | 57         | 284     |
|             |               |             | 283A00         | 50.0        | 60.1        | 68.1                  | 80                      | 76         | 272     | 75.9                    | 80                      | 84         | 284     |
|             |               |             | 284A00         | 75.0        | 90.2        | 98.2                  | 100                     | 111        | 272     | 106.0                   | 125                     | 118        | 284     |
|             |               | MED         | NONE           | —           | —           | 50.2                  | 60                      | 52         | 270     | 56.4                    | 70                      | 59         | 282     |
|             |               |             | 282A00         | 25.0        | 30.1        | 50.2                  | 60                      | 52         | 270     | 56.4                    | 70                      | 59         | 282     |
|             |               |             | 283A00         | 50.0        | 60.1        | 70.9                  | 80                      | 79         | 270     | 78.6                    | 80                      | 86         | 282     |
|             |               |             | 284A00         | 75.0        | 90.2        | 101.0                 | 110                     | 114        | 270     | 108.7                   | 125                     | 121        | 282     |
|             |               | HI          | NONE           | —           | —           | 55.9                  | 70                      | 59         | 310     | 62.1                    | 80                      | 66         | 322     |
|             |               |             | 282A00         | 25.0        | 30.1        | 55.9                  | 70                      | 59         | 310     | 63.3                    | 80                      | 66         | 322     |
|             |               |             | 283A00         | 50.0        | 60.1        | 78.0                  | 90                      | 86         | 310     | 85.7                    | 90                      | 93         | 322     |
|             |               |             | 284A00         | 75.0        | 90.2        | 108.1                 | 125                     | 120        | 310     | 115.8                   | 125                     | 127        | 322     |
|             | 575-3-60      | STD         | NONE           | —           | —           | 39.2                  | 50                      | 41         | 224     | 44.0                    | 50                      | 46         | 232     |
|             |               |             | 285A00         | 24.8        | 23.9        | 39.2                  | 50                      | 41         | 224     | 44.0                    | 50                      | 46         | 232     |
|             |               |             | 286A00         | 49.6        | 47.7        | 67.4                  | 70                      | 62         | 224     | 73.4                    | 80                      | 68         | 232     |
|             |               |             | 287A00         | 74.4        | 71.6        | 79.4                  | 90                      | 89         | 224     | 85.4                    | 90                      | 95         | 232     |
|             |               | MED         | NONE           | —           | —           | 40.6                  | 50                      | 42         | 222     | 45.4                    | 60                      | 48         | 230     |
|             |               |             | 285A00         | 24.8        | 23.9        | 40.6                  | 50                      | 42         | 222     | 45.4                    | 60                      | 48         | 230     |
|             |               |             | 286A00         | 49.6        | 47.7        | 69.1                  | 70                      | 64         | 222     | 75.1                    | 80                      | 69         | 230     |
|             |               |             | 287A00         | 74.4        | 71.6        | 81.1                  | 90                      | 91         | 222     | 87.1                    | 90                      | 97         | 230     |
|             |               | HI          | NONE           | —           | —           | 42.5                  | 50                      | 45         | 249     | 47.3                    | 60                      | 50         | 257     |
|             |               |             | 285A00         | 24.8        | 23.9        | 42.5                  | 50                      | 45         | 249     | 47.8                    | 60                      | 50         | 257     |
|             |               |             | 286A00         | 49.6        | 47.7        | 71.5                  | 80                      | 66         | 249     | 77.5                    | 80                      | 71         | 257     |
|             |               |             | 287A00         | 74.4        | 71.6        | 83.5                  | 90                      | 93         | 249     | 89.5                    | 100                     | 99         | 257     |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 35 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH 2 SPEED INDOOR FAN**

| Unit<br>RAS | NO M. V-Ph-HZ | IFM<br>TYPE | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                         |            |         |                       |                         |            |         |
|-------------|---------------|-------------|----------------|-------------|-------------|-----------------------|-------------------------|------------|---------|-----------------------|-------------------------|------------|---------|
|             |               |             | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                         |            |         | w/ P.E. (pwr fr/unit) |                         |            |         |
|             |               |             |                |             |             | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |               |             |                |             |             |                       |                         | FLA        | LRA     |                       |                         | FLA        | LRA     |
| 300         | 208/230-3-60  | STD         | NONE           | —           | —           | 127.8/126.9           | 175/175                 | 133/132    | 590     | 139.6/138.7           | 175/175                 | 147/146    | 610     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 127.8/126.9           | 175/175                 | 133/132    | 590/590 | 139.6/138.7           | 175/175                 | 147/146    | 610/610 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 147.3/136.2           | 175/175                 | 135/153    | 590/590 | 162.0/150.9           | 175/175                 | 149/167    | 610/610 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 173.4/196.3           | 200/225                 | 196/222    | 590/590 | 188.2/211.0           | 200/225                 | 209/236    | 610/610 |
|             |               | MED         | NONE           | —           | —           | 131.3                 | 175                     | 137        | 586     | 143.1                 | 175                     | 151        | 606     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 131.3/131.3           | 175/175                 | 137/137    | 586/586 | 143.1/143.1           | 175/175                 | 151/151    | 606/606 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                 | 139/158    | 586/586 | 166.4/156.4           | 175/175                 | 153/172    | 606/606 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                 | 200/227    | 586/586 | 192.5/216.5           | 200/250                 | 213/241    | 606/606 |
|             |               | HI          | NONE           | —           | —           | 142.7                 | 175                     | 150        | 665     | 154.5                 | 200                     | 164        | 685     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 142.7/142.7           | 175/175                 | 150/150    | 665/665 | 154.5/154.5           | 200/200                 | 164/164    | 685/685 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 165.9/155.9           | 175/175                 | 153/171    | 665/665 | 180.6/170.7           | 200/200                 | 166/185    | 685/685 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 192.0/216.0           | 200/250                 | 213/240    | 665/665 | 206.8/230.8           | 225/250                 | 226/254    | 685/685 |
|             | 460-3-60      | STD         | NONE           | —           | —           | 51.9                  | 60                      | 54         | 302     | 58.1                  | 70                      | 61         | 314     |
|             |               |             | 282A00         | 25.0        | 30.1        | 51.9                  | 60                      | 54         | 302     | 58.1                  | 70                      | 61         | 314     |
|             |               |             | 283A00         | 50.0        | 60.1        | 68.1                  | 80                      | 76         | 302     | 75.9                  | 80                      | 84         | 314     |
|             |               |             | 284A00         | 75.0        | 90.2        | 98.2                  | 100                     | 111        | 302     | 106.0                 | 125                     | 118        | 314     |
|             |               | MED         | NONE           | —           | —           | 54.1                  | 60                      | 57         | 300     | 60.3                  | 70                      | 64         | 312     |
|             |               |             | 282A00         | 25.0        | 30.1        | 54.1                  | 60                      | 57         | 300     | 60.3                  | 70                      | 64         | 312     |
|             |               |             | 283A00         | 50.0        | 60.1        | 70.9                  | 80                      | 79         | 300     | 78.6                  | 80                      | 86         | 312     |
|             |               |             | 284A00         | 75.0        | 90.2        | 101.0                 | 110                     | 114        | 300     | 108.7                 | 125                     | 121        | 312     |
|             |               | HI          | NONE           | —           | —           | 59.8                  | 70                      | 63         | 340     | 66.0                  | 80                      | 70         | 352     |
|             |               |             | 282A00         | 25.0        | 30.1        | 59.8                  | 70                      | 63         | 340     | 66.0                  | 80                      | 70         | 352     |
|             |               |             | 283A00         | 50.0        | 60.1        | 78.0                  | 90                      | 86         | 340     | 85.7                  | 90                      | 93         | 352     |
|             |               |             | 284A00         | 75.0        | 90.2        | 108.1                 | 125                     | 120        | 340     | 115.8                 | 125                     | 127        | 352     |
|             | 575-3-60      | STD         | NONE           | —           | —           | 41.7                  | 50                      | 44         | 244     | 46.5                  | 60                      | 49         | 252     |
|             |               |             | 285A00         | 24.8        | 23.9        | 41.7                  | 50                      | 44         | 244     | 46.5                  | 60                      | 49         | 252     |
|             |               |             | 286A00         | 49.6        | 47.7        | 67.4                  | 70                      | 62         | 244     | 73.4                  | 80                      | 68         | 252     |
|             |               |             | 287A00         | 74.4        | 71.6        | 79.4                  | 90                      | 89         | 244     | 85.4                  | 90                      | 95         | 252     |
|             |               | MED         | NONE           | —           | —           | 43.1                  | 50                      | 45         | 242     | 47.9                  | 60                      | 51         | 250     |
|             |               |             | 285A00         | 24.8        | 23.9        | 43.1                  | 50                      | 45         | 242     | 47.9                  | 60                      | 51         | 250     |
|             |               |             | 286A00         | 49.6        | 47.7        | 69.1                  | 70                      | 64         | 242     | 75.1                  | 80                      | 69         | 250     |
|             |               |             | 287A00         | 74.4        | 71.6        | 81.1                  | 90                      | 91         | 242     | 87.1                  | 90                      | 97         | 250     |
|             |               | HI          | NONE           | —           | —           | 45.0                  | 50                      | 47         | 269     | 49.8                  | 60                      | 53         | 277     |
|             |               |             | 285A00         | 24.8        | 23.9        | 45.0                  | 50                      | 47         | 269     | 49.8                  | 60                      | 53         | 277     |
|             |               |             | 286A00         | 49.6        | 47.7        | 71.5                  | 80                      | 66         | 269     | 77.5                  | 80                      | 71         | 277     |
|             |               |             | 287A00         | 74.4        | 71.6        | 83.5                  | 90                      | 93         | 269     | 89.5                  | 100                     | 99         | 277     |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED ON OR AFTER JULY 30, 2012) cont.

**TABLE 36 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH 2 SPEED INDOOR FAN**

| Unit<br>RAS | NO M. V-Ph-HZ | IFM<br>TYPE | ELEC. HTR      |             |             | NO C.O. or UNPWR C.O. |                         |            |         |                       |                         |            |         |
|-------------|---------------|-------------|----------------|-------------|-------------|-----------------------|-------------------------|------------|---------|-----------------------|-------------------------|------------|---------|
|             |               |             | CRHEATER***A00 | Nom<br>(kW) | FLA         | NO P.E.               |                         |            |         | w/ P.E. (pwr fr/unit) |                         |            |         |
|             |               |             |                |             |             | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         | MCA                   | FUSE or<br>HACR<br>BRKR | DISC. SIZE |         |
|             |               |             |                |             |             |                       |                         | FLA        | LRA     |                       |                         | FLA        | LRA     |
| 336         | 208/230-3-60  | STD         | NONE           | —           | —           | 141.5                 | 175                     | 148        | 702     | 153.3                 | 200                     | 162        | 722     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 141.5/141.5           | 175/175                 | 148/148    | 702/702 | 153.3/153.3           | 200/200                 | 162/162    | 722/722 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 151.6/141.7           | 175/175                 | 148/158    | 702/702 | 166.4/156.4           | 200/200                 | 162/172    | 722/722 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 177.8/201.8           | 200/225                 | 200/227    | 702/702 | 192.5/216.5           | 200/250                 | 213/241    | 722/722 |
|             |               | MED         | NONE           | —           | —           | 152.9                 | 200                     | 161        | 781     | 164.7                 | 200                     | 175        | 801     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 152.9/152.9           | 200/200                 | 161/161    | 781/781 | 164.7/164.7           | 200/200                 | 175/175    | 801/801 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 165.9/155.9           | 200/200                 | 161/171    | 781/781 | 180.6/170.7           | 200/200                 | 175/185    | 801/801 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 192.0/216.0           | 200/250                 | 213/240    | 781/781 | 206.8/230.8           | 225/250                 | 226/254    | 801/801 |
|             |               | HI          | NONE           | —           | —           | 154.8                 | 200                     | 163        | 812     | 166.6                 | 200                     | 177        | 832     |
|             |               |             | 279A00         | 18.8/25.0   | 52.1/60.1   | 154.8/154.8           | 200/200                 | 163/163    | 812/812 | 166.6/166.6           | 200/200                 | 177/177    | 832/832 |
|             |               |             | 280A00         | 37.6/50.0   | 104.2/120.3 | 168.3/158.3           | 200/200                 | 163/173    | 812/812 | 183.0/173.1           | 200/200                 | 177/187    | 832/832 |
|             |               |             | 281A00         | 56.3/75.0   | 156.4/180.4 | 194.4/218.4           | 225/250                 | 215/242    | 812/812 | 209.2/233.2           | 225/250                 | 228/256    | 832/832 |
|             | 460-3-60      | STD         | NONE           | —           | —           | 66.0                  | 80                      | 69         | 354     | 72.2                  | 90                      | 76         | 366     |
|             |               |             | 282A00         | 25.0        | 30.1        | 66.0                  | 80                      | 69         | 354     | 72.2                  | 90                      | 76         | 366     |
|             |               |             | 283A00         | 50.0        | 60.1        | 70.9                  | 80                      | 79         | 354     | 78.6                  | 90                      | 86         | 366     |
|             |               |             | 284A00         | 75.0        | 90.2        | 101.0                 | 110                     | 114        | 354     | 108.7                 | 125                     | 121        | 366     |
|             |               | MED         | NONE           | —           | —           | 71.7                  | 90                      | 76         | 394     | 77.9                  | 100                     | 83         | 406     |
|             |               |             | 282A00         | 25.0        | 30.1        | 71.7                  | 90                      | 76         | 394     | 77.9                  | 100                     | 83         | 406     |
|             |               |             | 283A00         | 50.0        | 60.1        | 78.0                  | 90                      | 86         | 394     | 85.7                  | 100                     | 93         | 406     |
|             |               |             | 284A00         | 75.0        | 90.2        | 108.1                 | 125                     | 120        | 394     | 115.8                 | 125                     | 127        | 406     |
|             |               | HI          | NONE           | —           | —           | 72.6                  | 90                      | 77         | 409     | 78.8                  | 100                     | 84         | 421     |
|             |               |             | 282A00         | 25.0        | 30.1        | 72.6                  | 90                      | 77         | 409     | 78.8                  | 100                     | 84         | 421     |
|             |               |             | 283A00         | 50.0        | 60.1        | 79.1                  | 90                      | 87         | 409     | 86.9                  | 100                     | 94         | 421     |
|             |               |             | 284A00         | 75.0        | 90.2        | 109.2                 | 125                     | 121        | 409     | 117.0                 | 125                     | 128        | 421     |
|             | 575-3-60      | STD         | NONE           | —           | —           | 56.0                  | 70                      | 59         | 264     | 60.8                  | 80                      | 64         | 272     |
|             |               |             | 285A00         | 24.8        | 23.9        | 56.0                  | 70                      | 59         | 264     | 60.8                  | 80                      | 64         | 272     |
|             |               |             | 286A00         | 49.6        | 47.7        | 69.1                  | 70                      | 64         | 264     | 75.1                  | 80                      | 69         | 272     |
|             |               |             | 287A00         | 74.4        | 71.6        | 81.1                  | 90                      | 91         | 264     | 87.1                  | 90                      | 97         | 272     |
|             |               | MED         | NONE           | —           | —           | 57.9                  | 70                      | 61         | 291     | 62.7                  | 80                      | 66         | 299     |
|             |               |             | 285A00         | 24.8        | 23.9        | 57.9                  | 70                      | 61         | 291     | 62.7                  | 80                      | 66         | 299     |
|             |               |             | 286A00         | 49.6        | 47.7        | 71.5                  | 80                      | 66         | 291     | 77.5                  | 80                      | 71         | 299     |
|             |               |             | 287A00         | 74.4        | 71.6        | 83.5                  | 90                      | 93         | 291     | 89.5                  | 100                     | 99         | 299     |
|             |               | HI          | NONE           | —           | —           | 60.8                  | 80                      | 64         | 302     | 65.6                  | 80                      | 70         | 310     |
|             |               |             | 285A00         | 24.8        | 23.9        | 60.8                  | 80                      | 64         | 302     | 65.6                  | 80                      | 70         | 310     |
|             |               |             | 286A00         | 49.6        | 47.7        | 75.1                  | 80                      | 69         | 302     | 81.1                  | 90                      | 75         | 310     |
|             |               |             | 287A00         | 74.4        | 71.6        | 87.1                  | 100                     | 97         | 302     | 93.1                  | 100                     | 102        | 310     |

