

**50TC  
Single Package Rooftop  
Cooling Only  
Horizontal Air Flow Unit  
with Puron® (R-410A) Refrigerant  
15, 17.5, 20, 25 Tons – (Sizes 18, 21, 25, 29)**



## Product Data



C12590

(Unit shown with economizer and power exhaust.)



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The 15 to 25 ton WeatherMaker Carrier rooftop unit (RTU) was designed by customers for customers. With a newly designed cabinet that integrates “no-strip” screw collars, handled access panels, and more, we’ve made your unit easy to install, easy to maintain and easy to use and reliable.

## Easy to install:

These WeatherMaker units are designed for dedicated factory supplied horizontal air flow duct configurations. No special field kits are required. Designed to fit on pre-installed curbs by other another manufacturer, these units also fit on past designed Carrier installed curbs with a new certified and authorized adapter curb. This cabinet design also integrates a large control box that gives you room to work and room to mount Carrier accessory controls.

## Easy to maintain:

Easy access handles by Carrier provide quick and easy access to all major, normally serviced components. Our “no-strip” screw system has superior holding power and guides screws into position while preventing the screw from stripping the unit’s metal. Take accurate pressure readings by reading condenser pressure with panels in place as compressors are strategically located to eliminate any air bypass.

## Easy to use:

The newly designed, central terminal board by Carrier puts all your connections and troubleshooting points in one convenient place, standard. Most low voltage connections are made to the same board and make it easy to find what you’re looking for and easy to access it. Carrier rooftops have high and low pressure switches, a filter drier, and 2-in (51mm) filters standard.

## Reliable:

Each unit comes with precision sized and tested scroll compressor that is internally protected from over temperature and pressures. In addition, each refrigerant circuit is further protected with a high pressure and low pressure switch as well as containing a liquid line filter drier. Each unit is factory tested prior to shipment to help ensure units operation once properly installed.

## FEATURES AND BENEFITS

- 2-stage cooling capacity with independent circuits and control.
- High performance copper tube / aluminum plate (RTPF) fin condenser and evaporator coils with optional coating.
- EER's up to 11.0
- IEER's up to 11.2 with single speed indoor fan motor and up to 12.9 with 2-speed/VFD indoor fan motor
- Dedicated horizontal air flow duct configuration models. No field kits required.
- Utility connections through the side or bottom. Bottom connections are also in an enclosed environment to help prevent water entry. Field supplied couplings are required.
- Standardized components and control box layout. Standardized components and controls make stocking parts and service easier.
- Scroll compressors on all units. This makes service, stocking parts, replacement, and trouble-shooting easier.
- Proven TXV refrigerant metering system.
- Easy-adjust, belt-drive motor available. Motor assembly also contains a fan belt break protection system on all models and reliable pillow block bearing system that allows lubrication thru front of the unit.
- Capable of thru-the-base electrical routing.
- Full range of electric heaters and single point electric kits – pre-engineered and approved for field installation.
- Single-point electrical connection.
- Sloped, composite drain pan sheds water; and won't rust.
- Standardized controls and control box layout. Standardized components and controls make stocking parts and service easier.
- Clean, large, easy to use control box.
- Color-coded wiring.
- Large, laminated wiring and power wiring drawings which are affixed to unit make troubleshooting easy.
- Single, central terminal board for test and wiring connections.
- Fast-access, handled, panels for easy access on normally accessed service panels.
- "No-strip" screw system guides screws into the panel and captures them tightly without stripping the screw, the panel, or the unit.
- Mechanical cooling (115°F to 35°F / 46°C to 2°C) standard on all models. Low ambient controller allows operation down to -20°F / -29°C.
- 2-in (51mm) disposable filters on all units, with 4-in (102mm) filter track - field installed.
- Refrigerant filter-drier on each circuit.
- High and low pressure switches. Added reliability with high pressure switch and low pressure switch.
- Many factory-installed options ranging from air management economizers, 2 position dampers, manual outdoor air dampers, plus convenience outlets, disconnect switch and smoke detectors.
- Factory-installed Humidi-MiZer® adaptive dehumidification system.
- Standard Parts Warranty: 10 year aluminized heat exchanger, 5 year compressor, condenser coil, 1 year others.
- Optional Staged Air Volume (SAV) system utilizes a Variable Frequency Drive (VFD) to automatically adjust the indoor fan motor speed between cooling stages. Available on 2-stage cooling models with electromechanical controls or RTU Open.

# MODEL NUMBER NOMENCLATURE

| Position: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|-----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
| Example:  | 5 | 0 | T | C | - | D | 2 | 5 | A | 5  | A  | 5  | -  | 0  | A  | 0  | A  | 0  |

**Unit Heat Type**  
50 - Electric Heat  
Packaged Rooftop

**Model Series - WeatherMaker™**  
TC - Standard Efficiency

**Heat Options**  
- = Standard, No Electric Heat

**Refrig. Systems Options**  
D = Two stage cooling model  
E = Two stage cooling models with Humidi-MiZer

**Cooling Tons**  
18 = 15 tons  
21 = 17.5 tons  
25 = 20 tons  
29 = 25 tons

**Sensor Options**  
A = None  
B = RA Smoke Detector  
C = SA Smoke Detector  
D = RA + SA Smoke Detector  
E = CO<sub>2</sub>  
F = RA Smoke Detector and CO<sub>2</sub>  
G = SA Smoke Detector and CO<sub>2</sub>  
H = RA + SA Smoke Detector and CO<sub>2</sub>

**Indoor Fan Options & Air Flow Configuration**  
5 = Standard Static/Horizontal Supply, Return Air Flow  
6 = Medium Static/Horizontal Supply, Return Air Flow  
7 = High Static/Horizontal Supply, Return Air Flow  
F = Medium Static High Efficiency Motor/HorizontalSupply, Return Air Flow  
G = High Static High Efficiency Motor/Horizontal Supply, Return Air Flow

**Coil Options – RTPF (Outdoor - Indoor - Hail Guard)**  
A = Al/Cu - Al/Cu  
B = Precoat Al/Cu - Al/Cu  
C = E-coat Al/Cu - Al/Cu  
D = E-coat Al/Cu - E-coat Al/Cu  
E = Cu/Cu - Al/Cu  
F = Cu/Cu - Cu/Cu  
M = Al/Cu -Al/Cu — Louvered Hail Guard  
N = Precoat Al/Cu - Al/Cu — Louvered Hail Guard  
P = E-coat Al/Cu - Al/Cu — Louvered Hail Guard  
Q = E-coat Al/Cu - E-coat Al/Cu — Louvered Hail Guard  
R = Cu/Cu - Al/Cu — Louvered Hail Guard  
S = Cu/Cu - Cu/Cu — Louvered Hail Guard

**Packaging & Seismic Compliance**  
0 = Standard

**Electrical Options**  
A = None  
C = Non-Fused Disconnect  
G = 2-Speed Indoor Fan (VFD) Controller (Standard on 29 size models)  
J = 2 Speed Fan Controller (VFD) & Non-Fused Disconnect

**Service Options**  
0 = None  
1 = Unpowered Convenience Outlet  
2 = Powered Convenience Outlet  
3 = Hinged Panels  
4 = Hinged Panels and Unpowered Convenience Outlet  
5 = Hinged Panels and Powered Convenience Outlet

**Intake / Exhaust Options**  
A = None  
B = Temperature Economizer w/ Barometric Relief  
F = Enthalpy Economizer w/ Barometric Relief  
K = 2-Position Damper  
U = Temp Ultra Low Leak Economizer w/ Baro Relief  
W= Enthalpy Ultra Low Leak Economizer w/ Baro Relief

**Base Unit Controls**  
0 = Electro mechanical controls. Can be used with W7212 EconoMi\$er IV (Non-Fault Detection & diagnostic)  
1 = PremierLink Controller  
2 = RTU Open Multi-Protocol Controller  
6 = Electro mechanical controls. Can be used with W7220 EconoMi\$er X ( with Fault Detection & Diagnostic)

**Design Revision**  
- = Factory Design Revision

**Voltage**  
1 = 575/3/60  
5 = 208-230/3/60  
6 = 460/3/60

**Fig. 1 - Model Number Nomenclature (Example)**

C13798C

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

| CATEGORY                                             | ITEM                                                                                                                             | FACTORY<br>INSTALLED<br>OPTION | FIELD<br>INSTALLED<br>ACCESSORY |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| <b>Cabinet</b>                                       | Hinged Access Panels                                                                                                             | X                              |                                 |
| <b>Coil Options</b>                                  | Cu/Cu indoor & outdoor coils                                                                                                     | X                              |                                 |
|                                                      | E – coated indoor & outdoor coils                                                                                                | X                              |                                 |
|                                                      | Pre – coated outdoor coils                                                                                                       | X                              |                                 |
| <b>Humidity Control</b>                              | Humidi – MiZer Adaptive Dehumidification System                                                                                  | X                              |                                 |
| <b>Condenser Protection</b>                          | Condenser coil hail guard (louvered design)                                                                                      | X                              | X                               |
| <b>Controls</b>                                      | Thermostats, temperature sensors, and subbases                                                                                   |                                | X                               |
|                                                      | PremierLink DDC communicating controller                                                                                         | X                              | X                               |
|                                                      | RTU Open protocol controller                                                                                                     | X                              |                                 |
|                                                      | Smoke detector (supply and/or return air)                                                                                        | X                              | X                               |
|                                                      | Time Guard II compressor delay control circuit                                                                                   |                                | X                               |
|                                                      | Phase Monitor                                                                                                                    |                                | X                               |
| <b>Economizers<br/>&amp; Outdoor Air<br/>Dampers</b> | EconoMi\$er IV for electro – mechanical controls – Non FDD (Standard air leak damper models) <sup>6</sup>                        | X                              | X                               |
|                                                      | EconoMi\$er2 for DDC controls, complies with FDD (Standard and Ultra Low Leak air damper models) <sup>6,7</sup>                  | X                              | X                               |
|                                                      | Motorized 2 position outdoor – air damper                                                                                        | X                              | X                               |
|                                                      | Manual outdoor – air damper (25%)                                                                                                |                                | X                               |
|                                                      | Barometric relief <sup>1</sup>                                                                                                   | X                              | X                               |
|                                                      | Barometric hood (Horizontal economizer)                                                                                          |                                | X                               |
|                                                      | EconoMi\$er X for electro – mechanical controls, complies with FDD. (Standard and Ultra Low Leak air damper models) <sup>6</sup> |                                | X                               |
|                                                      | Power exhaust                                                                                                                    |                                | X                               |
| <b>Economizer Sensors &amp;<br/>IAQ Devices</b>      | Single dry bulb temperature sensors <sup>2</sup>                                                                                 | X                              | X                               |
|                                                      | Differential dry bulb temperature sensors <sup>2</sup>                                                                           |                                | X                               |
|                                                      | Single enthalpy sensors <sup>2</sup>                                                                                             | X                              | X                               |
|                                                      | Differential enthalpy sensors <sup>2</sup>                                                                                       |                                | X                               |
|                                                      | CO <sub>2</sub> sensor (wall, duct, or unit mounted) <sup>2</sup>                                                                | X                              | X                               |
| <b>Electric Heat</b>                                 | Electric Resistance Heaters                                                                                                      |                                | X                               |
|                                                      | Single Point Kit                                                                                                                 |                                | X                               |
| <b>Indoor Motor<br/>&amp; Drive</b>                  | Multiple motor and drive packages                                                                                                | X                              |                                 |
|                                                      | Staged Air Vol (SAV) system w/VFD controller (2 – stage cool only with electrical mechanical and RTU Open controls)              | X                              |                                 |
|                                                      | Display Kit for SAV system with VFD                                                                                              |                                | X                               |
| <b>Low Ambient<br/>Control</b>                       | Winter start kit <sup>3</sup>                                                                                                    |                                | X                               |
|                                                      | MotorMaster head pressure controller to –20°F (–29°C) <sup>3</sup>                                                               |                                | X                               |
| <b>Power<br/>Options</b>                             | Convenience outlet (powered)                                                                                                     | X                              |                                 |
|                                                      | 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 for optimizing economizer.
3. See application data for assistance.
4. Non – fused disconnect switch cannot be used when FLA electrical rating exceeds 100 amps at 460/575 volt and 200 amps at 208/230 volt. Carrier RTUBuilder selects this automatically.
5. Not for 48TJE028 – 028 models using 48DP900041, 48DP900051 or 48DP900061 roofcurbs.
6. FDD – (Fault Detection and Diagnostic) capability per California Title 24 section 120.2.
7. Models with RTU Open DDC controls comply with California Title 24 Fault Detection and Diagnostic (FDD). PremierLink is non FDD.

## 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, saving money.

### Smoke Detectors

Trust the experts. Smoke detectors make your application safer and your job easier. Carrier smoke detectors immediately shut down the rooftop unit when smoke is detected. They are available, installed by the factory, for supply air, return air, or both.

### Louvered Hail Guards

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

### Convenience Outlet (powered or un-powered)

Reduce service and/or installation costs by including a convenience outlet in your specification. Carrier will install this service feature at our factory. Provides a convenient, 15 amp, 115v GFCI receptacle with “Wet in Use” cover. The “powered” option allows the installer to power the outlet from the line side of the disconnect as required by code. The “unpowered” 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.

### Power Exhaust with Barometric Relief

Superior internal building pressure control. This field-installed accessory or factory-installed option may eliminate the need for costly, external pressure control fans.

### PremierLink, DDC Controller

This CCN controller regulates your rooftop’s performance to tighter tolerances and expanded limits, as well as facilitates zoning systems and digital accessories. It also unites your Carrier HVAC equipment together on one, coherent CCN network. The PremierLink can be factory-installed, or easily field-installed. Not available with 2-speed indoor fan motor.

### RTU Open Protocol Controller

Connect the rooftop to an existing BAS without needing complicated translators or adapter modules using the RTU Open controller. This new controller speaks the 4 most common building automation system languages (Bacnet, Modbus, N2, and Lonworks). Use this controller when you have an existing BAS.

### 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. Not required with PremierLink®, RTU Open, or authorized commercial thermostats.

### 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.

### Motorized 2-Position Damper

The new Carrier 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

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

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

### Optional Humidi-MiZer Adaptive Dehumidification System

Carrier's Humidi-MiZer adaptive dehumidification system is an all-inclusive factory installed option that can be ordered with any WeatherMaker 50TC18-29 rooftop unit.

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

The Humidi-MiZer adaptive dehumidification system has the industry's only dual dehumidification mode setting. The Humidi-MiZer system includes two new modes of operation.

The WeatherMaker 50TC18-29 rooftop coupled with the Humidi-MiZer system 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.

### Staged Air Volume (SAV) Indoor Fan Speed System

Carrier's Staged Air Volume (SAV) 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, Carrier's SAV system can save substantial energy, 25%+\*, versus single speed indoor fan motor systems.

The VFD used in Carrier's SAV 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 SAV 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 SAV 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.

\*Data based on .10 (\$/kWh) in an office application utilizing Carrier's HAP 4.6 simulation software program

### 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.

MotorMaster allows cooling operation down to -20°F (-29°C) ambient conditions.

### Winter Start Kit

The winter start kit by Carrier 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.

### Alternate Motors and Drives

Some applications need larger horsepower motors, some need more airflow, and some need both. Regardless of the case, your Carrier expert 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.

### Thru-the-Base Connections

Thru-the-base provisions/connection points are available as standard with every unit. When bottom connections are required, field furnished couplings are required.

## **FACTORY OPTIONS AND/OR ACCESSORIES (cont.)**

### **Hinged Access Panels**

Allows access to unit's major components with specifically designed hinged access panels. Panels are: filter, control box and fan motor.

### **Electric Heaters / Single Point Kit**

Carrier offers a full-line of field-installed accessory heaters and single point kits when required. The heaters are very easy to use, install and are all pre-engineered and certified.

### **Carrier Energy Demand System(EDS)**

Carrier's wireless automated demand management and demand response controllers can be easily installed onto any packaged rooftop unit. Once installed, the controllers work together like a swarm of bees, intelligently communicating and managing the duty cycles of the units being controlled.

Utilizing patented intelligence, the controllers dramatically reduce peak electrical demand by up to 30 percent in commercial and light industrial properties and allow for effective scheduling of overnight and weekend loads. This platform can easily be installed when a full building automation system is not required.

The Energy Demand System is as easy to install as thermostats, and requires no special training. Every controller has a built-in self-configuring wireless network. The controllers work together to establish a wireless network, eliminating the need for expensive wiring. The secure web portal allows property managers to easily access multiple sites from any internet connection to monitor building performance and reconfigure controllers for demand response or the scheduling of loads.

- Simple, affordable, wireless electrical demand management
- Automated demand response, including Open ADR
- Energy consumption reduction through efficient schedule-based control
- Intelligent, adaptive energy management
- Web-based interface
- Electrical demand reductions
- Reduce energy costs, not comfort

### **Barometric Hood**

For Horizontal Economizer applications where relief damper is installed in duct work. This kit provides the needed protection.

**Table 2 – AHRI COOLING RATING TABLE 2-STAGE COOLING**

| UNIT | COOLING STAGES | NOM. CAPACITY (TONS) | NET COOLING CAPACITY (MBH) | TOTAL POWER (kW) | EER  | IEER WITH SINGLE SPEED INDOOR MOTOR | IEER WITH 2-SPEED INDOOR MOTOR |
|------|----------------|----------------------|----------------------------|------------------|------|-------------------------------------|--------------------------------|
| 18   | 2              | 15                   | 174.0                      | 15.8             | 11.0 | 11.2                                | 12.9                           |
| 21   | 2              | 17.5                 | 202.0                      | 18.4             | 11.0 | 11.2                                | 12.9                           |
| 25   | 2              | 20                   | 232.0                      | 21.1             | 11.0 | 11.2                                | 12.9                           |
| 29   | 2              | 25                   | 282.0                      | 28.2             | 10.0 | N/A*                                | 11.2                           |

**LEGEND**

- AHRI – Air Conditioning, Heating and Refrigeration Institute Test Standard
- ASHRAE – American Society of Heating, Refrigerating and Air Conditioning, Inc.
- EER – Energy Efficiency Ratio
- IEER – Integrated Energy Efficiency Ratio
- \* – Model only available with 2-Speed indoor Fan Motor



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).


**NOTES**

- Rated and certified under AHRI Standard 340/360, as appropriate.
- Ratings are based on:  
**Cooling Standard:** 80°F (27°C) db, 67°F (19°C) wb indoor air temp and 95°F db outdoor air temp.  
**IEER Standard:** A measure that expresses cooling part-load EER efficiency for commercial unitary air conditioning and heat pump equipment on the basis of weighted operation at various load capacities.
- All 50TC units comply with ASHRAE 90.1 Energy Standard for minimum EER and IEER requirements.
- Where appropriate, 50TC units comply with US Energy Policy Act. 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.

**Table 3 – MINIMUM - MAXIMUM AIRFLOWS (CFM) COOLING AND ELECTRIC HEAT**

| Model Size | Nominal kW | COOLING                        |                                           |                                          |         | ELECTRIC HEATERS |         |
|------------|------------|--------------------------------|-------------------------------------------|------------------------------------------|---------|------------------|---------|
|            |            | Minimum Single Speed Fan Motor | Minimum 2-Speed Fan Motor (at high speed) | Minimum 2-Speed Fan Motor (at low speed) | Maximum | Minimum          | Maximum |
| 18         | 25         | 4500                           | 5070                                      | 3346                                     | 7500    | 4500             | 7500    |
|            | 50         |                                |                                           |                                          |         |                  |         |
|            | 75         |                                |                                           |                                          |         |                  |         |
| 21         | 25         | 5250                           | 5915                                      | 3904                                     | 9000    | 5200             | 9000    |
|            | 50         |                                |                                           |                                          |         |                  |         |
|            | 75         |                                |                                           |                                          |         |                  |         |
| 25         | 25         | 6000                           | 7500                                      | 4950                                     | 10000   | 6000             | 10000   |
|            | 50         |                                |                                           |                                          |         |                  |         |
|            | 75         |                                |                                           |                                          |         |                  |         |
| 29         | 25         | 7500                           | 8450                                      | 5577                                     | 12500   | 7000             | 12500   |
|            | 50         |                                |                                           |                                          |         |                  |         |
|            | 75         |                                |                                           |                                          |         |                  |         |

**Table 4 – SOUND PERFORMANCE TABLE**

| MODEL SIZE | CLG STAGES | OUTDOOR SOUND (dB) |                 |      |      |      |      |      |      |      |      |
|------------|------------|--------------------|-----------------|------|------|------|------|------|------|------|------|
|            |            | A-Wgt              | AHRI 370 Rating | 63   | 125  | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
| 18         | 2          | 84.1               | 84              | 92.2 | 83.9 | 80.4 | 81.8 | 78.7 | 76.5 | 72.2 | 65.4 |
| 21         | 2          | 84.1               | 84              | 92.2 | 83.9 | 80.4 | 81.8 | 78.7 | 76.5 | 72.2 | 65.4 |
| 25         | 2          | 86.5               | 87              | 95.6 | 87.5 | 84.2 | 84.2 | 81.7 | 77.9 | 73.2 | 66.3 |
| 29         | 2          | 85.9               | 86              | 97.1 | 88.3 | 84.4 | 83.3 | 80.7 | 77.4 | 73.4 | 67.3 |

**LEGEND**

dB – Decibel


**NOTES:**

- Outdoor sound data is measure in accordance with AHRI standard 270-2008.
- 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.
- A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI standard 270-2008.

**Table 5 – PHYSICAL DATA  
RTPF (Round Tube/Plate Fin Coil Design)**

**(COOLING)**

**15-25 TONS**

|                             |                                    | <b>50TC–D18</b> | <b>50TC–E18</b> | <b>50TC–D21</b>    | <b>50TC–E21</b>    |
|-----------------------------|------------------------------------|-----------------|-----------------|--------------------|--------------------|
| <b>Refrigeration System</b> |                                    |                 |                 |                    |                    |
|                             | # Circuits / # Comp. / Type        | 2 / 2 / Scroll  | 2 / 2 / Scroll  | 2 / 2 / Scroll     | 2 / 2 / Scroll     |
|                             | R–410a charge A/B (lbs)            | 17/16.4         | 24.5/25.7       | 17.5/16.8          | 25.5/25.5          |
|                             | Metering device                    | TXV             | TXV             | TXV                | TXV                |
|                             | High–press. Trip / Reset (psig)    | 630 / 505       | 630 / 505       | 630 / 505          | 630 / 505          |
|                             | Low–press. Trip / Reset (psig)     | 54 / 117        | 27 / 44         | 54 / 117           | 27 / 44            |
|                             |                                    |                 |                 |                    |                    |
|                             | Material                           | Cu / Al         | Cu / Al         | Cu / Al            | Cu / Al            |
|                             | Tube Diameter                      | 3/8" RTPF       | 3/8" RTPF       | 3/8" RTPF          | 3/8" RTPF          |
|                             | Rows / FPI                         | 4 / 15          | 4 / 15          | 4 / 15             | 4 / 15             |
|                             | total face area (ft2)              | 22              | 22              | 22                 | 22                 |
|                             | Condensate drain conn. size        | 3/4"            | 3/4"            | 3/4"               | 3/4"               |
| <b>Humidimizer Coil</b>     |                                    |                 |                 |                    |                    |
|                             | Material                           | n/a             | Cu / Al         | n/a                | Cu / Al            |
|                             | Tube Diameter                      | n/a             | 3/8" RTPF       | n/a                | 3/8" RTPF          |
|                             | Rows / FPI                         | n/a             | 1 / 17          | n/a                | 1 / 17             |
|                             | total face area (ft2)              | n/a             | 22              | n/a                | 22                 |
| <b>Evap. fan and motor</b>  |                                    |                 |                 |                    |                    |
| Standard Static             | Motor Qty / Belt Qty / Driver Type | 1/1/ Belt       | 1/1/ Belt       | 1/1/ Belt          | 1/1/ Belt          |
|                             | Max BHP                            | 2.2             | 2.2             | 3.3                | 3.3                |
|                             | RPM range                          | 514–680         | 514–680         | 622–822            | 622–822            |
|                             | motor frame size                   | 56              | 56              | 56                 | 56                 |
|                             | Fan Qty / Type                     | 2 / Centrifugal | 2 / Centrifugal | 2 / Centrifugal    | 2 / Centrifugal    |
|                             | Fan Diameter (in)                  | 18 x 15/15 X 11 | 18 x 15/15 X 11 | 18 x 15/15 X 11    | 18 x 15/15 X 11    |
| Medium Static               | Motor Qty / Belt Qty / Driver Type | 1/1/ Belt       | 1/1/ Belt       | 1/1/ Belt          | 1/1/ Belt          |
|                             | Max BHP                            | 3.3             | 3.3             | 4.9                | 4.9                |
|                             | RPM range                          | 614–780         | 614–780         | 713–879            | 713–879            |
|                             | motor frame size                   | 56              | 56              | 56                 | 56                 |
|                             | Fan Qty / Type                     | 2 / Centrifugal | 2 / Centrifugal | 2 / Centrifugal    | 2 / Centrifugal    |
|                             | Fan Diameter (in)                  | 18 x 15/15 X 11 | 18 x 15/15 X 11 | 18 x 15/15 X 11    | 18 x 15/15 X 11    |
| High Static                 | Motor Qty / Belt Qty / Driver Type | 1/1/ Belt       | 1/1/ Belt       | n/a                | n/a                |
|                             | Max BHP                            | 4.9             | 4.9             | n/a                | n/a                |
|                             | RPM range                          | 746–912         | 746–912         | n/a                | n/a                |
|                             | motor frame size                   | 56              | 56              | n/a                | n/a                |
|                             | Fan Qty / Type                     | 2 / Centrifugal | 2 / Centrifugal | n/a                | n/a                |
|                             | Fan Diameter (in)                  | 18 x 15/15 X 11 | 18 x 15/15 X 11 | n/a                | n/a                |
| High Static–High Eff        | Motor Qty / Belt Qty / Driver Type | n/a             | n/a             | 1/1/ Belt          | 1/1/ Belt          |
|                             | Max BHP                            | n/a             | n/a             | 6.5/ 6.9/ 7.0/ 8.3 | 6.5/ 6.9/ 7.0/ 8.3 |
|                             | RPM range                          | n/a             | n/a             | 882–1078           | 882–1078           |
|                             | motor frame size                   | n/a             | n/a             | 184T               | 184T               |
|                             | Fan Qty / Type                     | n/a             | n/a             | 2 / Centrifugal    | 2 / Centrifugal    |
|                             | Fan Diameter (in)                  | n/a             | n/a             | 18 x 15/15 X 11    | 18 x 15/15 X 11    |

**Table 5 PHYSICAL DATA (cont.)**  
**RTPF (Round Tube/Plate Fin Coil Design)**

**(COOLING)**

**15-25 TONS**

|                                 |                                    | 50TC–D25           | 50TC–E25           | 50TC–D29           | 50TC–E29           |
|---------------------------------|------------------------------------|--------------------|--------------------|--------------------|--------------------|
| <b>Refrigeration System</b>     |                                    |                    |                    |                    |                    |
| # Circuits / # Comp. / Type     |                                    | 2 / 2 / Scroll     | 2 / 2 / Scroll     | 2 / 2 / Scroll     | 2 / 2 / Scroll     |
| R–410a charge A/B (lbs)         |                                    | 23.8/23.1          | 30.0/30.7          | 24.9/27.7          | 35.1/35.4          |
| Metering device                 |                                    | TXV                | TXV                | TXV                | TXV                |
| High–press. Trip / Reset (psig) |                                    | 630 / 505          | 630 / 505          | 630 / 505          | 630 / 505          |
| Low–press. Trip / Reset (psig)  |                                    | 54 / 117           | 27 / 44            | 54 / 117           | 27 / 44            |
| Material                        |                                    | Cu / Al            | Cu / Al            | Cu / Al            | Cu / Al            |
| Tube Diameter                   |                                    | 3/8" RTPF          | 3/8" RTPF          | 3/8" RTPF          | 3/8" RTPF          |
| Rows / FPI                      |                                    | 4 / 15             | 4 / 15             | 4 / 15             | 4 / 15             |
| total face area (ft2)           |                                    | 26                 | 26                 | 26                 | 26                 |
| Condensate drain conn. size     |                                    | 3/4"               | 3/4"               | 3/4"               | 3/4"               |
| <b>Humidimizer Coil</b>         |                                    |                    |                    |                    |                    |
| Material                        |                                    | n/a                | Cu / Al            | n/a                | Cu / Al            |
| Tube Diameter                   |                                    | n/a                | 3/8" RTPF          | n/a                | 3/8" RTPF          |
| Rows / FPI                      |                                    | n/a                | 1 / 17             | n/a                | 1 / 17             |
| total face area (ft2)           |                                    | n/a                | 26                 | n/a                | 26                 |
| <b>Evap. fan and motor</b>      |                                    |                    |                    |                    |                    |
| Standard Static                 | Motor Qty / Belt Qty / Driver Type | 1/1/ Belt          | 1/1/ Belt          | 1/1/ Belt          | 1/1/ Belt          |
|                                 | Max BHP                            | 4.9                | 4.9                | 4.9                | 4.9                |
|                                 | RPM range                          | 690–863            | 690–863            | 647–791            | 647–791            |
|                                 | motor frame size                   | 56                 | 56                 | 56                 | 56                 |
|                                 | Fan Qty / Type                     | 2 / Centrifugal    | 2 / Centrifugal    | 2 / Centrifugal    | 2 / Centrifugal    |
|                                 | Fan Diameter (in)                  | 18 x 15/15 X 11    | 18 x 15/15 X 11    | 18 x 15/15 X 11    | 18 x 15/15 X 11    |
| Medium Static<br>– High Eff.    | Motor Qty / Belt Qty / Driver Type | 1/1/ Belt          | 1/1/ Belt          | 1/1/ Belt          | 1/1/ Belt          |
|                                 | Max BHP                            | 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 |
|                                 | RPM range                          | 835–1021           | 835–1021           | 755–923            | 755–923            |
|                                 | motor frame size                   | 184T               | 184T               | 184T               | 184T               |
|                                 | Fan Qty / Type                     | 2 / Centrifugal    | 2 / Centrifugal    | 2 / Centrifugal    | 2 / Centrifugal    |
|                                 | Fan Diameter (in)                  | 18 x 15/15 X 11    | 18 x 15/15 X 11    | 18 x 15/15 X 11    | 18 x 15/15 X 11    |
| High Static–<br>High Eff.       | Motor Qty / Belt Qty / Driver Type | 1/1/ Belt          | 1/1/ Belt          | 1/1/ Belt          | 1/1/ Belt          |
|                                 | Max BHP                            | 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  |
|                                 | RPM range                          | 941–1176           | 941–1176           | 827–1010           | 827–1010           |
|                                 | motor frame size                   | 213T               | 213T               | 213T               | 213T               |
|                                 | Fan Qty / Type                     | 2 / Centrifugal    | 2 / Centrifugal    | 2 / Centrifugal    | 2 / Centrifugal    |
|                                 | Fan Diameter (in)                  | 18 x 15/15 X 11    | 18 x 15/15 X 11    | 18 x 15/15 X 11    | 18 x 15/15 X 11    |

**Table 5 PHYSICAL DATA (cont.)**  
**RTPF (Round Tube/Plate Fin Coil Design)**

**(COOLING)**

**15-25 TONS**

|                               | 50TC-D18           | 50TC-E18           | 50TC-D21           | 50TC-E21           | 50TC-D25           | 50TC-E25           | 50TC-D29           | 50TC-E29           |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>Cond. Coil (Circuit A)</b> |                    |                    |                    |                    |                    |                    |                    |                    |
| Coil type                     | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               |
| Coil Length (in)              | 70                 | 70                 | 72                 | 72                 | 82                 | 82                 | 95                 | 95                 |
| Coil Height (in)              | 44                 | 44                 | 44                 | 44                 | 52                 | 52                 | 52                 | 52                 |
| Rows / FPI                    | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              |
| total face area (ft2)         | 21.4               | 21.4               | 22.0               | 22.0               | 29.6               | 29.6               | 34.3               | 34.3               |
| <b>Cond. Coil (Circuit B)</b> |                    |                    |                    |                    |                    |                    |                    |                    |
| Coil type                     | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               | RTPF               |
| Coil Length (in)              | 70                 | 70                 | 64                 | 64                 | 80                 | 80                 | 95                 | 95                 |
| Coil Height (in)              | 44                 | 44                 | 44                 | 44                 | 52                 | 52                 | 52                 | 52                 |
| Rows / FPI                    | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              | 2 /17              |
| total face area (ft2)         | 21.4               | 21.4               | 19.5               | 19.5               | 29.6               | 29.6               | 34.3               | 34.3               |
| <b>Cond. fan / motor</b>      |                    |                    |                    |                    |                    |                    |                    |                    |
| Qty / Motor drive type        | 3 / direct         | 3 / direct         | 4 / direct         | 4 / direct         | 4/ direct          | 4/ direct          | 6 / direct         | 6 / direct         |
| Motor HP / RPM                | 1/4 / 1100         | 1/4 / 1100         | 1/4 / 1100         | 1/4 / 1100         | 1/4 / 1100         | 1/4 / 1100         | 1/4 / 1100         | 1/4 / 1100         |
| Fan diameter (in)             | 22                 | 22                 | 22                 | 22                 | 22                 | 22                 | 22                 | 22                 |
| <b>Filters</b>                |                    |                    |                    |                    |                    |                    |                    |                    |
| RA Filter # / size (in)       | 6 /<br>20 x 25 x 2 | 6 /<br>20 x 25 x 2 | 6 /<br>20 x 25 x 2 | 6 /<br>20 x 25 x 2 | 9 /<br>16 x 25 x 2 | 9 /<br>16 x 25 x 2 | 9 /<br>16 x 25 x 2 | 9 /<br>16 x 25 x 2 |
| OA inlet screen # / size (in) | 4 /<br>16 x 25 x 1 | 4 /<br>16 x 25 x 1 | 4 /<br>16 x 25 x 1 | 4 /<br>16 x 25 x 1 | 4 /<br>16 x 25 x 1 | 4 /<br>16 x 25 x 1 | 4 /<br>16 x 25 x 1 | 4 /<br>16 x 25 x 1 |