# ELECTRICAL DATA FOR UNITS PRODUCED PRIOR TO JULY 30, 2012

**NOTE:** Check the serial number of unit to verify production date.

## SERIAL NUMBER

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|
| U | 1 | 2 | 3 | 1 | 1 | 2 | 3 | 4 | 5  |

Manufacture Location

Week of Manufacture  
(fiscal calendar)

Sequence Number

Year of Manufacture  
(12 = 2012)

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012)

**TABLE 37 – 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

**17.5 – 27.5 TONS**

| UNIT<br>RAS | V–Ph–Hz  | VOLTAGE<br>RANGE |     | COMP 1 |     | COMP 2 |     | OFM (ea) |     | IFM  |                     |      |
|-------------|----------|------------------|-----|--------|-----|--------|-----|----------|-----|------|---------------------|------|
|             |          | MIN              | MAX | RLA    | LRA | RLA    | LRA | WATTS    | FLA | TYPE | EFF at Full<br>Load | FLA  |
| 210         | 208–3–60 | 187              | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD  | 83.8%               | 10.2 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%               | 15.0 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%               | 17.1 |
|             | 230–3–60 | 187              | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD  | 83.8%               | 10.2 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%               | 15.0 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%               | 17.1 |
|             | 460–3–60 | 414              | 506 | 14.7   | 95  | 16.7   | 114 | 277      | 0.9 | STD  | 83.8%               | 4.8  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%               | 7.4  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%               | 8.6  |
|             | 575–3–60 | 518              | 633 | 12.2   | 80  | 12.2   | 80  | 397      | 0.6 | STD  | 81.1%               | 2.8  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%               | 5.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%               | 7.6  |
| 240         | 208–3–60 | 187              | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD  | 83.6%               | 15.0 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 230–3–60 | 187              | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD  | 83.6%               | 15.0 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 460–3–60 | 414              | 506 | 18.6   | 125 | 14.7   | 95  | 277      | 0.9 | STD  | 83.6%               | 7.4  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 8.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 14.3 |
|             | 575–3–60 | 518              | 633 | 14.7   | 100 | 12.2   | 80  | 397      | 0.6 | STD  | 83.6%               | 5.6  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 7.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 9.5  |
| 300         | 208–3–60 | 187              | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD  | 83.6%               | 15.0 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 230–3–60 | 187              | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD  | 83.6%               | 15.0 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 28.5 |
|             | 460–3–60 | 414              | 506 | 18.6   | 125 | 18.6   | 125 | 277      | 0.9 | STD  | 83.6%               | 7.4  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 8.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 14.3 |
|             | 575–3–60 | 518              | 633 | 14.7   | 100 | 14.7   | 100 | 397      | 0.6 | STD  | 83.6%               | 5.6  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%               | 7.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 9.5  |
| 336         | 208–3–60 | 187              | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD  | 89.5%               | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%               | 28.5 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 30.4 |
|             | 230–3–60 | 187              | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD  | 89.5%               | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%               | 28.5 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 30.4 |
|             | 460–3–60 | 414              | 506 | 23.1   | 150 | 23.1   | 150 | 277      | 0.9 | STD  | 89.5%               | 8.6  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%               | 14.3 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 15.2 |
|             | 575–3–60 | 518              | 633 | 19.9   | 109 | 19.9   | 109 | 397      | 0.6 | STD  | 89.5%               | 7.6  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%               | 9.5  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%               | 12.4 |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012)

**TABLE 38 – 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

**17.5 – 27.5 TONS**

| UNIT<br>RAS | V-Ph-Hz  | VOLTAGE<br>RANGE |     | COMP 1 |     | COMP 2 |     | OFM (ea) |     | IFM  |                        |      |
|-------------|----------|------------------|-----|--------|-----|--------|-----|----------|-----|------|------------------------|------|
|             |          | MIN              | MAX | RLA    | LRA | RLA    | LRA | WATTS    | FLA | TYPE | EFF at<br>Full<br>Load | FLA  |
| 210         | 208-3-60 | 187              | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD  | 81.5%                  | 10.8 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%                  | 13.6 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%                  | 17.1 |
|             | 230-3-60 | 187              | 253 | 29.5   | 195 | 30.1   | 225 | 350      | 1.5 | STD  | 81.5%                  | 9.8  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%                  | 12.7 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%                  | 17.1 |
|             | 460-3-60 | 414              | 506 | 14.7   | 95  | 16.7   | 114 | 277      | 0.9 | STD  | 81.5%                  | 4.9  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%                  | 6.4  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%                  | 8.6  |
|             | 575-3-60 | 518              | 633 | 12.2   | 80  | 12.2   | 80  | 397      | 0.6 | STD  | 81.1%                  | 4.5  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 83.6%                  | 6.2  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 89.5%                  | 7.6  |
| 240         | 208-3-60 | 187              | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD  | 83.6%                  | 13.6 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 28.5 |
|             | 230-3-60 | 187              | 253 | 48.1   | 245 | 29.5   | 195 | 350      | 1.5 | STD  | 83.6%                  | 12.7 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 28.5 |
|             | 460-3-60 | 414              | 506 | 18.6   | 125 | 14.7   | 95  | 277      | 0.9 | STD  | 83.6%                  | 6.4  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 8.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 14.3 |
|             | 575-3-60 | 518              | 633 | 14.7   | 100 | 12.2   | 80  | 397      | 0.6 | STD  | 83.6%                  | 6.2  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 7.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 9.5  |
| 300         | 208-3-60 | 187              | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD  | 83.6%                  | 13.6 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 28.5 |
|             | 230-3-60 | 187              | 253 | 48.1   | 245 | 48.1   | 245 | 350      | 1.5 | STD  | 83.6%                  | 12.7 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 28.5 |
|             | 460-3-60 | 414              | 506 | 18.6   | 125 | 18.6   | 125 | 277      | 0.9 | STD  | 83.6%                  | 6.4  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 8.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 14.3 |
|             | 575-3-60 | 518              | 633 | 14.7   | 100 | 14.7   | 100 | 397      | 0.6 | STD  | 83.6%                  | 6.2  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 89.5%                  | 7.6  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 9.5  |
| 336         | 208-3-60 | 187              | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD  | 89.5%                  | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%                  | 28.5 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 30.4 |
|             | 230-3-60 | 187              | 253 | 51.3   | 300 | 51.3   | 300 | 350      | 1.5 | STD  | 89.5%                  | 17.1 |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%                  | 28.5 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 30.4 |
|             | 460-3-60 | 414              | 506 | 23.1   | 150 | 23.1   | 150 | 277      | 0.9 | STD  | 89.5%                  | 8.6  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%                  | 14.3 |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 15.2 |
|             | 575-3-60 | 518              | 633 | 19.9   | 109 | 19.9   | 109 | 397      | 0.6 | STD  | 89.5%                  | 7.6  |
|             |          |                  |     |        |     |        |     |          |     | MED  | 91.7%                  | 9.5  |
|             |          |                  |     |        |     |        |     |          |     | HI   | 91.7%                  | 12.4 |

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012)

**TABLE 39 – ELECTRIC HEAT – ELECTRICAL DATA**

**17.5 – 20 TONS**

**2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

| Unit<br>RAS | NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER PART<br>NUMBER CRHEATER | NOM<br>PWR<br>(kW) | APP<br>PWR<br>(kW) | APPLICATION<br>OUTPUT<br>(kW) |
|-------------|------------------|-------------|-----------------------------------------|--------------------|--------------------|-------------------------------|
| <b>210</b>  | 208/230–3–60     | STD         | 279/270A00                              | 25.0               | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280/271A00                              | 50.0               | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281/272A00                              | 75.0               | 56.3/68.9          | 192.2/235.0                   |
|             |                  | MED         | 279/270A00                              | 25.0               | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280/271A00                              | 50.0               | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281/272A00                              | 75.0               | 56.3/68.9          | 192.2/235.0                   |
|             |                  | HIGH        | 279/270A00                              | 25.0               | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280/271A00                              | 50.0               | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281/272A00                              | 75.0               | 56.3/68.9          | 192.2/235.0                   |
|             | 460–3–60         | STD         | 282/273A00                              | 25.0               | 23.0               | 78.3                          |
|             |                  |             | 283/274A00                              | 50.0               | 45.9               | 156.7                         |
|             |                  |             | 284/275A00                              | 75.0               | 68.9               | 235.0                         |
|             |                  | MED         | 282/273A00                              | 25.0               | 23.0               | 78.3                          |
|             |                  |             | 283/274A00                              | 50.0               | 45.9               | 156.7                         |
|             |                  |             | 284/275A00                              | 75.0               | 68.9               | 235.0                         |
|             |                  | HIGH        | 282/273A00                              | 25.0               | 23.0               | 78.3                          |
|             |                  |             | 283/274A00                              | 50.0               | 45.9               | 156.7                         |
|             |                  |             | 284/275A00                              | 75.0               | 68.9               | 235.0                         |
|             | 575–3–60         | STD         | 285/276A00                              | 24.8               | 22.8               | 77.7                          |
|             |                  |             | 286/277A00                              | 49.6               | 45.6               | 155.4                         |
|             |                  |             | 287/278A00                              | 74.4               | 68.3               | 233.1                         |
|             |                  | MED         | 285/276A00                              | 24.8               | 22.8               | 77.7                          |
|             |                  |             | 286/277A00                              | 49.6               | 45.6               | 155.4                         |
|             |                  |             | 287/278A00                              | 74.4               | 68.3               | 233.1                         |
|             |                  | HIGH        | 285/276A00                              | 24.8               | 22.8               | 77.7                          |
|             |                  |             | 286/277A00                              | 49.6               | 45.6               | 155.4                         |
|             |                  |             | 287/278A00                              | 74.4               | 68.3               | 233.1                         |
| <b>240</b>  | 208/203–3–60     | STD         | 279/270A00                              | 25.0               | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280/271A00                              | 50.0               | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281/272A00                              | 75.0               | 56.3/68.9          | 192.2/235.0                   |
|             |                  | MED         | 279/270A00                              | 25.0               | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280/271A00                              | 50.0               | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281/272A00                              | 75.0               | 56.3/68.9          | 192.2/235.0                   |
|             |                  | HIGH        | 279/270A00                              | 25.0               | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280/271A00                              | 50.0               | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281/272A00                              | 75.0               | 56.3/68.9          | 192.2/235.0                   |
|             | 460–3–60         | STD         | 282/273A00                              | 25.0               | 23.0               | 78.3                          |
|             |                  |             | 283/274A00                              | 50.0               | 45.9               | 156.7                         |
|             |                  |             | 284/275A00                              | 75.0               | 68.9               | 235.0                         |
|             |                  | MED         | 282/273A00                              | 25.0               | 23.0               | 78.3                          |
|             |                  |             | 283/274A00                              | 50.0               | 45.9               | 156.7                         |
|             |                  |             | 284/275A00                              | 75.0               | 68.9               | 235.0                         |
|             |                  | HIGH        | 282/273A00                              | 25.0               | 23.0               | 78.3                          |
|             |                  |             | 283/274A00                              | 50.0               | 45.9               | 156.7                         |
|             |                  |             | 284/275A00                              | 75.0               | 68.9               | 235.0                         |
|             | 575–3–60         | STD         | 285/276A00                              | 24.8               | 22.8               | 77.7                          |
|             |                  |             | 286/277A00                              | 49.6               | 45.6               | 155.4                         |
|             |                  |             | 287/278A00                              | 74.4               | 68.3               | 233.1                         |
|             |                  | MED         | 286/277A00                              | 49.6               | 45.6               | 155.4                         |
|             |                  |             | 287/278A00                              | 74.4               | 68.3               | 233.1                         |
|             |                  | HIGH        | 285/276A00                              | 24.8               | 22.8               | 77.7                          |
|             |                  |             | 286/277A00                              | 49.6               | 45.6               | 155.4                         |
|             |                  |             | 287/278A00                              | 74.4               | 68.3               | 233.1                         |

**LEGEND**

APP PWR – 208 / 230V / 460V / 575V  
 C.O. – Convenient outlet  
 FLA – Full load amps

IFM – Indoor fan motor  
 NOM PWR – 240V / 480V / 600V  
 P.E. – Power exhaust

UNPWRD – Unpowered convenient outlet

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012)

**TABLE 40 – ELECTRIC HEAT – ELECTRICAL DATA**

**25 – 27.5 TONS**

**2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

| Unit RAS | NOM. V–PH–Hz. | IFM TYPE | ELECTRIC HEATER PART NUMBER CRHEATER | NOM PWR (kW) | APP PWR (kW) | APPLICATION OUTPUT (kW) |
|----------|---------------|----------|--------------------------------------|--------------|--------------|-------------------------|
| 300      | 208/230–3–60  | STD      | 279/270A00                           | 25.0         | 18.8/23.0    | 64.1/78.3               |
|          |               |          | 280/271A00                           | 50.0         | 37.6/45.9    | 128.1/156.7             |
|          |               |          | 281/272A00                           | 75.0         | 56.3/68.9    | 192.2/235.0             |
|          |               | MED      | 279/270A00                           | 25.0         | 18.8/23.0    | 64.1/78.3               |
|          |               |          | 280/271A00                           | 50.0         | 37.6/45.9    | 128.1/156.7             |
|          |               |          | 281/272A00                           | 75.0         | 56.3/68.9    | 192.2/235.0             |
|          |               | HIGH     | 279/270A00                           | 25.0         | 18.8/23.0    | 64.1/78.3               |
|          |               |          | 280/271A00                           | 50.0         | 37.6/45.9    | 128.1/156.7             |
|          |               |          | 281/272A00                           | 75.0         | 56.3/68.9    | 192.2/235.0             |
|          | 460–3–60      | STD      | 282/273A00                           | 25.0         | 23.0         | 78.3                    |
|          |               |          | 283/274A00                           | 50.0         | 45.9         | 156.7                   |
|          |               |          | 284/275A00                           | 75.0         | 68.9         | 235.0                   |
|          |               | MED      | 282/273A00                           | 25.0         | 23.0         | 78.3                    |
|          |               |          | 283/274A00                           | 50.0         | 45.9         | 156.7                   |
|          |               |          | 284/275A00                           | 75.0         | 68.9         | 235.0                   |
|          |               | HIGH     | 282/273A00                           | 25.0         | 23.0         | 78.3                    |
|          |               |          | 283/274A00                           | 50.0         | 45.9         | 156.7                   |
|          |               |          | 284/275A00                           | 75.0         | 68.9         | 235.0                   |
|          | 575–3–60      | STD      | 285/276A00                           | 24.8         | 22.8         | 77.7                    |
|          |               |          | 286/277A00                           | 49.6         | 45.6         | 155.4                   |
|          |               |          | 287/278A00                           | 74.4         | 68.3         | 233.1                   |
|          |               | MED      | 285/276A00                           | 24.8         | 22.8         | 77.7                    |
|          |               |          | 286/277A00                           | 49.6         | 45.6         | 155.4                   |
|          |               |          | 287/278A00                           | 74.4         | 68.3         | 233.1                   |
|          |               | HIGH     | 285/276A00                           | 24.8         | 22.8         | 77.7                    |
|          |               |          | 286/277A00                           | 49.6         | 45.6         | 155.4                   |
|          |               |          | 287/278A00                           | 74.4         | 68.3         | 233.1                   |
| 360      | 208/230–3–60  | STD      | 279A00                               | 25.0         | 18.8/23.0    | 64.1/78.3               |
|          |               |          | 280A00                               | 50.0         | 37.6/45.9    | 128.1/156.7             |
|          |               |          | 281A00                               | 75.0         | 56.3/68.9    | 192.2/235.0             |
|          |               | MED      | 279A00                               | 25.0         | 18.8/23.0    | 64.1/78.3               |
|          |               |          | 280A00                               | 50.0         | 37.6/45.9    | 128.1/156.7             |
|          |               |          | 281A00                               | 75.0         | 56.3/68.9    | 192.2/235.0             |
|          |               | HIGH     | 279A00                               | 25.0         | 18.8/23.0    | 64.1/78.3               |
|          |               |          | 280A00                               | 50.0         | 37.6/45.9    | 128.1/156.7             |
|          |               |          | 281A00                               | 75.0         | 56.3/68.9    | 192.2/235.0             |
|          | 460–3–60      | STD      | 282A00                               | 25.0         | 23.0         | 78.3                    |
|          |               |          | 283A00                               | 50.0         | 45.9         | 156.7                   |
|          |               |          | 284A00                               | 75.0         | 68.9         | 235.0                   |
|          |               | MED      | 282A00                               | 25.0         | 23.0         | 78.3                    |
|          |               |          | 283A00                               | 50.0         | 45.9         | 156.7                   |
|          |               |          | 284A00                               | 75.0         | 68.9         | 235.0                   |
|          |               | HIGH     | 282A00                               | 25.0         | 23.0         | 78.3                    |
|          |               |          | 283A00                               | 50.0         | 45.9         | 156.7                   |
|          |               |          | 284A00                               | 75.0         | 68.9         | 235.0                   |
|          | 575–3–60      | STD      | 285A00                               | 24.8         | 22.8         | 77.7                    |
|          |               |          | 286A00                               | 49.6         | 45.6         | 155.4                   |
|          |               |          | 287A00                               | 74.4         | 68.3         | 233.1                   |
|          |               | MED      | 285A00                               | 24.8         | 22.8         | 77.7                    |
|          |               |          | 286A00                               | 49.6         | 45.6         | 155.4                   |
|          |               |          | 287A00                               | 74.4         | 68.3         | 233.1                   |
|          |               | HIGH     | 285A00                               | 24.8         | 22.8         | 77.7                    |
|          |               |          | 286A00                               | 49.6         | 45.6         | 155.4                   |
|          |               |          | 287A00                               | 74.4         | 68.3         | 233.1                   |

**LEGEND**

APP PWR – 208 / 230V / 460V / 575V  
 C.O. – Convenient outlet  
 FLA – Full load amps

IFM – Indoor fan motor  
 NOM PWR – 240V / 480V / 600V  
 P.E. – Power exhaust

UNPWRD – Unpowered convenient outlet

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012)

**TABLE 41 – ELECTRIC HEAT – ELECTRICAL DATA**

**17.5 – 20 TONS**

**2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

| Unit<br>RAS | NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER PART<br>NUMBER CRHEATER | NOM PWR<br>(kW) | APP<br>PWR<br>(kW) | APPLICATION OUT-<br>PUT (MBH) |
|-------------|------------------|-------------|-----------------------------------------|-----------------|--------------------|-------------------------------|
| 210         | 208/230–3–60     | STD         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | MED         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | HIGH        | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             | 460–3–60         | STD         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | MED         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | HIGH        | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             | 575–3–60         | STD         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | MED         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | HIGH        | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
| 240         | 208/203–3–60     | STD         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | MED         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | HIGH        | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             | 460–3–60         | STD         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | MED         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | HIGH        | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             | 575–3–60         | STD         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | MED         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | HIGH        | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |

**LEGEND**

APP PWR – 208 / 230V / 460V / 575V  
 C.O. – Convenient outlet  
 FLA – Full load amps

IFM – Indoor fan motor  
 NOM PWR – 240V / 480V / 600V  
 P.E. – Power exhaust

UNPWRD – Unpowered convenient outlet

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012)

**TABLE 42 – ELECTRIC HEAT – ELECTRICAL DATA**

**25 – 27.5 TONS**

**2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

| Unit<br>RAS | NOM.<br>V–PH–Hz. | IFM<br>TYPE | ELECTRIC HEATER PART<br>NUMBER CRHEATER | NOM PWR<br>(kW) | APP<br>PWR<br>(kW) | APPLICATION OUT-<br>PUT (MBH) |
|-------------|------------------|-------------|-----------------------------------------|-----------------|--------------------|-------------------------------|
| 300         | 208/230–3–60     | STD         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | MED         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | HIGH        | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             | 460–3–60         | STD         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | MED         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | HIGH        | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             | 575–3–60         | STD         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | MED         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | HIGH        | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
| 336         | 208/230–3–60     | STD         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | MED         | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             |                  | HIGH        | 279A00                                  | 25.0            | 18.8/23.0          | 64.1/78.3                     |
|             |                  |             | 280A00                                  | 50.0            | 37.6/45.9          | 128.1/156.7                   |
|             |                  |             | 281A00                                  | 75.0            | 56.3/68.9          | 192.2/235.0                   |
|             | 460–3–60         | STD         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | MED         | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             |                  | HIGH        | 282A00                                  | 25.0            | 23.0               | 78.3                          |
|             |                  |             | 283A00                                  | 50.0            | 45.9               | 156.7                         |
|             |                  |             | 284A00                                  | 75.0            | 68.9               | 235.0                         |
|             | 575–3–60         | STD         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | MED         | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |
|             |                  | HIGH        | 285A00                                  | 24.8            | 22.8               | 77.7                          |
|             |                  |             | 286A00                                  | 49.6            | 45.6               | 155.4                         |
|             |                  |             | 287A00                                  | 74.4            | 68.3               | 233.1                         |

**LEGEND**

APP PWR – 208 / 230V / 460V / 575V

C.O. – Convenient outlet

FLA – Full load amps

IFM – Indoor fan motor

NOM PWR – 240V / 480V / 600V

PE. – Power exhaust

UNPWRD – Unpowered convenient outlet

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 43 – RAS210 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                             |            |         |                        |                             |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|-----------------------------|------------|---------|------------------------|-----------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                             |            |         | w/ P.E. (pwrd fr/unit) |                             |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         | MCA                    | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                             | FLA        | LRA     |                        |                             | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 81.8                  | 100.0                       | 85         | 502     | 93.6                   | 110.0                       | 99         | 522     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 81.8/87.9             | 100/100                     | 85/85      | 502/502 | 93.6/102.6             | 110/110                     | 99/99      | 522/522 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 143.0/133.1           | 150/150                     | 132/150    | 502/502 | 157.8/147.8            | 175/175                     | 145/164    | 522/522 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 169.2/193.2           | 200/225                     | 192/219    | 502/502 | 183.9/207.9            | 200/225                     | 205/233    | 522/522 |
|                 | MED         | –               | –           | 86.6                  | 100.0                       | 91         | 511     | 98.4                   | 125.0                       | 105        | 531     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 86.6/93.9             | 100/100                     | 91/91      | 511/511 | 98.6/108.6             | 125/125                     | 105/105    | 531/531 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 149.0/139.1           | 150/175                     | 137/156    | 511/511 | 163.8/153.8            | 175/175                     | 151/169    | 531/531 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 175.2/199.2           | 200/225                     | 197/225    | 511/511 | 189.9/213.9            | 200/250                     | 211/238    | 531/531 |
|                 | HI          | –               | –           | 88.7                  | 100.0                       | 93         | 513     | 100.5                  | 125.0                       | 107        | 533     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 88.7/96.5             | 100/100                     | 93/93      | 513/513 | 101.3/111.3            | 125/125                     | 107/107    | 533/533 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                     | 139/158    | 513/513 | 166.4/156.4            | 175/175                     | 153/172    | 533/533 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                     | 200/227    | 513/513 | 192.5/216.5            | 200/250                     | 213/241    | 533/533 |
| 460–3–60        | STD         | –               | –           | 43.1                  | 50.0                        | 45         | 252     | 49.3                   | 60.0                        | 52         | 264     |
|                 |             | 25.0            | 30.1        | 43.6                  | 50.0                        | 45         | 252     | 51.4                   | 60.0                        | 52         | 264     |
|                 |             | 50.0            | 60.1        | 66.1                  | 80.0                        | 75         | 252     | 73.9                   | 80.0                        | 82         | 264     |
|                 |             | 75.0            | 90.2        | 96.2                  | 100                         | 109        | 252     | 104.0                  | 110                         | 116        | 264     |
|                 | MED         | –               | –           | 45.7                  | 60.0                        | 48         | 256     | 51.9                   | 60.0                        | 55         | 268     |
|                 |             | 25.0            | 30.1        | 46.9                  | 60.0                        | 48         | 256     | 54.6                   | 60.0                        | 55         | 268     |
|                 |             | 50.0            | 60.1        | 69.4                  | 80.0                        | 78         | 256     | 77.1                   | 80.0                        | 85         | 268     |
|                 |             | 75.0            | 90.2        | 99.5                  | 110                         | 112        | 256     | 107.2                  | 125                         | 119        | 268     |
|                 | HI          | –               | –           | 46.9                  | 60.0                        | 49         | 257     | 53.1                   | 60.0                        | 56         | 269     |
|                 |             | 25.0            | 30.1        | 48.4                  | 60.0                        | 49         | 257     | 56.1                   | 60.0                        | 56         | 269     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80.0                        | 79         | 257     | 78.6                   | 80.0                        | 86         | 269     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                         | 114        | 257     | 108.7                  | 125                         | 121        | 269     |
| 575–3–60        | STD         | –               | –           | 32.1                  | 40.0                        | 33         | 188     | 36.9                   | 45.0                        | 39         | 196     |
|                 |             | 24.8            | 23.9        | 33.4                  | 40.0                        | 33         | 188     | 39.4                   | 45.0                        | 39         | 196     |
|                 |             | 49.6            | 47.7        | 63.1                  | 70.0                        | 58         | 188     | 69.1                   | 70.0                        | 64         | 196     |
|                 |             | 74.4            | 71.6        | 75.1                  | 80                          | 86         | 188     | 81.1                   | 90                          | 91         | 196     |
|                 | MED         | –               | –           | 34.9                  | 45.0                        | 37         | 202     | 39.7                   | 50.0                        | 42         | 210     |
|                 |             | 24.8            | 23.9        | 36.9                  | 45.0                        | 37         | 202     | 42.9                   | 50.0                        | 42         | 210     |
|                 |             | 49.6            | 47.7        | 66.6                  | 70.0                        | 61         | 202     | 72.6                   | 80.0                        | 67         | 210     |
|                 |             | 74.4            | 71.6        | 78.6                  | 90                          | 89         | 202     | 84.6                   | 90                          | 94         | 210     |
|                 | HI          | –               | –           | 36.9                  | 45.0                        | 39         | 200     | 41.7                   | 50.0                        | 44         | 208     |
|                 |             | 24.8            | 23.9        | 39.4                  | 45.0                        | 39         | 200     | 45.4                   | 50.0                        | 44         | 208     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70.0                        | 64         | 200     | 75.1                   | 80.0                        | 69         | 208     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                          | 91         | 200     | 87.1                   | 90                          | 97         | 208     |