# DIMENSIONS

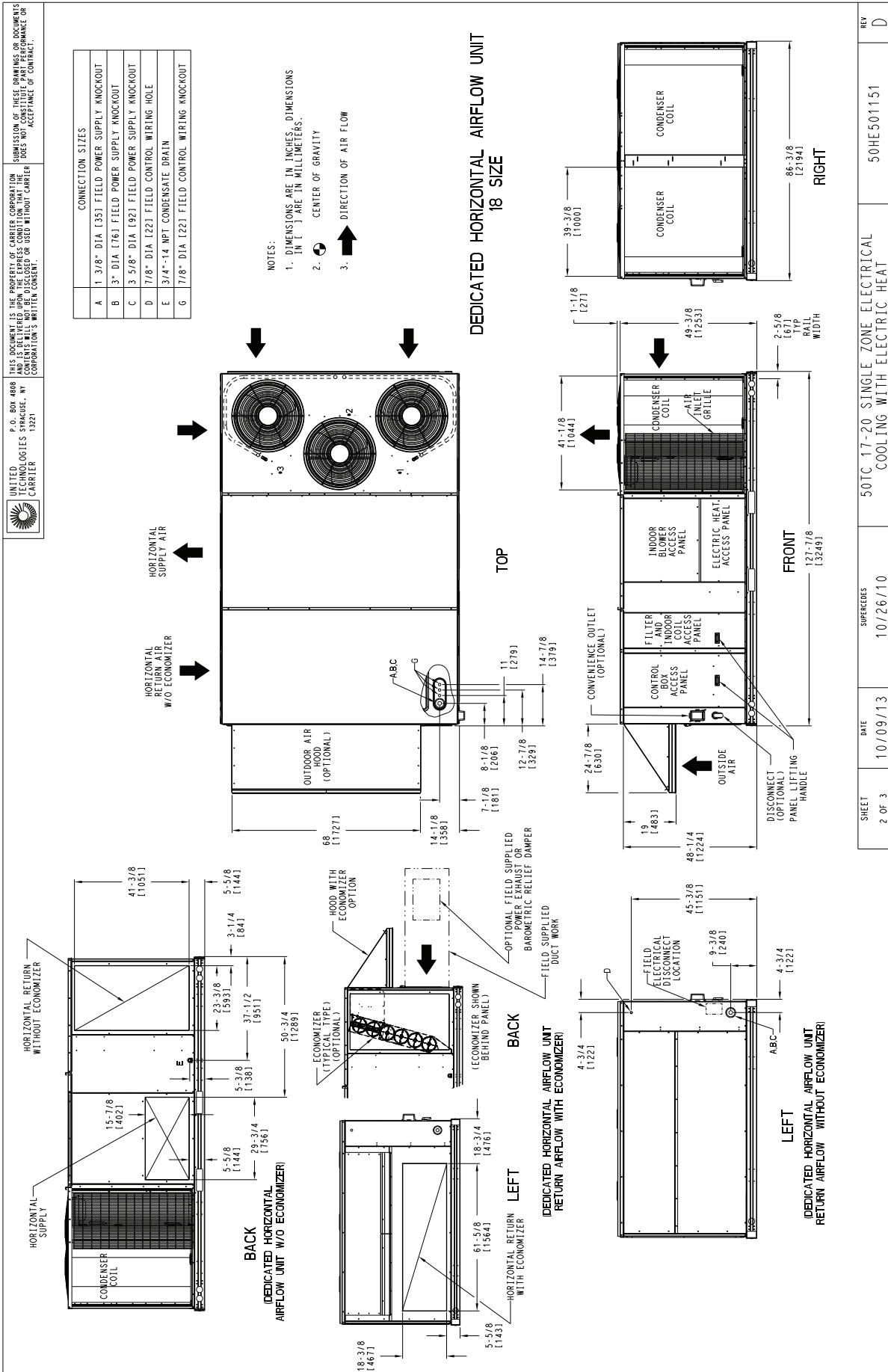
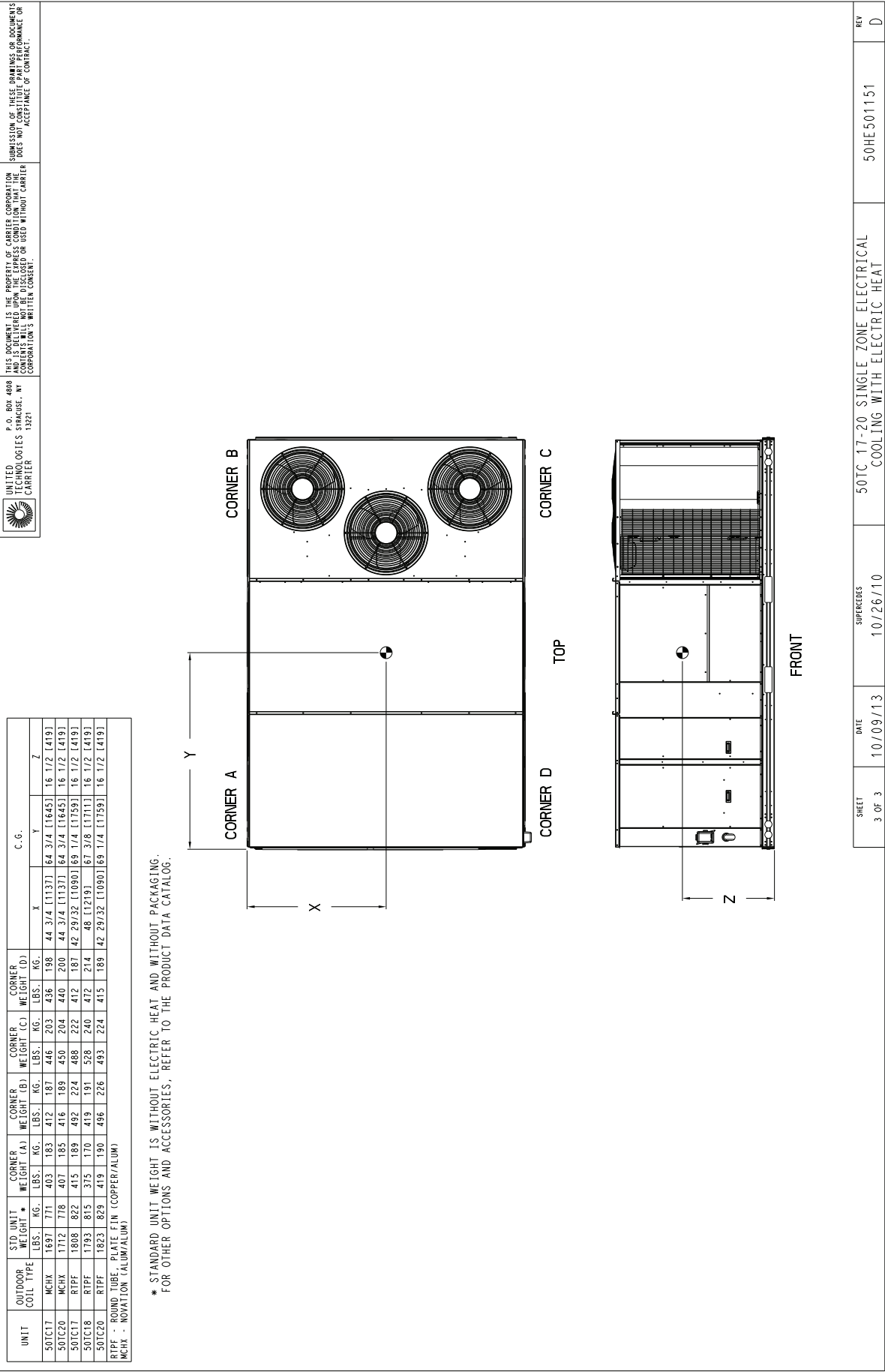
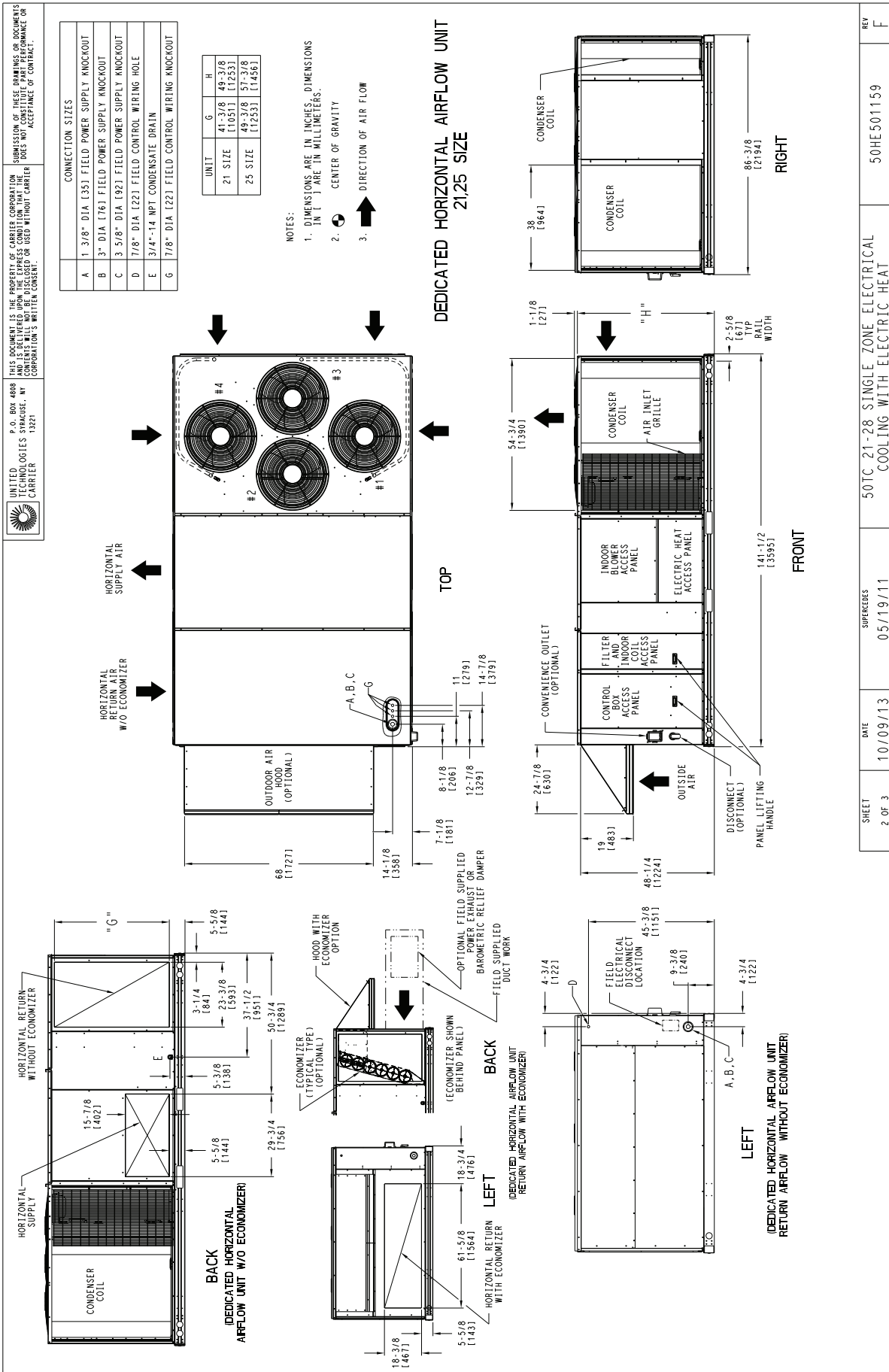


Fig. 2 - Unit Dimensional Drawing – 18 Size Unit

DIMENSIONS (cont.)



## DIMENSIONS (cont.)



**Fig. 3 - Unit Dimensional Drawing – 21 and 25 Size Units**

DIMENSIONS (cont.)

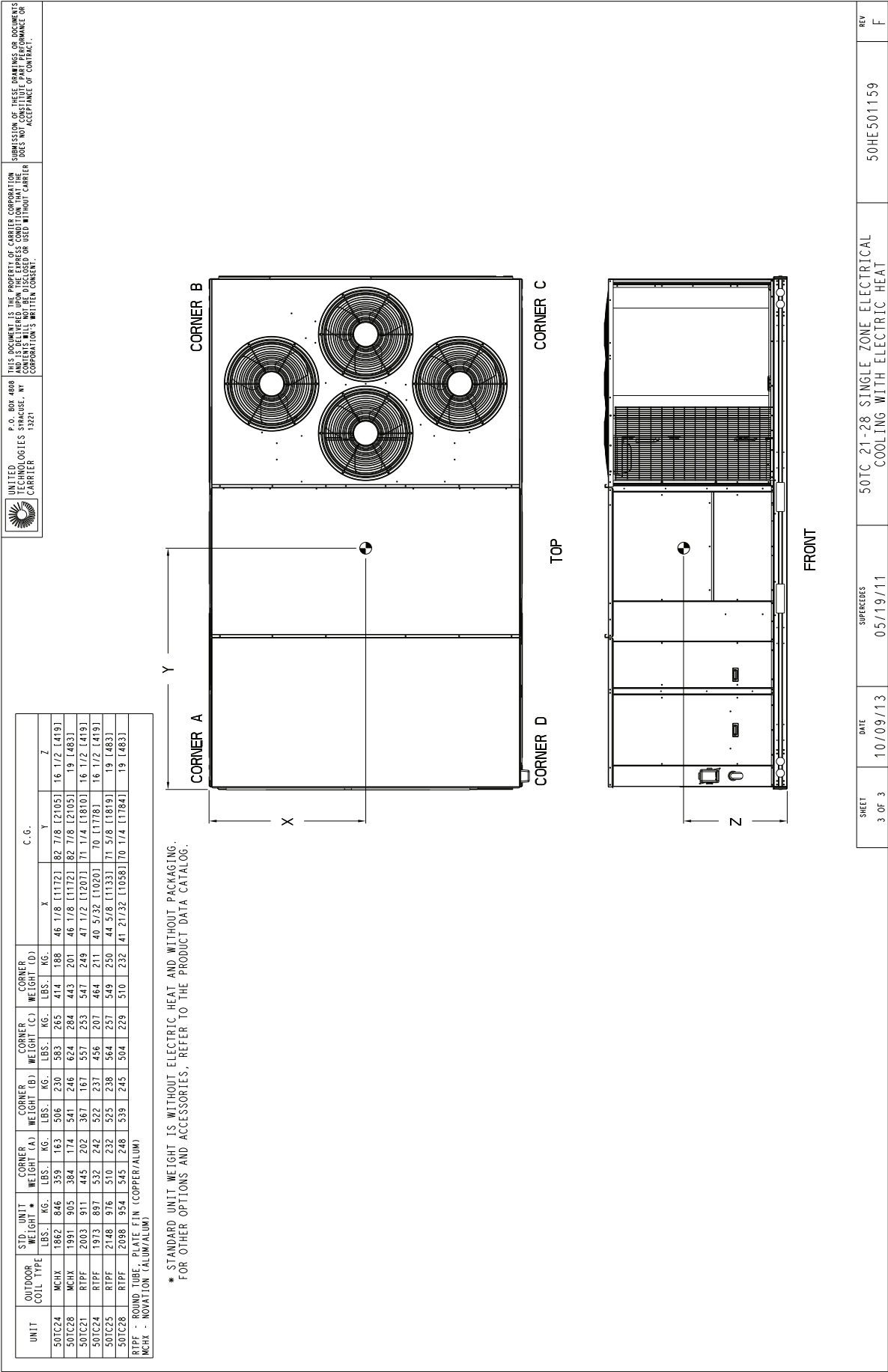
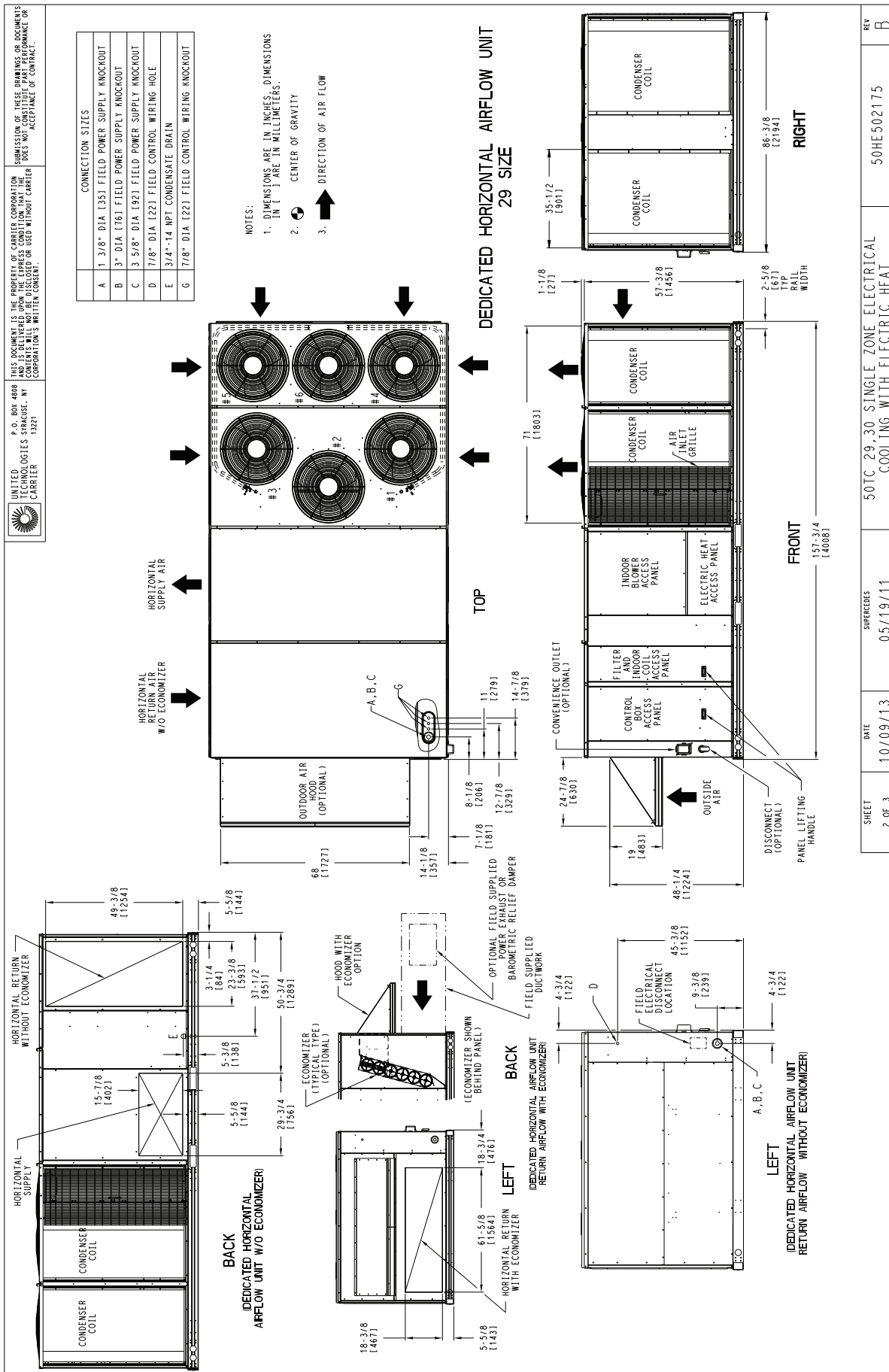


Fig. 3 - Unit Dimensional Drawing – 21 and 25 Size Units (cont.)

## DIMENSIONS (cont.)



**Fig. 4 - Unit Dimensional Drawing – 29 Size Unit**

## DIMENSIONS (cont.)

**UNIT WEIGHT**

| UNIT   | STD UNIT<br>WEIGHT •<br>LBS. / KG. | CORNER<br>WEIGHT (A)<br>LBS. / KG. | CORNER<br>WEIGHT (B)<br>LBS. / KG. | CORNER<br>WEIGHT (C)<br>LBS. / KG. | CORNER<br>WEIGHT (D)<br>LBS. / KG. | C.G.      |               |          |
|--------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|-----------|---------------|----------|
|        |                                    | LBS.                               | KG.                                | LBS.                               | KG.                                | X         | Y             | Z        |
| 50TC29 | 2193 [997]                         | 545 [248]                          | 528 [240]                          | 551 [251]                          | 589 [259]                          | 44 [1118] | 77 1/2 [1969] | 19 [483] |
| 50TC30 | 2513 [1142]                        | 664 [302]                          | 566 [257]                          | 591 [269]                          | 693 [315]                          | 44 [1118] | 72 1/2 [1842] | 19 [483] |

\* STANDARD UNIT WEIGHT IS WITHOUT ELECTRIC HEAT AND WITHOUT PACKAGING.  
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.

P.O. BOX 4688  
**UNITED TECHNOLOGIES STRATEGIC, INC.**  
 CARRIER 13221

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SHEET 2-25

DATE 4.01.00/4.2

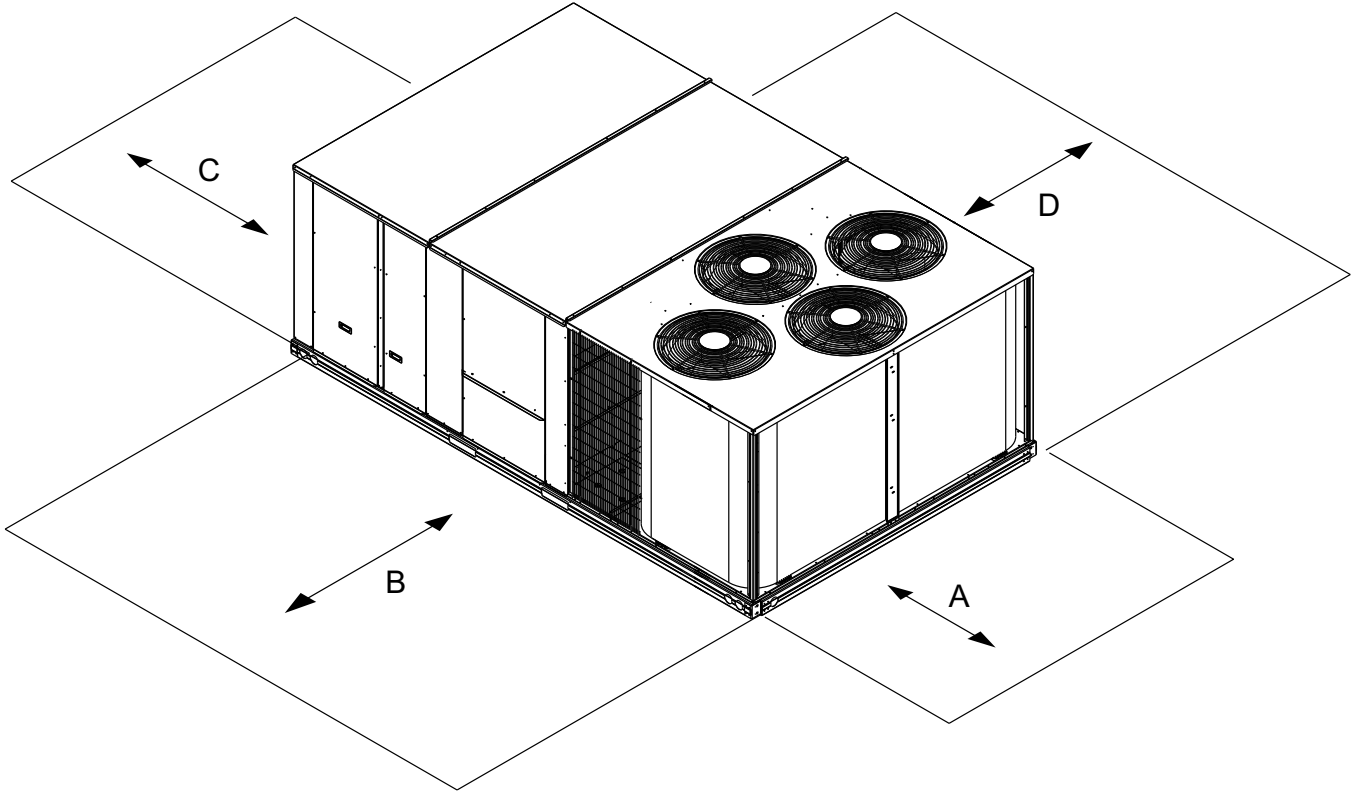
SUPERCERES 05/4.0/4.4

50TC 29, 30 SINGLE-ZONE ELECTRICAL CONTROL UNIT WITH ELECTROCLIMATE

REV D 50HE502175

**Fig. 4 - Unit Dimensional Drawing – 29 Size Unit (cont.)**

## DIMENSIONS (cont.)



C12392

| 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.

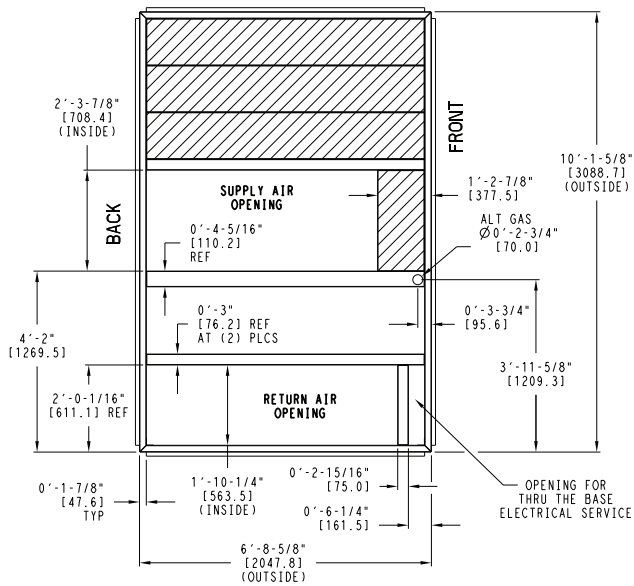
**Fig. 5 - Service Clearance Dimensional Drawing**

**Table 6 – Operating Weights**

| 50TC – *                           | UNIT LB (KG) |            |            |            |
|------------------------------------|--------------|------------|------------|------------|
|                                    | 18           | 21         | 25         | 29         |
| Base Unit                          | 1793 (815)   | 2003 (911) | 2148 (976) | 2193 (997) |
| Economizer                         | 246 (112)    | 246 (112)  | 246 (112)  | 246 (112)  |
| Powered Outlet                     | 35 (16)      | 35 (16)    | 35 (16)    | 35 (16)    |
| Humidi – MiZer <sup>®</sup> System | 110 (50)     | 120 (54)   | 120 (54)   | 120 (54)   |
| Curb                               |              |            |            |            |
| 14-in/356 mm                       | 240 (109)    | 255 (116)  | 255 (116)  | 255 (116)  |
| 24-in/610 mm                       | 340 (154)    | 355 (161)  | 355 (161)  | 355 (161)  |

## DIMENSIONS (cont.)

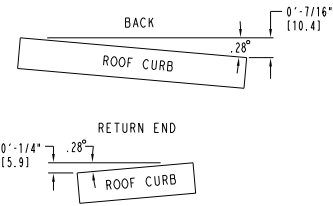
| UNIT SIZE | "A"                            | ROOF CURB ACCESSORY              |
|-----------|--------------------------------|----------------------------------|
| 18        | 1'-2" [356.0]<br>2'-0" [610.0] | CRRFCURB045A00<br>CRRFCURB046A00 |



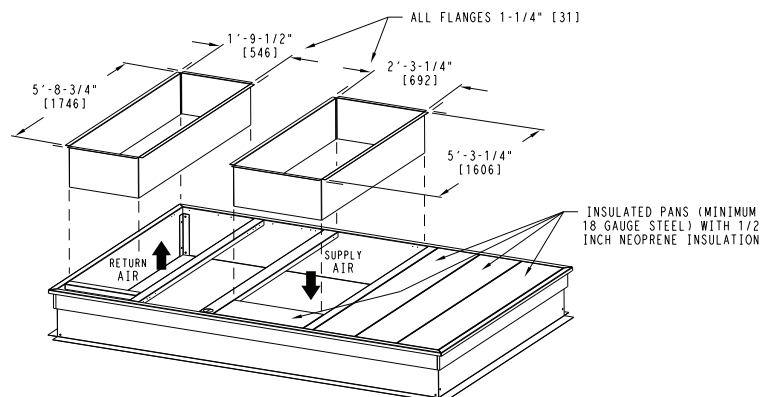
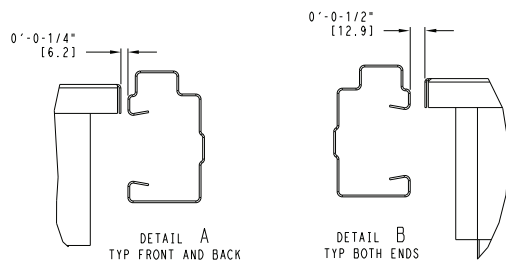
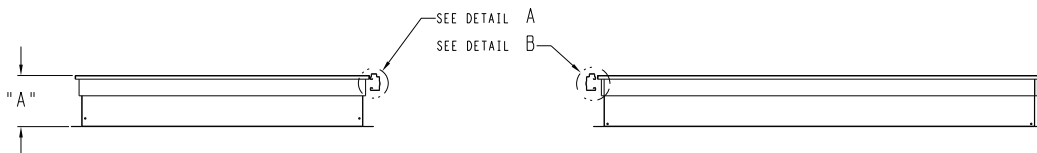
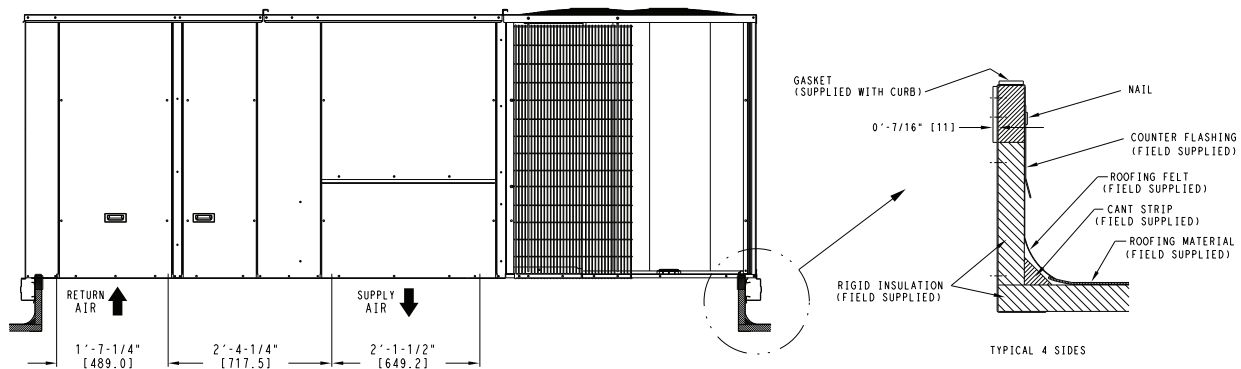
### NOTES:

- 1 ROOF CURB ACCESSORY IS SHIPPED UNASSEMBLED.
- 2 DIMENSIONS IN [ ] ARE IN MILLIMETERS.
- 3 ROOF CURB GALVANIZED STEEL.
- 4 ATTACH DUCTWORK TO CURB (FLANGES ON DUCT REST ON CURB)
- 5 SERVICE CLEARANCE 4 FT ON EACH SIDE

➔ DIRECTION OF AIR FLOW



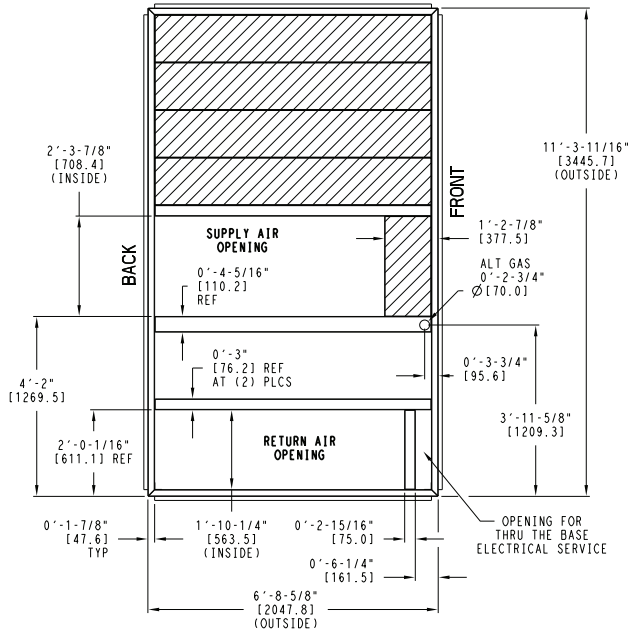
### MAX CURB LEVELING TOLERANCES



**Fig. 6 - Roof Curb Details – 18 Size Unit**

## DIMENSIONS (cont.)

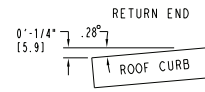
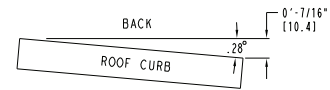
| UNIT SIZE | "A"                            | ROOF CURB ACCESSORY              |
|-----------|--------------------------------|----------------------------------|
| 21,25     | 1'-2" [356.0]<br>2'-0" [610.0] | CRRFCURB047A00<br>CRRFCURB048A00 |