See Legends and Notes on page 70.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 44 – RAS240 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                             |            |         |                        |                             |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|-----------------------------|------------|---------|------------------------|-----------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                             |            |         | w/ P.E. (pwrd fr/unit) |                             |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         | MCA                    | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                             | FLA        | LRA     |                        |                             | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 110.6                 | 150.0                       | 113        | 534     | 122.4                  | 150.0                       | 127        | 554     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 110.6/110.6           | 150/150                     | 113/113    | 534/534 | 122.4/122.4            | 150/150                     | 127/127    | 554/554 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 149.0/139.1           | 150/175                     | 137/156    | 534/534 | 163.8/153.8            | 175/175                     | 151/169    | 554/554 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 175.2/199.2           | 200/225                     | 197/225    | 534/534 | 189.9/213.9            | 200/250                     | 211/238    | 554/554 |
|                 | MED         | –               | –           | 112.7                 | 150.0                       | 116        | 536     | 124.5                  | 150.0                       | 129        | 556     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 112.7/112.7           | 150/150                     | 116/116    | 536/536 | 124.5/124.5            | 150/150                     | 129/129    | 556/556 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                     | 139/158    | 536/536 | 166.4/156.4            | 175/175                     | 153/172    | 556/556 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                     | 200/227    | 536/536 | 192.5/216.5            | 200/250                     | 213/241    | 556/556 |
|                 | HI          | –               | –           | 124.1                 | 150.0                       | 129        | 615     | 135.9                  | 175.0                       | 142        | 635     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 124.1/124.1           | 150/150                     | 129/129    | 615/615 | 135.9/135.9            | 175/175                     | 142/142    | 635/635 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 165.9/155.9           | 175/175                     | 153/171    | 615/615 | 180.6/170.7            | 200/175                     | 166/185    | 635/635 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 192.0/216.0           | 200/250                     | 213/240    | 615/615 | 206.8/230.8            | 225/250                     | 226/254    | 635/635 |
| 460–3–60        | STD         | –               | –           | 49.0                  | 60.0                        | 51         | 269     | 55.2                   | 60.0                        | 58         | 281     |
|                 |             | 25.0            | 30.1        | 49.0                  | 60.0                        | 51         | 269     | 55.2                   | 60.0                        | 58         | 281     |
|                 |             | 50.0            | 60.1        | 69.4                  | 80.0                        | 78         | 269     | 77.1                   | 80.0                        | 85         | 281     |
|                 |             | 75.0            | 90.2        | 99.5                  | 110                         | 112        | 269     | 107.2                  | 125                         | 119        | 281     |
|                 | MED         | –               | –           | 50.2                  | 60.0                        | 52         | 270     | 56.4                   | 70.0                        | 59         | 282     |
|                 |             | 25.0            | 30.1        | 50.2                  | 60.0                        | 52         | 270     | 56.4                   | 70.0                        | 59         | 282     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80.0                        | 79         | 270     | 78.6                   | 80.0                        | 86         | 282     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                         | 114        | 270     | 108.7                  | 125                         | 121        | 282     |
|                 | HI          | –               | –           | 55.9                  | 70.0                        | 59         | 310     | 62.1                   | 80.0                        | 66         | 322     |
|                 |             | 25.0            | 30.1        | 55.9                  | 70.0                        | 59         | 310     | 63.3                   | 80.0                        | 66         | 322     |
|                 |             | 50.0            | 60.1        | 78.0                  | 90.0                        | 86         | 310     | 85.7                   | 90.0                        | 93         | 322     |
|                 |             | 75.0            | 90.2        | 108.1                 | 125                         | 120        | 310     | 115.8                  | 125                         | 127        | 322     |
| 575–3–60        | STD         | –               | –           | 38.6                  | 50.0                        | 40         | 224     | 43.4                   | 50.0                        | 46         | 232     |
|                 |             | 24.8            | 23.9        | 38.6                  | 50.0                        | 40         | 224     | 43.4                   | 50.0                        | 46         | 232     |
|                 |             | 49.6            | 47.7        | 66.6                  | 70.0                        | 61         | 224     | 72.6                   | 80.0                        | 67         | 232     |
|                 |             | 74.4            | 71.6        | 78.6                  | 90                          | 89         | 224     | 84.6                   | 90                          | 94         | 232     |
|                 | MED         | –               | –           | 40.6                  | 50.0                        | 42         | 222     | 45.4                   | 60.0                        | 48         | 230     |
|                 |             | 24.8            | 23.9        | 40.6                  | 50.0                        | 42         | 222     | 45.4                   | 60.0                        | 48         | 230     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70.0                        | 64         | 222     | 75.1                   | 80.0                        | 69         | 230     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                          | 91         | 222     | 87.1                   | 90                          | 97         | 230     |
|                 | HI          | –               | –           | 42.5                  | 50.0                        | 45         | 249     | 47.3                   | 60.0                        | 50         | 257     |
|                 |             | 24.8            | 23.9        | 42.5                  | 50.0                        | 45         | 249     | 47.8                   | 60.0                        | 50         | 257     |
|                 |             | 49.6            | 47.7        | 71.5                  | 80.0                        | 66         | 249     | 77.5                   | 80.0                        | 71         | 257     |
|                 |             | 74.4            | 71.6        | 83.5                  | 90                          | 93         | 249     | 89.5                   | 100                         | 99         | 257     |

See Legends and Notes on page 70.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 45 – RAS300 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                          |            |         |                        |                          |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|--------------------------|------------|---------|------------------------|--------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                          |            |         | w/ P.E. (pwrd fr/unit) |                          |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE or<br>HACR BRKR | DISC. SIZE |         | MCA                    | MAX FUSE or<br>HACR BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                          | FLA        | LRA     |                        |                          | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 129.2                 | 175.0                    | 135        | 584     | 141.0                  | 175.0                    | 148        | 604     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 129.2/129.2           | 175/175                  | 135/135    | 584/584 | 141.0/141.0            | 175/175                  | 148/148    | 604/604 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 149.0/139.1           | 175/175                  | 137/156    | 584/584 | 163.8/153.8            | 175/175                  | 151/169    | 604/604 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 175.2/199.2           | 200/225                  | 197/225    | 584/584 | 189.9/213.9            | 200/250                  | 211/238    | 604/604 |
|                 | MED         | –               | –           | 131.3                 | 175.0                    | 137        | 586     | 143.1                  | 175.0                    | 151        | 606     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 131.3/131.3           | 175/175                  | 137/137    | 586/586 | 143.1/143.1            | 175/175                  | 151/151    | 606/606 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                  | 139/158    | 586/586 | 166.4/156.4            | 175/175                  | 153/172    | 606/606 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                  | 200/227    | 586/586 | 192.5/216.5            | 200/250                  | 213/241    | 606/606 |
|                 | HI          | –               | –           | 142.7                 | 175.0                    | 150        | 665     | 154.5                  | 200.0                    | 164        | 685     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 142.7/142.7           | 175/175                  | 150/150    | 665/665 | 154.5/154.5            | 200/200                  | 164/164    | 685/685 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 165.9/155.9           | 175/175                  | 153/171    | 665/665 | 180.6/170.7            | 200/200                  | 166/185    | 685/685 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 192.0/216.0           | 200/250                  | 213/240    | 665/665 | 206.8/230.8            | 225/250                  | 226/254    | 685/685 |
| 460–3–60        | STD         | –               | –           | 52.9                  | 60.0                     | 55         | 299     | 59.1                   | 70.0                     | 63         | 311     |
|                 |             | 25.0            | 30.1        | 52.9                  | 60.0                     | 55         | 299     | 59.1                   | 70.0                     | 63         | 311     |
|                 |             | 50.0            | 60.1        | 69.4                  | 80.0                     | 78         | 299     | 77.1                   | 80.0                     | 85         | 311     |
|                 |             | 75.0            | 90.2        | 99.5                  | 110                      | 112        | 299     | 107.2                  | 125                      | 119        | 311     |
|                 | MED         | –               | –           | 54.1                  | 60.0                     | 57         | 300     | 60.3                   | 70.0                     | 64         | 312     |
|                 |             | 25.0            | 30.1        | 54.1                  | 60.0                     | 57         | 300     | 60.3                   | 70.0                     | 64         | 312     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80.0                     | 79         | 300     | 78.6                   | 80.0                     | 86         | 312     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                      | 114        | 300     | 108.7                  | 125                      | 121        | 312     |
|                 | HI          | –               | –           | 59.8                  | 70.0                     | 63         | 340     | 66.0                   | 80.0                     | 70         | 352     |
|                 |             | 25.0            | 30.1        | 59.8                  | 70.0                     | 63         | 340     | 66.0                   | 80.0                     | 70         | 352     |
|                 |             | 50.0            | 60.1        | 78.0                  | 90.0                     | 86         | 340     | 85.7                   | 90.0                     | 93         | 352     |
|                 |             | 75.0            | 90.2        | 108.1                 | 125                      | 120        | 340     | 115.8                  | 125                      | 127        | 352     |
|                 | STD         | –               | –           | 41.1                  | 50.0                     | 43         | 244     | 45.9                   | 60.0                     | 49         | 252     |
|                 |             | 24.8            | 23.9        | 41.1                  | 50.0                     | 43         | 244     | 45.9                   | 60.0                     | 49         | 252     |
|                 |             | 49.6            | 47.7        | 66.6                  | 70.0                     | 61         | 244     | 72.6                   | 80.0                     | 67         | 252     |
|                 |             | 74.4            | 71.6        | 78.6                  | 90                       | 89         | 244     | 84.6                   | 90                       | 94         | 252     |
|                 | MED         | –               | –           | 43.1                  | 50.0                     | 45         | 242     | 47.9                   | 60.0                     | 51         | 250     |
|                 |             | 24.8            | 23.9        | 43.1                  | 50.0                     | 45         | 242     | 47.9                   | 60.0                     | 51         | 250     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70.0                     | 64         | 242     | 75.1                   | 80.0                     | 69         | 250     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                       | 91         | 242     | 87.1                   | 90                       | 97         | 250     |
|                 | HI          | –               | –           | 45.0                  | 50.0                     | 47         | 269     | 49.8                   | 60.0                     | 53         | 277     |
|                 |             | 24.8            | 23.9        | 45.0                  | 50.0                     | 47         | 269     | 49.8                   | 60.0                     | 53         | 277     |
|                 |             | 49.6            | 47.7        | 71.5                  | 80.0                     | 66         | 269     | 77.5                   | 80.0                     | 71         | 277     |
|                 |             | 74.4            | 71.6        | 83.5                  | 90                       | 93         | 269     | 89.5                   | 100                      | 99         | 277     |

See Legends and Notes on page 70.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 46 – RAS336 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                             |            |         |                         |                             |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|-----------------------------|------------|---------|-------------------------|-----------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                             |            |         | w/ P.E. (pwrdr fr/unit) |                             |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         | MCA                     | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                             | FLA        | LRA     |                         |                             | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 141.5                 | 175.0                       | 148        | 702     | 153.3                   | 200.0                       | 162        | 722     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 141.5/141.5           | 175/175                     | 148/148    | 702/702 | 153.3/153.3             | 200/200                     | 162/162    | 722/722 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                     | 148/158    | 702/702 | 166.4/156.4             | 200/200                     | 162/172    | 722/722 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                     | 200/227    | 702/702 | 192.5/216.5             | 200/250                     | 213/241    | 722/722 |
|                 | MED         | –               | –           | 152.9                 | 200.0                       | 161        | 781     | 164.7                   | 200.0                       | 175        | 801     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 152.9/152.9           | 200/200                     | 161/161    | 781/781 | 164.7/164.7             | 200/200                     | 175/175    | 801/801 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 165.9/155.9           | 200/200                     | 161/171    | 781/781 | 180.6/170.7             | 200/200                     | 175/185    | 801/801 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 192.0/216.0           | 200/250                     | 213/240    | 781/781 | 206.8/230.8             | 225/250                     | 226/254    | 801/801 |
|                 | HI          | –               | –           | 154.8                 | 200.0                       | 163        | 812     | 166.6                   | 200.0                       | 177        | 832     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 154.8/154.8           | 200/200                     | 163/163    | 812/812 | 166.6/166.6             | 200/200                     | 177/177    | 832/832 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 168.3/158.3           | 200/200                     | 163/173    | 812/812 | 183.0/173.1             | 200/200                     | 177/187    | 832/832 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 194.4/218.4           | 225/250                     | 215/242    | 812/812 | 209.2/233.2             | 225/250                     | 228/256    | 832/832 |
| 460–3–60        | STD         | –               | –           | 66.0                  | 80.0                        | 69         | 354     | 72.2                    | 90.0                        | 76         | 366     |
|                 |             | 25.0            | 30.1        | 66.0                  | 80.0                        | 69         | 354     | 72.2                    | 90.0                        | 76         | 366     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80.0                        | 79         | 354     | 78.6                    | 90.0                        | 86         | 366     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                         | 114        | 354     | 108.7                   | 125                         | 121        | 366     |
|                 | MED         | –               | –           | 71.7                  | 90.0                        | 76         | 394     | 77.9                    | 100.0                       | 83         | 406     |
|                 |             | 25.0            | 30.1        | 71.7                  | 90.0                        | 76         | 394     | 77.9                    | 100.0                       | 83         | 406     |
|                 |             | 50.0            | 60.1        | 78.0                  | 90.0                        | 86         | 394     | 85.7                    | 100.0                       | 93         | 406     |
|                 |             | 75.0            | 90.2        | 108.1                 | 125                         | 120        | 394     | 115.8                   | 125                         | 127        | 406     |
|                 | HI          | –               | –           | 72.6                  | 90.0                        | 77         | 409     | 78.8                    | 100.0                       | 84         | 421     |
|                 |             | 25.0            | 30.1        | 72.6                  | 90.0                        | 77         | 409     | 78.8                    | 100.0                       | 84         | 421     |
|                 |             | 50.0            | 60.1        | 79.1                  | 90.0                        | 87         | 409     | 86.9                    | 100.0                       | 94         | 421     |
|                 |             | 75.0            | 90.2        | 109.2                 | 125                         | 121        | 409     | 117.0                   | 125                         | 128        | 421     |
| 575–3–60        | STD         | –               | –           | 56.0                  | 70.0                        | 59         | 264     | 60.8                    | 80.0                        | 64         | 272     |
|                 |             | 24.8            | 23.9        | 56.0                  | 70.0                        | 59         | 264     | 60.8                    | 80.0                        | 64         | 272     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70.0                        | 64         | 264     | 75.1                    | 80.0                        | 69         | 272     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                          | 91         | 264     | 87.1                    | 90                          | 97         | 272     |
|                 | MED         | –               | –           | 57.9                  | 70.0                        | 61         | 291     | 62.7                    | 80.0                        | 66         | 299     |
|                 |             | 24.8            | 23.9        | 57.9                  | 70.0                        | 61         | 291     | 62.7                    | 80.0                        | 66         | 299     |
|                 |             | 49.6            | 47.7        | 71.5                  | 80.0                        | 66         | 291     | 77.5                    | 80.0                        | 71         | 299     |
|                 |             | 74.4            | 71.6        | 83.5                  | 90                          | 93         | 291     | 89.5                    | 100                         | 99         | 299     |
|                 | HI          | –               | –           | 60.8                  | 80.0                        | 64         | 302     | 65.6                    | 80.0                        | 70         | 310     |
|                 |             | 24.8            | 23.9        | 60.8                  | 80.0                        | 64         | 302     | 65.6                    | 80.0                        | 70         | 310     |
|                 |             | 49.6            | 47.7        | 75.1                  | 80.0                        | 69         | 302     | 81.1                    | 90.0                        | 75         | 310     |
|                 |             | 74.4            | 71.6        | 87.1                  | 100                         | 97         | 302     | 93.1                    | 100                         | 102        | 310     |

See Legends and Notes on page 70.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 47 – RAS210 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                             |            |         |                         |                             |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|-----------------------------|------------|---------|-------------------------|-----------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                             |            |         | w/ P.E. (pwrdr fr/unit) |                             |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         | MCA                     | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                             | FLA        | LRA     |                         |                             | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 82.4/81.4             | 100/100                     | 86/85      | 506     | 94.2/93.2               | 110/110                     | 100/99     | 526     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 82.4/87.4             | 100/100                     | 86/85      | 506/506 | 94.2/102.1              | 110/110                     | 100/99     | 526/526 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 143.8/132.6           | 150/150                     | 132/150    | 506/506 | 158.5/147.3             | 175/175                     | 146/163    | 526/526 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 169.9/192.7           | 200/225                     | 192/219    | 506/506 | 184.7/207.4             | 200/225                     | 206/232    | 526/526 |
|                 | MED         | –               | –           | 85.2/84.3             | 100/100                     | 89/88      | 517     | 97.0/96.1               | 125/125                     | 103/102    | 537     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 85.2/91.0             | 100/100                     | 89/88      | 517/517 | 97.0/105.8              | 125/125                     | 103/102    | 537/537 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 147.3/136.2           | 150/150                     | 135/153    | 517/517 | 162.0/150.9             | 175/175                     | 149/167    | 537/537 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 173.4/196.3           | 200/225                     | 196/222    | 517/517 | 188.2/211.0             | 200/225                     | 209/236    | 537/537 |
|                 | HI          | –               | –           | 88.7                  | 100                         | 93         | 513     | 100.5                   | 125                         | 107        | 533     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 88.7/96.5             | 100/100                     | 93/93      | 513/513 | 101.3/111.3             | 125/125                     | 107/107    | 533/533 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                     | 139/158    | 513/513 | 166.4/156.4             | 175/175                     | 153/172    | 533/533 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                     | 200/227    | 513/513 | 192.5/216.5             | 200/250                     | 213/241    | 533/533 |
| 460–3–60        | STD         | –               | –           | 43.2                  | 50                          | 45         | 254     | 49.4                    | 60                          | 52         | 266     |
|                 |             | 25.0            | 30.1        | 43.8                  | 50                          | 45         | 254     | 51.5                    | 60                          | 52         | 266     |
|                 |             | 50.0            | 60.1        | 66.2                  | 80                          | 75         | 254     | 74.0                    | 80                          | 82         | 266     |
|                 |             | 75.0            | 90.2        | 96.3                  | 100                         | 109        | 254     | 104.1                   | 110                         | 116        | 266     |
|                 | MED         | –               | –           | 44.7                  | 60                          | 47         | 259     | 50.9                    | 60                          | 54         | 271     |
|                 |             | 25.0            | 30.1        | 45.6                  | 60                          | 47         | 259     | 53.4                    | 60                          | 54         | 271     |
|                 |             | 50.0            | 60.1        | 68.1                  | 80                          | 76         | 259     | 75.9                    | 80                          | 84         | 271     |
|                 |             | 75.0            | 90.2        | 98.2                  | 100                         | 111        | 259     | 106.0                   | 125                         | 118        | 271     |
|                 | HI          | –               | –           | 46.9                  | 60                          | 49         | 257     | 53.1                    | 60                          | 56         | 269     |
|                 |             | 25.0            | 30.1        | 48.4                  | 60                          | 49         | 257     | 56.1                    | 60                          | 56         | 269     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80                          | 79         | 257     | 78.6                    | 80                          | 86         | 269     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                         | 114        | 257     | 108.7                   | 125                         | 121        | 269     |
| 575–3–60        | STD         | –               | –           | 33.8                  | 45                          | 35         | 188     | 38.6                    | 50                          | 41         | 196     |
|                 |             | 24.8            | 23.9        | 35.5                  | 45                          | 35         | 188     | 41.5                    | 50                          | 41         | 196     |
|                 |             | 49.6            | 47.7        | 65.3                  | 70                          | 60         | 188     | 71.3                    | 80                          | 66         | 196     |
|                 |             | 74.4            | 71.6        | 77.2                  | 90                          | 88         | 188     | 83.2                    | 90                          | 93         | 196     |
|                 | MED         | –               | –           | 35.5                  | 45                          | 37         | 202     | 40.3                    | 50                          | 43         | 210     |
|                 |             | 24.8            | 23.9        | 37.6                  | 45                          | 37         | 202     | 43.6                    | 50                          | 43         | 210     |
|                 |             | 49.6            | 47.7        | 67.4                  | 70                          | 62         | 202     | 73.4                    | 80                          | 68         | 210     |
|                 |             | 74.4            | 71.6        | 79.4                  | 90                          | 89         | 202     | 85.4                    | 90                          | 95         | 210     |
|                 | HI          | –               | –           | 36.9                  | 45                          | 39         | 200     | 41.7                    | 50                          | 44         | 208     |
|                 |             | 24.8            | 23.9        | 39.4                  | 45                          | 39         | 200     | 45.4                    | 50                          | 44         | 208     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70                          | 64         | 200     | 75.1                    | 80                          | 69         | 208     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                          | 91         | 200     | 87.1                    | 90                          | 97         | 208     |

See Legends and Notes on page 70.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 48 – RAS240 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                             |            |         |                        |                             |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|-----------------------------|------------|---------|------------------------|-----------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                             |            |         | w/ P.E. (pwrd fr/unit) |                             |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         | MCA                    | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                             | FLA        | LRA     |                        |                             | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 109.2/108.3           | 150/150                     | 112/111    | 540     | 121.0/120.1            | 150/150                     | 125/124    | 560     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 109.2/108.3           | 150/150                     | 112/111    | 540/540 | 121.0/120.1            | 150/150                     | 125/124    | 560/560 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 147.3/136.2           | 150/150                     | 135/153    | 540/540 | 162.0/150.9            | 175/175                     | 149/167    | 560/560 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 173.4/196.3           | 200/225                     | 196/222    | 540/540 | 188.2/211.0            | 200/225                     | 209/236    | 560/560 |
|                 | MED         | –               | –           | 112.7                 | 150                         | 116        | 536     | 124.5                  | 150                         | 129        | 556     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 112.7/112.7           | 150/150                     | 116/116    | 536/536 | 124.5/124.5            | 150/150                     | 129/129    | 556/556 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                     | 139/158    | 536/536 | 166.4/156.4            | 175/175                     | 153/172    | 556/556 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                     | 200/227    | 536/536 | 192.5/216.5            | 200/250                     | 213/241    | 556/556 |
|                 | HI          | –               | –           | 124.1                 | 150                         | 129        | 615     | 135.9                  | 175                         | 142        | 635     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 124.1/124.1           | 150/150                     | 129/129    | 615/615 | 135.9/135.9            | 175/175                     | 142/142    | 635/635 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 165.9/155.9           | 175/175                     | 153/171    | 615/615 | 180.6/170.7            | 200/175                     | 166/185    | 635/635 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 192.0/216.0           | 200/250                     | 213/240    | 615/615 | 206.8/230.8            | 225/250                     | 226/254    | 635/635 |
| 460–3–60        | STD         | –               | –           | 48.0                  | 60                          | 50         | 272     | 54.2                   | 60                          | 57         | 284     |
|                 |             | 25.0            | 30.1        | 48.0                  | 60                          | 50         | 272     | 54.2                   | 60                          | 57         | 284     |
|                 |             | 50.0            | 60.1        | 68.1                  | 80                          | 76         | 272     | 75.9                   | 80                          | 84         | 284     |
|                 |             | 75.0            | 90.2        | 98.2                  | 100                         | 111        | 272     | 106.0                  | 125                         | 118        | 284     |
|                 | MED         | –               | –           | 50.2                  | 60                          | 52         | 270     | 56.4                   | 70                          | 59         | 282     |
|                 |             | 25.0            | 30.1        | 50.2                  | 60                          | 52         | 270     | 56.4                   | 70                          | 59         | 282     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80                          | 79         | 270     | 78.6                   | 80                          | 86         | 282     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                         | 114        | 270     | 108.7                  | 125                         | 121        | 282     |
|                 | HI          | –               | –           | 55.9                  | 70                          | 59         | 310     | 62.1                   | 80                          | 66         | 322     |
|                 |             | 25.0            | 30.1        | 55.9                  | 70                          | 59         | 310     | 63.3                   | 80                          | 66         | 322     |
|                 |             | 50.0            | 60.1        | 78.0                  | 90                          | 86         | 310     | 85.7                   | 90                          | 93         | 322     |
|                 |             | 75.0            | 90.2        | 108.1                 | 125                         | 120        | 310     | 115.8                  | 125                         | 127        | 322     |
| 575–3–60        | STD         | –               | –           | 39.2                  | 50                          | 41         | 224     | 44.0                   | 50                          | 46         | 232     |
|                 |             | 24.8            | 23.9        | 39.2                  | 50                          | 41         | 224     | 44.0                   | 50                          | 46         | 232     |
|                 |             | 49.6            | 47.7        | 67.4                  | 70                          | 62         | 224     | 73.4                   | 80                          | 68         | 232     |
|                 |             | 74.4            | 71.6        | 79.4                  | 90                          | 89         | 224     | 85.4                   | 90                          | 95         | 232     |
|                 | MED         | –               | –           | 40.6                  | 50                          | 42         | 222     | 45.4                   | 60                          | 48         | 230     |
|                 |             | 24.8            | 23.9        | 40.6                  | 50                          | 42         | 222     | 45.4                   | 60                          | 48         | 230     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70                          | 64         | 222     | 75.1                   | 80                          | 69         | 230     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                          | 91         | 222     | 87.1                   | 90                          | 97         | 230     |
|                 | HI          | –               | –           | 42.5                  | 50                          | 45         | 249     | 47.3                   | 60                          | 50         | 257     |
|                 |             | 24.8            | 23.9        | 42.5                  | 50                          | 45         | 249     | 47.8                   | 60                          | 50         | 257     |
|                 |             | 49.6            | 47.7        | 71.5                  | 80                          | 66         | 249     | 77.5                   | 80                          | 71         | 257     |
|                 |             | 74.4            | 71.6        | 83.5                  | 90                          | 93         | 249     | 89.5                   | 100                         | 99         | 257     |

See Legends and Notes on page 70.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 49 – RAS300 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                             |            |         |                       |                             |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|-----------------------------|------------|---------|-----------------------|-----------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                             |            |         | w/ P.E. (pwr fr/unit) |                             |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                             | FLA        | LRA     |                       |                             | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 127.8/126.9           | 175/175                     | 133/132    | 590     | 139.6/138.7           | 175/175                     | 147/146    | 610     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 127.8/126.9           | 175/175                     | 133/132    | 590/590 | 139.6/138.7           | 175/175                     | 147/146    | 610/610 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 147.3/136.2           | 175/175                     | 135/153    | 590/590 | 162.0/150.9           | 175/175                     | 149/167    | 610/610 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 173.4/196.3           | 200/225                     | 196/222    | 590/590 | 188.2/211.0           | 200/225                     | 209/236    | 610/610 |
|                 | MED         | –               | –           | 131.3                 | 175                         | 137        | 586     | 143.1                 | 175                         | 151        | 606     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 131.3/131.3           | 175/175                     | 137/137    | 586/586 | 143.1/143.1           | 175/175                     | 151/151    | 606/606 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                     | 139/158    | 586/586 | 166.4/156.4           | 175/175                     | 153/172    | 606/606 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                     | 200/227    | 586/586 | 192.5/216.5           | 200/250                     | 213/241    | 606/606 |
|                 | HI          | –               | –           | 142.7                 | 175                         | 150        | 665     | 154.5                 | 200                         | 164        | 685     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 142.7/142.7           | 175/175                     | 150/150    | 665/665 | 154.5/154.5           | 200/200                     | 164/164    | 685/685 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 165.9/155.9           | 175/175                     | 153/171    | 665/665 | 180.6/170.7           | 200/200                     | 166/185    | 685/685 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 192.0/216.0           | 200/250                     | 213/240    | 665/665 | 206.8/230.8           | 225/250                     | 226/254    | 685/685 |
| 460–3–60        | STD         | –               | –           | 51.9                  | 60                          | 54         | 302     | 58.1                  | 70                          | 61         | 314     |
|                 |             | 25.0            | 30.1        | 51.9                  | 60                          | 54         | 302     | 58.1                  | 70                          | 61         | 314     |
|                 |             | 50.0            | 60.1        | 68.1                  | 80                          | 76         | 302     | 75.9                  | 80                          | 84         | 314     |
|                 |             | 75.0            | 90.2        | 98.2                  | 100                         | 111        | 302     | 106.0                 | 125                         | 118        | 314     |
|                 | MED         | –               | –           | 54.1                  | 60                          | 57         | 300     | 60.3                  | 70                          | 64         | 312     |
|                 |             | 25.0            | 30.1        | 54.1                  | 60                          | 57         | 300     | 60.3                  | 70                          | 64         | 312     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80                          | 79         | 300     | 78.6                  | 80                          | 86         | 312     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                         | 114        | 300     | 108.7                 | 125                         | 121        | 312     |
|                 | HI          | –               | –           | 59.8                  | 70                          | 63         | 340     | 66.0                  | 80                          | 70         | 352     |
|                 |             | 25.0            | 30.1        | 59.8                  | 70                          | 63         | 340     | 66.0                  | 80                          | 70         | 352     |
|                 |             | 50.0            | 60.1        | 78.0                  | 90                          | 86         | 340     | 85.7                  | 90                          | 93         | 352     |
|                 |             | 75.0            | 90.2        | 108.1                 | 125                         | 120        | 340     | 115.8                 | 125                         | 127        | 352     |
| 575–3–60        | STD         | –               | –           | 41.7                  | 50                          | 44         | 244     | 46.5                  | 60                          | 49         | 252     |
|                 |             | 24.8            | 23.9        | 41.7                  | 50                          | 44         | 244     | 46.5                  | 60                          | 49         | 252     |
|                 |             | 49.6            | 47.7        | 67.4                  | 70                          | 62         | 244     | 73.4                  | 80                          | 68         | 252     |
|                 |             | 74.4            | 71.6        | 79.4                  | 90                          | 89         | 244     | 85.4                  | 90                          | 95         | 252     |
|                 | MED         | –               | –           | 43.1                  | 50                          | 45         | 242     | 47.9                  | 60                          | 51         | 250     |
|                 |             | 24.8            | 23.9        | 43.1                  | 50                          | 45         | 242     | 47.9                  | 60                          | 51         | 250     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70                          | 64         | 242     | 75.1                  | 80                          | 69         | 250     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                          | 91         | 242     | 87.1                  | 90                          | 97         | 250     |
|                 | HI          | –               | –           | 45.0                  | 50                          | 47         | 269     | 49.8                  | 60                          | 53         | 277     |
|                 |             | 24.8            | 23.9        | 45.0                  | 50                          | 47         | 269     | 49.8                  | 60                          | 53         | 277     |
|                 |             | 49.6            | 47.7        | 71.5                  | 80                          | 66         | 269     | 77.5                  | 80                          | 71         | 277     |
|                 |             | 74.4            | 71.6        | 83.5                  | 90                          | 93         | 269     | 89.5                  | 100                         | 99         | 277     |

See Legends and Notes on page 70.