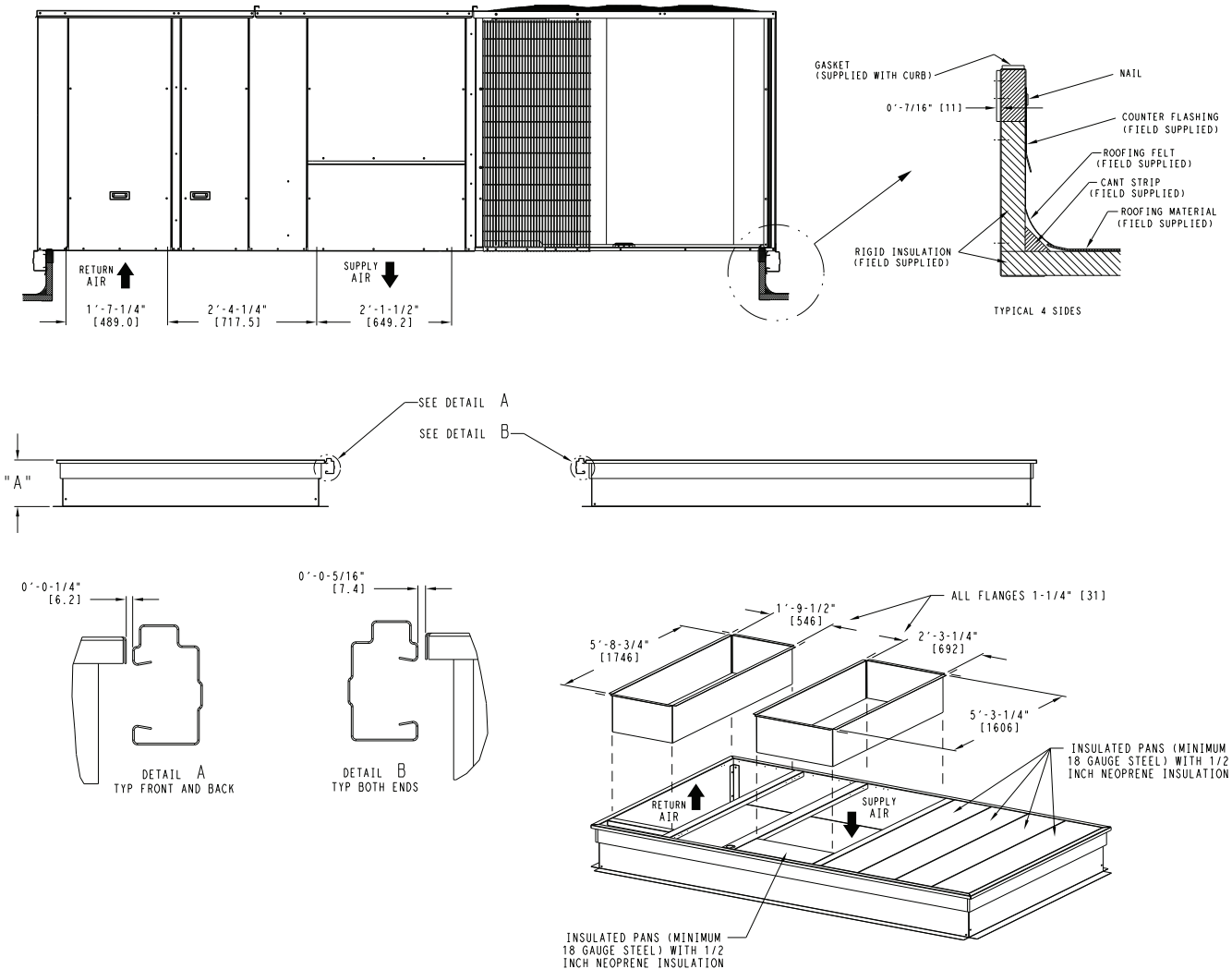
### NOTES:

- 1 ROOF CURB ACCESSORY IS SHIPPED UNASSEMBLED.
- 2 DIMENSIONS IN [ ] ARE IN MILLIMETERS.
- 3 ROOF CURB GALVANIZED STEEL.
- 4 ATTACH DUCTWORK TO CURB (FLANGES ON DUCT REST ON CURB)
- 5 SERVICE CLEARANCE 4 ft ON EACH SIDE

➡ DIRECTION OF AIR FLOW



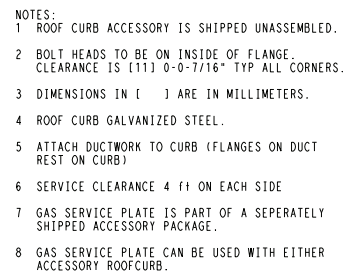
MAX CURB LEVELING TOLERANCES



**Fig. 7 - Roof Curb Details – 21 and 25 Size Units**

C13781

| UNIT SIZE | "A"                            | ROOF CURB<br>ACCESSORY           |
|-----------|--------------------------------|----------------------------------|
| 29        | 1'-2" [356.0]<br>2'-0" [610.0] | CRRFCURB049A00<br>CRRFCURB050A00 |



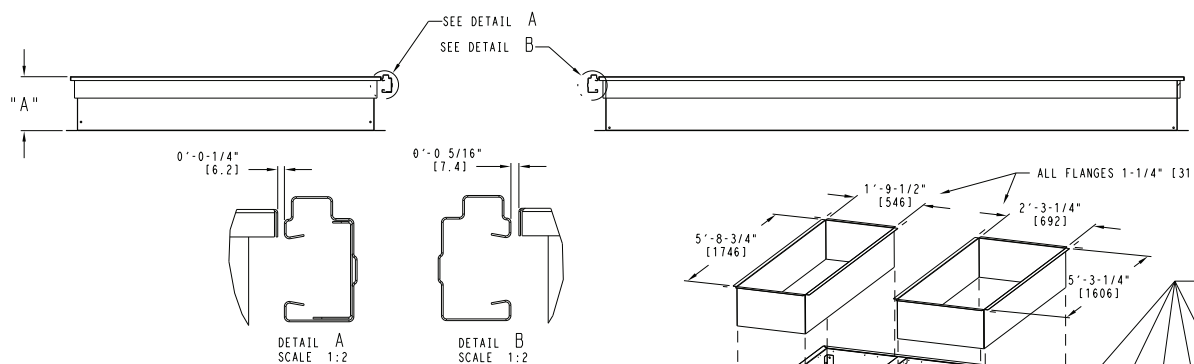
RETURN END  
0'-1/4" .28°  
[5.9]  
↑ ROOF CURB

A cross-sectional diagram of a roof assembly, labeled "TYPICAL 4 SIDES". The diagram shows a vertical section of a roof edge. At the top, a "GASKET (SUPPLIED WITH CURB)" is shown. Below it, a "NAIL" is driven through a "COUNTER FLASHING (FIELD SUPPLIED)". The main roof structure consists of "ROOFING FELT (FIELD SUPPLIED)", a "CANT STRIP (FIELD SUPPLIED)", and "ROOFING MATERIAL (FIELD SUPPLIED)". The roof is supported by a "RIGID INSULATION (FIELD SUPPLIED)" layer. A dimension line indicates a width of "0'-7 1/16\" (11)".

Labels in the diagram include:

- GASKET (SUPPLIED WITH CURB)
- 0'-7 1/16" (11)
- NAIL
- COUNTER FLASHING (FIELD SUPPLIED)
- ROOFING FELT (FIELD SUPPLIED)
- CANT STRIP (FIELD SUPPLIED)
- ROOFING MATERIAL (FIELD SUPPLIED)
- RIGID INSULATION (FIELD SUPPLIED)

TYPICAL 4 SIDES



## OPTIONS AND ACCESSORIES WEIGHT ADDERS

| BASE UNIT WITH OPTIONS AND ACCESSORIES<br>(Weight Adders) | MAX WEIGHT ADD |     |         |     |         |     |         |     |
|-----------------------------------------------------------|----------------|-----|---------|-----|---------|-----|---------|-----|
|                                                           | 50HC*18        |     | 50HC*21 |     | 50HC*25 |     | 50HC*29 |     |
|                                                           | lb             | kg  | lb      | kg  | lb      | kg  | lb      | kg  |
| Humidi-MiZer                                              | 110            | 50  | 120     | 55  | 120     | 55  | 120     | 55  |
| Base Unit Operating Weight                                | 1793           | 813 | 2003    | 909 | 2148    | 974 | 2193    | 975 |
| Power Exhaust                                             | 125            | 57  | 125     | 57  | 125     | 57  | 125     | 57  |
| Economizer                                                | 246            | 112 | 246     | 112 | 246     | 112 | 246     | 112 |
| Copper Tube/Fin Evaporator Coil                           | 53             | 24  | 58      | 26  | 64      | 29  | 64      | 29  |
| Electric Heater                                           | 85             | 39  | 85      | 39  | 85      | 39  | 85      | 39  |
| Single Point Kit                                          | 15             | 7   | 15      | 7   | 15      | 7   | 15      | 7   |
| Roof Curb 14-in (356mm)                                   | 240            | 109 | 255     | 116 | 255     | 116 | 255     | 116 |
| Roof Curb 24-in (610mm)                                   | 340            | 154 | 355     | 161 | 355     | 161 | 355     | 161 |
| Louvered Hail Guard                                       | 60             | 27  | 60      | 27  | 120     | 54  | 150     | 68  |
| CO <sub>2</sub> sensor                                    | 5              | 2   | 5       | 2   | 5       | 2   | 5       | 2   |
| Return Smoke Detector                                     | 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   |
| Powered Convenience Outlet                                | 35             | 16  | 35      | 16  | 35      | 16  | 35      | 16  |
| 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  | 50      | 23  | 65      | 29  |
| Manual Damper                                             | 35             | 16  | 35      | 16  | 35      | 16  | 40      | 18  |
| Field Filter Track 4-in (102mm)                           | 12             | 5   | 12      | 5   | 12      | 5   | 12      | 5   |
| MotorMaster Controller                                    | 39             | 18  | 39      | 18  | 39      | 18  | 39      | 18  |
| Standard Static Motor/Drive                               | 0              | 0   | 0       | 0   | 0       | 0   | 0       | 0   |
| Medium Static Motor/Drive                                 | 5              | 2   | 6       | 3   | 6       | 3   | 6       | 3   |
| High Static Motor/Drive                                   | 11             | 5   | 12      | 5   | 16      | 7   | 16      | 7   |
| Barometric Relief Hood (Horizontal)                       | 25             | 11  | 25      | 11  | 25      | 11  | 25      | 11  |
| SAV System with VFD                                       | 20             | 9   | 20      | 9   | 20      | 9   | 20      | 9   |

## APPLICATION/SELECTION DATA

### Min operating ambient temp (cooling):

In mechanical cooling mode, your Carrier rooftop can safely operate down to an outdoor ambient temperature of 35°F (2°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 mode):

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. Please contact your local Carrier representative for assistance.

### Motor limits, break horsepower (BHP):

Due to Carrier's internal unit design, air path, and specially designed motors, the full horsepower (maximum continuous BHP) band, as listed in Table 5, can be used with the utmost confidence. There is no need for extra safety factors, as Carrier's motors are designed and rigorously tested to use the entire, listed BHP range without either nuisance tripping or premature motor failure.

## APPLICATION/SELECTION DATA (cont.)

### Sizing a rooftop

Bigger isn't necessarily better. While an air conditioner needs to have enough capacity to meet the load, it doesn't need excess capacity. In fact, having 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, and rounding up to the next largest unit, are all signs of oversizing air conditioners. Oversizing can cause short-cycling, and short cycling leads to poor humidity control, reduced efficiency, higher utility bills, drastic indoor temperature swings, excessive noise, and increased wear and tear on the air conditioner.

Rather than oversizing an air conditioner, wise contractors and engineers "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

When equipped with a Carrier economizer, your rooftop unit can 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 Carrier rooftop can operate to ambient temperatures down to -20°F (-29°C) using the recommended accessory Motormaster low ambient controller.

### Winter start

Carrier's 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.

### Application/Selection Option

Selection software by Carrier saves time by performing many of the steps above. Contact your Carrier sales representative for assistance.

### Staged Air Volume (SAV) with Variable Frequency Drive (VFD)

Carrier's Staged Air Volume (SAV) 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 Carrier's SAV 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 SAV 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 SAV 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 7 – COOLING CAPACITIES

## 2-STAGE COOLING

15 TONS

| 50TC*D18 |          |    |     | 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    |
| 4500 CFM | EAT (wb) | 58 | THC | 158.3               | 158.3 | 179.2 | 152.6    | 152.6 | 172.9 | 146.6    | 146.6 | 166.1 | 140.2    | 140.2 | 158.8 |
|          |          |    | SHC | 137.3               | 158.3 | 179.2 | 132.4    | 152.6 | 172.9 | 127.2    | 146.6 | 166.1 | 121.6    | 140.2 | 158.8 |
|          |          | 62 | THC | 166.8               | 166.8 | 169.0 | 159.5    | 159.5 | 165.6 | 151.8    | 151.8 | 161.9 | 143.6    | 143.6 | 157.9 |
|          |          |    | SHC | 123.1               | 146.1 | 169.0 | 119.7    | 142.6 | 165.6 | 116.1    | 139.0 | 161.9 | 112.3    | 135.1 | 157.9 |
|          |          | 67 | THC | 182.9               | 182.9 | 182.9 | 174.9    | 174.9 | 174.9 | 166.3    | 166.3 | 166.3 | 157.2    | 157.2 | 157.2 |
|          |          |    | SHC | 100.0               | 123.1 | 146.1 | 96.7     | 119.8 | 142.8 | 93.2     | 116.3 | 139.4 | 89.7     | 112.7 | 135.7 |
|          |          | 72 | THC | 200.5               | 200.5 | 200.5 | 191.6    | 191.6 | 191.6 | 182.2    | 182.2 | 182.2 | 172.2    | 172.2 | 172.2 |
|          |          |    | SHC | 76.1                | 99.5  | 122.8 | 72.9     | 96.2  | 119.5 | 69.5     | 92.8  | 116.1 | 66.0     | 89.3  | 112.5 |
|          |          | 76 | THC | –                   | 215.4 | 215.4 | –        | 205.8 | 205.8 | –        | 195.6 | 195.6 | –        | 184.8 | 184.8 |
|          |          |    | SHC | –                   | 80.2  | 105.0 | –        | 77.1  | 101.7 | –        | 73.7  | 98.2  | –        | 70.2  | 94.5  |
| 5250 CFM | EAT (wb) | 58 | THC | 166.7               | 166.7 | 188.8 | 160.6    | 160.6 | 181.9 | 154.0    | 154.0 | 174.4 | 147.0    | 147.0 | 166.5 |
|          |          |    | SHC | 144.6               | 166.7 | 188.8 | 139.3    | 160.6 | 181.9 | 133.6    | 154.0 | 174.4 | 127.6    | 147.0 | 166.5 |
|          |          | 62 | THC | 172.0               | 172.0 | 185.1 | 164.3    | 164.3 | 181.2 | 156.3    | 156.3 | 177.0 | 147.8    | 147.8 | 172.4 |
|          |          |    | SHC | 132.5               | 158.8 | 185.1 | 128.9    | 155.1 | 181.2 | 125.0    | 151.0 | 177.0 | 120.9    | 146.6 | 172.4 |
|          |          | 67 | THC | 188.3               | 188.3 | 188.3 | 179.7    | 179.7 | 179.7 | 170.7    | 170.7 | 170.7 | 161.0    | 161.0 | 161.0 |
|          |          |    | SHC | 106.1               | 132.7 | 159.3 | 102.8    | 129.3 | 155.9 | 99.3     | 125.8 | 152.4 | 95.6     | 122.1 | 148.6 |
|          |          | 72 | THC | 206.1               | 206.1 | 206.1 | 196.7    | 196.7 | 196.7 | 186.7    | 186.7 | 186.7 | 176.2    | 176.2 | 176.2 |
|          |          |    | SHC | 78.8                | 105.6 | 132.5 | 75.5     | 102.3 | 129.1 | 72.1     | 98.8  | 125.6 | 68.5     | 95.2  | 121.9 |
|          |          | 76 | THC | –                   | 221.2 | 221.2 | –        | 211.0 | 211.0 | –        | 200.3 | 200.3 | –        | 189.0 | 189.0 |
|          |          |    | SHC | –                   | 83.6  | 111.7 | –        | 80.3  | 108.2 | –        | 76.9  | 104.6 | –        | 73.3  | 100.9 |
| 6000 CFM | EAT (wb) | 58 | THC | 173.8               | 173.8 | 196.8 | 167.2    | 167.2 | 189.4 | 160.2    | 160.2 | 181.4 | 152.7    | 152.7 | 173.0 |
|          |          |    | SHC | 150.8               | 173.8 | 196.8 | 145.1    | 167.2 | 189.4 | 139.0    | 160.2 | 181.4 | 132.5    | 152.7 | 173.0 |
|          |          | 62 | THC | 176.3               | 176.3 | 199.5 | 168.5    | 168.5 | 194.9 | 160.5    | 160.5 | 188.9 | 152.9    | 152.9 | 179.9 |
|          |          |    | SHC | 140.9               | 170.2 | 199.5 | 136.9    | 165.9 | 194.9 | 132.1    | 160.5 | 188.9 | 125.8    | 152.9 | 179.9 |
|          |          | 67 | THC | 192.3               | 192.3 | 192.3 | 183.4    | 183.4 | 183.4 | 173.9    | 173.9 | 173.9 | 164.0    | 164.0 | 164.0 |
|          |          |    | SHC | 112.0               | 142.0 | 172.0 | 108.5    | 138.5 | 168.5 | 104.9    | 134.9 | 164.8 | 101.2    | 131.1 | 161.0 |
|          |          | 72 | THC | 210.4               | 210.4 | 210.4 | 200.6    | 200.6 | 200.6 | 190.2    | 190.2 | 190.2 | 179.3    | 179.3 | 179.3 |
|          |          |    | SHC | 81.2                | 111.4 | 141.7 | 77.9     | 108.0 | 138.2 | 74.4     | 104.5 | 134.6 | 70.7     | 100.8 | 130.8 |
|          |          | 76 | THC | –                   | 225.6 | 225.6 | –        | 215.0 | 215.0 | –        | 203.8 | 203.8 | –        | 192.1 | 192.1 |
|          |          |    | SHC | –                   | 86.7  | 117.9 | –        | 83.3  | 114.5 | –        | 79.9  | 110.8 | –        | 76.3  | 107.1 |
| 6750 CFM | EAT (wb) | 58 | THC | 179.8               | 179.8 | 203.7 | 172.9    | 172.9 | 195.8 | 165.5    | 165.5 | 187.4 | 157.5    | 157.5 | 178.4 |
|          |          |    | SHC | 156.0               | 179.8 | 203.7 | 150.0    | 172.9 | 195.8 | 143.5    | 165.5 | 187.4 | 136.7    | 157.5 | 178.4 |
|          |          | 62 | THC | 180.5               | 180.5 | 210.7 | 173.0    | 173.0 | 203.6 | 165.6    | 165.6 | 194.9 | 157.7    | 157.7 | 185.5 |
|          |          |    | SHC | 147.6               | 179.2 | 210.7 | 142.4    | 173.0 | 203.6 | 136.3    | 165.6 | 194.9 | 129.8    | 157.7 | 185.5 |
|          |          | 67 | THC | 195.6               | 195.6 | 195.6 | 186.2    | 186.2 | 186.2 | 176.5    | 176.5 | 176.8 | 166.2    | 166.2 | 172.7 |
|          |          |    | SHC | 117.5               | 150.8 | 184.1 | 114.0    | 147.3 | 180.5 | 110.4    | 143.6 | 176.8 | 106.5    | 139.6 | 172.7 |
|          |          | 72 | THC | 213.8               | 213.8 | 213.8 | 203.6    | 203.6 | 203.6 | 192.9    | 192.9 | 192.9 | 181.6    | 181.6 | 181.6 |
|          |          |    | SHC | 83.5                | 117.0 | 150.5 | 80.1     | 113.5 | 147.0 | 76.5     | 109.9 | 143.3 | 72.8     | 106.1 | 139.4 |
|          |          | 76 | THC | –                   | 229.1 | 229.1 | –        | 218.1 | 218.1 | –        | 206.6 | 206.6 | –        | 194.6 | 194.6 |
|          |          |    | SHC | –                   | 89.6  | 124.0 | –        | 86.2  | 120.5 | –        | 82.7  | 116.8 | –        | 79.0  | 113.0 |
| 7500 CFM | EAT (wb) | 58 | THC | 185.1               | 185.1 | 209.6 | 177.7    | 177.7 | 201.3 | 170.0    | 170.0 | 192.5 | 161.6    | 161.6 | 183.0 |
|          |          |    | SHC | 160.6               | 185.1 | 209.6 | 154.2    | 177.7 | 201.3 | 147.5    | 170.0 | 192.5 | 140.2    | 161.6 | 183.0 |
|          |          | 62 | THC | 185.2               | 185.2 | 218.0 | 177.9    | 177.9 | 209.3 | 170.1    | 170.1 | 200.2 | 161.8    | 161.8 | 190.4 |
|          |          |    | SHC | 152.5               | 185.2 | 218.0 | 146.4    | 177.9 | 209.3 | 140.0    | 170.1 | 200.2 | 133.2    | 161.8 | 190.4 |
|          |          | 67 | THC | 198.1               | 198.1 | 198.1 | 188.6    | 188.6 | 192.1 | 178.6    | 178.6 | 188.1 | 168.1    | 168.1 | 183.8 |
|          |          |    | SHC | 122.8               | 159.3 | 195.9 | 119.2    | 155.7 | 192.1 | 115.5    | 151.8 | 188.1 | 111.5    | 147.7 | 183.8 |
|          |          | 72 | THC | 216.6               | 216.6 | 216.6 | 206.1    | 206.1 | 206.1 | 195.1    | 195.1 | 195.1 | 183.5    | 183.5 | 183.5 |
|          |          |    | SHC | 85.6                | 122.3 | 159.0 | 82.2     | 118.8 | 155.5 | 78.6     | 115.2 | 151.7 | 74.9     | 111.3 | 147.8 |
|          |          | 76 | THC | –                   | 231.9 | 231.9 | –        | 220.7 | 220.7 | –        | 208.9 | 208.9 | –        | 196.5 | 196.5 |
|          |          |    | SHC | –                   | 92.4  | 129.9 | –        | 88.9  | 126.3 | –        | 85.4  | 122.6 | –        | 81.6  | 118.7 |

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 8 – COOLING CAPACITIES

## 2-STAGE COOLING

15 TONS (cont.)

| 50TCE18 (15 TONS) – UNIT WITH HUMIDI–MIZER IN SUBCOOLING MODE |     |                                     |       |       |       |       |       |       |       |       |
|---------------------------------------------------------------|-----|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Temp (F)<br>Air Entering<br>Condenser (Edb)                   |     | AIR ENTERING EVAPORATOR – CFM       |       |       |       |       |       |       |       |       |
|                                                               |     | 4,500                               |       |       | 6,000 |       |       | 7,500 |       |       |
|                                                               |     | Air Entering Evaporator – – Ewb (F) |       |       |       |       |       |       |       |       |
| 75                                                            | TC  | 202.9                               | 184.6 | 166.2 | 213.7 | 194.6 | 175.4 | 222.3 | 202.5 | 182.7 |
|                                                               | SHC | 91.9                                | 112.4 | 132.9 | 106.1 | 126.4 | 146.8 | 117.5 | 137.7 | 158.0 |
|                                                               | kW  | 10.19                               | 10.12 | 9.78  | 10.51 | 10.19 | 9.95  | 10.61 | 10.36 | 10.12 |
| 85                                                            | TC  | 189.8                               | 171.8 | 153.8 | 201.0 | 182.2 | 163.3 | 209.9 | 190.4 | 170.8 |
|                                                               | SHC | 75.9                                | 101.0 | 126.2 | 91.2  | 116.3 | 141.3 | 103.4 | 128.4 | 153.5 |
|                                                               | kW  | 11.57                               | 11.49 | 11.15 | 11.88 | 11.56 | 11.32 | 11.98 | 11.73 | 11.49 |
| 95                                                            | TC  | 176.7                               | 159.1 | 141.4 | 188.3 | 169.7 | 151.2 | 197.5 | 178.2 | 159.0 |
|                                                               | SHC | 59.8                                | 89.7  | 119.6 | 76.2  | 106.1 | 135.9 | 89.4  | 119.2 | 149.0 |
|                                                               | kW  | 12.87                               | 12.81 | 12.47 | 13.20 | 12.88 | 12.64 | 13.30 | 13.05 | 12.81 |
| 105                                                           | TC  | 163.6                               | 146.3 | 129.0 | 175.6 | 157.3 | 139.1 | 185.1 | 166.1 | 147.1 |
|                                                               | SHC | 43.8                                | 78.4  | 112.9 | 61.3  | 95.9  | 130.4 | 75.3  | 109.9 | 144.4 |
|                                                               | kW  | 14.05                               | 14.00 | 13.65 | 14.39 | 14.07 | 13.82 | 14.40 | 14.24 | 14.00 |
| 115                                                           | TC  | 150.5                               | 133.5 | 116.5 | 162.9 | 144.9 | 127.0 | 172.7 | 154.0 | 135.3 |
|                                                               | SHC | 27.7                                | 67.0  | 106.3 | 46.4  | 85.7  | 125.0 | 61.3  | 100.6 | 133.4 |
|                                                               | kW  | 15.44                               | 15.36 | 15.02 | 15.75 | 15.43 | 15.19 | 15.85 | 15.60 | 15.36 |

| 50TCE18 (15 TONS) – UNIT WITH HUMIDI–MIZER IN HOT GAS REHEAT MODE |     |                                   |       |       |                |       |       |                |       |       |
|-------------------------------------------------------------------|-----|-----------------------------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| Temp (F)<br>Air Entering<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     |       |       |                |       |       |                |       |       |
|                                                                   |     | 4,500                             | 6,000 | 7,500 | 4,500          | 6,000 | 7,500 | 4,500          | 6,000 | 7,500 |
| 80                                                                | TC  | 64.50                             | 71.00 | 73.30 | 68.40          | 74.50 | 77.30 | 71.20          | 79.70 | 80.60 |
|                                                                   | SHC | 12.60                             | 24.90 | 36.80 | 6.80           | 13.70 | 23.90 | –0.80          | 5.50  | 13.80 |
|                                                                   | kW  | 10.10                             | 10.26 | 10.42 | 10.18          | 10.40 | 10.56 | 10.33          | 10.47 | 10.67 |
| 75                                                                | TC  | 66.60                             | 73.10 | 75.60 | 70.50          | 76.60 | 79.50 | 73.20          | 80.80 | 82.90 |
|                                                                   | SHC | 14.30                             | 26.70 | 38.50 | 8.10           | 14.90 | 25.70 | 0.70           | 7.00  | 15.00 |
|                                                                   | kW  | 10.05                             | 10.22 | 10.36 | 10.14          | 10.36 | 10.52 | 10.28          | 10.43 | 10.62 |
| 70                                                                | TC  | 68.70                             | 75.10 | 77.40 | 72.50          | 78.60 | 81.40 | 75.20          | 82.80 | 84.90 |
|                                                                   | SHC | 15.40                             | 27.80 | 40.00 | 9.50           | 16.20 | 26.80 | 2.10           | 8.40  | 16.30 |
|                                                                   | kW  | 10.00                             | 10.18 | 10.33 | 10.10          | 10.31 | 10.47 | 10.23          | 10.40 | 10.58 |
| 60                                                                | TC  | 72.80                             | 79.30 | 81.60 | 76.70          | 82.80 | 85.70 | 79.40          | 86.90 | 88.80 |
|                                                                   | SHC | 19.00                             | 31.10 | 43.20 | 12.70          | 19.90 | 30.10 | 5.30           | 11.60 | 20.00 |
|                                                                   | kW  | 9.92                              | 10.09 | 10.24 | 10.01          | 10.22 | 10.37 | 10.14          | 10.31 | 10.49 |
| 50                                                                | TC  | 76.80                             | 83.40 | 85.70 | 80.80          | 86.90 | 89.70 | 83.50          | 90.90 | 92.80 |
|                                                                   | SHC | 21.70                             | 34.20 | 46.20 | 15.80          | 22.70 | 33.20 | 8.40           | 14.70 | 22.80 |
|                                                                   | kW  | 9.83                              | 10.00 | 10.15 | 9.92           | 10.13 | 10.29 | 10.05          | 10.21 | 10.39 |
| 40                                                                | TC  | 80.90                             | 87.30 | 89.60 | 84.90          | 90.80 | 93.60 | 87.40          | 94.80 | 96.70 |
|                                                                   | SHC | 24.90                             | 37.10 | 49.30 | 19.00          | 26.00 | 36.10 | 11.60          | 17.90 | 26.20 |
|                                                                   | kW  | 9.74                              | 9.91  | 10.06 | 9.83           | 10.04 | 10.20 | 9.96           | 10.12 | 10.30 |

## 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.
2. 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 9 – COOLING CAPACITIES