# ELECTRICAL INFORMATION

## (UNITS PRODUCED PRIOR TO JULY 30, 2012) cont.

**TABLE 50 – RAS336 UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

| NOM.<br>V–Ph–Hz | IFM<br>TYPE | ELECTRIC HEATER |             | NO C.O. or UNPWR C.O. |                             |            |         |                         |                             |            |         |
|-----------------|-------------|-----------------|-------------|-----------------------|-----------------------------|------------|---------|-------------------------|-----------------------------|------------|---------|
|                 |             | Nom<br>(kW)     | FLA         | NO P.E.               |                             |            |         | w/ P.E. (pwrdr fr/unit) |                             |            |         |
|                 |             |                 |             | MCA                   | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         | MCA                     | MAX FUSE<br>or HACR<br>BRKR | DISC. SIZE |         |
|                 |             |                 |             |                       |                             | FLA        | LRA     |                         |                             | FLA        | LRA     |
| 208/230–3–60    | STD         | –               | –           | 141.5                 | 175                         | 148        | 702     | 153.3                   | 200                         | 162        | 722     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 141.5/141.5           | 175/175                     | 148/148    | 702/702 | 153.3/153.3             | 200/200                     | 162/162    | 722/722 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 151.6/141.7           | 175/175                     | 148/158    | 702/702 | 166.4/156.4             | 200/200                     | 162/172    | 722/722 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 177.8/201.8           | 200/225                     | 200/227    | 702/702 | 192.5/216.5             | 200/250                     | 213/241    | 722/722 |
|                 | MED         | –               | –           | 152.9                 | 200                         | 161        | 781     | 164.7                   | 200                         | 175        | 801     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 152.9/152.9           | 200/200                     | 161/161    | 781/781 | 164.7/164.7             | 200/200                     | 175/175    | 801/801 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 165.9/155.9           | 200/200                     | 161/171    | 781/781 | 180.6/170.7             | 200/200                     | 175/185    | 801/801 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 192.0/216.0           | 200/250                     | 213/240    | 781/781 | 206.8/230.8             | 225/250                     | 226/254    | 801/801 |
|                 | HI          | –               | –           | 154.8                 | 200                         | 163        | 812     | 166.6                   | 200                         | 177        | 832     |
|                 |             | 18.8/25.0       | 52.1/60.1   | 154.8/154.8           | 200/200                     | 163/163    | 812/812 | 166.6/166.6             | 200/200                     | 177/177    | 832/832 |
|                 |             | 37.6/50.0       | 104.2/120.3 | 168.3/158.3           | 200/200                     | 163/173    | 812/812 | 183.0/173.1             | 200/200                     | 177/187    | 832/832 |
|                 |             | 56.3/75.0       | 156.4/180.4 | 194.4/218.4           | 225/250                     | 215/242    | 812/812 | 209.2/233.2             | 225/250                     | 228/256    | 832/832 |
| 460–3–60        | STD         | –               | –           | 66.0                  | 80                          | 69         | 354     | 72.2                    | 90                          | 76         | 366     |
|                 |             | 25.0            | 30.1        | 66.0                  | 80                          | 69         | 354     | 72.2                    | 90                          | 76         | 366     |
|                 |             | 50.0            | 60.1        | 70.9                  | 80                          | 79         | 354     | 78.6                    | 90                          | 86         | 366     |
|                 |             | 75.0            | 90.2        | 101.0                 | 110                         | 114        | 354     | 108.7                   | 125                         | 121        | 366     |
|                 | MED         | –               | –           | 71.7                  | 90                          | 76         | 394     | 77.9                    | 100                         | 83         | 406     |
|                 |             | 25.0            | 30.1        | 71.7                  | 90                          | 76         | 394     | 77.9                    | 100                         | 83         | 406     |
|                 |             | 50.0            | 60.1        | 78.0                  | 90                          | 86         | 394     | 85.7                    | 100                         | 93         | 406     |
|                 |             | 75.0            | 90.2        | 108.1                 | 125                         | 120        | 394     | 115.8                   | 125                         | 127        | 406     |
|                 | HI          | –               | –           | 72.6                  | 90                          | 77         | 409     | 78.8                    | 100                         | 84         | 421     |
|                 |             | 25.0            | 30.1        | 72.6                  | 90                          | 77         | 409     | 78.8                    | 100                         | 84         | 421     |
|                 |             | 50.0            | 60.1        | 79.1                  | 90                          | 87         | 409     | 86.9                    | 100                         | 94         | 421     |
|                 |             | 75.0            | 90.2        | 109.2                 | 125                         | 121        | 409     | 117.0                   | 125                         | 128        | 421     |
| 575–3–60        | STD         | –               | –           | 56.0                  | 70                          | 59         | 264     | 60.8                    | 80                          | 64         | 272     |
|                 |             | 24.8            | 23.9        | 56.0                  | 70                          | 59         | 264     | 60.8                    | 80                          | 64         | 272     |
|                 |             | 49.6            | 47.7        | 69.1                  | 70                          | 64         | 264     | 75.1                    | 80                          | 69         | 272     |
|                 |             | 74.4            | 71.6        | 81.1                  | 90                          | 91         | 264     | 87.1                    | 90                          | 97         | 272     |
|                 | MED         | –               | –           | 57.9                  | 70                          | 61         | 291     | 62.7                    | 80                          | 66         | 299     |
|                 |             | 24.8            | 23.9        | 57.9                  | 70                          | 61         | 291     | 62.7                    | 80                          | 66         | 299     |
|                 |             | 49.6            | 47.7        | 71.5                  | 80                          | 66         | 291     | 77.5                    | 80                          | 71         | 299     |
|                 |             | 74.4            | 71.6        | 83.5                  | 90                          | 93         | 291     | 89.5                    | 100                         | 99         | 299     |
|                 | HI          | –               | –           | 60.8                  | 80                          | 64         | 302     | 65.6                    | 80                          | 70         | 310     |
|                 |             | 24.8            | 23.9        | 60.8                  | 80                          | 64         | 302     | 65.6                    | 80                          | 70         | 310     |
|                 |             | 49.6            | 47.7        | 75.1                  | 80                          | 69         | 302     | 81.1                    | 90                          | 75         | 310     |
|                 |             | 74.4            | 71.6        | 87.1                  | 100                         | 97         | 302     | 93.1                    | 100                         | 102        | 310     |

See Legends and Notes on page 70.

**LEGEND and NOTES:**

|          |   |                             |
|----------|---|-----------------------------|
| BRKR     | — | Circuit breaker             |
| CO       | — | Convenience outlet          |
| DISC     | — | Disconnect                  |
| FLA      | — | Full load amps              |
| IFM      | — | Indoor fan motor            |
| LRA      | — | Locked rotor amps           |
| MCA      | — | Minimum circuit amps        |
| MOCP     | — | MAX FUSE or HACR BRKR       |
| PE       | — | Power exhaust               |
| PWRD CO  | — | Powered convenient outlet   |
| UNPWR CO | — | Unpowered convenient outlet |

**NOTES:**

1. In compliance with NEC requirements for multimotor and combination motor circuits (see NEC Articles 430 and 440), the overcurrent protective device must be a fuse or HACR breaker. Canadian units may be fuse or circuit breaker.

**1. Unbalanced 3-Phase Supply Voltage**

Never operate a motor where a phase imbalance in supply voltage exists. Use the following formula to determine the percentage of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

**Example: Supply voltage is 230-3-60**

$$AB = 224 \text{ v}$$

$$BC = 231 \text{ v}$$

$$AC = 226 \text{ v}$$

$$\text{Average Voltage} = \frac{(224 + 231 + 226)}{3} = \frac{681}{3} = 227$$

Determine maximum deviation from average voltage.

$$(AB) 227 - 224 = 3 \text{ v}$$

$$(BC) 231 - 227 = 4 \text{ v}$$

$$(AC) 227 - 226 = 1 \text{ v}$$

Maximum deviation is 4 v.

Determine percent of voltage imbalance.

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{4}{227} \\ &= 1.76\% \end{aligned}$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

# SEQUENCE OF OPERATION

## General

The sequence below describes the sequence of operation for an electro-mechanical unit with and without a factory installed "Economizer IV or X". For information regarding a direct digital controller, see the start-up, operations, and troubleshooting manual for the applicable controller.

### Units with no Economizer

#### **Cooling — (Single speed indoor fan motor)**

When the thermostat calls for cooling, terminals G and Y1 are energized. As a result, the indoor-fan contactor (IFC) and the compressor contactor (C1) are energized, causing the indoor-fan motor (IFM), compressor #1, and outdoor fan to start. If the unit has 2 stages of cooling, the thermostat will additionally energize Y2. The Y2 signal will energize compressor contactor #2 (C2), causing compressor #2 to start. Regardless of the number of stages, the outdoor-fan motor runs continuously while unit is cooling.

#### **Cooling (2-speed indoor fan motor) —**

Per ASHRAE 90.1 2010 standard section 6.4.3.10.b, during the first stage of cooling operation the VFD will adjust the fan motor to provide 2/3rd of the total cfm established for the unit. When a call for the second stage of cooling is required, the VFD will allow the total cfm for the unit established (100%).

#### **Heating —**

**NOTE:** This unit is sold as cooling only. If electric heaters are required, use only factory-approved electric heaters. They will operate as described below.

Units have either 1 or 2 stages of electric heat. When the thermostat calls for heating, power is applied to the W1 terminal at the unit. The unit control will energize the indoor fan contactor and the first stage of electric heat. On units with 2-stage heating, when additional heating is required, the second stage of electric heat (if equipped) will be energized when power is applied at the W2 terminal on the unit.

### Units with an Economizer

#### **Cooling —**

When free cooling is not available, the compressors will be controlled by the zone thermostat. When free cooling is available, the outdoor-air damper is modulated by the Economizer IV or X control to provide a 50°F (10°C) to 55°F (13°C) mixed-air temperature into the zone. As the mixed-air temperature fluctuates above 55°F (13°C) or below 50°F (10°C) dampers will be modulated (open or close) to bring the mixed-air temperature back within control. If mechanical cooling is utilized with free cooling, the outdoor-air damper will maintain its current position at the time the compressor is started. If the increase in cooling capacity causes the mixed-air temperature to drop below 45°F (7°C), then the outdoor-air damper position will be decreased to the minimum position. If the mixed-air temperature continues to fall, the outdoor-air damper will close. Control returns to normal once the mixed-air temperature rises above 48°F (9°C). The power exhaust fans will be energized and de-energized, if installed, as the outdoor-air damper opens and closes.

If field-installed accessory CO<sub>2</sub> sensors are connected to the economizer IV or X control, a demand controlled ventilation strategy will begin to operate. As the CO<sub>2</sub> level in the zone increases above the CO<sub>2</sub> setpoint, the minimum position of the damper will be increased proportionally. As the CO<sub>2</sub> level

decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed. For economizer IV or X operation, there must be a thermostat call for the fan (G). If the unit is occupied and the fan is on, the damper will operate at minimum position. Otherwise, the damper will be closed.

When the economizer IV control is in the occupied mode and a call for cooling exists (Y1 on the thermostat), the control will first check for indoor fan operation. If the fan is not on, then cooling will not be activated. If the fan is on, then the control will open the economizer IV damper to the minimum position.

On the initial power to the economizer IV control, it will take the damper up to 2 1/2 minutes before it begins to position itself. After the initial power-up, further changes in damper position can take up to 30 seconds to initiate. Damper movement from full closed to full open (or vice versa) will take between 1 1/2 and 2 1/2 minutes. If free cooling can be used as determined from the appropriate changeover command (switch, dry bulb, enthalpy curve, differential dry bulb, or differential enthalpy), then the control will modulate the dampers open to maintain the mixed-air temperature setpoint at 50°F (10°C) to 55°F (13°C). If there is a further demand for cooling (cooling second stage – Y2 is energized), then the control will bring on compressor stage 1 to maintain the mixed-air temperature setpoint. The economizer IV damper will be open at maximum position. economizer IV operation is limited to a single compressor.

**2-Speed Note:** When operating in ventilation mode only, the indoor fan motor will automatically adjust to 2/3rd of the total cfm established.

#### **Heating —**

The sequence of operation for the heating is the same as a unit with no economizer. The only difference is how the economizer acts. The economizer will stay at the Economizer Minimum Position while the evaporator fan is operating. The outdoor-air damper is closed when the indoor fan is not operating.

Refer to Service and Maintenance Manual for further details.

### **Hot Gas Reheat System**

Units with the factory equipped Hot Gas Reheat option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle. The Hot Gas Reheat option includes additional valves in the liquid line and discharge line of each refrigerant circuit, a small reheat condenser coil downstream of the evaporator, and Motormaster variable-speed control of some or all outdoor fans. Operation of the revised refrigerant circuit for each mode is described below.

The Hot Gas Reheat system provides three sub-modes of operation: Cool, Reheat1, and Reheat2.