## 2-STAGE COOLING

17.5 TONS

| 50TC*D21 |          |    |     | 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 | 185.1               | 185.1 | 209.2 | 178.7    | 178.7 | 201.9 | 171.8    | 171.8 | 194.1 | 164.5    | 164.5 | 185.8 |
|          |          |    | SHC | 161.1               | 185.1 | 209.2 | 155.4    | 178.7 | 201.9 | 149.4    | 171.8 | 194.1 | 143.1    | 164.5 | 185.8 |
|          |          | 62 | THC | 193.8               | 193.8 | 199.5 | 185.6    | 185.6 | 195.4 | 176.9    | 176.9 | 191.1 | 167.7    | 167.7 | 186.4 |
|          |          |    | SHC | 145.6               | 172.6 | 199.5 | 141.7    | 168.6 | 195.4 | 137.6    | 164.4 | 191.1 | 133.2    | 159.8 | 186.4 |
|          |          | 67 | THC | 212.2               | 212.2 | 212.2 | 203.3    | 203.3 | 203.3 | 193.8    | 193.8 | 193.8 | 183.8    | 183.8 | 183.8 |
|          |          |    | SHC | 119.0               | 146.0 | 173.1 | 115.3    | 142.3 | 169.4 | 111.4    | 138.4 | 165.4 | 107.3    | 134.3 | 161.3 |
|          |          | 72 | THC | 232.3               | 232.3 | 232.3 | 222.7    | 222.7 | 222.7 | 212.4    | 212.4 | 212.4 | 201.6    | 201.6 | 201.6 |
|          |          |    | SHC | 91.5                | 118.8 | 146.2 | 87.9     | 115.2 | 142.5 | 84.1     | 111.4 | 138.7 | 80.2     | 107.4 | 134.6 |
|          |          | 76 | THC | –                   | 249.5 | 249.5 | –        | 239.2 | 239.2 | –        | 228.2 | 228.2 | –        | 216.6 | 216.6 |
|          |          |    | SHC | –                   | 96.7  | 125.3 | –        | 93.2  | 121.7 | –        | 89.5  | 117.9 | –        | 85.6  | 113.8 |
| 6125 CFM | EAT (wb) | 58 | THC | 194.7               | 194.7 | 220.0 | 187.8    | 187.8 | 212.2 | 180.4    | 180.4 | 203.8 | 172.5    | 172.5 | 194.9 |
|          |          |    | SHC | 169.4               | 194.7 | 220.0 | 163.3    | 187.8 | 212.2 | 156.9    | 180.4 | 203.8 | 150.1    | 172.5 | 194.9 |
|          |          | 62 | THC | 199.6               | 199.6 | 218.0 | 191.1    | 191.1 | 213.5 | 182.1    | 182.1 | 208.4 | 173.0    | 173.0 | 201.2 |
|          |          |    | SHC | 156.5               | 187.2 | 218.0 | 152.3    | 182.9 | 213.5 | 147.7    | 178.0 | 208.4 | 141.8    | 171.5 | 201.2 |
|          |          | 67 | THC | 218.0               | 218.0 | 218.0 | 208.7    | 208.7 | 208.7 | 198.7    | 198.7 | 198.7 | 188.2    | 188.2 | 188.2 |
|          |          |    | SHC | 126.2               | 157.4 | 188.6 | 122.4    | 153.6 | 184.7 | 118.4    | 149.6 | 180.7 | 114.3    | 145.4 | 176.5 |
|          |          | 72 | THC | 238.5               | 238.5 | 238.5 | 228.4    | 228.4 | 228.4 | 217.7    | 217.7 | 217.7 | 206.3    | 206.3 | 206.3 |
|          |          |    | SHC | 94.7                | 126.1 | 157.5 | 91.0     | 122.4 | 153.8 | 87.2     | 118.5 | 149.8 | 83.1     | 114.4 | 145.7 |
|          |          | 76 | THC | –                   | 255.9 | 255.9 | –        | 245.1 | 245.1 | –        | 233.6 | 233.6 | –        | 221.4 | 221.4 |
|          |          |    | SHC | –                   | 100.7 | 133.3 | –        | 97.1  | 129.6 | –        | 93.3  | 125.6 | –        | 89.3  | 121.5 |
| 7000 CFM | EAT (wb) | 58 | THC | 202.7               | 202.7 | 229.1 | 195.4    | 195.4 | 220.8 | 187.5    | 187.5 | 211.9 | 179.2    | 179.2 | 202.5 |
|          |          |    | SHC | 176.4               | 202.7 | 229.1 | 170.0    | 195.4 | 220.8 | 163.1    | 187.5 | 211.9 | 155.9    | 179.2 | 202.5 |
|          |          | 62 | THC | 204.6               | 204.6 | 234.4 | 196.0    | 196.0 | 228.0 | 187.7    | 187.7 | 220.3 | 179.3    | 179.3 | 210.5 |
|          |          |    | SHC | 166.0               | 200.2 | 234.4 | 160.8    | 194.4 | 228.0 | 155.1    | 187.7 | 220.3 | 148.2    | 179.3 | 210.5 |
|          |          | 67 | THC | 222.5               | 222.5 | 222.5 | 212.8    | 212.8 | 212.8 | 202.4    | 202.4 | 202.4 | 191.5    | 191.5 | 191.5 |
|          |          |    | SHC | 133.0               | 168.2 | 203.4 | 129.2    | 164.3 | 199.5 | 125.1    | 160.3 | 195.4 | 120.9    | 156.0 | 191.0 |
|          |          | 72 | THC | 243.3               | 243.3 | 243.3 | 232.7    | 232.7 | 232.7 | 221.6    | 221.6 | 221.6 | 209.9    | 209.9 | 209.9 |
|          |          |    | SHC | 97.5                | 132.9 | 168.3 | 93.8     | 129.2 | 164.5 | 89.9     | 125.2 | 160.5 | 85.8     | 121.1 | 156.3 |
|          |          | 76 | THC | –                   | 260.8 | 260.8 | –        | 249.6 | 249.6 | –        | 237.7 | 237.7 | –        | 225.1 | 225.1 |
|          |          |    | SHC | –                   | 104.4 | 140.8 | –        | 100.7 | 137.0 | –        | 96.9  | 133.0 | –        | 92.8  | 128.8 |
| 7875 CFM | EAT (wb) | 58 | THC | 209.6               | 209.6 | 236.8 | 201.8    | 201.8 | 228.1 | 193.6    | 193.6 | 218.8 | 184.8    | 184.8 | 208.9 |
|          |          |    | SHC | 182.3               | 209.6 | 236.8 | 175.6    | 201.8 | 228.1 | 168.4    | 193.6 | 218.8 | 160.8    | 184.8 | 208.9 |
|          |          | 62 | THC | 209.8               | 209.8 | 246.2 | 202.0    | 202.0 | 237.1 | 193.8    | 193.8 | 227.4 | 185.0    | 185.0 | 217.1 |
|          |          |    | SHC | 173.4               | 209.8 | 246.2 | 167.0    | 202.0 | 237.1 | 160.1    | 193.8 | 227.4 | 152.9    | 185.0 | 217.1 |
|          |          | 67 | THC | 226.1               | 226.1 | 226.1 | 216.0    | 216.0 | 216.0 | 205.4    | 205.4 | 209.4 | 194.2    | 194.2 | 204.8 |
|          |          |    | SHC | 139.6               | 178.6 | 217.7 | 135.6    | 174.7 | 213.7 | 131.5    | 170.5 | 209.4 | 127.1    | 166.0 | 204.8 |
|          |          | 72 | THC | 247.0               | 247.0 | 247.0 | 236.2    | 236.2 | 236.2 | 224.7    | 224.7 | 224.7 | 212.7    | 212.7 | 212.7 |
|          |          |    | SHC | 100.2               | 139.5 | 178.8 | 96.5     | 135.7 | 174.9 | 92.5     | 131.7 | 170.9 | 88.4     | 127.5 | 166.6 |
|          |          | 76 | THC | –                   | 264.7 | 264.7 | –        | 253.1 | 253.1 | –        | 240.9 | 240.9 | –        | 227.9 | 227.9 |
|          |          |    | SHC | –                   | 107.9 | 148.1 | –        | 104.2 | 144.3 | –        | 100.2 | 140.2 | –        | 96.1  | 135.9 |
| 8750 CFM | EAT (wb) | 58 | THC | 215.4               | 215.4 | 243.4 | 207.3    | 207.3 | 234.3 | 198.7    | 198.7 | 224.6 | 189.6    | 189.6 | 214.2 |
|          |          |    | SHC | 187.4               | 215.4 | 243.4 | 180.3    | 207.3 | 234.3 | 172.9    | 198.7 | 224.6 | 164.9    | 189.6 | 214.2 |
|          |          | 62 | THC | 215.5               | 215.5 | 253.0 | 207.5    | 207.5 | 243.5 | 198.9    | 198.9 | 233.4 | 189.7    | 189.7 | 222.7 |
|          |          |    | SHC | 178.1               | 215.5 | 253.0 | 171.5    | 207.5 | 243.5 | 164.4    | 198.9 | 233.4 | 156.8    | 189.7 | 222.7 |
|          |          | 67 | THC | 228.9               | 228.9 | 231.5 | 218.7    | 218.7 | 227.3 | 207.8    | 207.8 | 222.8 | 196.4    | 196.4 | 217.9 |
|          |          |    | SHC | 145.8               | 188.6 | 231.5 | 141.8    | 184.5 | 227.3 | 137.5    | 180.1 | 222.8 | 133.0    | 175.5 | 217.9 |
|          |          | 72 | THC | 250.1               | 250.1 | 250.1 | 239.0    | 239.0 | 239.0 | 227.3    | 227.3 | 227.3 | 214.9    | 214.9 | 214.9 |
|          |          |    | SHC | 102.8               | 145.8 | 188.9 | 99.0     | 142.0 | 185.0 | 95.0     | 137.9 | 180.9 | 90.8     | 133.7 | 176.5 |
|          |          | 76 | THC | –                   | 267.8 | 267.8 | –        | 256.0 | 256.0 | –        | 243.5 | 243.5 | –        | 230.2 | 230.2 |
|          |          |    | SHC | –                   | 111.2 | 155.2 | –        | 107.4 | 151.3 | –        | 103.5 | 147.1 | –        | 99.3  | 142.8 |

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

| 50TCE21 (17.5 TONS) – UNIT WITH HUMIDI-MIZER IN SUBCOOLING MODE |     |                                     |       |        |       |       |       |       |       |       |
|-----------------------------------------------------------------|-----|-------------------------------------|-------|--------|-------|-------|-------|-------|-------|-------|
| Temp (F)<br>Air Entering<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  | 232.0                               | 211.3 | 190.6  | 242.4 | 221.0 | 199.7 | 250.7 | 228.9 | 207.0 |
|                                                                 | SHC | 110.9                               | 133.7 | 156.4  | 127.6 | 150.3 | 173.0 | 141.1 | 163.7 | 186.4 |
|                                                                 | kW  | 12.45                               | 12.16 | 11.81  | 12.74 | 12.41 | 12.02 | 12.93 | 12.51 | 12.18 |
| 85                                                              | TC  | 215.9                               | 195.7 | 175.5  | 226.0 | 205.2 | 184.4 | 234.2 | 212.8 | 191.5 |
|                                                                 | SHC | 90.6                                | 118.8 | 147.0  | 108.4 | 136.6 | 164.9 | 122.7 | 151.0 | 179.2 |
|                                                                 | kW  | 13.48                               | 13.20 | 12.88  | 13.77 | 13.47 | 13.07 | 13.96 | 13.58 | 13.23 |
| 95                                                              | TC  | 199.7                               | 180.0 | 160.3  | 209.7 | 189.4 | 169.1 | 217.6 | 196.8 | 176.1 |
|                                                                 | SHC | 70.3                                | 104.0 | 137.7  | 89.2  | 123.0 | 156.7 | 104.4 | 138.2 | 172.1 |
|                                                                 | kW  | 14.60                               | 14.25 | 13.94  | 14.89 | 14.51 | 14.15 | 15.08 | 14.63 | 14.31 |
| 105                                                             | TC  | 183.6                               | 164.5 | 145.2  | 193.3 | 173.5 | 153.8 | 201.0 | 180.8 | 160.6 |
|                                                                 | SHC | 50.0                                | 89.1  | 128.3  | 70.0  | 109.3 | 148.6 | 86.0  | 125.5 | 158.6 |
|                                                                 | kW  | 15.64                               | 15.36 | 15.–01 | 15.93 | 15.60 | 15.21 | 16.12 | 15.72 | 15.37 |
| 115                                                             | TC  | 167.5                               | 148.8 | 130.1  | 176.9 | 157.7 | 138.5 | 184.5 | 164.8 | 145.1 |
|                                                                 | SHC | 29.7                                | 74.3  | 118.9  | 50.7  | 95.6  | 138.1 | 67.7  | 112.7 | 145.1 |
|                                                                 | kW  | 16.70                               | 16.38 | 15.82  | 16.98 | 16.63 | 16.03 | 17.17 | 16.75 | 16.19 |

| 50TCE21 (17.5 TONS) – UNIT WITH HUMIDI–MIZER IN HOT GAS REHEAT MODE |     |                                   |        |        |                |        |        |                |        |        |
|---------------------------------------------------------------------|-----|-----------------------------------|--------|--------|----------------|--------|--------|----------------|--------|--------|
| Temp (F)<br>Air Entering<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  | 67.80                             | 71.30  | 74.10  | 70.50          | 74.80  | 79.80  | 73.30          | 78.20  | 82.40  |
|                                                                     | SHC | 9.00                              | 26.50  | 41.70  | 2.20           | 13.20  | 26.90  | –5.20          | 2.90   | 13.80  |
|                                                                     | kW  | 11.65                             | 11.75  | 11.87  | 11.82          | 11.90  | 11.98  | 11.93          | 12.10  | 12.19  |
| 75                                                                  | TC  | 72.50                             | 76.00  | 78.80  | 75.00          | 79.20  | 84.30  | 78.00          | 83.00  | 86.90  |
|                                                                     | SHC | 13.40                             | 30.90  | 46.10  | 6.50           | 18.00  | 31.30  | –2.10          | 7.20   | 17.90  |
|                                                                     | kW  | 11.44                             | 11.54  | 11.66  | 11.61          | 11.68  | 11.75  | 11.70          | 11.86  | 11.95  |
| 70                                                                  | TC  | 77.10                             | 80.60  | 83.40  | 79.50          | 83.90  | 88.90  | 82.40          | 87.30  | 91.10  |
|                                                                     | SHC | 17.60                             | 34.70  | 49.90  | 10.80          | 22.20  | 35.10  | 3.20           | 11.50  | 22.20  |
|                                                                     | kW  | 11.22                             | 11.33  | 11.45  | 11.40          | 11.46  | 11.54  | 11.49          | 11.64  | 11.75  |
| 60                                                                  | TC  | 86.30                             | 89.90  | 92.70  | 88.80          | 93.20  | 98.20  | 91.70          | 96.60  | 100.50 |
|                                                                     | SHC | 26.20                             | 43.20  | 58.40  | 19.40          | 30.80  | 43.60  | 11.60          | 20.10  | 30.70  |
|                                                                     | kW  | 10.76                             | 10.86  | 10.98  | 10.93          | 11.00  | 11.07  | 11.03          | 11.18  | 11.28  |
| 50                                                                  | TC  | 95.50                             | 99.10  | 101.90 | 98.00          | 102.40 | 107.40 | 101.00         | 106.00 | 109.80 |
|                                                                     | SHC | 34.80                             | 51.80  | 67.00  | 28.00          | 39.40  | 52.20  | 20.10          | 28.70  | 39.40  |
|                                                                     | kW  | 10.33                             | 10.43  | 10.55  | 10.50          | 10.52  | 10.63  | 10.59          | 10.74  | 10.85  |
| 40                                                                  | TC  | 104.80                            | 108.40 | 111.20 | 107.30         | 111.70 | 116.60 | 110.30         | 115.30 | 119.10 |
|                                                                     | SHC | 43.40                             | 60.40  | 75.60  | 36.60          | 48.00  | 60.80  | 28.80          | 37.30  | 47.90  |
|                                                                     | kW  | 9.87                              | 9.97   | 10.09  | 10.04          | 10.11  | 10.18  | 10.14          | 10.28  | 10.40  |

**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.
2. 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 11 – COOLING CAPACITIES

## 2-STAGE COOLING

20 TONS

| 50TC*D25   |          |    |     | AMBIENT TEMPERATURE |       |       |         |       |       |         |       |       |         |       |       |
|------------|----------|----|-----|---------------------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|
|            |          |    |     | 85                  |       |       | 95      |       |       | 105     |       |       | 115     |       |       |
|            |          |    |     | EA (db)             |       |       | EA (db) |       |       | EA (db) |       |       | EA (db) |       |       |
|            |          |    |     | 75                  | 80    | 85    | 75      | 80    | 85    | 75      | 80    | 85    | 75      | 80    | 85    |
| 6000 CFM   | EAT (wb) | 58 | THC | 214.4               | 214.4 | 242.5 | 207.0   | 207.0 | 234.2 | 199.0   | 199.0 | 225.1 | 190.2   | 190.2 | 215.2 |
|            |          |    | SHC | 186.3               | 214.4 | 242.5 | 179.9   | 207.0 | 234.2 | 173.0   | 199.0 | 225.1 | 165.3   | 190.2 | 215.2 |
|            |          | 62 | THC | 226.8               | 226.8 | 227.7 | 217.3   | 217.3 | 223.0 | 206.9   | 206.9 | 218.0 | 195.8   | 195.8 | 212.5 |
|            |          |    | SHC | 167.0               | 197.3 | 227.7 | 162.4   | 192.7 | 223.0 | 157.6   | 187.8 | 218.0 | 152.3   | 182.4 | 212.5 |
|            |          | 67 | THC | 248.4               | 248.4 | 248.4 | 237.9   | 237.9 | 237.9 | 226.6   | 226.6 | 226.6 | 214.3   | 214.3 | 214.3 |
|            |          |    | SHC | 136.5               | 167.1 | 197.6 | 132.2   | 162.7 | 193.2 | 127.5   | 158.0 | 188.4 | 122.5   | 152.9 | 183.4 |
|            |          | 72 | THC | 271.9               | 271.9 | 271.9 | 260.3   | 260.3 | 260.3 | 247.9   | 247.9 | 247.9 | 234.5   | 234.5 | 234.5 |
|            |          |    | SHC | 105.1               | 136.0 | 167.0 | 100.8   | 131.7 | 162.5 | 96.3    | 127.1 | 157.9 | 91.4    | 122.1 | 152.9 |
|            |          | 76 | THC | –                   | 291.7 | 291.7 | –       | 279.2 | 279.2 | –       | 265.7 | 265.7 | –       | 251.3 | 251.3 |
|            |          |    | SHC | –                   | 110.7 | 143.7 | –       | 106.5 | 139.5 | –       | 102.0 | 134.7 | –       | 97.2  | 129.7 |
| 7000 CFM   | EAT (wb) | 58 | THC | 225.8               | 225.8 | 255.3 | 217.8   | 217.8 | 246.3 | 209.1   | 209.1 | 236.5 | 199.6   | 199.6 | 225.7 |
|            |          |    | SHC | 196.2               | 225.8 | 255.3 | 189.3   | 217.8 | 246.3 | 181.7   | 209.1 | 236.5 | 173.4   | 199.6 | 225.7 |
|            |          | 62 | THC | 233.9               | 233.9 | 248.8 | 223.8   | 223.8 | 243.8 | 213.1   | 213.1 | 238.2 | 201.4   | 201.4 | 231.8 |
|            |          |    | SHC | 179.4               | 214.1 | 248.8 | 174.6   | 209.2 | 243.8 | 169.4   | 203.8 | 238.2 | 163.7   | 197.8 | 231.8 |
|            |          | 67 | THC | 255.7               | 255.7 | 255.7 | 244.6   | 244.6 | 244.6 | 232.6   | 232.6 | 232.6 | 219.6   | 219.6 | 219.6 |
|            |          |    | SHC | 144.7               | 179.7 | 214.8 | 140.2   | 175.2 | 210.2 | 135.4   | 170.4 | 205.4 | 130.3   | 165.2 | 200.2 |
|            |          | 72 | THC | 279.4               | 279.4 | 279.4 | 267.3   | 267.3 | 267.3 | 254.1   | 254.1 | 254.1 | 240.1   | 240.1 | 240.1 |
|            |          |    | SHC | 108.7               | 144.1 | 179.6 | 104.3   | 139.7 | 175.1 | 99.6    | 135.0 | 170.3 | 94.7    | 129.9 | 165.1 |
|            |          | 76 | THC | –                   | 299.4 | 299.4 | –       | 286.2 | 286.2 | –       | 272.1 | 272.1 | –       | 256.9 | 256.9 |
|            |          |    | SHC | –                   | 115.3 | 152.9 | –       | 110.9 | 148.2 | –       | 106.3 | 143.3 | –       | 101.3 | 138.0 |
| 8000 CFM   | EAT (wb) | 58 | THC | 235.3               | 235.3 | 266.2 | 226.8   | 226.8 | 256.5 | 217.5   | 217.5 | 246.0 | 207.4   | 207.4 | 234.5 |
|            |          |    | SHC | 204.5               | 235.3 | 266.2 | 197.1   | 226.8 | 256.5 | 189.0   | 217.5 | 246.0 | 180.2   | 207.4 | 234.5 |
|            |          | 62 | THC | 239.7               | 239.7 | 268.1 | 229.4   | 229.4 | 262.0 | 219.0   | 219.0 | 253.3 | 208.3   | 208.3 | 241.9 |
|            |          |    | SHC | 190.7               | 229.4 | 268.1 | 185.4   | 223.7 | 262.0 | 178.6   | 215.9 | 253.3 | 170.4   | 206.2 | 241.9 |
|            |          | 67 | THC | 261.3               | 261.3 | 261.3 | 249.6   | 249.6 | 249.6 | 237.1   | 237.1 | 237.1 | 223.6   | 223.6 | 223.6 |
|            |          |    | SHC | 152.3               | 191.8 | 231.2 | 147.7   | 187.1 | 226.6 | 142.9   | 182.2 | 221.6 | 137.7   | 177.0 | 216.3 |
|            |          | 72 | THC | 285.3               | 285.3 | 285.3 | 272.5   | 272.5 | 272.5 | 258.9   | 258.9 | 258.9 | 244.2   | 244.2 | 244.2 |
|            |          |    | SHC | 111.9               | 151.7 | 191.5 | 107.5   | 147.2 | 186.9 | 102.7   | 142.4 | 182.0 | 97.7    | 137.2 | 176.7 |
|            |          | 76 | THC | –                   | 305.4 | 305.4 | –       | 291.6 | 291.6 | –       | 276.8 | 276.8 | –       | 261.2 | 261.2 |
|            |          |    | SHC | –                   | 119.4 | 161.0 | –       | 114.9 | 156.2 | –       | 110.1 | 151.2 | –       | 105.1 | 146.0 |
| 9000 CFM   | EAT (wb) | 58 | THC | 243.5               | 243.5 | 275.4 | 234.5   | 234.5 | 265.2 | 224.6   | 224.6 | 254.0 | 213.9   | 213.9 | 241.9 |
|            |          |    | SHC | 211.6               | 243.5 | 275.4 | 203.8   | 234.5 | 265.2 | 195.2   | 224.6 | 254.0 | 185.9   | 213.9 | 241.9 |
|            |          | 62 | THC | 245.4               | 245.4 | 282.9 | 235.4   | 235.4 | 274.6 | 225.0   | 225.0 | 264.3 | 214.4   | 214.4 | 251.7 |
|            |          |    | SHC | 199.7               | 241.3 | 282.9 | 193.2   | 233.9 | 274.6 | 185.6   | 224.9 | 264.3 | 176.8   | 214.3 | 251.7 |
|            |          | 67 | THC | 265.6               | 265.6 | 265.6 | 253.6   | 253.6 | 253.6 | 240.7   | 240.7 | 240.7 | 226.8   | 226.8 | 231.8 |
|            |          |    | SHC | 159.6               | 203.3 | 247.1 | 154.9   | 198.6 | 242.3 | 150.0   | 193.6 | 237.3 | 144.7   | 188.3 | 231.8 |
|            |          | 72 | THC | 289.9               | 289.9 | 289.9 | 276.7   | 276.7 | 276.7 | 262.6   | 262.6 | 262.6 | 247.5   | 247.5 | 247.5 |
|            |          |    | SHC | 114.9               | 159.0 | 203.0 | 110.4   | 154.4 | 198.3 | 105.6   | 149.5 | 193.3 | 100.5   | 144.2 | 188.0 |
|            |          | 76 | THC | –                   | 310.1 | 310.1 | –       | 295.8 | 295.8 | –       | 280.6 | 280.6 | –       | 264.4 | 264.4 |
|            |          |    | SHC | –                   | 123.2 | 168.9 | –       | 118.6 | 164.1 | –       | 113.8 | 159.0 | –       | 108.7 | 153.6 |
| 10,000 CFM | EAT (wb) | 58 | THC | 250.4               | 250.4 | 283.2 | 240.9   | 240.9 | 272.5 | 230.7   | 230.7 | 260.9 | 219.5   | 219.5 | 248.2 |
|            |          |    | SHC | 217.7               | 250.4 | 283.2 | 209.4   | 240.9 | 272.5 | 200.5   | 230.7 | 260.9 | 190.7   | 219.5 | 248.2 |
|            |          | 62 | THC | 250.8               | 250.8 | 294.6 | 241.1   | 241.1 | 283.3 | 231.1   | 231.1 | 271.4 | 219.6   | 219.6 | 258.0 |
|            |          |    | SHC | 207.0               | 250.8 | 294.6 | 199.0   | 241.1 | 283.3 | 190.7   | 231.1 | 271.4 | 181.2   | 219.6 | 258.0 |
|            |          | 67 | THC | 269.2               | 269.2 | 269.2 | 256.8   | 256.8 | 257.6 | 243.5   | 243.5 | 252.3 | 229.4   | 229.4 | 246.4 |
|            |          |    | SHC | 166.6               | 214.5 | 262.5 | 161.9   | 209.7 | 257.6 | 156.8   | 204.5 | 252.3 | 151.3   | 198.9 | 246.4 |
|            |          | 72 | THC | 293.7               | 293.7 | 293.7 | 280.1   | 280.1 | 280.1 | 265.6   | 265.6 | 265.6 | 250.2   | 250.2 | 250.2 |
|            |          |    | SHC | 117.8               | 166.0 | 214.2 | 113.2   | 161.3 | 209.3 | 108.3   | 156.3 | 204.3 | 103.2   | 151.0 | 198.8 |
|            |          | 76 | THC | –                   | 313.9 | 313.9 | –       | 299.3 | 299.3 | –       | 283.7 | 283.7 | –       | 267.1 | 267.1 |
|            |          |    | SHC | –                   | 126.8 | 176.5 | –       | 122.2 | 171.6 | –       | 117.3 | 166.5 | –       | 112.1 | 161.0 |

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 12 – COOLING CAPACITIES

## 2-STAGE COOLING

20 TONS (cont.)

| 50TCE25 (20 TONS) – UNIT WITH HUMIDI–MIZER IN SUBCOOLING MODE |     |                                     |       |       |       |       |       |        |       |       |
|---------------------------------------------------------------|-----|-------------------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| Temp (F)<br>Air Entering<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  | 281.6                               | 256.5 | 231.3 | 293.1 | 267.0 | 240.9 | 302.3  | 275.4 | 248.6 |
|                                                               | SHC | 114.7                               | 141.0 | 167.4 | 140.6 | 166.6 | 192.6 | 161.6  | 187.3 | 212.9 |
|                                                               | kW  | 13.52                               | 13.25 | 12.95 | 13.82 | 13.46 | 13.21 | 13.97  | 13.60 | 13.31 |
| 85                                                            | TC  | 261.3                               | 236.9 | 212.4 | 272.1 | 247.7 | 221.3 | 280.7  | 254.6 | 228.5 |
|                                                               | SHC | 90.9                                | 123.5 | 156.1 | 118.8 | 151.1 | 183.3 | 141.4  | 173.4 | 205.4 |
|                                                               | kW  | 14.95                               | 14.68 | 14.48 | 15.25 | 14.89 | 14.64 | 15.40  | 15.03 | 14.74 |
| 95                                                            | TC  | 241.1                               | 217.2 | 193.4 | 251.1 | 226.4 | 201.7 | 259.2  | 233.8 | 208.4 |
|                                                               | SHC | 67.2                                | 106.0 | 144.8 | 97.1  | 120.1 | 174.1 | 121.2  | 159.5 | 197.8 |
|                                                               | kW  | 16.52                               | 16.25 | 15.95 | 16.82 | 16.46 | 16.21 | 16.97  | 16.60 | 16.31 |
| 105                                                           | TC  | 220.8                               | 197.5 | 174.4 | 230.2 | 206.2 | 182.2 | 237.7  | 213.0 | 188.4 |
|                                                               | SHC | 43.4                                | 88.4  | 133.5 | 75.3  | 120.1 | 164.9 | 101.0  | 145.7 | 178.9 |
|                                                               | kW  | 18.09                               | 17.82 | 17.52 | 18.39 | 18.03 | 17.78 | 18.54  | 18.17 | 17.88 |
| 115                                                           | TC  | 200.5                               | 178.0 | 155.5 | 209.2 | 185.9 | 162.6 | 216.2  | 192.2 | 168.7 |
|                                                               | SHC | 19.7                                | 70.9  | 122.2 | 53.5  | 104.6 | 155.7 | 80.9   | 131.8 | 161.2 |
|                                                               | kW  | 19.65                               | 19.38 | 19.08 | 19.95 | 19.59 | 19.34 | 20.10  | 19.73 | 19.44 |

| 50TCE25 (20 TONS) – UNIT WITH HUMIDI-MIZER IN HOT GAS REHEAT MODE |     |                                   |        |        |                |        |        |                |        |        |
|-------------------------------------------------------------------|-----|-----------------------------------|--------|--------|----------------|--------|--------|----------------|--------|--------|
| Temp (F)<br>Air Entering<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  | 115.20                            | 123.30 | 130.60 | 120.40         | 129.30 | 138.20 | 122.80         | 135.00 | 143.70 |
|                                                                   | SHC | 40.80                             | 58.30  | 76.10  | 32.30          | 45.50  | 60.40  | 20.10          | 34.30  | 48.00  |
|                                                                   | kW  | 13.24                             | 13.32  | 13.39  | 13.43          | 13.57  | 13.65  | 13.49          | 13.68  | 13.74  |
| 75                                                                | TC  | 119.80                            | 128.60 | 135.90 | 125.50         | 135.30 | 143.20 | 128.00         | 139.50 | 148.40 |
|                                                                   | SHC | 45.60                             | 62.80  | 82.10  | 37.00          | 49.80  | 65.20  | 24.30          | 38.70  | 52.60  |
|                                                                   | kW  | 13.05                             | 13.10  | 13.17  | 13.21          | 13.35  | 13.43  | 13.27          | 13.46  | 13.52  |
| 70                                                                | TC  | 122.50                            | 133.10 | 140.20 | 129.80         | 140.70 | 147.60 | 132.40         | 144.40 | 153.20 |
|                                                                   | SHC | 49.80                             | 76.00  | 86.10  | 41.10          | 54.30  | 69.20  | 28.80          | 41.40  | 56.80  |
|                                                                   | kW  | 12.80                             | 12.87  | 12.94  | 12.98          | 13.12  | 13.20  | 13.04          | 13.23  | 13.29  |
| 60                                                                | TC  | 133.80                            | 142.50 | 149.60 | 139.30         | 150.40 | 157.40 | 141.50         | 154.20 | 163.00 |
|                                                                   | SHC | 58.60                             | 76.00  | 95.00  | 50.20          | 63.50  | 78.10  | 37.80          | 52.10  | 65.90  |
|                                                                   | kW  | 12.34                             | 12.42  | 12.49  | 12.53          | 12.67  | 12.75  | 12.59          | 12.78  | 12.84  |
| 50                                                                | TC  | 143.50                            | 151.80 | 159.30 | 149.00         | 160.00 | 167.00 | 151.30         | 163.60 | 172.50 |
|                                                                   | SHC | 67.70                             | 84.80  | 103.80 | 59.10          | 72.40  | 87.00  | 46.70          | 61.00  | 74.90  |
|                                                                   | kW  | 11.88                             | 11.95  | 12.03  | 12.07          | 12.21  | 12.29  | 12.13          | 12.32  | 12.38  |
| 40                                                                | TC  | 153.20                            | 161.30 | 168.70 | 158.60         | 169.20 | 176.60 | 160.80         | 173.10 | 182.00 |
|                                                                   | SHC | 76.50                             | 93.60  | 111.60 | 68.00          | 81.50  | 95.80  | 55.80          | 69.80  | 84.00  |
|                                                                   | kW  | 11.42                             | 11.49  | 11.56  | 11.60          | 11.74  | 11.82  | 11.66          | 11.85  | 11.91  |

## 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.
2. 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 13 – COOLING CAPACITIES