**Cool mode** – provides a normal ratio of Sensible and Latent Cooling effect from the evaporator coil.

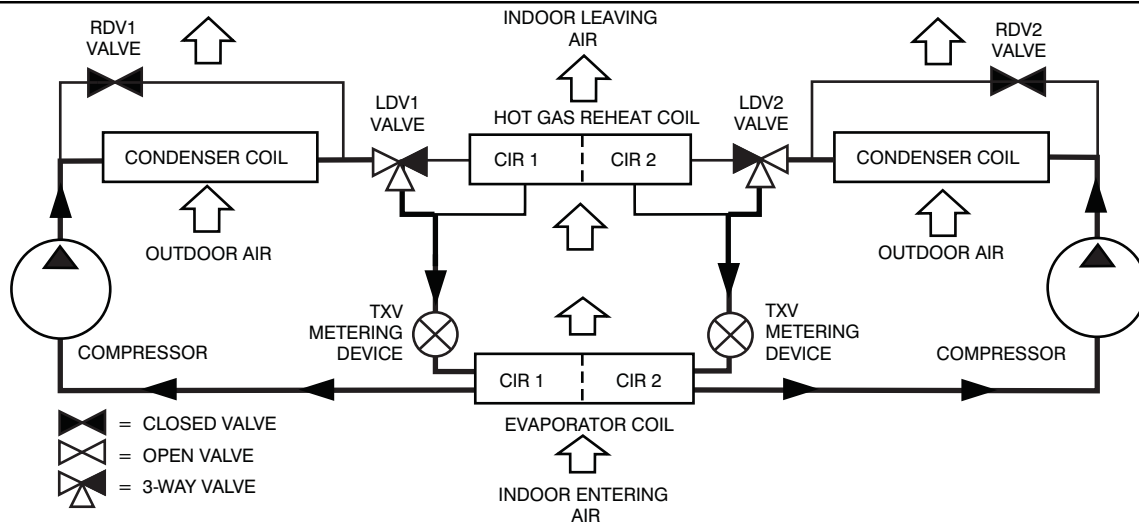
**Reheat1** – provides increased Latent Cooling while slightly reducing the Sensible Cooling effect.

**Reheat2** – provides normal Latent Cooling but with null or minimum Sensible Cooling effect delivered to the space.

The Reheat1 and Reheat2 modes are available when the unit is not in a Heating mode and when the Low Ambient Lockout switch is closed.

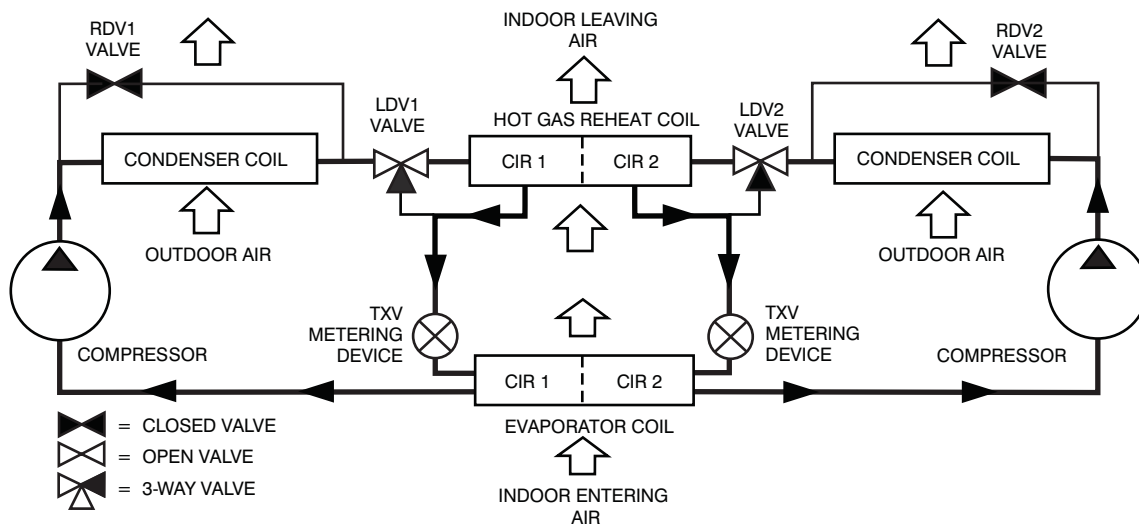
The following diagrams depict piping for Two Stage cooling units.

## SEQUENCE OF OPERATION (CONT.)



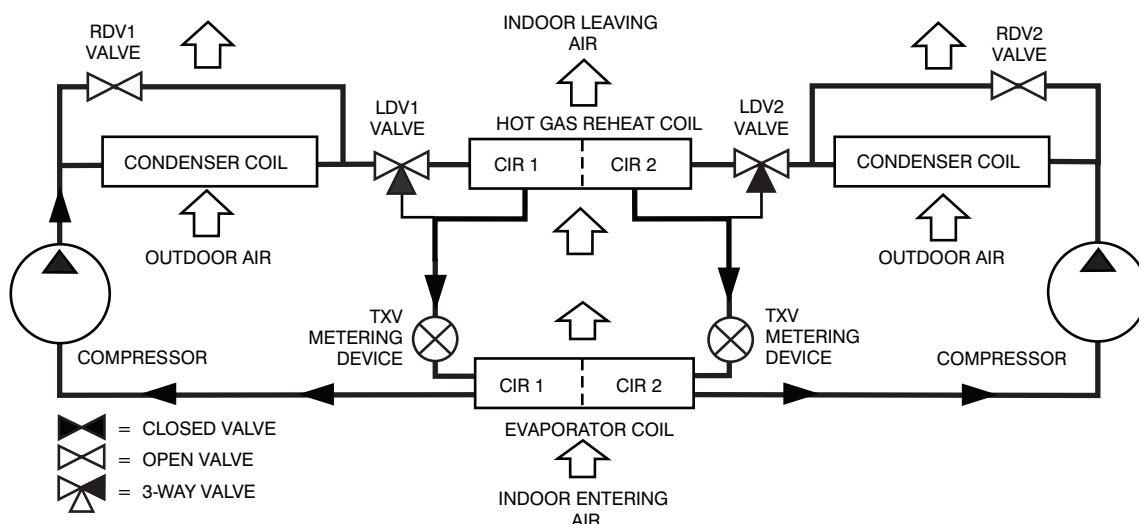
C13792

**Normal Cooling Mode - Hot Gas Reheat System**



C13809

**Subcooling Mode (Reheat 1) - Hot Gas Reheat System**



C13793

**Hot Gas Reheat Mode (Reheat 2) - Hot Gas Reheat System**

Note about this specification:

## COOLING ONLY / ELECTRIC HEAT PACKAGED ROOFTOP

HVAC Guide Specifications

Size Range: 17.5 to 27.5 Nominal Tons



| <u>Section</u> | <u>Description</u> |
|----------------|--------------------|
|----------------|--------------------|

|                 |                                                   |
|-----------------|---------------------------------------------------|
| <b>23 06 80</b> | <b>Schedules for Decentralized HVAC Equipment</b> |
|-----------------|---------------------------------------------------|

|             |                                               |
|-------------|-----------------------------------------------|
| 23 06 80.13 | Decentralized Unitary HVAC Equipment Schedule |
|-------------|-----------------------------------------------|

|                |                       |
|----------------|-----------------------|
| 23 06 80.13.A. | Rooftop unit schedule |
|----------------|-----------------------|

- |    |                                                         |
|----|---------------------------------------------------------|
| 1. | Schedule is per the project specification requirements. |
|----|---------------------------------------------------------|

|                 |                                  |
|-----------------|----------------------------------|
| <b>23 07 16</b> | <b>HVAC Equipment Insulation</b> |
|-----------------|----------------------------------|

|             |                               |
|-------------|-------------------------------|
| 23 07 16.13 | Decentralized, Rooftop Units: |
|-------------|-------------------------------|

|                |                             |
|----------------|-----------------------------|
| 23 07 16.13.A. | Evaporator fan compartment: |
|----------------|-----------------------------|

- |    |                                                                                                                                                                                                     |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Interior cabinet surfaces shall be insulated with a minimum 1/2-in. thick, minimum 1 1/2 lb density, flexible fiberglass insulation bonded with a phenolic binder, neoprene coated on the air side. |
| 2. | Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.                                                                                                     |

|                |                            |
|----------------|----------------------------|
| 23 07 16.13.B. | Electric heat compartment: |
|----------------|----------------------------|

- |    |                                                                                                 |
|----|-------------------------------------------------------------------------------------------------|
| 1. | Aluminum foil-faced fiberglass insulation shall be used.                                        |
| 2. | Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation. |

|                 |                                                     |
|-----------------|-----------------------------------------------------|
| <b>23 09 13</b> | <b>Instrumentation and Control Devices for HVAC</b> |
|-----------------|-----------------------------------------------------|

|             |                          |
|-------------|--------------------------|
| 23 09 13.23 | Sensors and Transmitters |
|-------------|--------------------------|

|                |             |
|----------------|-------------|
| 23 09 13.23.A. | Thermostats |
|----------------|-------------|

- |    |                                                                                               |
|----|-----------------------------------------------------------------------------------------------|
| 1. | Thermostat must                                                                               |
| a. | energize both "W" and "G" when calling for heat.                                              |
| b. | have capability to energize 2 different stages of cooling, and 2 different stages of heating. |
| c. | include capability for occupancy scheduling.                                                  |

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| <b>23 09 33</b> | <b>Electric and Electronic Control System for HVAC</b> |
|-----------------|--------------------------------------------------------|

|             |                               |
|-------------|-------------------------------|
| 23 09 33.13 | Decentralized, Rooftop Units: |
|-------------|-------------------------------|

|                |          |
|----------------|----------|
| 23 09 33.13.A. | General: |
|----------------|----------|

- |    |                                                                                                                                                                                                                                      |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-v transformer side. Transformer shall have 75VA capability.                                                    |
| 2. | Shall utilize color-coded wiring.                                                                                                                                                                                                    |
| 3. | Shall include a central control terminal board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, economizer, thermostat, and low and high pressure switches. |
| 4. | Unit shall include a minimum of one 8-pin screw terminal connection board for connection of control wiring.                                                                                                                          |

|                |           |
|----------------|-----------|
| 23 09 33.23.B. | Safeties: |
|----------------|-----------|

- |    |                                                                                                                                                                                                             |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Compressor over-temperature, over-current.                                                                                                                                                                  |
| 2. | Low-pressure switch.                                                                                                                                                                                        |
| a. | Units shall have different sized connectors for the circuit 1 and circuit 2 low and high pressure switches. They shall physically prevent the cross-wiring of the safety switches between circuits 1 and 2. |
| b. | Low pressure switch shall use different color wire than the high pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.     |

3. High pressure switch.
  - a. Units shall have different sized connectors for the circuit 1 and circuit 2 low and high pressure switches. They shall physically prevent the cross-wiring of the safety switches between circuits 1 and 2.
  - b. High pressure switch shall use different color wire than the low pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
4. Automatic reset, motor thermal overload protector.

### **23 09 93 Sequence of Operations for HVAC Controls**

23 09 93.13 Decentralized, Rooftop Units:

23 09 93.13 INSERT SEQUENCE OF OPERATION

### **23 40 13 Panel Air Filters**

23 40 13.13 Decentralized, Rooftop Units:

23 40 13.13.A. Standard filter section

1. Shall consist of factory-installed, low velocity, disposable 2-in. thick fiberglass filters of commercially available sizes.
2. Unit shall use only one filter size. Multiple sizes are not acceptable.
3. Filters shall be accessible through a dedicated, weather tight access panel.
4. 4-in filter capabilities shall be capable with pre-engineered and approved filter track field installed accessory. This kit requires field furnished filters.

### **23 81 19 Self-Contained Air Conditioners**

23 81 19.13 Medium-Capacity Self-Contained Air Conditioners (RAS210-336)

23 81 19.13.A. General

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing a fully hermetic scroll compressor(s) for cooling duty and with optional electric heat accessories for heating duty.
2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
3. Unit shall use environmentally sound, R-410A refrigerant.
4. Unit shall be installed in accordance with the manufacturer's instructions.
5. Unit must be selected and installed in compliance with local, state, and federal codes.

23 81 19.13.B. Quality Assurance

1. Unit meets ASHRAE 90.1 minimum efficiency requirements.
2. Unit shall be rated in accordance with AHRI Standard 340/360.
3. Unit shall be designed to conform to ASHRAE 15.
4. Unit shall be ETL-tested and certified in accordance with ANSI Z21.47 Standards and ETL-listed and certified under Canadian standards as a total package for safety requirements.
5. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
6. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
7. Unit casing shall be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 5000-hour salt spray.
8. Unit shall be designed in accordance with ISO 9001.
9. Roof curb shall be designed to conform to NRCA Standards.
10. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.
11. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain.
12. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.
13. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.
14. High Efficient Motors listed shall meet section 313 of the Energy Independence and Security Act of 2007 (EISA 2007).

23 81 19.13.C. Delivery, Storage, and Handling

1. Unit shall be stored and handled per manufacturer's recommendations.
2. Lifted by crane requires either shipping top panel or spreader bars.
3. Unit shall only be stored or positioned in the upright position.

23 81 19.13.D. Project Conditions

1. As specified in the contract.

#### 23 81 19.13.E. Operating Characteristics

1. Unit shall be capable of starting and running at 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 340/360 at  $\pm 10\%$  voltage.
2. Compressor with standard controls shall be capable of operation down to 30°F (−1°C), ambient outdoor temperatures. Accessory winter start kit is necessary if mechanically cooling at ambient temperatures below 30°F (−1°C).
3. Unit shall discharge supply air vertically as shown on contract drawings.
4. Unit shall be factory configured and ordered for vertical supply & return configurations.
5. Unit shall be factory furnished for vertical configuration. No field conversion is required.

#### 23 81 19.13.F. Electrical Requirements

1. Main power supply voltage, phase, and frequency must match those required by the manufacturer.

#### 23 81 19.13.G. Unit Cabinet

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a pre-painted baked enamel finish on all externally exposed surfaces.
2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003 inches minimum, gloss (per ASTM D523, 60°F / 16°C): 60, Hardness: H-2H Pencil hardness.
3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standard 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 1/2-in. thick, 1 lb density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
4. Base of unit shall have a minimum of four locations for thru-the-base electrical connections standard. Electric connections shall be internal to the cabinet to protect from environmental issues.
5. Base Rail
  - a. Unit shall have base rails on a minimum of 2 sides.
  - b. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
  - c. Holes shall be provided in the base rail for moving the rooftop by fork truck.
  - d. Base rail shall be a minimum of 16 gauge thickness.
6. Condensate pan and connections:
  - a. Shall be a sloped condensate drain pan made of a non-corrosive material.
  - b. Shall comply with ASHRAE Standard 62.
  - c. Shall use a 3/4-in –14 NPT drain connection, through the side of the drain pan. Connection shall be made per manufacturer's recommendations.
7. Top panel:
  - a. Shall be a multi-piece top panel linked with water tight flanges and locking systems.
8. Electrical Connections
  - a. All unit power wiring shall enter unit cabinet at a single, factory-prepared, knockout location.
  - b. Thru-the-base capability.
    - (1.) Thru-the-base provisions/connections are available as standard with every unit. When bottom connections are required, field furnished couplings are required.
    - (2.) No basepan penetration, other than those authorized by the manufacturer, is permitted.
9. Component access panels (standard)
  - a. Cabinet panels shall be easily removable for servicing.
  - b. Unit shall have one factory installed, removable, filter access panel.
  - c. Panels covering control box and filter shall have molded composite handles while the blower access door shall have an integrated flange for easy removal.
  - d. Handles shall be UV modified, composite. They shall be permanently attached, and recessed into the panel.
  - e. Screws on the vertical portion of all removable access panels shall engage into heat resistant, molded composite collars.
  - f. Collars shall be removable and easily replaceable using manufacturer recommended parts.

#### 23 81 19.13.H. N/A

#### 23 81 19.13.I. Coils

1. Standard Aluminum fin – Copper Tube Coils:
  - a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.

- b. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
  - c. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
2. Optional Pre-coated aluminum-fin condenser coils:
- a. Shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments.
  - b. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube.
  - c. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.
3. Optional Copper-fin evaporator and condenser coils:
- a. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets.
  - b. Galvanized steel tube sheets shall not be acceptable.
  - c. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.
4. Optional E-coated aluminum-fin evaporator and condenser coils:
- a. Shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins.
  - b. Coating process shall ensure complete coil encapsulation of tubes, fins and headers.
  - c. Color shall be HI gloss black with gloss per ASTM D523-89.
  - d. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges.
  - e. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93.
  - f. Impact resistance shall be up to 160 in.-lb (ASTM D2794-93).
  - g. Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92).
  - h. Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90.

#### 23 81 19.13.J. Refrigerant Components

1. Refrigerant circuit shall include the following control, safety, and maintenance features:
  - a. Fixed orifice metering system (on non Hot Gas Reheat units) shall prevent mal-distribution of two-phase refrigerant by including multiple fixed orifice devices in each refrigeration circuit. Each orifice is to be optimized to the coil circuit it serves.
  - b. Thermostatic Expansion Valve (TXV) shall help provide optimum performance across the entire operating range. Shall contain removable power element to allow change out of power element and bulb without removing the valve body (for Hot Gas Reheat units only).
  - c. Refrigerant filter drier – Solid core design.
  - d. Service gauge connections on suction and discharge lines.
  - e. Pressure gauge access through a specially designed access screen on the side of the unit.
2. Compressors
  - a. Unit shall use fully hermetic, scroll compressor for each independent refrigeration circuit.
  - b. Models shall be available with 2 compressor/2 stage cooling.
  - c. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
  - d. Compressors shall be internally protected from High discharge temperature conditions.
  - e. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.
  - f. Compressor shall be factory mounted on rubber grommets.
  - g. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.
  - h. Crankcase heaters shall not be required for normal operating range, unless provided by the factory.

#### 23 81 19.13.K. Filter Section

1. Filters access is specified in the unit cabinet section of this specification.
2. Filters shall be held in place by a preformed, slide-out filter tray, facilitating easy removal and installation.
3. Shall consist of factory-installed, low velocity, throw-away 2-in. thick fiberglass filters.
4. Filters shall be standard, commercially available sizes.
5. Only one size filter per unit is allowed.

6. 4-in filter capability is possible with a field installed pre engineered slide out filter track accessory. 4-in filters are field furnished.

#### 23 81 19.13.L. Evaporator Fan and Motor

1. Evaporator fan motor:
  - a. Shall have inherent automatic-reset thermal overload protection or circuit breaker.
  - b. Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating shall be required.
2. Belt-driven Evaporator Fan:
  - a. Belt drive shall include an adjustable-pitch motor pulley and belt break protection system.
  - b. Shall use rigid pillow block bearing system with lubricant fittings at accessible bearing or lubrication line.
  - c. Blower fan shall be double-inlet type with forward-curved blades.
  - d. Shall be constructed from steel with a corrosion resistant finish and dynamically balanced.

#### 23 81 19.13.M. Condenser Fans and Motors

1. Condenser fan motors:
  - a. Shall be a totally enclosed motor.
  - b. Shall use permanently lubricated bearings.
  - c. Shall have inherent thermal overload protection with an automatic reset feature.
  - d. Shall use a shaft-down design.
2. Condenser Fans:
  - a. Shall be a direct-driven propeller type fan.
  - b. Shall have galvalum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

#### 23 81 19.13.N. Special Features Options and Accessories

1. 2-speed indoor fan motor for 2-stage cooling models only
  - a. Evaporator fan motor:
    - (1.) Shall have permanently lubricated bearings.
    - (2.) Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating.
    - (3.) Shall be Variable Frequency duty and 2-speed control.
    - (4.) Shall contain motor shaft grounding ring to prevent electrical bearing fluting damage by safely diverting harmful shaft voltages and bearing currents to ground.
2. Variable Frequency Drive (VFD). Only available on 2-speed indoor fan motor option:
  - a. Shall be installed inside the unit cabinet, mounted, wired and tested.
  - b. Shall contain Electromagnetic Interference (EMI) frequency protection.
  - c. Insulated Gate Bi-Polar Transistors (IGBT) used to produce the output pulse width modulated (PWM) waveform, allowing for quiet motor operation.
  - d. Self diagnostics with fault and power code LED indicator. Field accessory Display Kit available for further diagnostics and special setup applications.
  - e. RS485 capability standard.
  - f. Electronic thermal overload protection.
  - g. 5% swinging chokes for harmonic reduction and improved power factor.
  - h. All printed circuit boards shall be conformal coated.
3. Standard Integrated Economizer IV, with standard leak rating for single speed indoor fan motor models. (Factory installed on 3 Phase Models Only. Field installed on all 3 and 1 Phase Models):
  - a. Integrated, gear-driven parallel modulating blade design type capable of simultaneous economizer and compressor operation.
  - b. Independent modules for vertical or horizontal return configurations shall be available. Vertical return modules shall be available as a factory installed option.
  - c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
  - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
  - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.

- f. Standard leak rate models shall be equipped with low-leakage dampers, not to exceed 2% leakage at 1 in. wg pressure differential. Economizer controller on electromechanical units shall be Honeywell W7212 that provides:
  - i. Combined minimum and DCV maximum damper position potentiometers with compressor staging relay
  - ii. Functions with solid state analog enthalpy or dry bulb changeover control sensing.
  - iii. Contain LED indicates for: when free cooling is available, when module is in DCV mode, when exhaust fan contact is closed.
- g. Standard leak rate models shall be equipped with low-leakage dampers, not to exceed 2% leakage at 1 in. wg pressure differential.
- 4. Ultra low leak Economizer X system shall be available on single and two-speed indoor fan motor models.
  - a. Integrated, gear-driven parallel modulating blade design type capable of simultaneous economizer and compressor operation.
  - b. Independent modules for vertical or horizontal return configurations shall be available. Vertical return modules shall be available as a factory installed option.
  - c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
  - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
  - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
    - i. Maximum damper leakage rate shall meet California Title 24 section 140.4 and ASHRAE 90.1 requirements of 4 cfm per sq. ft. on the outside air dampers and 10 cfm per sq. ft. on the return dampers. Economizer controller on electromechanical units shall be Honeywell W7220 that provides:
      - ii. 2-line LCD interface screen for setup, configuration and troubleshooting.
      - iii. On-board fault detection and diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24.
      - iv. Sensor failure loss of communication identification.
      - v. Automatic sensor detection.
      - vi. Capabilities for use with multiple-speed indoor fan systems.
      - vii. Utilize digital sensors: Dry bulb and Enthalpy.
  - f. Shall be capable of introducing up to 100% outdoor air.
  - g. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air contain seals that meet ASHRAE 90.1 requirements.
  - h. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
    - i. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory installed only. Outdoor air sensor setpoint shall be adjustable and shall range from 40° to 100°F / 4° to 38°C. Additional sensor options shall be available as accessories.
    - j. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.
    - k. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
      - l. Dampers shall be completely closed when the unit is in the unoccupied mode.
  - m. Economizer controller shall accept a 2–10 Vdc CO2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.
  - n. Compressor lockout temperature is adjustable from –45°F (–42°C) to 80°F (27°C), set at factory default of 32°F (0°C) .
  - o. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
  - p. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
    - viii. Maximum damper leakage rate shall meet California Title 24 section 140.4 and ASHRAE 90.1 requirements of 4 cfm per sq. ft. on the outside air dampers and 10 cfm per sq. ft. on the return dampers.
- 5. Two-Position Motorized Damper
  - a. Damper shall be a Two-Position Damper. Damper travel shall be from the full closed position to the field adjustable %-open setpoint.
  - b. Damper shall include adjustable damper travel from 25% to 100% (full open).
  - c. Damper shall include single or dual blade, gear driven dampers and actuator motor.

- d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
- e. Damper will admit up to 100% outdoor air for applicable rooftop units.
- f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
- g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
- h. Outside air hood shall include aluminum water entrainment filter
- 6. Manual damper
  - a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25% outdoor air for year round ventilation.
- 7. Hot Gas Reheat System (not available on 336 size units)
  - a. The Hot Gas Reheat System shall be factory-installed in 2-stage RAS models with RTPF (round tube plate fin) condenser coils, and shall provide greater dehumidification of the occupied space by two modes of dehumidification operations beside its normal design cooling mode:
    - (1.) Subcooling mode further subcools the hot liquid refrigerant leaving the condenser coil when both temperature and humidity in the space are not satisfied.
    - (2.) Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to create a two-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.
    - (3.) Includes Head Pressure Controller.
- 8. Head Pressure Control Package (MotorMaster)
  - a. Controller shall control coil head pressure by condenser-fan speed modulation or condenser-fan cycling and wind baffles.
  - b. Shall consist of solid-state control and condenser-coil temperature sensor to maintain condensing temperature between 90°F (32°C) and 110°F (43°C) at outdoor ambient temperatures down to -20°F (-29°C).
- 9. Condenser Coil Hail Guard Assembly
  - a. Shall protect against damage from hail.
  - b. Shall be louvered style design.
- 10. Unit-Mounted, Non-Fused Disconnect Switch:
  - a. Switch shall be factory-installed, internally mounted.
  - b. National Electric Code (NEC) and ETL approved non-fused switch shall provide unit power shutoff.
  - c. Shall be accessible from outside the unit
  - d. Shall provide local shutdown and lockout capability.
- 11. Convenience Outlet:
  - a. Non-Powered convenience outlet.
    - (1.) Outlet shall be powered from a separate 115/120v power source.
    - (2.) A transformer shall not be included.
    - (3.) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
    - (4.) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
    - (5.) Outlet shall be accessible from outside the unit.
    - (6.) Outlet shall include a field-installed "Wet in Use" cover.
- 12. Fan/Filter Status Switch:
  - a. Switch shall provide status of indoor evaporator fan (ON/OFF) or filter (CLEAN/DIRTY).
  - b. Status shall be displayed either over communication bus (when used with direct digital controls) or with an indicator light at the thermostat.
- 13. Centrifugal Power Exhaust:
  - a. Power exhaust shall be used in conjunction with an integrated economizer.
  - b. Independent modules for vertical return configurations shall be available.
  - c. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0-100% adjustable setpoint on the economizer control.
- 14. Roof Curbs (Vertical):
  - a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
  - b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
  - c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
- 15. HI-Static Indoor Fan Motor(s) and Drive(s):
  - a. HI-static motor(s) and drive(s) shall be factory-installed to provide additional performance range.

16. Outdoor Air Enthalpy Sensor:
  - a. The outdoor air enthalpy sensor shall be used to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the unit will provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.
17. Return Air Enthalpy Sensor:
  - a. The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.
18. Indoor Air Quality (CO<sub>2</sub>) Sensor:
  - a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
  - b. The IAQ sensor shall be available in duct mount. The setpoint shall have adjustment capability.
19. Smoke detectors (Supply):
  - a. Shall be a Four-Wire Controller and Detector.
  - b. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.
  - c. Shall use magnet-activated test/reset sensor switches.
  - d. Shall have tool-less connection terminal access.
  - e. Shall have a recessed momentary switch for testing and resetting the detector.
  - f. Controller shall include:
    - (1.) One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel.
    - (2.) Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
    - (3.) One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
    - (4.) Capable of direct connection to two individual detector modules.
    - (5.) Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications
20. Winter start kit
  - a. Shall contain a bypass device around the low pressure switch.
  - b. Shall be required when mechanical cooling is required down to 25°F (-4°C).
  - c. Shall not be required to operate on an economizer when below an outdoor ambient of 40°F (4°C).
21. Time Guard
  - a. Shall prevent compressor short cycling by providing a 5-minute delay (±2 minutes) before restarting a compressor after shutdown for any reason.
  - b. One device shall be required per compressor.
22. Electric Heat:
  - a. Heating Section
    - (1.) Heater element open coil resistance wire, nickel-chrome alloy, 0.29 inches inside diameter, strung through ceramic insulators mounted on metal frame. Coil ends are staked and welded to terminal screw slots.
    - (2.) Heater assemblies are provided with integral fusing for protection of internal heater circuits not exceeding 48 amps each. Auto reset thermo limit controls, magnetic heater contactors (24 v coil) and terminal block all mounted in electric heater control box (minimum 18 ga galvanized steel) attached to end of heater assembly.
23. Display Kit for Variable Frequency Drive
  - a. Kit allows the ability to access the VFD controller programs to provide special setup capabilities and diagnostics.
  - b. Kit contains display module and communication cable.
  - c. Display Kit can be permanently installed in the unit or used on any 2-Speed Indoor Fan Motor VFD controller as needed.
24. Hinged Access Panels:
  - a. Shall provide easy access through hinged access doors with vinyl coated door retainers.
  - b. Shall be on major panels of – filter, control box and fan motor.