## 2-STAGE COOLING

25 TONS

| 50TC*E29   |          |    |     | AMBIENT TEMPERATURE |       |       |         |       |       |         |       |       |         |       |       |
|------------|----------|----|-----|---------------------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|
|            |          |    |     | 85                  |       |       | 95      |       |       | 105     |       |       | 115     |       |       |
|            |          |    |     | EA (db)             |       |       | EA (db) |       |       | EA (db) |       |       | EA (db) |       |       |
|            |          |    |     | 75                  | 80    | 85    | 75      | 80    | 85    | 75      | 80    | 85    | 75      | 80    | 85    |
| 7,500 CFM  | EAT (wb) | 58 | THC | 264.4               | 264.4 | 298.9 | 254.6   | 254.6 | 287.9 | 244.1   | 244.1 | 276.0 | 232.7   | 232.7 | 263.1 |
|            |          |    | SHC | 229.9               | 264.4 | 298.9 | 221.4   | 254.6 | 287.9 | 212.2   | 244.1 | 276.0 | 202.3   | 232.7 | 263.1 |
|            |          | 62 | THC | 278.7               | 278.7 | 282.4 | 266.3   | 266.3 | 276.4 | 252.8   | 252.8 | 269.8 | 238.5   | 238.5 | 262.4 |
|            |          |    | SHC | 206.8               | 244.6 | 282.4 | 200.9   | 238.7 | 276.4 | 194.6   | 232.2 | 269.8 | 187.7   | 225.0 | 262.4 |
|            |          | 67 | THC | 305.3               | 305.3 | 305.3 | 291.9   | 291.9 | 291.9 | 277.3   | 277.3 | 277.3 | 261.5   | 261.5 | 261.5 |
|            |          |    | SHC | 169.0               | 207.0 | 245.0 | 163.4   | 201.4 | 239.4 | 157.4   | 195.3 | 233.3 | 151.0   | 188.9 | 226.8 |
|            |          | 72 | THC | 334.0               | 334.0 | 334.0 | 319.4   | 319.4 | 319.4 | 303.6   | 303.6 | 303.6 | 286.5   | 286.5 | 286.5 |
|            |          |    | SHC | 129.9               | 168.5 | 207.1 | 124.5   | 163.0 | 201.5 | 118.7   | 157.1 | 195.5 | 112.5   | 150.8 | 189.2 |
|            |          | 76 | THC | —                   | 358.2 | 358.2 | —       | 342.4 | 342.4 | —       | 325.4 | 325.4 | —       | 307.1 | 307.1 |
|            |          |    | SHC | —                   | 137.0 | 178.2 | —       | 131.7 | 172.9 | —       | 126.0 | 166.9 | —       | 119.9 | 160.4 |
| 8,750 CFM  | EAT (wb) | 58 | THC | 278.2               | 278.2 | 314.5 | 267.8   | 267.8 | 302.8 | 256.5   | 256.5 | 289.9 | 244.2   | 244.2 | 276.1 |
|            |          |    | SHC | 241.9               | 278.2 | 314.5 | 232.8   | 267.8 | 302.8 | 223.0   | 256.5 | 289.9 | 212.3   | 244.2 | 276.1 |
|            |          | 62 | THC | 287.2               | 287.2 | 308.3 | 274.3   | 274.3 | 301.5 | 260.8   | 260.8 | 291.7 | 247.0   | 247.0 | 280.9 |
|            |          |    | SHC | 222.1               | 265.2 | 308.3 | 215.7   | 258.6 | 301.5 | 207.7   | 249.7 | 291.7 | 199.0   | 240.0 | 280.9 |
|            |          | 67 | THC | 314.0               | 314.0 | 314.0 | 299.8   | 299.8 | 299.8 | 284.4   | 284.4 | 284.4 | 267.8   | 267.8 | 267.8 |
|            |          |    | SHC | 179.1               | 222.7 | 266.4 | 173.3   | 216.9 | 260.6 | 167.2   | 210.8 | 254.3 | 160.7   | 204.2 | 247.7 |
|            |          | 72 | THC | 343.0               | 343.0 | 343.0 | 327.7   | 327.7 | 327.7 | 311.1   | 311.1 | 311.1 | 293.1   | 293.1 | 293.1 |
|            |          |    | SHC | 134.3               | 178.5 | 222.6 | 128.8   | 172.9 | 216.9 | 122.9   | 166.9 | 210.8 | 116.6   | 160.4 | 204.3 |
|            |          | 76 | THC | —                   | 367.3 | 367.3 | —       | 350.8 | 350.8 | —       | 333.0 | 333.0 | —       | 313.8 | 313.8 |
|            |          |    | SHC | —                   | 142.6 | 189.4 | —       | 137.1 | 183.5 | —       | 131.2 | 177.3 | —       | 125.0 | 170.7 |
| 10,000 CFM | EAT (wb) | 58 | THC | 289.7               | 289.7 | 327.5 | 278.7   | 278.7 | 315.0 | 266.6   | 266.6 | 301.4 | 253.6   | 253.6 | 286.7 |
|            |          |    | SHC | 251.9               | 289.7 | 327.5 | 242.3   | 278.7 | 315.0 | 231.8   | 266.6 | 301.4 | 220.5   | 253.6 | 286.7 |
|            |          | 62 | THC | 294.6               | 294.6 | 329.6 | 282.2   | 282.2 | 319.7 | 268.7   | 268.7 | 309.1 | 254.1   | 254.1 | 298.4 |
|            |          |    | SHC | 234.7               | 282.1 | 329.6 | 226.8   | 273.3 | 319.7 | 218.4   | 263.7 | 309.1 | 209.7   | 254.1 | 298.4 |
|            |          | 67 | THC | 320.6               | 320.6 | 320.6 | 305.9   | 305.9 | 305.9 | 289.9   | 289.9 | 289.9 | 272.7   | 272.7 | 272.7 |
|            |          |    | SHC | 188.6               | 237.7 | 286.8 | 182.7   | 231.8 | 280.9 | 176.5   | 225.5 | 274.5 | 169.8   | 218.8 | 267.7 |
|            |          | 72 | THC | 350.0               | 350.0 | 350.0 | 334.0   | 334.0 | 334.0 | 316.8   | 316.8 | 316.8 | 298.2   | 298.2 | 298.2 |
|            |          |    | SHC | 138.4               | 187.9 | 237.5 | 132.8   | 182.2 | 231.7 | 126.8   | 176.1 | 225.5 | 120.4   | 169.6 | 218.8 |
|            |          | 76 | THC | —                   | 374.4 | 374.4 | —       | 357.3 | 357.3 | —       | 338.7 | 338.7 | —       | 318.9 | 318.9 |
|            |          |    | SHC | —                   | 147.7 | 199.5 | —       | 142.1 | 193.7 | —       | 136.1 | 187.4 | —       | 129.7 | 180.6 |
| 11,250 CFM | EAT (wb) | 58 | THC | 299.4               | 299.4 | 338.4 | 287.8   | 287.8 | 325.4 | 275.2   | 275.2 | 311.1 | 261.4   | 261.4 | 295.6 |
|            |          |    | SHC | 260.3               | 299.4 | 338.4 | 250.2   | 287.8 | 325.4 | 239.2   | 275.2 | 311.1 | 227.3   | 261.4 | 295.6 |
|            |          | 62 | THC | 302.2               | 302.2 | 346.0 | 289.3   | 289.3 | 335.7 | 275.5   | 275.5 | 323.5 | 262.1   | 262.1 | 307.7 |
|            |          |    | SHC | 244.8               | 295.4 | 346.0 | 236.7   | 286.2 | 335.7 | 227.5   | 275.5 | 323.5 | 216.4   | 262.1 | 307.7 |
|            |          | 67 | THC | 325.9               | 325.9 | 325.9 | 310.7   | 310.7 | 310.7 | 294.2   | 294.2 | 294.2 | 276.6   | 276.6 | 286.7 |
|            |          |    | SHC | 197.6               | 252.1 | 306.5 | 191.7   | 246.1 | 300.4 | 185.3   | 239.6 | 293.9 | 178.5   | 232.6 | 286.7 |
|            |          | 72 | THC | 355.5               | 355.5 | 355.5 | 339.1   | 339.1 | 339.1 | 321.3   | 321.3 | 321.3 | 302.2   | 302.2 | 302.2 |
|            |          |    | SHC | 142.1               | 197.0 | 251.8 | 136.4   | 191.2 | 245.9 | 130.4   | 185.0 | 239.6 | 123.9   | 178.3 | 232.8 |
|            |          | 76 | THC | —                   | 380.0 | 380.0 | —       | 362.4 | 362.4 | —       | 343.3 | 343.3 | —       | 322.8 | 322.8 |
|            |          |    | SHC | —                   | 152.4 | 209.4 | —       | 146.8 | 203.4 | —       | 140.7 | 197.0 | —       | 134.2 | 190.2 |
| 12,500 CFM | EAT (wb) | 58 | THC | 307.7               | 307.7 | 347.9 | 295.7   | 295.7 | 334.2 | 282.5   | 282.5 | 319.3 | 268.2   | 268.2 | 303.2 |
|            |          |    | SHC | 267.6               | 307.7 | 347.9 | 257.1   | 295.7 | 334.2 | 245.6   | 282.5 | 319.3 | 233.2   | 268.2 | 303.2 |
|            |          | 62 | THC | 308.4               | 308.4 | 362.2 | 295.9   | 295.9 | 347.4 | 283.1   | 283.1 | 332.4 | 268.4   | 268.4 | 315.2 |
|            |          |    | SHC | 254.6               | 308.4 | 362.2 | 244.4   | 295.9 | 347.4 | 233.8   | 283.1 | 332.4 | 221.7   | 268.4 | 315.2 |
|            |          | 67 | THC | 330.2               | 330.2 | 330.2 | 314.6   | 314.6 | 319.2 | 297.8   | 297.8 | 312.3 | 279.8   | 279.8 | 304.7 |
|            |          |    | SHC | 206.3               | 265.9 | 325.5 | 200.3   | 259.7 | 319.2 | 193.8   | 253.1 | 312.3 | 186.7   | 245.7 | 304.7 |
|            |          | 72 | THC | 360.1               | 360.1 | 360.1 | 343.2   | 343.2 | 343.2 | 325.0   | 325.0 | 325.0 | 305.4   | 305.4 | 305.4 |
|            |          |    | SHC | 145.7               | 205.7 | 265.7 | 139.9   | 199.8 | 259.7 | 133.8   | 193.5 | 253.3 | 127.3   | 186.8 | 246.3 |
|            |          | 76 | THC | —                   | 384.6 | 384.6 | —       | 366.5 | 366.5 | —       | 346.9 | 346.9 | —       | 325.9 | 325.9 |
|            |          |    | SHC | —                   | 157.0 | 218.9 | —       | 151.2 | 212.9 | —       | 145.1 | 206.3 | —       | 138.5 | 199.3 |

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 14 – COOLING CAPACITIES

## 2-STAGE COOLING

25 TONS (cont.)

| 50TCE29 (25 TONS) – UNIT WITH HUMIDI–MIZER IN SUBCOOLING MODE |     |                                     |       |       |        |       |       |        |       |       |
|---------------------------------------------------------------|-----|-------------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|
| Temp (F)<br>Air Entering<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  | 351.3                               | 319.5 | 287.8 | 370.4  | 337.3 | 304.1 | 385.8  | 351.5 | 317.2 |
|                                                               | SHC | 166.5                               | 199.4 | 232.3 | 191.2  | 245.6 | 258.5 | 211.4  | 245.6 | 279.9 |
|                                                               | kW  | 16.75                               | 16.55 | 15.20 | 17.30  | 16.75 | 15.85 | 17.80  | 17.50 | 16.50 |
| 85                                                            | TC  | 327.5                               | 296.4 | 265.3 | 346.1  | 313.6 | 281.2 | 361.1  | 327.5 | 294.0 |
|                                                               | SHC | 137.4                               | 178.2 | 219.0 | 162.6  | 204.5 | 246.4 | 183.3  | 226.0 | 268.7 |
|                                                               | kW  | 18.65                               | 18.45 | 17.25 | 19.20  | 18.65 | 17.80 | 19.45  | 19.15 | 18.15 |
| 95                                                            | TC  | 303.7                               | 273.3 | 242.9 | 321.8  | 290.0 | 258.3 | 336.4  | 303.5 | 270.7 |
|                                                               | SHC | 108.2                               | 157.0 | 205.8 | 134.0  | 184.1 | 234.3 | 155.1  | 206.4 | 257.6 |
|                                                               | kW  | 20.60                               | 20.40 | 19.34 | 21.15  | 20.60 | 19.95 | 21.60  | 21.30 | 20.30 |
| 105                                                           | TC  | 279.9                               | 250.2 | 220.4 | 297.5  | 266.4 | 235.3 | 311.7  | 279.5 | 247.4 |
|                                                               | SHC | 79.0                                | 135.8 | 192.5 | 105.4  | 163.8 | 222.2 | 127.1  | 186.7 | 246.4 |
|                                                               | kW  | 22.85                               | 22.65 | 21.45 | 23.40  | 22.85 | 22.05 | 23.70  | 23.40 | 22.40 |
| 115                                                           | TC  | 256.2                               | 227.1 | 198.0 | 273.2  | 242.8 | 212.4 | 287.0  | 255.5 | 224.1 |
|                                                               | SHC | 49.9                                | 114.5 | 179.2 | 76.8   | 143.4 | 210.1 | 98.9   | 167.1 | 223.8 |
|                                                               | kW  | 25.05                               | 24.85 | 23.65 | 25.60  | 25.05 | 24.25 | 25.90  | 25.60 | 24.60 |

| 50TCE29 (25 TONS) – UNIT WITH HUMIDI-MIZER IN HOT GAS REHEAT MODE |     |                                   |        |        |                |        |        |                |        |        |
|-------------------------------------------------------------------|-----|-----------------------------------|--------|--------|----------------|--------|--------|----------------|--------|--------|
| Temp (F)<br>Air Entering<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  | 124.40                            | 133.90 | 139.00 | 132.00         | 142.10 | 145.10 | 135.60         | 149.10 | 151.50 |
|                                                                   | SHC | 37.60                             | 60.70  | 82.20  | 27.80          | 45.40  | 65.80  | 17.50          | 34.20  | 50.10  |
|                                                                   | kW  | 15.83                             | 15.90  | 16.00  | 15.97          | 16.13  | 16.16  | 16.11          | 16.31  | 16.38  |
| 75                                                                | TC  | 129.00                            | 138.50 | 144.60 | 136.60         | 147.60 | 150.10 | 140.60         | 154.00 | 156.30 |
|                                                                   | SHC | 47.10                             | 70.60  | 92.10  | 37.30          | 55.30  | 75.70  | 27.00          | 43.70  | 60.00  |
|                                                                   | kW  | 15.77                             | 15.83  | 15.94  | 15.91          | 16.07  | 16.10  | 16.05          | 16.25  | 16.32  |
| 70                                                                | TC  | 133.60                            | 143.10 | 149.20 | 141.20         | 152.30 | 154.80 | 145.30         | 158.80 | 161.10 |
|                                                                   | SHC | 57.30                             | 80.70  | 102.20 | 47.50          | 65.40  | 85.80  | 37.20          | 53.90  | 70.10  |
|                                                                   | kW  | 15.68                             | 15.75  | 15.86  | 15.83          | 16.00  | 16.04  | 15.88          | 16.08  | 16.15  |
| 60                                                                | TC  | 142.80                            | 158.40 | 158.40 | 150.40         | 161.40 | 163.90 | 153.90         | 167.40 | 169.70 |
|                                                                   | SHC | 76.50                             | 121.40 | 121.40 | 66.70          | 84.60  | 105.00 | 56.40          | 73.10  | 89.30  |
|                                                                   | kW  | 15.54                             | 15.60  | 15.71  | 15.68          | 15.84  | 15.87  | 15.82          | 16.02  | 16.09  |
| 50                                                                | TC  | 151.80                            | 161.30 | 167.40 | 159.40         | 170.50 | 173.20 | 162.80         | 176.20 | 178.80 |
|                                                                   | SHC | 94.10                             | 117.50 | 139.00 | 84.30          | 102.20 | 122.60 | 74.00          | 90.70  | 106.90 |
|                                                                   | kW  | 15.40                             | 15.47  | 15.58  | 15.54          | 15.68  | 15.71  | 15.66          | 15.86  | 15.93  |
| 40                                                                | TC  | 161.20                            | 170.70 | 176.80 | 168.80         | 179.80 | 182.50 | 172.20         | 185.70 | 188.20 |
|                                                                   | SHC | 114.10                            | 137.60 | 159.10 | 104.30         | 122.30 | 142.70 | 94.00          | 110.70 | 127.00 |
|                                                                   | kW  | 15.24                             | 15.31  | 15.42  | 15.39          | 15.55  | 15.58  | 15.53          | 15.73  | 15.80  |

## 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.
2. The following formulas may be used:

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

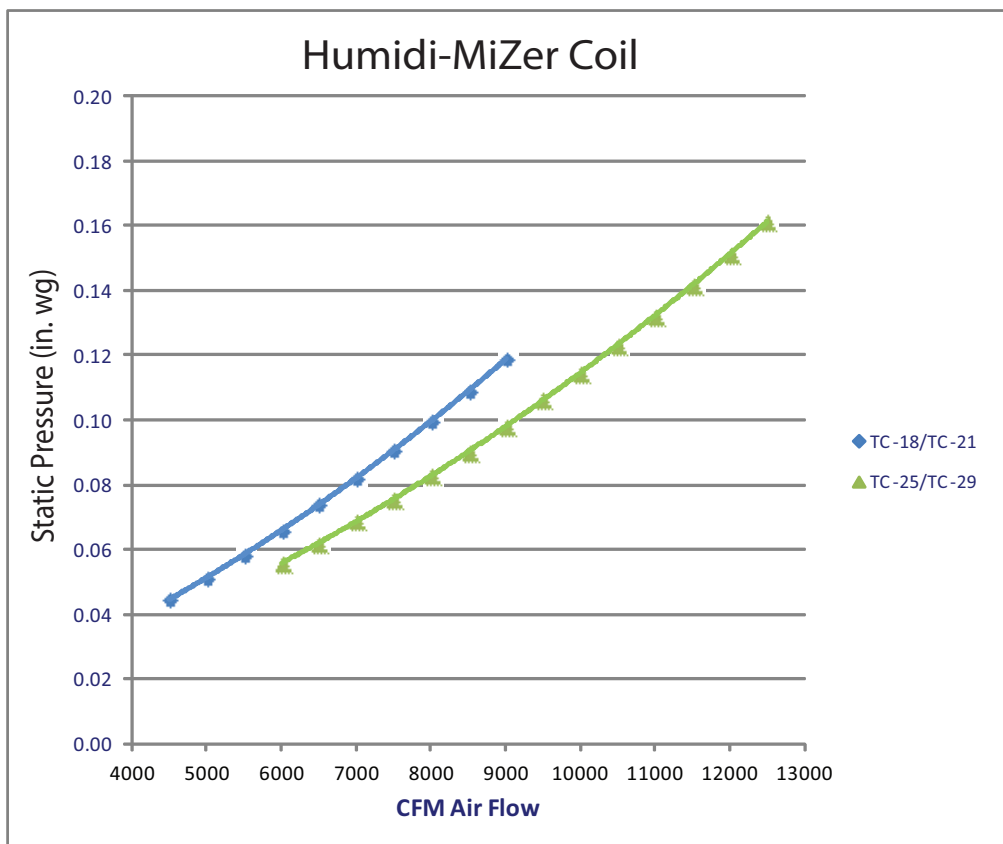
$t_{lwb}$  = Wet–bulb temperature corresponding to enthalpy of air leaving evaporator coil ( $h_{lwb}$ )

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

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

**Table 15 – STATIC PRESSURE ADDERS (IN. WG) - FACTORY OPTIONS AND/OR ACCESSORIES**

**Humidi-MiZer**



C13822

**Economizer - Horizontal Duct Configuration**

| MODEL SIZES 18–29              |       |       |       |       |       |       |       |       |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| CFM                            | 4500  | 5000  | 5500  | 6000  | 6500  | 7000  | 7500  | 8000  |
| Static Pressure Adder (in. wg) | 0.047 | 0.052 | 0.057 | 0.062 | 0.067 | 0.072 | 0.077 | 0.082 |

| MODEL SIZES 18–29              |       |       |       |       |       |       |       |       |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| CFM                            | 8500  | 9000  | 9500  | 10000 | 10500 | 11000 | 11500 | 12000 |
| Static Pressure Adder (in. wg) | 0.088 | 0.093 | 0.098 | 0.103 | 0.109 | 0.114 | 0.119 | 0.125 |

**Electric Heaters - Horizontal Duct Configuration**

| MODEL SIZES 18–29 |       |       |       |       |       |       |       |       |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 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 |

# DAMPER, BAROMETRIC RELIEF AND PE PERFORMANCE

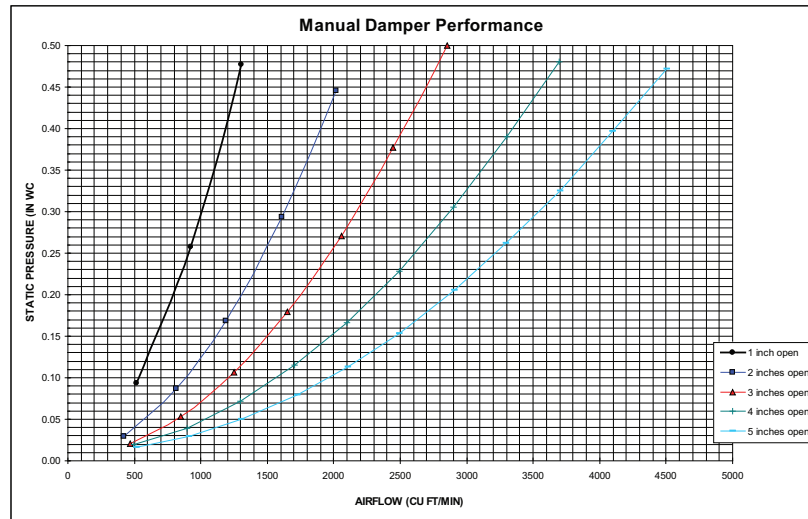


Fig. 9 - Manual Damper Performance

C09264

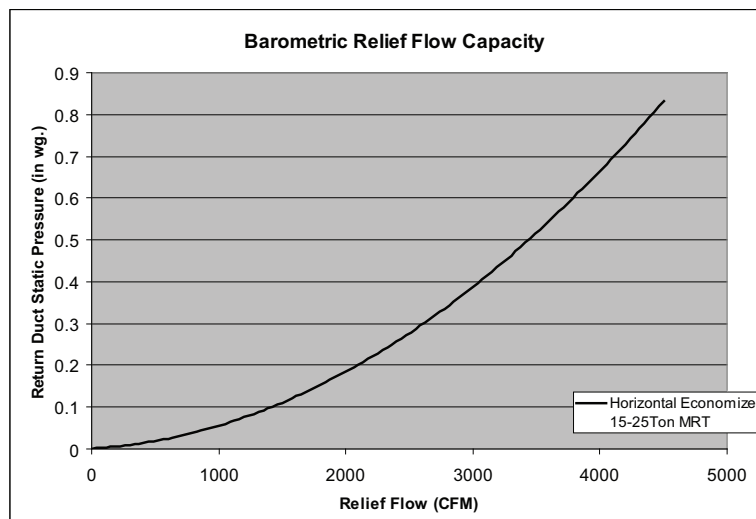


Fig. 10 - Barometric Relief Flow Capacity

C13850

## Power Exhaust Fan Performance

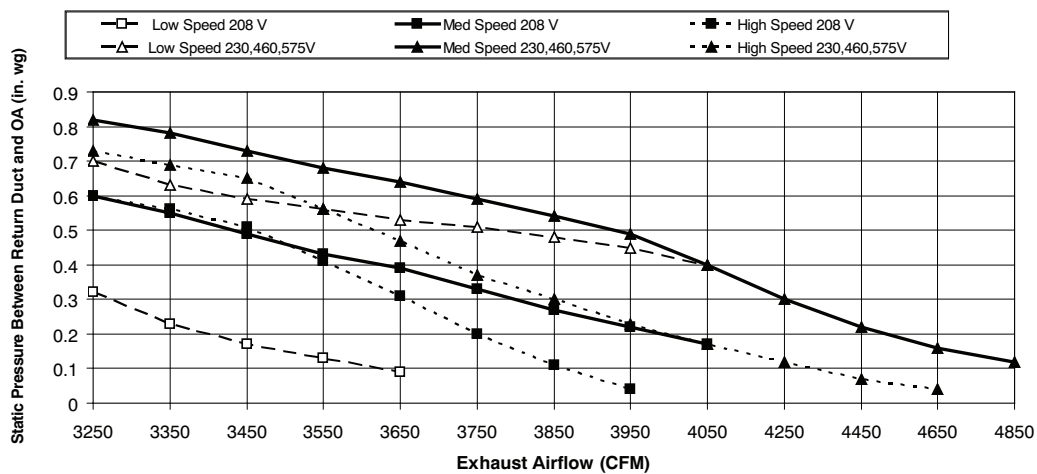


Fig. 11 - Power Exhaust Fan Performance

C11308

## **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, unit casing, and wet coils. Factory options and accessories may add static pressure losses. Selection software is available, through your salesperson, to help you select the best motor/drive combination for your application.
4. The Fan Performance tables offer motor/drive recommendations. In cases when two motor/drive combinations would work, Carrier recommended the lower horsepower option.
5. For information on the electrical properties of Carrier motors, please see the Electrical information section of this book.
6. For more information on the performance limits of Carrier motors, see the application data section of this book.

# FAN PERFORMANCE

Table 16 – 50TC\*18

## HORIZONTAL SUPPLY / RETURN

15 TON

| 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  |
| 4500                                                                          | 451                                         | 0.84 | 533 | 1.21 | 605                                                        | 1.63 | 668 | 2.12 | 726 | 2.67 |
| 4900                                                                          | 476                                         | 1.01 | 554 | 1.40 | 623                                                        | 1.84 | 685 | 2.34 | 742 | 2.89 |
| 5250                                                                          | 498                                         | 1.18 | 573 | 1.60 | 640                                                        | 2.05 | 701 | 2.55 | 756 | 3.11 |
| 5600                                                                          | 520                                         | 1.37 | 593 | 1.82 | 658                                                        | 2.28 | 717 | 2.79 | 771 | 3.35 |
| 6000                                                                          | 546                                         | 1.61 | 616 | 2.10 | 679                                                        | 2.58 | 736 | 3.10 | 789 | 3.67 |
| 6400                                                                          | 572                                         | 1.88 | 640 | 2.41 | 700                                                        | 2.91 | 756 | 3.45 | 808 | 4.03 |
| 6750                                                                          | 595                                         | 2.13 | 661 | 2.70 | 720                                                        | 3.23 | 774 | 3.79 | 825 | 4.38 |
| 7100                                                                          | 619                                         | 2.41 | 683 | 3.02 | 740                                                        | 3.59 | 793 | 4.16 | 842 | 4.76 |
| 7500                                                                          | 646                                         | 2.75 | 708 | 3.42 | 764                                                        | 4.02 | 815 | 4.62 | 863 | 5.23 |
| 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  |
| 4500                                                                          | 778                                         | 3.25 | 826 | 3.86 | 871                                                        | 4.49 | 913 | 5.15 | -   | -    |
| 4900                                                                          | 794                                         | 3.49 | 842 | 4.12 | 887                                                        | 4.78 | -   | -    | -   | -    |
| 5250                                                                          | 808                                         | 3.72 | 856 | 4.36 | 900                                                        | 5.04 | -   | -    | -   | -    |
| 5600                                                                          | 822                                         | 3.97 | 870 | 4.62 | -                                                          | -    | -   | -    | -   | -    |
| 6000                                                                          | 839                                         | 4.29 | 886 | 4.96 | -                                                          | -    | -   | -    | -   | -    |
| 6400                                                                          | 857                                         | 4.65 | -   | -    | -                                                          | -    | -   | -    | -   | -    |
| 6750                                                                          | 873                                         | 5.01 | -   | -    | -                                                          | -    | -   | -    | -   | -    |
| 7100                                                                          | -                                           | -    | -   | -    | -                                                          | -    | -   | -    | -   | -    |
| 7500                                                                          | -                                           | -    | -   | -    | -                                                          | -    | -   | -    | -   | -    |
| Standard Static Motor and Drive – 514 – 680 RPM, Max BHP 2.2                  |                                             |      |     |      | Medium Static Motor and Drive – 614 – 780 RPM, Max BHP 3.3 |      |     |      |     |      |
| High Static Motor and Drive – 746 – 912 RPM, Max BHP 4.9                      |                                             |      |     |      | – Outside operating range                                  |      |     |      |     |      |
| <b>Boldface</b> – Field Supplied Drive                                        |                                             |      |     |      | <i>ITALIC</i> – Field Supplied Motor and Drive             |      |     |      |     |      |
| <i><b>ITALIC Boldface</b></i> – Field Supplied Drive with Medium Static Motor |                                             |      |     |      |                                                            |      |     |      |     |      |

Table 17 – 50TC\*21

## HORIZONTAL SUPPLY / RETURN

17.5 TON

| 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                                                                          | 498                                         | 1.18 | 573 | 1.60 | 640                                                             | 2.05        | 701        | 2.55        | 756  | 3.11 |
| 5700                                                                          | 526                                         | 1.43 | 599 | 1.89 | 663                                                             | 2.35        | 721        | 2.86        | 776  | 3.43 |
| 6100                                                                          | 552                                         | 1.67 | 622 | 2.17 | 684                                                             | 2.66        | 741        | 3.18        | 794  | 3.76 |
| 6500                                                                          | 579                                         | 1.95 | 646 | 2.49 | 706                                                             | 3.00        | 761        | 3.54        | 813  | 4.12 |
| 7000                                                                          | 612                                         | 2.33 | 677 | 2.93 | 734                                                             | 3.48        | 788        | 4.05        | 837  | 4.64 |
| 7500                                                                          | 646                                         | 2.75 | 708 | 3.42 | 764                                                             | 4.02        | 815        | 4.62        | 863  | 5.23 |
| 7900                                                                          | 673                                         | 3.13 | 734 | 3.86 | 788                                                             | 4.50        | <u>838</u> | <u>5.12</u> | 884  | 5.75 |
| 8300                                                                          | 700                                         | 3.53 | 760 | 4.33 | <u>812</u>                                                      | <u>5.01</u> | <u>861</u> | <u>5.66</u> | 906  | 6.32 |
| 8750                                                                          | 731                                         | 4.03 | 789 | 4.90 | <u>840</u>                                                      | <u>5.63</u> | 887        | 6.33        | 932  | 7.02 |
| 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                                                                          | 808                                         | 3.72 | 856 | 4.36 | 901                                                             | 5.04        | 943        | 5.75        | 983  | 6.48 |
| 5700                                                                          | 826                                         | 4.05 | 874 | 4.71 | 918                                                             | 5.40        | 960        | 6.13        | 1000 | 6.89 |
| 6100                                                                          | 843                                         | 4.38 | 890 | 5.05 | 934                                                             | 5.75        | 976        | 6.50        | 1016 | 7.27 |
| 6500                                                                          | 861                                         | 4.75 | 907 | 5.43 | 951                                                             | 6.14        | 992        | 6.90        | 1032 | 7.69 |
| 7000                                                                          | 885                                         | 5.28 | 929 | 5.96 | 972                                                             | 6.69        | 1013       | 7.45        | -    | -    |
| 7500                                                                          | 909                                         | 5.88 | 953 | 6.58 | 994                                                             | 7.31        | -          | -           | -    | -    |
| 7900                                                                          | 929                                         | 6.42 | 972 | 7.12 | -                                                               | -           | -          | -           | -    | -    |
| 8300                                                                          | 950                                         | 7.01 | 992 | 7.72 | -                                                               | -           | -          | -           | -    | -    |
| 8750                                                                          | -                                           | -    | -   | -    | -                                                               | -           | -          | -           | -    | -    |
| Standard 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                                        |                                             |      |     |      | <i>ITALIC</i> – Field Supplied Motor and Drive                  |             |            |             |      |      |
| <i><b>ITALIC Boldface</b></i> – Field Supplied Drive with Medium Static Motor |                                             |      |     |      | <u>Underscore</u> – Field Supplied Drive with High Static Motor |             |            |             |      |      |

## FAN PERFORMANCE (cont.)

**Table 18 – 50TC\*25**

**HORIZONTAL SUPPLY / RETURN**

**20 TON**

| 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                                                                   | 546                                         | 1.57 | 617  | 2.10 | 680                                                             | 2.67 | 738  | 3.29 | 790  | 3.93 |
| 6500                                                                   | 579                                         | 1.90 | 646  | 2.46 | 707                                                             | 3.07 | 763  | 3.71 | 814  | 4.39 |
| 7000                                                                   | 613                                         | 2.28 | 677  | 2.87 | 735                                                             | 3.51 | 789  | 4.19 | 839  | 4.89 |
| 7500                                                                   | 648                                         | 2.71 | 708  | 3.34 | 764                                                             | 4.01 | 816  | 4.72 | 865  | 5.46 |
| 8000                                                                   | 683                                         | 3.20 | 740  | 3.86 | 794                                                             | 4.57 | 846  | 5.30 | 892  | 6.08 |
| 8500                                                                   | 718                                         | 3.76 | 773  | 4.45 | 825                                                             | 5.18 | 873  | 5.95 | 919  | 6.75 |
| 9000                                                                   | 754                                         | 4.37 | 814  | 5.10 | 856                                                             | 5.87 | 903  | 6.67 | 947  | 7.50 |
| 9500                                                                   | 790                                         | 5.06 | 840  | 5.82 | 887                                                             | 6.51 | 933  | 7.45 | 976  | 8.31 |
| 10000                                                                  | 826                                         | 5.82 | 874  | 6.50 | 920                                                             | 7.44 | 965  | 8.30 | -    | -    |
| 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                                                                   | 839                                         | 4.60 | 885  | 5.29 | 928                                                             | 6.01 | 969  | 6.75 | 1008 | 7.51 |
| 6500                                                                   | 862                                         | 5.09 | 907  | 5.82 | 950                                                             | 6.57 | 990  | 7.34 | 1028 | 8.13 |
| 7000                                                                   | 886                                         | 5.63 | 930  | 6.39 | 972                                                             | 7.17 | 1012 | 7.97 | 1050 | 8.70 |
| 7500                                                                   | 911                                         | 6.22 | 954  | 7.01 | 995                                                             | 7.83 | 1035 | 8.66 | -    | -    |
| 8000                                                                   | 936                                         | 6.87 | 979  | 7.69 | 1019                                                            | 8.54 | -    | -    | -    | -    |
| 8500                                                                   | 965                                         | 7.58 | 1004 | 8.44 | -                                                               | -    | -    | -    | -    | -    |
| 9000                                                                   | 990                                         | 8.36 | -    | -    | -                                                               | -    | -    | -    | -    | -    |
| 9500                                                                   | -                                           | -    | -    | -    | -                                                               | -    | -    | -    | -    | -    |
| 10000                                                                  | -                                           | -    | -    | -    | -                                                               | -    | -    | -    | -    | -    |
| Standard Static Motor and Drive – 690 – 680 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                                 |                                             |      |      |      | <u>Underscore</u> – Field Supplied Drive with High Static Motor |      |      |      |      |      |
| <i>ITALIC Boldface</i> – Field Supplied Drive with Medium Static Motor |                                             |      |      |      |                                                                 |      |      |      |      |      |

**Table 19 – 50TC\*29**

**HORIZONTAL SUPPLY / RETURN**

**25 TON**

| 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                                                         | 553                                         | 1.92 | 621 | 2.46 | 683                                                                    | 3.07 | 741  | 3.72 | 795  | 4.42 |
| 8000                                                         | 575                                         | 2.21 | 639 | 2.77 | 700                                                                    | 3.39 | 756  | 4.07 | 809  | 4.78 |
| 8500                                                         | 596                                         | 2.52 | 658 | 3.10 | 716                                                                    | 3.73 | 771  | 4.43 | 823  | 5.16 |
| 9000                                                         | 616                                         | 2.86 | 675 | 3.44 | 732                                                                    | 4.10 | 786  | 4.80 | 836  | 5.55 |
| 9500                                                         | 636                                         | 3.22 | 693 | 3.82 | 747                                                                    | 4.48 | 800  | 5.20 | 849  | 5.97 |
| 10000                                                        | 656                                         | 3.60 | 710 | 4.21 | 763                                                                    | 4.89 | 813  | 5.62 | 862  | 6.40 |
| 10500                                                        | 675                                         | 4.02 | 727 | 4.64 | 778                                                                    | 5.32 | 827  | 6.07 | 874  | 6.86 |
| 11000                                                        | 694                                         | 4.46 | 744 | 5.09 | 793                                                                    | 5.79 | 841  | 6.50 | 887  | 7.34 |
| 11500                                                        | 713                                         | 4.93 | 761 | 5.57 | 808                                                                    | 6.27 | 854  | 7.03 | 899  | 7.84 |
| 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                                                         | 845                                         | 5.14 | 892 | 5.90 | 936                                                                    | 6.68 | 978  | 7.48 | 1018 | 8.31 |
| 8000                                                         | 859                                         | 5.53 | 905 | 6.31 | 949                                                                    | 7.11 | 991  | 7.94 | -    | -    |
| 8500                                                         | 872                                         | 5.93 | 918 | 6.73 | 961                                                                    | 7.56 | 1003 | 8.41 | -    | -    |
| 9000                                                         | 884                                         | 6.34 | 930 | 7.16 | 973                                                                    | 8.01 | -    | -    | -    | -    |
| 9500                                                         | 896                                         | 6.77 | 941 | 7.61 | 984                                                                    | 8.48 | -    | -    | -    | -    |
| 10000                                                        | 908                                         | 7.22 | 953 | 8.08 | -                                                                      | -    | -    | -    | -    | -    |
| 10500                                                        | 920                                         | 7.69 | 963 | 8.56 | -                                                                      | -    | -    | -    | -    | -    |
| 11000                                                        | 931                                         | 8.18 | -   | -    | -                                                                      | -    | -    | -    | -    | -    |
| 11500                                                        | 943                                         | 8.70 | -   | -    | -                                                                      | -    | -    | -    | -    | -    |
| Standard Static Motor and Drive – 647 – 791 RPM, Max BHP 4.9 |                                             |      |     |      | Medium Static Motor and Drive – 755 – 923 RPM, Max BHP 6.5             |      |      |      |      |      |
| High Static Motor and Drive – 827 – 1010 RPM, Max BHP 8.7    |                                             |      |     |      | – Outside operating range                                              |      |      |      |      |      |
| <b>Boldface</b> – Field Supplied Drive                       |                                             |      |     |      | <i>ITALIC Boldface</i> – Field Supplied Drive with Medium Static Motor |      |      |      |      |      |

## FAN PERFORMANCE (cont.)

**Table 20 – PULLEY ADJUSTMENT - HORIZONTAL**

| UNIT | MOTOR/DRIVE COMBO | MOTOR PULLEY TURNS OPEN |      |      |      |      |      |      |      |     |     |     |
|------|-------------------|-------------------------|------|------|------|------|------|------|------|-----|-----|-----|
|      |                   | 0                       | 0.5  | 1    | 1.5  | 2    | 2.5  | 3    | 3.5  | 4   | 4.5 | 5   |
| 18   | Standard Static   | 680                     | 663  | 647  | 630  | 614  | 597  | 580  | 564  | 547 | 531 | 514 |
|      | Medium Static     | 780                     | 763  | 747  | 730  | 714  | 697  | 680  | 664  | 647 | 631 | 614 |
|      | High Static       | 912                     | 895  | 879  | 862  | 846  | 829  | 812  | 796  | 779 | 763 | 746 |
| 21   | 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 |
| 25   | 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 |
| 29   | Standard Static   | N/A                     | N/A  | N/A  | N/A  | N/A  | N/A  | N/A  | N/A  | N/A | N/A | N/A |
|      | Medium Static     | 923                     | 906  | 889  | 873  | 856  | 839  | 822  | 805  | 789 | 772 | 755 |
|      | High Static       | 1010                    | 992  | 973  | 955  | 937  | 919  | 900  | 882  | 864 | 845 | 827 |

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

**N/A** – Not Available

 – Factory settings

# ELECTRICAL INFORMATION

## Legend and Notes

### LEGEND:

|          |   |                             |
|----------|---|-----------------------------|
| BRKR     | - | Circuit breaker             |
| CO       | - | Convenience outlet          |
| DISC     | - | Disconnect                  |
| FLA      | - | Full load amps              |
| LRA      | - | Locked rotor amps           |
| MCA      | - | Minimum circuit amps        |
| PE       | - | Power exhaust               |
| PWRD CO  | - | Powered convenient outlet   |
| UNPWR CO | - | Unpowered convenient outlet |



### NOTES:

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

### 2. Unbalanced 3-Phase Supply Voltage

Never operate a motor where a phase imbalance in supply voltage is greater than 2%. 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

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

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.

# ELECTRICAL INFORMATION

**Table 21 – 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR**

**15 - 25 TONS**

| UNIT     | V-Ph-Hz  | VOLTAGE RANGE |     | COMP 1 |     | COMP 2 |     | OFM (ea) |     | IFM            |                  |      |
|----------|----------|---------------|-----|--------|-----|--------|-----|----------|-----|----------------|------------------|------|
|          |          | MIN           | MAX | RLA    | LRA | RLA    | LRA | WATTS    | FLA | TYPE           | EFF at Full Load | FLA  |
| 50TC**18 | 208-3-60 | 187           | 253 | 25.0   | 164 | 25.0   | 164 | 350      | 1.5 | STD            | 88.6%            | 8.4  |
|          |          |               |     |        |     |        |     |          |     | MED            | 87.0%            | 10.6 |
|          |          |               |     |        |     |        |     |          |     | HIGH           | 82.9%            | 13.6 |
|          | 230-3-60 | 187           | 253 | 25.0   | 164 | 25.0   | 164 | 350      | 1.5 | STD            | 88.6%            | 8.3  |
|          |          |               |     |        |     |        |     |          |     | MED            | 87.0%            | 10.6 |
|          |          |               |     |        |     |        |     |          |     | HIGH           | 82.9%            | 12.7 |
|          | 460-3-60 | 414           | 506 | 12.8   | 100 | 12.8   | 100 | 277      | 0.9 | STD            | 88.6%            | 4.2  |
|          |          |               |     |        |     |        |     |          |     | MED            | 87.0%            | 5.3  |
|          |          |               |     |        |     |        |     |          |     | HIGH           | 82.9%            | 6.4  |
|          | 575-3-60 | 518           | 633 | 9.6    | 78  | 9.6    | 78  | 397      | 0.6 | STD            | 81.1%            | 2.8  |
|          |          |               |     |        |     |        |     |          |     | MED            | 81.1%            | 2.8  |
|          |          |               |     |        |     |        |     |          |     | HIGH           | 83.6%            | 5.6  |
| 50TC**21 | 208-3-60 | 187           | 253 | 27.6   | 191 | 25.0   | 164 | 350      | 1.5 | STD            | 87.0%            | 10.6 |
|          |          |               |     |        |     |        |     |          |     | MED            | 82.9%            | 13.6 |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 89.5%            | 17.1 |
|          | 230-3-60 | 187           | 253 | 27.6   | 191 | 25.0   | 164 | 350      | 1.5 | STD            | 87.0%            | 10.6 |
|          |          |               |     |        |     |        |     |          |     | MED            | 82.9%            | 12.7 |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 89.5%            | 17.1 |
|          | 460-3-60 | 414           | 506 | 12.8   | 100 | 12.2   | 100 | 277      | 0.9 | STD            | 87.0%            | 5.3  |
|          |          |               |     |        |     |        |     |          |     | MED            | 82.9%            | 6.4  |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 89.5%            | 8.6  |
|          | 575-3-60 | 518           | 633 | 9.6    | 78  | 9.0    | 78  | 397      | 0.6 | STD            | 81.1%            | 2.8  |
|          |          |               |     |        |     |        |     |          |     | MED            | 83.6%            | 5.6  |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 89.5%            | 7.6  |
| 50TC**25 | 208-3-60 | 187           | 253 | 30.1   | 225 | 30.1   | 225 | 350      | 1.5 | STD            | 82.9%            | 13.6 |
|          |          |               |     |        |     |        |     |          |     | MED-High Eff.  | 89.5%            | 17.1 |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 91.7%            | 28.5 |
|          | 230-3-60 | 187           | 253 | 30.1   | 225 | 30.1   | 225 | 350      | 1.5 | STD            | 82.9%            | 12.7 |
|          |          |               |     |        |     |        |     |          |     | MED-High Eff.  | 89.5%            | 17.1 |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 91.7%            | 28.5 |
|          | 460-3-60 | 414           | 506 | 16.7   | 114 | 16.7   | 114 | 277      | 0.9 | STD            | 82.9%            | 6.4  |
|          |          |               |     |        |     |        |     |          |     | MED-High Eff.  | 89.5%            | 8.6  |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 91.7%            | 14.3 |
|          | 575-3-60 | 518           | 633 | 12.2   | 80  | 12.2   | 80  | 397      | 0.6 | STD            | 83.6%            | 5.6  |
|          |          |               |     |        |     |        |     |          |     | MED-High Eff.  | 89.5%            | 7.6  |
|          |          |               |     |        |     |        |     |          |     | HIGH-High Eff. | 91.7%            | 9.5  |

See: "Legend and Notes" on page 39

Size 29 unit is not available with single speed indoor fan motor

# ELECTRICAL INFORMATION

**Table 22 – 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

**15 - 25 TONS**

| UNIT     | V-Ph-Hz  | VOLTAGE RANGE |     | COMP 1 |     | COMP 2 |     | OFM (ea) |     | IFM  |                  |      |
|----------|----------|---------------|-----|--------|-----|--------|-----|----------|-----|------|------------------|------|
|          |          | MIN           | MAX | RLA    | LRA | RLA    | LRA | WATTS    | FLA | TYPE | EFF at Full Load | FLA  |
| 50TC**18 | 208-3-60 | 187           | 253 | 25.0   | 164 | 25.0   | 164 | 350      | 1.5 | STD  | 85.0%            | 8.6  |
|          |          |               |     |        |     |        |     |          |     | MED  | 81.5%            | 10.8 |
|          |          |               |     |        |     |        |     |          |     | HIGH | 83.6%            | 13.6 |
|          | 230-3-60 | 187           | 253 | 25.0   | 164 | 25.0   | 164 | 350      | 1.5 | STD  | 85.0%            | 7.8  |
|          |          |               |     |        |     |        |     |          |     | MED  | 81.5%            | 9.8  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 83.6%            | 12.7 |
|          | 460-3-60 | 414           | 506 | 12.8   | 100 | 12.8   | 100 | 277      | 0.9 | STD  | 85.0%            | 3.8  |
|          |          |               |     |        |     |        |     |          |     | MED  | 81.5%            | 4.9  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 83.6%            | 6.4  |
|          | 575-3-60 | 518           | 633 | 9.6    | 78  | 9.6    | 78  | 397      | 0.6 | STD  | 81.1%            | 4.5  |
|          |          |               |     |        |     |        |     |          |     | MED  | 81.1%            | 4.5  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 83.6%            | 6.2  |
| 50TC**21 | 208-3-60 | 187           | 253 | 27.6   | 191 | 25.0   | 164 | 350      | 1.5 | STD  | 81.5%            | 10.8 |
|          |          |               |     |        |     |        |     |          |     | MED  | 83.6%            | 13.6 |
|          |          |               |     |        |     |        |     |          |     | HIGH | 89.5%            | 17.1 |
|          | 230-3-60 | 187           | 253 | 27.6   | 191 | 25.0   | 164 | 350      | 1.5 | STD  | 81.5%            | 9.8  |
|          |          |               |     |        |     |        |     |          |     | MED  | 83.6%            | 12.7 |
|          |          |               |     |        |     |        |     |          |     | HIGH | 89.5%            | 17.1 |
|          | 460-3-60 | 414           | 506 | 12.8   | 100 | 12.2   | 100 | 277      | 0.9 | STD  | 81.5%            | 4.9  |
|          |          |               |     |        |     |        |     |          |     | MED  | 83.6%            | 6.4  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 89.5%            | 8.6  |
|          | 575-3-60 | 518           | 633 | 9.6    | 78  | 9.0    | 78  | 397      | 0.6 | STD  | 81.1%            | 4.5  |
|          |          |               |     |        |     |        |     |          |     | MED  | 83.6%            | 6.2  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 89.5%            | 7.6  |
| 50TC**25 | 208-3-60 | 187           | 253 | 30.1   | 225 | 30.1   | 225 | 350      | 1.5 | STD  | 83.6%            | 13.6 |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 17.1 |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 28.5 |
|          | 230-3-60 | 187           | 253 | 30.1   | 225 | 30.1   | 225 | 350      | 1.5 | STD  | 83.6%            | 12.7 |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 17.1 |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 28.5 |
|          | 460-3-60 | 414           | 506 | 16.7   | 114 | 16.7   | 114 | 277      | 0.9 | STD  | 83.6%            | 6.4  |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 8.6  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 14.3 |
|          | 575-3-60 | 518           | 633 | 12.2   | 80  | 12.2   | 80  | 397      | 0.6 | STD  | 83.6%            | 6.2  |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 7.6  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 9.5  |
| 50TC**29 | 208-3-60 | 187           | 253 | 48.1   | 245 | 33.3   | 239 | 350      | 1.5 | STD  | 83.6%            | 13.6 |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 17.1 |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 28.5 |
|          | 230-3-60 | 187           | 253 | 48.1   | 245 | 33.3   | 239 | 350      | 1.5 | STD  | 83.6%            | 12.7 |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 17.1 |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 28.5 |
|          | 460-3-60 | 414           | 506 | 18.6   | 125 | 17.9   | 125 | 277      | 0.9 | STD  | 83.6%            | 6.4  |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 8.6  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 14.3 |
|          | 575-3-60 | 518           | 633 | 14.7   | 100 | 12.8   | 80  | 397      | 0.6 | STD  | 83.6%            | 6.2  |
|          |          |               |     |        |     |        |     |          |     | MED  | 89.5%            | 7.6  |
|          |          |               |     |        |     |        |     |          |     | HIGH | 91.7%            | 9.5  |

See: "Legend and Notes" on page 39

# ELECTRIC HEAT - ELECTRICAL INFORMATION

**Table 23 – 50TC\*\*18-21**

**SINGLE SPEED INDOOR FAN MOTOR**

| Model Number<br>50TC** | NOM.<br>V–Ph–Hz | IFM<br>TYPE                  | Electric Heater<br>Part Number<br>CRHEATERXXXXXX | Nominal<br>(kW) | Application<br>(kW) | Application<br>Output (MBH) | Single Point or Junction Kit<br>Part Number<br>CRSINGLEXXXXA00 |                              |             |                              |
|------------------------|-----------------|------------------------------|--------------------------------------------------|-----------------|---------------------|-----------------------------|----------------------------------------------------------------|------------------------------|-------------|------------------------------|
|                        |                 |                              |                                                  |                 |                     |                             | NO C.O. Or<br>Unpowered C.O.                                   |                              | w/PWRD C.O. |                              |
|                        |                 |                              |                                                  |                 |                     |                             | NO<br>P.E.                                                     | w/ P.E.<br>(pwrd<br>fr/unit) | NO<br>P.E.  | w/ P.E.<br>(pwrd<br>fr/unit) |
| 18                     | 208/230–3–60    | STD                          | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |                              | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | MED                          | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |                              | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | HIGH                         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |                              | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        | 460–3–60        | STD                          | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 274A00                                           | 50.0            | 45.9                | 156.7                       | –                                                              | 057                          | 057         | 057                          |
|                        |                 |                              | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED                          | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |                              | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH                         | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |                              | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        | 575–3–60        | STD                          | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | –                            | –           | 057                          |
|                        |                 |                              | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED                          | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | –                            | –           | 057                          |
|                        |                 |                              | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH                         | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | –           | 057                          |
|                        |                 |                              | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
| 21                     | 208/230–3–60    | STD                          | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |                              | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | MED                          | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |                              | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | HIGH –<br>High<br>Efficiency | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |                              | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        | 460–3–60        | STD                          | R273A00                                          | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |                              | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED                          | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |                              | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH –<br>High<br>Efficiency | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |                              | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        | 575–3–60        | STD                          | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | –                            | –           | 057                          |
|                        |                 |                              | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED                          | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | –           | 057                          |
|                        |                 |                              | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH –<br>High<br>Efficiency | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |                              | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | 057         | 057                          |
|                        |                 |                              | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |

See: “Legend and Notes” on page 39

# ELECTRIC HEAT - ELECTRICAL INFORMATION

**Table 23 - 50TC\*\*25 (CONT.)**

## SINGLE SPEED INDOOR FAN MOTOR

| Model Number<br>50TC** | NOM.<br>V-Ph-Hz | IFM<br>TYPE             | Electric Heater<br>Part Number<br>CRHEATERXXXXXX | Nominal<br>(kW) | Application<br>(kW) | Application<br>Output (MBH) | Single Point or Junction Kit<br>Part Number<br>CRSINGLEXXXXA00 |                             |             |                             |
|------------------------|-----------------|-------------------------|--------------------------------------------------|-----------------|---------------------|-----------------------------|----------------------------------------------------------------|-----------------------------|-------------|-----------------------------|
|                        |                 |                         |                                                  |                 |                     |                             | NO C.O. Or<br>Unpowered C.O.                                   |                             | w/PWRD C.O. |                             |
|                        |                 |                         |                                                  |                 |                     |                             | NO<br>P.E.                                                     | w/ P.E.<br>(pwr<br>fr/unit) | NO<br>P.E.  | w/ P.E.<br>(pwr<br>fr/unit) |
| 25                     | 208/203-3-60    | STD                     | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | —                                                              | —                           | —           | —                           |
|                        |                 |                         | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                         | 056         | 056                         |
|                        |                 |                         | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                         | 056         | 056                         |
|                        |                 | MED-High<br>Efficiency  | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | —                                                              | —                           | —           | —                           |
|                        |                 |                         | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                         | 056         | 056                         |
|                        |                 |                         | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                         | 056         | 056                         |
|                        |                 | HIGH-High<br>Efficiency | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | —                                                              | 056                         | —           | 056                         |
|                        |                 |                         | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                         | 056         | 056                         |
|                        |                 |                         | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                         | 056         | 056                         |
|                        | 460-3-60        | STD                     | 273A00                                           | 25.0            | 23.0                | 78.3                        | —                                                              | —                           | —           | —                           |
|                        |                 |                         | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 |                         | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 | MED-High<br>Efficiency  | 273A00                                           | 25.0            | 23.0                | 78.3                        | —                                                              | —                           | —           | —                           |
|                        |                 |                         | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 |                         | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 | HIGH-High<br>Efficiency | 273A00                                           | 25.0            | 23.0                | 78.3                        | —                                                              | —                           | —           | 057                         |
|                        |                 |                         | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 |                         | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                         | 057         | 057                         |
|                        | 575-3-60        | STD                     | 276A00                                           | 24.8            | 22.8                | 77.7                        | —                                                              | —                           | —           | —                           |
|                        |                 |                         | 277A00                                           | 49.6            | 45.6                | 155.4                       | —                                                              | 057                         | —           | 057                         |
|                        |                 |                         | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 | MED-High<br>Efficiency  | 276A00                                           | 24.8            | 22.8                | 77.7                        | —                                                              | —                           | —           | —                           |
|                        |                 |                         | 277A00                                           | 49.6            | 45.6                | 155.4                       | —                                                              | 057                         | 057         | 057                         |
|                        |                 |                         | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 | HIGH-High<br>Efficiency | 276A00                                           | 24.8            | 22.8                | 77.7                        | —                                                              | —                           | —           | —                           |
|                        |                 |                         | 277A00                                           | 49.6            | 45.6                | 155.4                       | 057                                                            | 057                         | 057         | 057                         |
|                        |                 |                         | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                         | 057         | 057                         |

See: "Legend and Notes" on page 39

# ELECTRIC HEAT - ELECTRICAL INFORMATION

Table 24 – 50TC\*\*18-21

2-SPEED INDOOR FAN MOTOR

| Model Number<br>50TC** | NOM.<br>V–Ph–Hz | IFM<br>TYPE | Electric Heater<br>Part Number<br>CRHEATERXXXXXX | Nominal<br>(kW) | Application<br>(kW) | Application<br>Output (MBH) | Single Point or Junction Kit<br>Part Number<br>CRSINGLEXXXXA00 |                              |             |                              |
|------------------------|-----------------|-------------|--------------------------------------------------|-----------------|---------------------|-----------------------------|----------------------------------------------------------------|------------------------------|-------------|------------------------------|
|                        |                 |             |                                                  |                 |                     |                             | NO C.O. Or<br>Unpowered C.O.                                   |                              | w/PWRD C.O. |                              |
|                        |                 |             |                                                  |                 |                     |                             | NO<br>P.E.                                                     | w/ P.E.<br>(pwrd<br>fr/unit) | NO<br>P.E.  | w/ P.E.<br>(pwrd<br>fr/unit) |
| 18                     | 208/230–3–60    | STD         | 27A000                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | MED         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | HIGH        | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        | 460–3–60        | STD         | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | –                                                              | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        | 575–3–60        | STD         | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | –           | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | –           | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | –           | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
| 21                     | 208/230–3–60    | STD         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | MED         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | HIGH        | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | –                                                              | –                            | –           | –                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        | 460–3–60        | STD         | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 273A00                                           | 25.0            | 23.0                | 78.3                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        | 575–3–60        | STD         | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | –           | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | –           | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 276A00                                           | 24.8            | 22.8                | 77.7                        | –                                                              | –                            | –           | –                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | –                                                              | 057                          | 057         | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |

See: “Legend and Notes” on page 39

# ELECTRIC HEAT - ELECTRICAL INFORMATION

Table 24 - 50TC\*\*25-29 (CONT.)

2-SPEED INDOOR FAN MOTOR

| Model Number<br>50TC** | NOM.<br>V-Ph-Hz | IFM<br>TYPE | Electric Heater<br>Part Number<br>CRHEATERXXXXXX | Nominal<br>(kW) | Application<br>(kW) | Application<br>Output (MBH) | Single Point or Junction Kit<br>Part Number<br>CRSINGLEXXXXA00 |                              |             |                              |
|------------------------|-----------------|-------------|--------------------------------------------------|-----------------|---------------------|-----------------------------|----------------------------------------------------------------|------------------------------|-------------|------------------------------|
|                        |                 |             |                                                  |                 |                     |                             | NO C.O. Or<br>Unpowered C.O.                                   |                              | w/PWRD C.O. |                              |
|                        |                 |             |                                                  |                 |                     |                             | NO<br>P.E.                                                     | w/ P.E.<br>(pwrd<br>fr/unit) | NO<br>P.E.  | w/ P.E.<br>(pwrd<br>fr/unit) |
| 25                     | 208/203-3-60    | STD         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | -                                                              | -                            | -           | -                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | MED         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | -                                                              | -                            | -           | -                            |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | HIGH        | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | -                                                              | 056                          | -           | 056                          |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        | 460-3-60        | STD         | 273A00                                           | 25.0            | 23.0                | 78.3                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 273A00                                           | 25.0            | 23.0                | 78.3                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 273A00                                           | 25.0            | 23.0                | 78.3                        | -                                                              | -                            | -           | 057                          |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        | 575-3-60        | STD         | 276A00                                           | 24.8            | 22.8                | 77.7                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | -                                                              | 057                          | -           | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 276A00                                           | 24.8            | 22.8                | 77.7                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | -                                                              | 057                          | 057         | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 276A00                                           | 24.8            | 22.8                | 77.7                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
| 29                     | 208/230-3-60    | STD         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | MED         | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 | HIGH        | 270A00                                           | 25.0            | 18.8/23.0           | 64.1/78.3                   | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 271A00                                           | 50.0            | 37.6/45.9           | 128.1/156.7                 | 056                                                            | 056                          | 056         | 056                          |
|                        |                 |             | 272A00                                           | 75.0            | 56.3/68.9           | 192.2/235.0                 | 056                                                            | 056                          | 056         | 056                          |
|                        | 460-3-60        | STD         | 273A00                                           | 25.0            | 23.0                | 78.3                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 273A00                                           | 25.0            | 23.0                | 78.3                        | -                                                              | -                            | -           | 057                          |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 273A00                                           | 25.0            | 23.0                | 78.3                        | -                                                              | 057                          | 057         | 057                          |
|                        |                 |             | 274A00                                           | 50.0            | 45.9                | 156.7                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 275A00                                           | 75.0            | 68.9                | 235.0                       | 057                                                            | 057                          | 057         | 057                          |
|                        | 575-3-60        | STD         | 276A00                                           | 24.8            | 22.8                | 77.7                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | -                                                              | 057                          | -           | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | MED         | 276A00                                           | 24.8            | 22.8                | 77.7                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | -                                                              | 057                          | 057         | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 | HIGH        | 276A00                                           | 24.8            | 22.8                | 77.7                        | -                                                              | -                            | -           | -                            |
|                        |                 |             | 277A00                                           | 49.6            | 45.6                | 155.4                       | 057                                                            | 057                          | 057         | 057                          |
|                        |                 |             | 278A00                                           | 74.4            | 68.3                | 233.1                       | 057                                                            | 057                          | 057         | 057                          |

See: "Legend and Notes" on page 39

# ELECTRICAL INFORMATION

Table 25 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR

| UNIT          | IFM TYPE | ELEC. HTR     |           |             | NO C.O. or UNPWR C.O. |         |            |                        |         |            | w/ PWRD C.O.     |         |            |                        |             |         |
|---------------|----------|---------------|-----------|-------------|-----------------------|---------|------------|------------------------|---------|------------|------------------|---------|------------|------------------------|-------------|---------|
|               |          | CRHEATER***** | Nom (kW)  | FLA         | NO PE.                |         |            | w/ P.E. (pwrd fr/unit) |         |            | NO PE.           |         |            | w/ P.E. (pwrd fr/unit) |             |         |
|               |          |               |           |             | MAX FUSE or BRKR      | MCA     | DISC. SIZE | MAX FUSE or BRKR       | MCA     | DISC. SIZE | MAX FUSE or BRKR | MCA     | DISC. SIZE | MAX FUSE or BRKR       | FLA         | LRA     |
| NO M. V-PH-HZ | STD      | NONE          | —         | —           | 69.2/69.1             | 72/72   | 409        | 100/100                | 86/86   | 429        | 74.0/73.9        | 90/90   | 78/78      | 414                    | 85.8/85.7   | 100/100 |
|               |          | 270A00        | 18.8/25.0 | 52.1/60.1   | 75.6/85.5             | 72/79   | 409/409    | 100/110                | 86/92   | 429/429    | 81.6/91.5        | 90/100  | 78/84      | 414/414                | 96.4/106.3  | 100/110 |
|               |          | 271A00        | 37.6/50.0 | 104.2/120.3 | 140.8/130.7           | 129/148 | 409/409    | 175/175                | 143/161 | 429/429    | 146.8/136.7      | 150/150 | 135/153    | 414/414                | 161.5/151.4 | 175/175 |
|               |          | 272A00        | 56.3/75.0 | 156.4/180.4 | 166.9/190.8           | 190/217 | 409/409    | 200/225                | 203/231 | 429/429    | 172.9/196.8      | 200/225 | 195/223    | 414/414                | 187.7/211.5 | 200/225 |
| 208/230-3-60  | MED      | NONE          | —         | —           | 71.4                  | 75      | 423        | 100                    | 88      | 443        | 76.2             | 100     | 80         | 428                    | 88.0        | 100     |
|               |          | 270A00        | 18.8/25.0 | 52.1/60.1   | 78.4/88.4             | 75/81   | 423/423    | 100/110                | 88/95   | 443/443    | 84.4/94.4        | 100/100 | 80/87      | 428/428                | 99.1/109.1  | 100/110 |
|               |          | 271A00        | 37.6/50.0 | 104.2/120.3 | 143.3/133.6           | 132/151 | 423/423    | 175/175                | 146/164 | 443/443    | 149.5/139.6      | 150/150 | 138/156    | 428/428                | 164.3/154.3 | 175/175 |
|               |          | 272A00        | 56.3/75.0 | 156.4/180.4 | 169.7/193.7           | 192/220 | 423/423    | 200/225                | 206/233 | 443/443    | 175.7/199.7      | 200/225 | 198/225    | 428/428                | 190.4/214.4 | 200/225 |
| HIGH          | HIGH     | NONE          | —         | —           | 74.4/73.5             | 78/77   | 425        | 100/100                | 92/91   | 445        | 79.2/78.3        | 100/100 | 84/83      | 430                    | 91.0/90.1   | 100/100 |
|               |          | 270A00        | 18.8/25.0 | 52.1/60.1   | 82.1/91.0             | 78/84   | 425/425    | 100/110                | 92/97   | 445/445    | 88.1/97.0        | 100/100 | 84/89      | 430/430                | 102.9/111.8 | 110/125 |
|               |          | 271A00        | 37.6/50.0 | 104.2/120.3 | 147.3/136.2           | 135/153 | 425/425    | 175/175                | 149/167 | 445/445    | 153.3/142.2      | 175/175 | 141/158    | 430/430                | 168.0/156.9 | 175/175 |
|               |          | 272A00        | 56.3/75.0 | 156.4/180.4 | 173.4/196.3           | 196/222 | 425/425    | 200/225                | 209/236 | 445/445    | 179.4/202.3      | 200/225 | 201/228    | 430/430                | 194.2/217.0 | 200/250 |
| 460-3-60      | STD      | NONE          | —         | —           | 35.7                  | 37      | 242        | 50                     | 45      | 254        | 37.9             | 50      | 40         | 244                    | 44.1        | 50      |
|               |          | 273A00        | 25.0      | 30.1        | 42.9                  | 39      | 242        | 60                     | 47      | 254        | 45.6             | 50      | 42         | 244                    | 53.4        | 60      |
|               |          | 274A00        | 50.0      | 60.1        | 65.4                  | 74      | 242        | 80                     | 81      | 254        | 68.1             | 80      | 76         | 244                    | 75.9        | 80      |
|               |          | 275A00        | 75.0      | 90.2        | 95.5                  | 109     | 242        | 110                    | 116     | 254        | 98.2             | 100     | 111        | 244                    | 106.0       | 110     |
| 50TC**18      | MED      | NONE          | —         | —           | 36.8                  | 39      | 249        | 50                     | 46      | 261        | 39.0             | 50      | 41         | 251                    | 45.2        | 50      |
|               |          | 273A00        | 25.0      | 30.1        | 44.3                  | 41      | 249        | 60                     | 48      | 261        | 47.0             | 50      | 43         | 251                    | 54.8        | 60      |
|               |          | 274A00        | 50.0      | 60.1        | 66.7                  | 75      | 249        | 80                     | 82      | 261        | 69.5             | 80      | 78         | 251                    | 77.2        | 80      |
|               |          | 275A00        | 75.0      | 90.2        | 96.8                  | 110     | 249        | 110                    | 117     | 261        | 99.6             | 110     | 112        | 251                    | 107.3       | 125     |
| HIGH          | HIGH     | NONE          | —         | —           | 37.9                  | 40      | 250        | 50                     | 47      | 262        | 40.1             | 50      | 42         | 252                    | 46.3        | 50      |
|               |          | 273A00        | 25.0      | 30.1        | 45.6                  | 42      | 250        | 60                     | 49      | 262        | 48.4             | 50      | 45         | 252                    | 56.1        | 60      |
|               |          | 274A00        | 50.0      | 60.1        | 68.1                  | 76      | 250        | 80                     | 84      | 262        | 70.9             | 80      | 79         | 252                    | 78.6        | 80      |
|               |          | 275A00        | 75.0      | 90.2        | 98.2                  | 111     | 250        | 125                    | 118     | 262        | 101.0            | 110     | 114        | 252                    | 108.7       | 125     |
| 575-3-60      | STD      | NONE          | —         | —           | 26.2                  | 27      | 184        | 30                     | 33      | 192        | 27.9             | 35      | 29         | 186                    | 32.7        | 40      |
|               |          | 276A00        | 24.8      | 23.9        | 33.4                  | 31      | 184        | 40                     | 36      | 192        | 35.5             | 40      | 33         | 186                    | 41.5        | 45      |
|               |          | 277A00        | 49.6      | 47.7        | 63.1                  | 58      | 184        | 70                     | 64      | 192        | 65.3             | 70      | 60         | 186                    | 71.3        | 80      |
|               |          | 278A00        | 74.4      | 71.6        | 75.1                  | 86      | 184        | 90                     | 91      | 192        | 77.2             | 80      | 88         | 186                    | 83.2        | 90      |
| 575-3-60      | MED      | NONE          | —         | —           | 26.2                  | 27      | 184        | 30                     | 33      | 192        | 27.9             | 35      | 29         | 186                    | 32.7        | 40      |
|               |          | 276A00        | 24.8      | 23.9        | 33.4                  | 31      | 184        | 40                     | 36      | 192        | 35.5             | 40      | 33         | 186                    | 41.5        | 45      |
|               |          | 277A00        | 49.6      | 47.7        | 63.1                  | 58      | 184        | 70                     | 64      | 192        | 65.3             | 70      | 60         | 186                    | 71.3        | 80      |
|               |          | 278A00        | 74.4      | 71.6        | 75.1                  | 86      | 184        | 90                     | 91      | 192        | 77.2             | 80      | 88         | 186                    | 83.2        | 90      |
| HIGH          | HIGH     | NONE          | —         | —           | 29.0                  | 31      | 198        | 35                     | 36      | 206        | 30.7             | 40      | 33         | 200                    | 35.5        | 45      |
|               |          | 276A00        | 24.8      | 23.9        | 36.9                  | 34      | 198        | 40                     | 39      | 206        | 39.0             | 40      | 36         | 200                    | 45.0        | 50      |
|               |          | 277A00        | 49.6      | 47.7        | 66.6                  | 61      | 198        | 70                     | 67      | 206        | 68.8             | 70      | 63         | 200                    | 74.8        | 80      |
|               |          | 278A00        | 74.4      | 71.6        | 78.6                  | 89      | 198        | 90                     | 94      | 206        | 80.7             | 90      | 91         | 200                    | 86.7        | 90      |

See: "Legend and Notes" on page 39

# ELECTRICAL INFORMATION

Table 25 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR (cont.)

| UNIT         | IFM TYPE | ELEC. HTR     |           | NO C.O. or UNPWR C.O. |             |                       |            |         |                        |         |                       | w/ PWRD C.O. |             |         |         |                       |                        |         |         |         |
|--------------|----------|---------------|-----------|-----------------------|-------------|-----------------------|------------|---------|------------------------|---------|-----------------------|--------------|-------------|---------|---------|-----------------------|------------------------|---------|---------|---------|
|              |          | CRHEATER***** | Nom (kW)  | FLA                   | NO P.E.     |                       |            |         | w/ P.E. (pwrd fr/unit) |         |                       |              | NO P.E.     |         |         |                       | w/ P.E. (pwrd fr/unit) |         |         |         |
|              |          |               |           |                       | MCA         | MAX FUSE or HACR BRKR | DISC. SIZE | FLA     | LRA                    | MCA     | MAX FUSE or HACR BRKR | DISC. SIZE   | FLA         | LRA     | MCA     | MAX FUSE or HACR BRKR | DISC. SIZE             | FLA     | LRA     |         |
|              | STD      | NONE          | —         | —                     | 76.1        | 100                   | 80         | 453     | 87.9                   | 100     | 93                    | 473          | 80.9        | 100     | 85      | 458                   | 92.7                   | 100     | 99      | 478     |
|              |          | 270A00        | 18.8/25.0 | 52.1/60.1             | 78.4/88.4   | 100/100               | 80/81      | 453/453 | 93.1/103.1             | 100/110 | 93/95                 | 473/473      | 84.4/94.4   | 100/100 | 85/87   | 458/458               | 98.1/109.1             | 100/110 | 99/100  | 478/478 |
|              |          | 271A00        | 37.6/50.0 | 104.2/120.3           | 143.5/133.6 | 150/150               | 132/151    | 453/453 | 158.3/148.3            | 175/175 | 146/164               | 473/473      | 149.5/139.6 | 150/150 | 138/156 | 458/458               | 164.3/154.3            | 175/175 | 151/170 | 478/478 |
|              |          | 272A00        | 56.3/75.0 | 156.4/180.4           | 169.7/193.7 | 200/225               | 192/220    | 453/453 | 184.4/208.4            | 200/225 | 206/233               | 473/473      | 175.7/199.7 | 200/225 | 198/225 | 458/458               | 190.2/214.4            | 200/225 | 211/239 | 478/478 |
| 208/230-3-60 | MED      | NONE          | —         | —                     | 79.1/78.2   | 100/100               | 83/82      | 455     | 90.9/90.0              | 100/100 | 97/96                 | 473          | 83.9/83.0   | 100/100 | 89/88   | 460                   | 95.7/94.8              | 110/110 | 102/101 | 480     |
|              |          | 270A00        | 18.8/25.0 | 52.1/60.1             | 82.1/91.0   | 100/100               | 83/84      | 455/455 | 96.9/105.8             | 100/110 | 97/97                 | 475/475      | 88.1/97.0   | 100/100 | 89/89   | 460/460               | 102.9/111.8            | 110/125 | 102/103 | 480/480 |
|              |          | 271A00        | 37.6/50.0 | 104.2/120.3           | 147.3/136.2 | 150/150               | 135/153    | 455/455 | 162.0/150.9            | 175/175 | 149/167               | 475/475      | 153.3/142.2 | 175/175 | 141/158 | 460/460               | 168.0/156.9            | 175/175 | 155/172 | 480/480 |
|              |          | 272A00        | 56.3/75.0 | 156.4/180.4           | 173.4/196.3 | 200/225               | 196/222    | 455/455 | 188.2/211.0            | 200/225 | 209/236               | 475/475      | 179.4/202.3 | 200/225 | 201/228 | 460/460               | 194.2/217.0            | 200/250 | 215/241 | 480/480 |
| 460-3-60     | STD      | NONE          | —         | —                     | 82.6        | 100                   | 87         | 451     | 94.4                   | 110     | 101                   | 471          | 87.4        | 100     | 93      | 456                   | 99.2                   | 125     | 106     | 476     |
|              |          | 270A00        | 18.8/25.0 | 52.1/60.1             | 86.5/96.5   | 100/100               | 87/89      | 451/451 | 101.3/111.3            | 110/125 | 101/102               | 471/471      | 92.5/102.5  | 100/110 | 93/94   | 456/456               | 107.3/117.3            | 125/125 | 106/108 | 476/476 |
|              |          | 271A00        | 37.6/50.0 | 104.2/120.3           | 151.6/141.7 | 175/175               | 139/158    | 451/451 | 166.4/156.4            | 175/175 | 153/172               | 471/471      | 157.6/147.7 | 175/175 | 145/164 | 456/456               | 172.4/162.4            | 175/175 | 159/177 | 476/476 |
|              |          | 272A00        | 56.3/75.0 | 156.4/180.4           | 177.8/201.8 | 200/225               | 200/227    | 451/451 | 192.5/216.5            | 200/250 | 213/241               | 471/471      | 183.8/207.8 | 200/225 | 205/233 | 456/456               | 198.5/222.5            | 200/250 | 219/246 | 476/476 |
| 50TC**21     | MED      | NONE          | —         | —                     | 37.1        | 45                    | 39         | 251     | 43.3                   | 50      | 46                    | 263          | 39.3        | 50      | 42      | 253                   | 45.5                   | 50      | 49      | 265     |
|              |          | 273A00        | 25.0      | 30.1                  | 44.3        | 45                    | 41         | 251     | 52.0                   | 60      | 48                    | 263          | 47.0        | 50      | 43      | 253                   | 54.8                   | 60      | 50      | 265     |
|              |          | 274A00        | 50.0      | 60.1                  | 66.7        | 80                    | 75         | 251     | 74.5                   | 80      | 82                    | 263          | 69.5        | 80      | 78      | 253                   | 77.2                   | 80      | 85      | 265     |
|              |          | 275A00        | 75.0      | 90.2                  | 96.8        | 100                   | 110        | 251     | 104.6                  | 110     | 117                   | 263          | 99.6        | 110     | 112     | 253                   | 107.3                  | 125     | 119     | 265     |
|              | HIGH     | NONE          | —         | —                     | 38.2        | 50                    | 40         | 252     | 44.4                   | 50      | 47                    | 264          | 40.4        | 50      | 43      | 254                   | 46.6                   | 50      | 50      | 266     |
|              |          | 273A00        | 25.0      | 30.1                  | 45.6        | 50                    | 42         | 252     | 53.4                   | 60      | 49                    | 264          | 48.4        | 50      | 45      | 254                   | 56.1                   | 60      | 52      | 266     |
|              |          | 274A00        | 50.0      | 60.1                  | 68.1        | 80                    | 76         | 252     | 75.9                   | 80      | 84                    | 264          | 70.9        | 80      | 79      | 254                   | 78.6                   | 80      | 86      | 266     |
|              |          | 275A00        | 75.0      | 90.2                  | 98.2        | 100                   | 111        | 252     | 106.0                  | 125     | 118                   | 264          | 101.0       | 110     | 114     | 254                   | 108.7                  | 125     | 121     | 266     |
|              | HIGH     | NONE          | —         | —                     | 40.4        | 50                    | 43         | 250     | 46.6                   | 50      | 50                    | 262          | 42.6        | 50      | 45      | 252                   | 48.8                   | 60      | 52      | 264     |
|              |          | 273A00        | 25.0      | 30.1                  | 48.4        | 50                    | 45         | 250     | 56.1                   | 60      | 52                    | 262          | 51.1        | 60      | 47      | 252                   | 58.9                   | 60      | 54      | 264     |
|              |          | 274A00        | 50.0      | 60.1                  | 70.9        | 80                    | 79         | 250     | 78.6                   | 80      | 86                    | 262          | 73.6        | 80      | 82      | 252                   | 81.4                   | 90      | 89      | 264     |
|              |          | 275A00        | 75.0      | 90.2                  | 101.0       | 110                   | 114        | 250     | 108.7                  | 125     | 121                   | 262          | 103.7       | 125     | 116     | 252                   | 111.5                  | 125     | 123     | 264     |
|              | STD      | NONE          | —         | —                     | 26.2        | 30                    | 27         | 186     | 31.0                   | 40      | 33                    | 194          | 27.9        | 35      | 29      | 188                   | 32.7                   | 40      | 35      | 196     |
|              |          | 276A00        | 24.8      | 23.9                  | 33.4        | 35                    | 31         | 186     | 39.4                   | 40      | 36                    | 194          | 35.5        | 40      | 33      | 188                   | 41.5                   | 45      | 38      | 196     |
|              |          | 277A00        | 49.6      | 47.7                  | 63.1        | 70                    | 58         | 186     | 69.1                   | 70      | 64                    | 194          | 65.3        | 70      | 60      | 188                   | 71.3                   | 80      | 66      | 196     |
|              |          | 278A00        | 74.4      | 71.6                  | 75.1        | 80                    | 86         | 186     | 81.1                   | 90      | 91                    | 194          | 77.2        | 80      | 88      | 188                   | 83.2                   | 90      | 93      | 196     |
|              | MED      | NONE          | —         | —                     | 29.0        | 35                    | 31         | 200     | 33.8                   | 40      | 36                    | 208          | 30.7        | 40      | 33      | 202                   | 35.5                   | 45      | 38      | 210     |
|              |          | 276A00        | 24.8      | 23.9                  | 36.9        | 40                    | 34         | 200     | 42.9                   | 45      | 39                    | 208          | 39.0        | 40      | 36      | 202                   | 45.0                   | 50      | 41      | 210     |
|              |          | 277A00        | 49.6      | 47.7                  | 66.6        | 70                    | 61         | 200     | 72.6                   | 80      | 67                    | 208          | 68.8        | 70      | 63      | 202                   | 74.8                   | 80      | 69      | 210     |
|              |          | 278A00        | 74.4      | 71.6                  | 78.6        | 90                    | 89         | 200     | 84.6                   | 90      | 94                    | 208          | 80.7        | 90      | 91      | 202                   | 86.7                   | 90      | 96      | 210     |
|              | HIGH     | NONE          | —         | —                     | 31.0        | 40                    | 33         | 198     | 35.8                   | 45      | 38                    | 206          | 32.7        | 40      | 35      | 200                   | 37.5                   | 45      | 40      | 208     |
|              |          | 276A00        | 24.8      | 23.9                  | 39.4        | 40                    | 36         | 198     | 45.4                   | 50      | 42                    | 206          | 41.5        | 45      | 38      | 200                   | 47.5                   | 50      | 44      | 208     |
|              |          | 277A00        | 49.6      | 47.7                  | 69.1        | 70                    | 64         | 198     | 75.1                   | 80      | 69                    | 206          | 71.3        | 80      | 66      | 200                   | 77.3                   | 80      | 71      | 208     |
|              |          | 278A00        | 74.4      | 71.6                  | 81.1        | 90                    | 91         | 198     | 87.1                   | 90      | 97                    | 206          | 83.2        | 90      | 93      | 200                   | 89.2                   | 90      | 99      | 208     |

See: "Legend and Notes" on page 39

# ELECTRICAL INFORMATION

Table 25 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR (cont.)

| UNIT         | IFM TYPE         | ELEC. HTR     |           |             | NO C.O. or UNPWR C.O. |            |         |                       |                  |            | w/ PWRD C.O. |             |                  |                       |         |             |
|--------------|------------------|---------------|-----------|-------------|-----------------------|------------|---------|-----------------------|------------------|------------|--------------|-------------|------------------|-----------------------|---------|-------------|
|              |                  | CRHEATER***** | Nom (kW)  | FLA         | NO PE.                |            |         | w/ PE. (pwrd fr/unit) |                  |            | NO PE.       |             |                  | w/ PE. (pwrd fr/unit) |         |             |
|              |                  |               |           |             | MAX FUSE or BRKR      | DISC. SIZE | FLA     | MCA                   | MAX FUSE or BRKR | DISC. SIZE | FLA          | MCA         | MAX FUSE or BRKR | DISC. SIZE            | FLA     | LRA         |
| 50TC**25     | NO M. V-PH-HZ    | NONE          | —         | —           | 100/100               | 92/91      | 550     | 87.3/86.4             | 100/100          | 92/91      | 550          | 99.1/98.2   | 125/125          | 105/104               | 570     | 92.1/91.2   |
|              |                  | 270A00        | 18.8/25.0 | 52.1/60.1   | 100/100               | 92/91      | 550/550 | 87.3/91.0             | 100/100          | 92/91      | 550/550      | 99.1/105.8  | 125/125          | 105/104               | 570/570 | 92.1/97.0   |
|              |                  | 271A00        | 37.6/50.0 | 104.2/120.3 | 150/150               | 135/153    | 550/550 | 147.3/136.2           | 200/225          | 196/222    | 550/550      | 162.0/150.9 | 175/175          | 149/167               | 570/570 | 153.3/142.2 |
|              |                  | 272A00        | 56.3/75.0 | 156.4/180.4 | 200/225               | 196/222    | 550/550 | 173.4/196.3           | 200/225          | 196/222    | 550/550      | 188.2/211.0 | 200/225          | 209/236               | 570/570 | 179.4/202.3 |
| 208/230-3-60 | MED — High Eff.  | NONE          | —         | —           | 100                   | 96         | 546     | 90.8                  | 100              | 96         | 546          | 102.6       | 125              | 109                   | 566     | 95.6        |
|              |                  | 270A00        | 18.8/25.0 | 52.1/60.1   | 100/100               | 96/96      | 546/546 | 90.8/96.5             | 100/100          | 96/96      | 546/546      | 102.6/111.3 | 125/125          | 109/109               | 566/566 | 95.6/102.5  |
|              |                  | 271A00        | 37.6/50.0 | 104.2/120.3 | 175/175               | 139/158    | 546/546 | 151.6/141.7           | 200/225          | 200/225    | 546/546      | 166.4/156.4 | 175/175          | 153/172               | 566/566 | 157.6/147.7 |
|              |                  | 272A00        | 56.3/75.0 | 156.4/180.4 | 200/225               | 200/227    | 546/546 | 177.8/201.8           | 200/225          | 200/227    | 546/546      | 192.5/216.5 | 200/250          | 213/241               | 566/566 | 183.8/207.8 |
| 460-3-60     | HIGH — High Eff. | NONE          | —         | —           | 125                   | 109        | 625     | 102.2                 | 125              | 109        | 625          | 114.0       | 125              | 122                   | 645     | 107.0       |
|              |                  | 270A00        | 18.8/25.0 | 52.1/60.1   | 125/125               | 109/109    | 625/625 | 102.2/110.8           | 125/125          | 109/109    | 625/625      | 115.5/125.5 | 125/150          | 122/122               | 645/645 | 107.0/116.8 |
|              |                  | 271A00        | 37.6/50.0 | 104.2/120.3 | 175/175               | 153/171    | 625/625 | 165.9/155.9           | 200/250          | 213/240    | 625/625      | 180.6/170.7 | 200/175          | 166/185               | 645/645 | 171.9/161.9 |
|              |                  | 272A00        | 56.3/75.0 | 156.4/180.4 | 200/250               | 213/240    | 625/625 | 192.0/216.0           | 200/250          | 213/240    | 625/625      | 208.8/230.8 | 225/250          | 229/254               | 645/645 | 198.0/222.0 |
| 575-3-60     | STD              | NONE          | —         | —           | 60                    | 50         | 280     | 47.6                  | 60               | 50         | 280          | 53.8        | 60               | 57                    | 292     | 49.8        |
|              |                  | 273A00        | 25.0      | 30.1        | 60                    | 50         | 280     | 47.6                  | 60               | 50         | 280          | 53.8        | 60               | 57                    | 292     | 49.8        |
|              |                  | 274A00        | 50.0      | 60.1        | 80                    | 76         | 280     | 68.1                  | 80               | 76         | 280          | 75.9        | 80               | 84                    | 292     | 70.9        |
|              |                  | 275A00        | 75.0      | 90.2        | 100                   | 111        | 280     | 98.2                  | 100              | 111        | 280          | 106.0       | 125              | 118                   | 292     | 101.0       |
| 575-3-60     | MED — High Eff.  | NONE          | —         | —           | 60                    | 52         | 278     | 49.8                  | 60               | 52         | 278          | 56.0        | 70               | 60                    | 290     | 52.0        |
|              |                  | 273A00        | 25.0      | 30.1        | 60                    | 52         | 278     | 49.8                  | 60               | 52         | 278          | 56.1        | 70               | 60                    | 290     | 52.0        |
|              |                  | 274A00        | 50.0      | 60.1        | 80                    | 79         | 278     | 70.9                  | 80               | 79         | 278          | 78.6        | 80               | 86                    | 290     | 73.6        |
|              |                  | 275A00        | 75.0      | 90.2        | 110                   | 114        | 278     | 101.0                 | 110              | 114        | 278          | 108.7       | 125              | 121                   | 290     | 103.7       |
| 575-3-60     | HIGH — High Eff. | NONE          | —         | —           | 60                    | 59         | 318     | 55.5                  | 60               | 59         | 318          | 61.7        | 70               | 66                    | 330     | 57.7        |
|              |                  | 273A00        | 25.0      | 30.1        | 60                    | 59         | 318     | 55.5                  | 60               | 59         | 318          | 63.3        | 70               | 66                    | 330     | 58.3        |
|              |                  | 274A00        | 50.0      | 60.1        | 90                    | 86         | 318     | 78.0                  | 90               | 86         | 318          | 85.7        | 90               | 93                    | 330     | 80.7        |
|              |                  | 275A00        | 75.0      | 90.2        | 125                   | 120        | 318     | 108.1                 | 125              | 120        | 318          | 115.8       | 125              | 127                   | 330     | 110.8       |
| 575-3-60     | STD              | NONE          | —         | —           | 45                    | 37         | 204     | 35.5                  | 45               | 37         | 204          | 40.3        | 50               | 43                    | 212     | 37.2        |
|              |                  | 276A00        | 24.8      | 23.9        | 45                    | 37         | 204     | 36.9                  | 45               | 37         | 204          | 42.9        | 50               | 43                    | 212     | 39.0        |
|              |                  | 277A00        | 49.6      | 47.7        | 70                    | 61         | 204     | 66.6                  | 70               | 61         | 204          | 72.6        | 80               | 67                    | 212     | 68.8        |
|              |                  | 278A00        | 74.4      | 71.6        | 90                    | 89         | 204     | 78.6                  | 90               | 89         | 204          | 84.6        | 90               | 94                    | 212     | 80.7        |
| 575-3-60     | MED — High Eff.  | NONE          | —         | —           | 45                    | 40         | 202     | 37.5                  | 45               | 40         | 202          | 42.3        | 50               | 45                    | 210     | 39.2        |
|              |                  | 276A00        | 24.8      | 23.9        | 45                    | 40         | 202     | 39.4                  | 45               | 40         | 202          | 45.4        | 50               | 45                    | 210     | 41.5        |
|              |                  | 277A00        | 49.6      | 47.7        | 70                    | 64         | 202     | 69.1                  | 70               | 64         | 202          | 75.1        | 80               | 69                    | 210     | 71.3        |
|              |                  | 278A00        | 74.4      | 71.6        | 90                    | 91         | 202     | 81.1                  | 90               | 91         | 202          | 87.1        | 90               | 97                    | 210     | 83.2        |
| 575-3-60     | HIGH — High Eff. | NONE          | —         | —           | 50                    | 42         | 229     | 39.4                  | 50               | 42         | 229          | 44.2        | 50               | 47                    | 237     | 41.1        |
|              |                  | 276A00        | 24.8      | 23.9        | 50                    | 42         | 229     | 41.8                  | 50               | 42         | 229          | 47.8        | 50               | 47                    | 237     | 43.9        |
|              |                  | 277A00        | 49.6      | 47.7        | 80                    | 66         | 229     | 71.5                  | 80               | 66         | 229          | 77.5        | 80               | 71                    | 237     | 73.6        |
|              |                  | 278A00        | 74.4      | 71.6        | 90                    | 93         | 229     | 83.5                  | 90               | 93         | 229          | 89.5        | 100              | 99                    | 237     | 85.6        |

See: "Legend and Notes" on page 39

# ELECTRICAL INFORMATION

Table 26 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH FACTORY INSTALLED 2 SPEED INDOOR FAN OPTION

| UNIT          | IFM TYPE      | ELEC. HTR |             | NO C.O. or UNPWR C.O. |                  |         |                       |         |         | w/ PWRD C.O.     |         |            |                       |             |                  |
|---------------|---------------|-----------|-------------|-----------------------|------------------|---------|-----------------------|---------|---------|------------------|---------|------------|-----------------------|-------------|------------------|
|               |               |           |             | NO PE.                |                  |         | w/ PE. (pwrd fr/unit) |         |         | NO PE.           |         |            | w/ PE. (pwrd fr/unit) |             |                  |
|               |               |           |             | MCA                   | MAX FUSE or BRKR | FLA     | DISC. SIZE            | LRA     | MCA     | MAX FUSE or BRKR | FLA     | DISC. SIZE | LRA                   | MCA         | MAX FUSE or BRKR |
| NO M. V-PH-HZ | CRHEATER***** | Nom (kW)  | FLA         | DISC. SIZE            |                  |         | DISC. SIZE            |         |         | DISC. SIZE       |         |            | DISC. SIZE            |             |                  |
|               |               |           |             | MCA                   | MAX FUSE or BRKR | FLA     | DISC. SIZE            | LRA     | MCA     | MAX FUSE or BRKR | FLA     | DISC. SIZE | LRA                   | MCA         | MAX FUSE or BRKR |
|               |               |           |             | MCA                   | MAX FUSE or BRKR | FLA     | DISC. SIZE            | LRA     | MCA     | MAX FUSE or BRKR | FLA     | DISC. SIZE | LRA                   | MCA         | MAX FUSE or BRKR |
|               |               |           |             | MCA                   | MAX FUSE or BRKR | FLA     | DISC. SIZE            | LRA     | MCA     | MAX FUSE or BRKR | FLA     | DISC. SIZE | LRA                   | MCA         | MAX FUSE or BRKR |
| STD           | NONE          | —         | —           | 69.4/68.6             | 90/90            | 73/72   | 390                   | 410     | 86/85   | 100/100          | 86/85   | 410        | 410                   | 74.2/73.4   | 90/90            |
|               | 270A00        | 18.8/25.0 | 52.1/60.1   | 75.9/84.9             | 90/90            | 73/78   | 390/390               | 410/410 | 86/92   | 100/100          | 86/92   | 410/410    | 410                   | 81.9/90.9   | 90/100           |
|               | 271A00        | 37.6/50.0 | 104.2/120.3 | 141.0/130.1           | 150/150          | 130/147 | 390/390               | 410/410 | 143/161 | 175/150          | 143/161 | 410/410    | 410                   | 147.0/136.1 | 150/150          |
|               | 272A00        | 56.3/75.0 | 156.4/180.4 | 167.2/190.2           | 200/200          | 190/216 | 390/390               | 410/410 | 203/230 | 200/225          | 203/230 | 410/410    | 410                   | 173.2/196.2 | 200/225          |
| MED           | NONE          | —         | —           | 71.6/70.6             | 90/90            | 75/74   | 414                   | 434     | 89/88   | 100/100          | 89/88   | 434        | 434                   | 76.4/75.4   | 100/100          |
|               | 270A00        | 18.8/25.0 | 52.1/60.1   | 78.6/87.4             | 90/90            | 75/80   | 414/414               | 434/434 | 89/94   | 100/110          | 89/94   | 434/434    | 434                   | 84.6/93.4   | 100/100          |
|               | 271A00        | 37.6/50.0 | 104.2/120.3 | 143.8/132.6           | 150/150          | 132/150 | 414/414               | 434/434 | 146/163 | 175/175          | 146/163 | 434/434    | 434                   | 149.8/138.6 | 150/150          |
|               | 272A00        | 56.3/75.0 | 156.4/180.4 | 169.9/192.7           | 200/225          | 192/219 | 414/414               | 434/434 | 206/232 | 200/225          | 206/232 | 434/434    | 434                   | 175.9/198.7 | 200/225          |
| HIGH          | NONE          | —         | —           | 74.4/73.5             | 90/90            | 78/77   | 425                   | 445     | 92/91   | 100/100          | 92/91   | 445        | 445                   | 79.2/78.3   | 100/100          |
|               | 270A00        | 18.8/25.0 | 52.1/60.1   | 82.1/91.0             | 90/100           | 78/84   | 425/425               | 445/445 | 92/97   | 100/110          | 92/97   | 445/445    | 445                   | 88.1/97.0   | 100/100          |
|               | 271A00        | 37.6/50.0 | 104.2/120.3 | 147.3/136.2           | 150/150          | 136/153 | 425/425               | 445/445 | 149/167 | 175/175          | 149/167 | 445/445    | 445                   | 153.3/142.2 | 175/175          |
|               | 272A00        | 56.3/75.0 | 156.4/180.4 | 173.4/196.3           | 200/225          | 196/222 | 425/425               | 445/445 | 209/236 | 200/225          | 209/236 | 445/445    | 445                   | 179.4/202.3 | 200/225          |
| STD           | NONE          | —         | —           | 35.3                  | 45               | 37      | 233                   | 245     | 44      | 50               | 44      | 245        | 245                   | 37.5        | 50.00            |
|               | 273A00        | 25.0      | 30.1        | 42.4                  | 45               | 39      | 233                   | 245     | 46      | 60               | 46      | 245        | 245                   | 45.1        | 50.00            |
|               | 274A00        | 50.0      | 60.1        | 64.9                  | 70               | 73      | 233                   | 245     | 81      | 80               | 81      | 245        | 245                   | 67.6        | 80.00            |
|               | 275A00        | 75.0      | 90.2        | 95.0                  | 100              | 108     | 233                   | 245     | 115     | 110              | 115     | 245        | 245                   | 97.7        | 100              |
| MED           | NONE          | —         | —           | 36.4                  | 45               | 38      | 245                   | 257     | 45      | 50               | 45      | 257        | 257                   | 38.6        | 50.00            |
|               | 273A00        | 25.0      | 30.1        | 43.8                  | 45               | 40      | 245                   | 257     | 47      | 60               | 47      | 257        | 257                   | 46.5        | 50.00            |
|               | 274A00        | 50.0      | 60.1        | 66.2                  | 80               | 75      | 245                   | 257     | 82      | 80               | 82      | 257        | 257                   | 69.0        | 80.00            |
|               | 275A00        | 75.0      | 90.2        | 96.3                  | 100              | 109     | 245                   | 257     | 116     | 110              | 116     | 257        | 257                   | 99.1        | 100              |
| HIGH          | NONE          | —         | —           | 37.9                  | 50               | 40      | 250                   | 262     | 47      | 50               | 47      | 262        | 262                   | 40.1        | 50.00            |
|               | 273A00        | 25.0      | 30.1        | 45.6                  | 50               | 42      | 250                   | 262     | 49      | 60               | 49      | 262        | 262                   | 48.4        | 50.00            |
|               | 274A00        | 50.0      | 60.1        | 68.1                  | 80               | 76      | 250                   | 262     | 84      | 80               | 84      | 262        | 262                   | 70.9        | 80.00            |
|               | 275A00        | 75.0      | 90.2        | 98.2                  | 100              | 111     | 250                   | 262     | 118     | 125              | 118     | 262        | 262                   | 101.0       | 110              |
| STD           | NONE          | —         | —           | 27.9                  | 35               | 29      | 184                   | 192     | 35      | 40               | 35      | 192        | 192                   | 29.6        | 35.00            |
|               | 276A00        | 24.8      | 23.9        | 35.5                  | 40               | 33      | 184                   | 192     | 38      | 45               | 38      | 192        | 192                   | 37.6        | 40.00            |
|               | 277A00        | 49.6      | 47.7        | 65.3                  | 70               | 60      | 184                   | 192     | 66      | 80               | 66      | 192        | 192                   | 67.4        | 70.00            |
|               | 278A00        | 74.4      | 71.6        | 77.2                  | 90               | 88      | 184                   | 192     | 93      | 90               | 93      | 192        | 192                   | 79.4        | 90               |
| MED           | NONE          | —         | —           | 27.9                  | 35               | 29      | 184                   | 192     | 35      | 40               | 35      | 192        | 192                   | 29.6        | 35.00            |
|               | 276A00        | 24.8      | 23.9        | 35.5                  | 40               | 33      | 184                   | 192     | 38      | 45               | 38      | 192        | 192                   | 37.6        | 40.00            |
|               | 277A00        | 49.6      | 47.7        | 65.3                  | 70               | 60      | 184                   | 192     | 66      | 80               | 66      | 192        | 192                   | 67.4        | 70.00            |
|               | 278A00        | 74.4      | 71.6        | 77.2                  | 90               | 88      | 184                   | 192     | 93      | 90               | 93      | 192        | 192                   | 79.4        | 90               |
| HIGH          | NONE          | —         | —           | 29.6                  | 35               | 31      | 198                   | 206     | 37      | 40               | 37      | 206        | 206                   | 31.3        | 40.00            |
|               | 276A00        | 24.8      | 23.9        | 37.6                  | 40               | 35      | 198                   | 206     | 40      | 45               | 40      | 206        | 206                   | 39.8        | 40.00            |
|               | 277A00        | 49.6      | 47.7        | 67.4                  | 70               | 62      | 198                   | 206     | 68      | 80               | 68      | 206        | 206                   | 69.5        | 70.00            |
|               | 278A00        | 74.4      | 71.6        | 79.4                  | 90               | 89      | 198                   | 206     | 95      | 90               | 95      | 206        | 206                   | 81.5        | 90               |

See: "Legend and Notes" on page 39

# ELECTRICAL INFORMATION

Table 26 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH FACTORY INSTALLED 2 SPEED INDOOR FAN OPTION (cont.)

| UNIT          | IFM TYPE | ELEC. HTR |           | NO C.O. or UNPWR C.O. |                  |         |                       |         |         | w/ PWRD C.O. |                  |         |                       |         |         |
|---------------|----------|-----------|-----------|-----------------------|------------------|---------|-----------------------|---------|---------|--------------|------------------|---------|-----------------------|---------|---------|
|               |          |           |           | NO PE.                |                  |         | w/ PE. (pwrd fr/unit) |         |         | NO PE.       |                  |         | w/ PE. (pwrd fr/unit) |         |         |
|               |          |           |           | MCA                   | MAX FUSE or BRKR | FLA     | DISC. SIZE            | LRA     | FLA     | MCA          | MAX FUSE or BRKR | FLA     | DISC. SIZE            | LRA     | FLA     |
| NO M. V-PH-HZ | STD      | NONE      | 18.8/25.0 | 76.3/75.3             | 100/100          | 80/79   | 444                   | 444     | 93/92   | 81.1/80.1    | 100/100          | 85/84   | 449                   | 449     | 99/98   |
|               |          |           |           | 78.6/87.4             | 100/100          | 80/80   | 444/444               | 464/464 | 93/94   | 84.6/93.4    | 100/110          | 85/86   | 449/449               | 100/110 | 99/99   |
|               |          |           |           | 143.8/132.6           | 150/150          | 132/150 | 444/444               | 464/464 | 146/163 | 149.8/138.6  | 150/150          | 138/155 | 449/449               | 175/175 | 151/169 |
|               |          |           |           | 169.9/192.7           | 200/225          | 192/219 | 444/444               | 464/464 | 206/232 | 175.9/198.7  | 200/225          | 198/224 | 449/449               | 200/225 | 211/238 |
| 208/230-3-60  | MED      | NONE      | 18.8/25.0 | 79.1/78.2             | 100/100          | 83/82   | 455                   | 475     | 97/96   | 83.9/83.0    | 100/100          | 89/88   | 460                   | 460     | 102/101 |
|               |          |           |           | 82.1/91.0             | 100/100          | 83/84   | 455/455               | 475/475 | 97/97   | 88.1/97.0    | 100/100          | 89/89   | 460/460               | 110/110 | 102/103 |
|               |          |           |           | 147.3/136.2           | 150/150          | 135/153 | 455/455               | 475/475 | 149/167 | 153.3/142.2  | 175/175          | 141/158 | 460/460               | 175/175 | 155/172 |
|               |          |           |           | 173.4/196.3           | 200/225          | 196/222 | 455/455               | 475/475 | 209/236 | 179.4/202.3  | 200/225          | 201/228 | 460/460               | 200/250 | 215/241 |
| 208/230-3-60  | HIGH     | NONE      | 18.8/25.0 | 82.6                  | 100              | 87      | 451                   | 471     | 101     | 87.4         | 100/100          | 93      | 456                   | 456     | 106     |
|               |          |           |           | 86.5/96.5             | 100/100          | 87/89   | 451/451               | 471/471 | 101/102 | 92.5/102.5   | 100/110          | 93/94   | 456/456               | 125/125 | 106/108 |
|               |          |           |           | 151.6/141.7           | 175/175          | 139/158 | 451/451               | 471/471 | 153/172 | 157.6/147.7  | 175/175          | 145/164 | 456/456               | 175/175 | 159/177 |
|               |          |           |           | 177.8/201.8           | 200/225          | 200/227 | 451/451               | 471/471 | 213/241 | 183.8/207.8  | 200/225          | 205/233 | 456/456               | 200/250 | 219/246 |
| 460-3-60      | STD      | NONE      | 25.0      | 36.7                  | 45               | 39      | 247                   | 259     | 46      | 38.9         | 50.00            | 41      | 249                   | 249     | 48      |
|               |          |           |           | 43.8                  | 45               | 40      | 247                   | 259     | 47      | 46.5         | 50.00            | 43      | 249                   | 249     | 50      |
|               |          |           |           | 66.2                  | 80               | 75      | 247                   | 259     | 82      | 69.0         | 80.00            | 77      | 249                   | 249     | 84      |
|               |          |           |           | 96.3                  | 100              | 109     | 247                   | 259     | 116     | 99.1         | 100              | 112     | 249                   | 249     | 119     |
| 460-3-60      | MED      | NONE      | 25.0      | 38.2                  | 50               | 40      | 252                   | 264     | 47      | 40.4         | 50.00            | 43      | 254                   | 254     | 50      |
|               |          |           |           | 45.6                  | 50               | 42      | 252                   | 264     | 49      | 48.4         | 50.00            | 45      | 254                   | 254     | 52      |
|               |          |           |           | 68.1                  | 80               | 76      | 252                   | 264     | 84      | 70.9         | 80.00            | 79      | 254                   | 254     | 86      |
|               |          |           |           | 98.2                  | 100              | 111     | 252                   | 264     | 118     | 101.0        | 110              | 114     | 254                   | 254     | 121     |
| HIGH          | STD      | NONE      | 25.0      | 40.4                  | 50               | 43      | 250                   | 262     | 50      | 42.6         | 50.00            | 45      | 252                   | 252     | 52      |
|               |          |           |           | 48.4                  | 50               | 45      | 250                   | 262     | 52      | 51.1         | 60.00            | 47      | 252                   | 252     | 54      |
|               |          |           |           | 70.9                  | 80               | 79      | 250                   | 262     | 86      | 73.6         | 80.00            | 82      | 252                   | 252     | 89      |
|               |          |           |           | 101.0                 | 110              | 114     | 250                   | 262     | 121     | 103.7        | 125              | 116     | 252                   | 252     | 123     |
| 575-3-60      | STD      | NONE      | 24.8      | 27.9                  | 35               | 29      | 186                   | 194     | 35      | 29.6         | 35.00            | 31      | 188                   | 188     | 37      |
|               |          |           |           | 35.5                  | 40               | 33      | 186                   | 194     | 38      | 37.6         | 40.00            | 35      | 188                   | 188     | 40      |
|               |          |           |           | 65.3                  | 70               | 60      | 186                   | 194     | 66      | 67.4         | 70.00            | 62      | 188                   | 188     | 68      |
|               |          |           |           | 77.2                  | 90               | 88      | 186                   | 194     | 93      | 79.4         | 90               | 89      | 188                   | 188     | 95      |
| 575-3-60      | MED      | NONE      | 24.8      | 29.6                  | 35               | 31      | 200                   | 208     | 37      | 31.3         | 40.00            | 33      | 202                   | 202     | 39      |
|               |          |           |           | 37.6                  | 40               | 35      | 200                   | 208     | 38      | 39.8         | 40.00            | 37      | 202                   | 202     | 42      |
|               |          |           |           | 67.4                  | 70               | 62      | 200                   | 208     | 68      | 69.5         | 70.00            | 64      | 202                   | 202     | 69      |
|               |          |           |           | 79.4                  | 90               | 89      | 200                   | 208     | 95      | 81.5         | 90               | 91      | 202                   | 202     | 97      |
| HIGH          | STD      | NONE      | 24.8      | 31.0                  | 40               | 33      | 198                   | 206     | 38      | 32.7         | 40.00            | 35      | 200                   | 200     | 40      |
|               |          |           |           | 39.4                  | 40               | 36      | 198                   | 206     | 42      | 41.5         | 45.00            | 38      | 200                   | 200     | 44      |
|               |          |           |           | 69.1                  | 70               | 64      | 198                   | 206     | 69      | 71.3         | 80.00            | 66      | 200                   | 200     | 71      |
|               |          |           |           | 81.1                  | 90               | 91      | 198                   | 206     | 97      | 83.2         | 90               | 93      | 200                   | 200     | 99      |

See: "Legend and Notes" on page 39

# ELECTRICAL INFORMATION

Table 26 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH FACTORY INSTALLED 2 SPEED INDOOR FAN OPTION (cont.)

| UNIT     | NO M. V-PH-HZ | IFM TYPE | ELEC. HTR     |           | NO C.O. or UNPWR C.O. |             |                  |            |                        |         | w/ PWRD C.O.     |             |         |         |                        |             |         |         |         |
|----------|---------------|----------|---------------|-----------|-----------------------|-------------|------------------|------------|------------------------|---------|------------------|-------------|---------|---------|------------------------|-------------|---------|---------|---------|
|          |               |          | CRHEATER***** | Nom (kW)  | FLA                   | NO PE.      |                  |            | w/ P.E. (pwrd fr/unit) |         |                  | NO PE.      |         |         | w/ P.E. (pwrd fr/unit) |             |         |         |         |
|          |               |          |               |           |                       | MCA         | MAX FUSE or BRKR | DISC. SIZE |                        | MCA     | MAX FUSE or BRKR | DISC. SIZE  |         | MCA     | MAX FUSE or BRKR       | DISC. SIZE  |         |         |         |
|          |               |          |               |           |                       |             |                  | FLA        | LRA                    |         |                  | FLA         | LRA     |         |                        | FLA         | LRA     |         |         |
| 50TC**25 |               | STD      | NONE          | —         | —                     | 87.3/86.4   | 100/100          | 92/91      | 550                    | 105/104 | 570              | 92.1/91.2   | 100/100 | 97/96   | 555                    | 103.9/103.0 | 125/125 | 111/110 | 575     |
|          |               |          | 270A00        | 18.8/25.0 | 52.1/60.1             | 87.3/91.0   | 100/100          | 92/91      | 550/550                | 105/104 | 570/570          | 92.1/97.0   | 100/100 | 97/96   | 555/555                | 103.9/111.8 | 125/125 | 111/110 | 575/575 |
|          |               |          | 271A00        | 37.6/50.0 | 104.2/120.3           | 147.3/136.2 | 150/150          | 135/153    | 550/550                | 149/167 | 570/570          | 153.3/142.2 | 175/175 | 141/158 | 555/555                | 168.0/156.9 | 175/175 | 155/172 | 575/575 |
|          |               |          | 272A00        | 56.3/75.0 | 156.4/180.4           | 173.4/196.3 | 200/225          | 196/222    | 550/550                | 209/236 | 570/570          | 179.4/202.3 | 200/250 | 201/228 | 555/555                | 194.2/217.0 | 200/250 | 215/241 | 575/575 |
|          | 208/230-3-60  | MED      | NONE          | —         | —                     | 90.8        | 100              | 96         | 546                    | 109     | 566              | 95.6        | 125/125 | 101     | 551                    | 107.4       | 125/125 | 115     | 571     |
|          |               |          | 270A00        | 18.8/25.0 | 52.1/60.1             | 90.8/96.5   | 100/100          | 96/96      | 546/546                | 109/109 | 566/566          | 95.6/102.5  | 125/125 | 101/101 | 551/551                | 107.4/117.3 | 125/125 | 115/115 | 571/571 |
|          |               |          | 271A00        | 37.6/50.0 | 104.2/120.3           | 151.6/141.7 | 175/175          | 139/158    | 546/546                | 153/172 | 566/566          | 157.6/147.7 | 175/175 | 145/164 | 551/551                | 172.4/162.4 | 175/175 | 159/177 | 571/571 |
|          |               |          | 272A00        | 56.3/75.0 | 156.4/180.4           | 177.8/201.8 | 200/225          | 200/227    | 546/546                | 213/241 | 566/566          | 183.8/207.8 | 200/225 | 205/233 | 551/551                | 198.5/222.5 | 200/250 | 219/246 | 571/571 |
|          | 460-3-60      | HIGH     | NONE          | —         | —                     | 102.2       | 125              | 109        | 625                    | 122     | 645              | 107.0       | 125/125 | 114     | 630                    | 118.8       | 150/150 | 128     | 650     |
|          |               |          | 270A00        | 18.8/25.0 | 52.1/60.1             | 102.2/110.8 | 125/125          | 109/109    | 625/625                | 122/122 | 645/645          | 107.0/116.8 | 125/125 | 114/114 | 630/630                | 121.5/131.5 | 150/150 | 128/128 | 650/650 |
|          |               |          | 271A00        | 37.6/50.0 | 104.2/120.3           | 165.9/153.9 | 175/175          | 153/171    | 625/625                | 166/185 | 645/645          | 171.9/161.9 | 175/175 | 158/177 | 630/630                | 186.6/176.7 | 200/200 | 172/190 | 650/650 |
|          |               |          | 272A00        | 56.3/75.0 | 156.4/180.4           | 192.0/216.0 | 200/250          | 213/240    | 625/625                | 226/254 | 645/645          | 198.0/222.0 | 225/250 | 218/246 | 630/630                | 212.8/236.8 | 225/250 | 232/259 | 650/650 |
|          |               | STD      | NONE          | —         | —                     | 47.6        | 60               | 50         | 280                    | 57      | 292              | 49.8        | 60/60   | 52      | 282                    | 56.0        | 70/60   | 60      | 294     |
|          |               |          | 273A00        | 25.0      | 30.1                  | 47.6        | 60               | 50         | 280                    | 57      | 292              | 49.8        | 60/60   | 52      | 282                    | 56.1        | 70/60   | 60      | 294     |
|          |               |          | 274A00        | 50.0      | 60.1                  | 68.1        | 80               | 76         | 280                    | 84      | 292              | 70.9        | 80/80   | 79      | 282                    | 78.6        | 80/80   | 86      | 294     |
|          |               |          | 275A00        | 75.0      | 90.2                  | 98.2        | 100              | 111        | 280                    | 118     | 292              | 101.0       | 110     | 114     | 282                    | 108.7       | 125     | 121     | 294     |
|          |               | MED      | NONE          | —         | —                     | 49.8        | 60               | 52         | 278                    | 60      | 290              | 52.0        | 60/60   | 55      | 280                    | 58.2        | 70/60   | 62      | 292     |
|          |               |          | 273A00        | 25.0      | 30.1                  | 49.8        | 60               | 52         | 278                    | 60      | 290              | 52.0        | 60/60   | 55      | 280                    | 58.9        | 70/60   | 62      | 292     |
|          |               |          | 274A00        | 50.0      | 60.1                  | 70.9        | 80               | 79         | 278                    | 86      | 290              | 73.6        | 80/80   | 82      | 280                    | 81.4        | 90/80   | 89      | 292     |
|          |               |          | 275A00        | 75.0      | 90.2                  | 101.0       | 110              | 114        | 278                    | 121     | 290              | 103.7       | 125     | 116     | 280                    | 111.5       | 125     | 123     | 292     |
|          |               | HIGH     | NONE          | —         | —                     | 55.5        | 60               | 59         | 318                    | 66      | 330              | 57.7        | 70/60   | 62      | 320                    | 63.9        | 80/80   | 69      | 332     |
|          |               |          | 273A00        | 25.0      | 30.1                  | 55.5        | 60               | 59         | 318                    | 66      | 330              | 58.3        | 70/60   | 62      | 320                    | 66.0        | 80/80   | 69      | 332     |
|          |               |          | 274A00        | 50.0      | 60.1                  | 78.0        | 90               | 86         | 318                    | 93      | 330              | 80.7        | 90/90   | 88      | 320                    | 88.5        | 100/100 | 95      | 332     |
|          |               |          | 275A00        | 75.0      | 90.2                  | 108.1       | 125              | 120        | 318                    | 127     | 330              | 110.8       | 125     | 123     | 320                    | 118.6       | 125     | 130     | 332     |
|          |               | STD      | NONE          | —         | —                     | 36.1        | 45               | 38         | 204                    | 43      | 212              | 37.8        | 45/45   | 40      | 206                    | 42.6        | 50/45   | 45      | 214     |
|          |               |          | 276A00        | 24.8      | 23.9                  | 37.6        | 45               | 38         | 204                    | 43      | 212              | 39.8        | 45/45   | 40      | 206                    | 45.8        | 50/45   | 45      | 214     |
|          |               |          | 277A00        | 49.6      | 47.7                  | 67.4        | 70               | 62         | 204                    | 68      | 212              | 69.5        | 70/60   | 64      | 206                    | 75.5        | 80/80   | 69      | 214     |
|          |               |          | 278A00        | 74.4      | 71.6                  | 79.4        | 90               | 89         | 204                    | 95      | 212              | 81.5        | 90      | 91      | 206                    | 87.5        | 90      | 97      | 214     |
|          |               | MED      | NONE          | —         | —                     | 37.5        | 45               | 40         | 202                    | 45      | 210              | 39.2        | 50/45   | 42      | 204                    | 44.0        | 50/45   | 47      | 212     |
|          |               |          | 276A00        | 24.8      | 23.9                  | 39.4        | 45               | 40         | 202                    | 45      | 210              | 41.5        | 50/45   | 42      | 204                    | 47.5        | 50/45   | 47      | 212     |
|          |               |          | 277A00        | 49.6      | 47.7                  | 69.1        | 70               | 64         | 202                    | 69      | 210              | 71.3        | 80/80   | 66      | 204                    | 77.3        | 80/80   | 71      | 212     |
|          |               |          | 278A00        | 74.4      | 71.6                  | 81.1        | 90               | 91         | 202                    | 97      | 210              | 83.2        | 90      | 93      | 204                    | 89.2        | 90      | 99      | 212     |
|          |               | HIGH     | NONE          | —         | —                     | 39.4        | 50               | 42         | 229                    | 47      | 237              | 41.1        | 50/50   | 44      | 231                    | 45.9        | 50/45   | 49      | 239     |
|          |               |          | 276A00        | 24.8      | 23.9                  | 41.8        | 50               | 42         | 229                    | 47      | 237              | 43.9        | 50/45   | 44      | 231                    | 49.9        | 50/45   | 49      | 239     |
|          |               |          | 277A00        | 49.6      | 47.7                  | 71.5        | 80               | 66         | 229                    | 71      | 237              | 73.6        | 80/80   | 68      | 231                    | 79.6        | 80/80   | 73      | 239     |
|          |               |          | 278A00        | 74.4      | 71.6                  | 83.5        | 90               | 93         | 229                    | 99      | 237              | 85.6        | 90      | 95      | 231                    | 91.6        | 100     | 101     | 239     |

See: "Legend and Notes" on page 39

# ELECTRICAL INFORMATION

Table 26 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH FACTORY INSTALLED 2 SPEED INDOOR FAN OPTION (cont.)

| UNIT         | NO M. V-PH-HZ | ELEC. HTR     |           |             | NO C.O. or UNPWR C.O. |             |            |                        |                       |         | w/ PWRD C.O. |             |                       |                        |            |             |
|--------------|---------------|---------------|-----------|-------------|-----------------------|-------------|------------|------------------------|-----------------------|---------|--------------|-------------|-----------------------|------------------------|------------|-------------|
|              |               | CRHEATER***** | Nom (kW)  | FLA         | NO PE.                |             |            | w/ P.E. (pwrd fr/unit) |                       |         | NO PE.       |             |                       | w/ P.E. (pwrd fr/unit) |            |             |
|              |               |               |           |             | MAX FUSE or HACR BRKR | MCA         | DISC. SIZE | MCA                    | MAX FUSE or HACR BRKR | FLA     | DISC. SIZE   | MCA         | MAX FUSE or HACR BRKR | FLA                    | DISC. SIZE | DISC. SIZE  |
| 208/230-3-60 | STD           | NONE          | -         | -           | 150/150               | 116.0/115.1 | 120/119    | 590                    | 175/175               | 133/132 | 610          | 120.8/119.9 | 150/150               | 125/124                | 595        | 132.6/131.7 |
|              |               | 270A00        | 18.8/25.0 | 52.1/60.1   | 150/150               | 116.0/115.1 | 120/119    | 590/590                | 175/175               | 133/132 | 610/610      | 120.8/119.9 | 150/150               | 125/124                | 595/595    | 132.6/131.7 |
|              |               | 271A00        | 37.6/50.0 | 104.2/120.3 | 150/150               | 147.3/136.2 | 135/153    | 590/590                | 175/175               | 149/167 | 610/610      | 153.3/142.2 | 175/175               | 141/158                | 595/595    | 168.0/156.9 |
|              |               | 272A00        | 56.3/75.0 | 156.4/180.4 | 200/225               | 173.4/196.3 | 196/222    | 590/590                | 200/225               | 209/236 | 610/610      | 179.4/202.3 | 200/225               | 201/228                | 595/595    | 194.2/217.0 |
| 208/230-3-60 | MED           | NONE          | -         | -           | 150                   | 119.5       | 124        | 586                    | 175                   | 137     | 606          | 124.3       | 150/150               | 129                    | 591        | 136.1       |
|              |               | 270A00        | 18.8/25.0 | 52.1/60.1   | 150/150               | 119.5/119.5 | 124/124    | 586/586                | 175/175               | 137/137 | 606/606      | 124.3/124.3 | 150/150               | 129/129                | 591/591    | 136.1/136.1 |
|              |               | 271A00        | 37.6/50.0 | 104.2/120.3 | 175/175               | 151.6/141.7 | 139/158    | 586/586                | 175/175               | 153/172 | 606/606      | 157.6/147.7 | 175/175               | 145/164                | 591/591    | 172.4/162.4 |
|              |               | 272A00        | 56.3/75.0 | 156.4/180.4 | 200/225               | 177.8/201.8 | 200/227    | 586/586                | 200/250               | 213/241 | 606/606      | 183.8/207.8 | 200/225               | 205/233                | 591/591    | 198.5/222.5 |
| 460-3-60     | HIGH          | NONE          | -         | -           | 175                   | 130.9       | 137        | 665                    | 175                   | 150     | 685          | 135.7       | 175/175               | 142                    | 670        | 147.5       |
|              |               | 270A00        | 18.8/25.0 | 52.1/60.1   | 175/175               | 130.9/130.9 | 137/137    | 665/665                | 175/175               | 150/150 | 685/685      | 135.7/135.7 | 175/175               | 142/142                | 670/670    | 147.5/147.5 |
|              |               | 271A00        | 37.6/50.0 | 104.2/120.3 | 175/175               | 165.9/155.9 | 153/171    | 665/665                | 200/175               | 166/185 | 685/685      | 171.9/161.9 | 175/175               | 158/177                | 670/670    | 186.6/176.7 |
|              |               | 272A00        | 56.3/75.0 | 156.4/180.4 | 200/250               | 192.0/216.0 | 213/240    | 665/665                | 225/250               | 226/254 | 685/685      | 198.0/222.0 | 225/250               | 218/246                | 670/670    | 212.8/236.8 |
| 460-3-60     | STD           | NONE          | -         | -           | 60                    | 53.0        | 56         | 306                    | 70                    | 63      | 318          | 55.2        | 60/60                 | 58                     | 308        | 61.4        |
|              |               | 273A00        | 25.0      | 30.1        | 60                    | 53.0        | 56         | 306                    | 70                    | 63      | 318          | 55.2        | 60/60                 | 58                     | 308        | 61.4        |
|              |               | 274A00        | 50.0      | 60.1        | 80                    | 68.1        | 76         | 306                    | 80                    | 84      | 318          | 70.9        | 80/80                 | 79                     | 308        | 78.6        |
|              |               | 275A00        | 75.0      | 90.2        | 100                   | 98.2        | 111        | 306                    | 125                   | 118     | 318          | 101.0       | 110                   | 114                    | 308        | 108.7       |
| 50TC**29     | MED           | NONE          | -         | -           | 60                    | 55.2        | 58         | 304                    | 70                    | 65      | 316          | 57.4        | 70/60                 | 61                     | 306        | 63.6        |
|              |               | 273A00        | 25.0      | 30.1        | 60                    | 55.2        | 58         | 304                    | 70                    | 65      | 316          | 57.4        | 70/60                 | 61                     | 306        | 63.6        |
|              |               | 274A00        | 50.0      | 60.1        | 80                    | 70.9        | 79         | 304                    | 80                    | 86      | 316          | 73.6        | 80/80                 | 82                     | 306        | 81.4        |
|              |               | 275A00        | 75.0      | 90.2        | 110                   | 101.0       | 114        | 304                    | 125                   | 121     | 316          | 103.7       | 125                   | 116                    | 306        | 111.5       |
| 50TC**29     | HIGH          | NONE          | -         | -           | 70                    | 60.9        | 65         | 344                    | 80                    | 72      | 356          | 63.1        | 80/80                 | 67                     | 346        | 69.3        |
|              |               | 273A00        | 25.0      | 30.1        | 70                    | 60.9        | 65         | 344                    | 80                    | 72      | 356          | 63.1        | 80/80                 | 67                     | 346        | 69.3        |
|              |               | 274A00        | 50.0      | 60.1        | 90                    | 78.0        | 86         | 344                    | 90                    | 93      | 356          | 80.7        | 90/90                 | 88                     | 346        | 88.5        |
|              |               | 275A00        | 75.0      | 90.2        | 125                   | 108.1       | 120        | 344                    | 125                   | 127     | 356          | 110.8       | 125                   | 123                    | 346        | 118.6       |
| 575-3-60     | STD           | NONE          | -         | -           | 50                    | 41.0        | 43         | 228                    | 60                    | 48      | 236          | 42.7        | 50/50                 | 45                     | 230        | 47.5        |
|              |               | 276A00        | 24.8      | 23.9        | 50                    | 41.0        | 43         | 228                    | 60                    | 48      | 236          | 42.7        | 50/50                 | 45                     | 230        | 47.5        |
|              |               | 277A00        | 49.6      | 47.7        | 70                    | 67.4        | 62         | 228                    | 80                    | 68      | 236          | 69.5        | 70/60                 | 64                     | 230        | 75.5        |
|              |               | 278A00        | 74.4      | 71.6        | 90                    | 79.4        | 89         | 228                    | 90                    | 95      | 236          | 81.5        | 90                    | 91                     | 230        | 87.5        |
| 575-3-60     | MED           | NONE          | -         | -           | 50                    | 42.4        | 45         | 226                    | 60                    | 50      | 234          | 44.1        | 50/50                 | 46                     | 228        | 48.9        |
|              |               | 276A00        | 24.8      | 23.9        | 50                    | 42.4        | 45         | 226                    | 60                    | 50      | 234          | 44.1        | 50/50                 | 46                     | 228        | 48.9        |
|              |               | 277A00        | 49.6      | 47.7        | 70                    | 69.1        | 64         | 226                    | 80                    | 69      | 234          | 71.3        | 80/80                 | 66                     | 228        | 77.3        |
|              |               | 278A00        | 74.4      | 71.6        | 90                    | 81.1        | 91         | 226                    | 90                    | 97      | 234          | 83.2        | 90                    | 93                     | 228        | 89.2        |
| 575-3-60     | HIGH          | NONE          | -         | -           | 50                    | 44.3        | 47         | 253                    | 60                    | 52      | 261          | 46.0        | 60/60                 | 49                     | 255        | 50.8        |
|              |               | 276A00        | 24.8      | 23.9        | 50                    | 44.3        | 47         | 253                    | 60                    | 52      | 261          | 46.0        | 60/60                 | 49                     | 255        | 50.8        |
|              |               | 277A00        | 49.6      | 47.7        | 80                    | 71.5        | 66         | 253                    | 80                    | 71      | 261          | 73.6        | 80/80                 | 68                     | 255        | 79.6        |
|              |               | 278A00        | 74.4      | 71.6        | 90                    | 83.5        | 93         | 253                    | 100                   | 99      | 261          | 85.6        | 90                    | 95                     | 255        | 91.6        |

See: "Legend and Notes" on page 39

# SEQUENCE OF OPERATION

## General

The sequence below describes the sequence of operation for an electro-mechanical unit with and without a factory installed EconoMiSer™ IV and X (called “economizer” in this sequence). For information regarding a direct digital controller, see the start-up, operations, and troubleshooting manual for the applicable controller.

### Electro-mechanical 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:** The 50TC 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 two-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.

### Electro-mechanical 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 EconoMiSer IV and 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 (9°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 EconoMiSer IV and 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 EconoMiSer IV and 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 EconoMiSer IV and X 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 EconoMiSer IV and X damper to the minimum position.

On the initial power to the EconoMiSer IV and X 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 EconoMiSer IV and X damper will be open at maximum position. EconoMiSer IV and X 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 an electromechanical 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.

## SEQUENCE OF OPERATION (cont.)

### Optional Humidi-MiZer Dehumidification System

Units with the factory equipped Humidi-MiZer option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle. The Humidi-MiZer 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 Humidi-MiZer system provides three sub-modes of operation: Cool, Reheat1, and Reheat2.

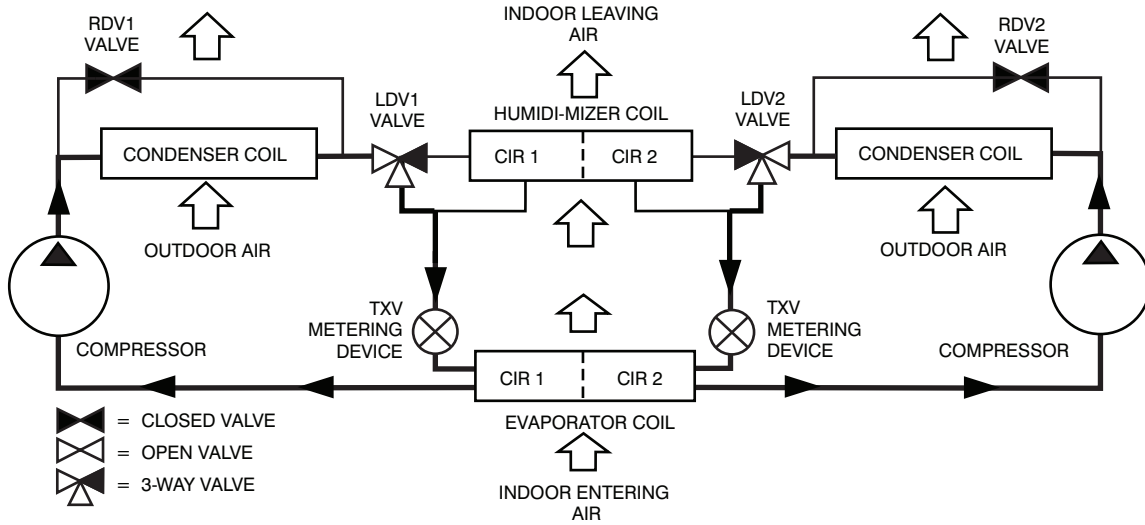
**Cool mode** - provides a normal ratio of Sensible and Latent Cooling effect from the evaporator coil.

**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.

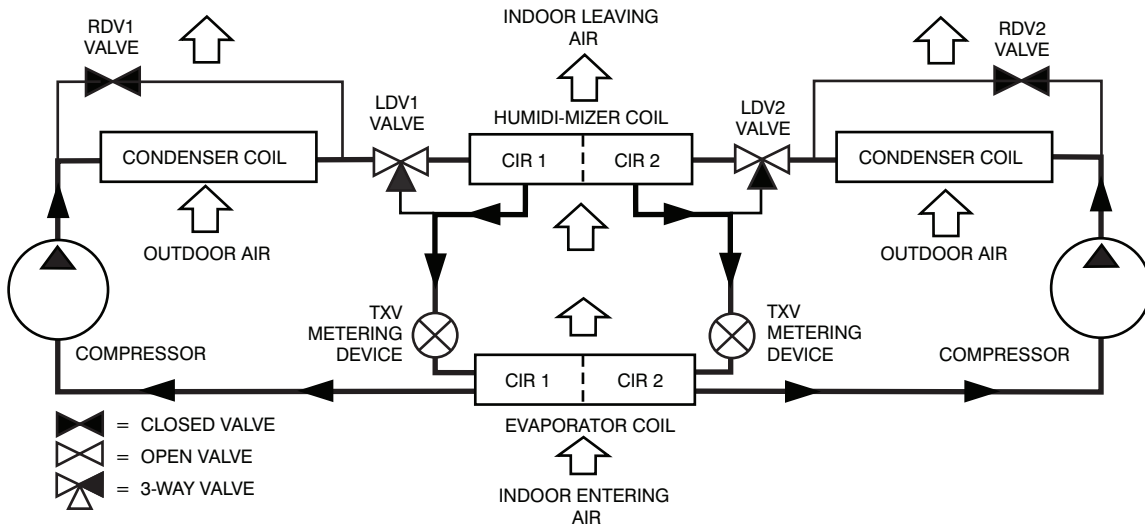
The Reheat1 and Reheat2 modes are available when the unit is not in a Heating mode and when the Low Ambient Lockout switch is closed.

## SEQUENCE OF OPERATION (cont.)



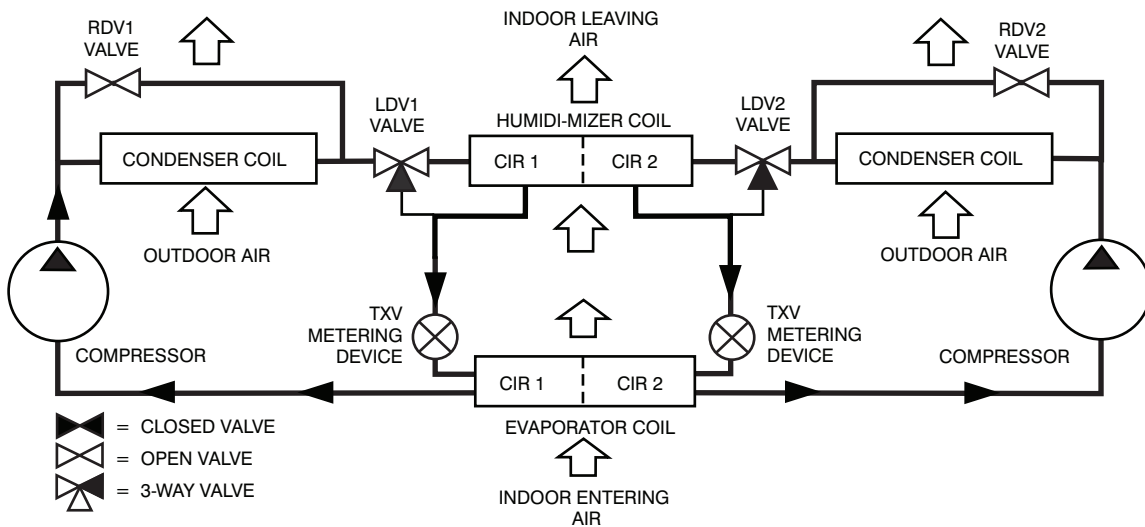
C13792

### Normal Cooling Mode - Humidi-MiZer System



C13809

### Subcooling Mode (Reheat 1) - Humidi-MiZer System



C13793

### Hot Gas Reheat Mode (Reheat 2) - Humidi-MiZer System

# GUIDE SPECIFICATIONS - 50TC\*\*18-29

Note about this specification:

These specifications are written in “Masterformat” as published by the Construction Specification Institute. Please feel free to copy this specification directly into your building spec.

## Cooling Only/Electric Heat Packaged Rooftop

### HVAC Guide Specifications

**Size Range:** 15 to 25 Nominal Tons



#### Section

#### Description

#### **23 06 80 Schedules for Decentralized HVAC Equipment**

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.

#### **23 07 16 HVAC Equipment Insulation**

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.

#### **23 09 13 Instrumentation and Control Devices for HVAC**

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.

#### **23 09 23 Direct-digital Control system for HVAC**

23 09 23.13 Decentralized, Rooftop Units:

23 09 23.13.A. PremierLink controller

1. Shall be ASHRAE 62-2001 compliant.
2. Shall accept 18-32VAC input power.
3. Shall have an operating temperature range from -40°F (-40°C) to 158°F (70°C), 10% - 95% RH (non-condensing).
4. Shall include an integrated economizer controller to support an economizer with 4 to 20 mA actuator input and no microprocessor controller.
5. Controller shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air quality, indoor relative humidity, compressor lock-out, fire shutdown, enthalpy, fan status, remote time clock/door switch.
6. Shall accept a CO<sub>2</sub> sensor in the conditioned space, and be Demand Control Ventilation (DCV) ready.
7. Shall provide the following outputs: Economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, heat stage 3/ exhaust/ reversing valve/ dehumidify/ occupied.
8. Unit shall provide surge protection for the controller through a circuit breaker.
9. Shall be Internet capable, and communicate at a Baud rate of 38.4K or faster
10. Shall have an LED display independently showing the status of activity on the communication bus, and processor operation.

11. Shall include an EIA-485 protocol communication port, an access port for connection of either a computer or a Carrier technician tool, an EIA-485 port for network communication to intelligent space sensors and displays, and a port to connect an optional LonWorks plug-in communications card.
12. Shall have built-in Carrier Comfort Network (CCN) protocol, and be compatible with other CCN devices, including ComfortVIEW controllers.
13. Shall have built-in support for Carrier technician tool.
14. Software upgrades will be accomplished by local download. Software upgrades through chip replacements are not allowed.
15. Shall be shock resistant in all planes to 5G peak, 11ms during operation, and 100G peak, 11ms during storage.
16. Shall be vibration resistant in all planes to 1.5G @ 20-300 Hz.
17. Shall support a bus length of 4000 ft max, 60 devices per 1000 ft section, and 1 RS-485 repeater per 1000ft sections.

23 09 23.13.B. RTU Open protocol, direct digital controller:

1. Shall be ASHRAE 62-2001 compliant.
2. Shall accept 18-30VAC, 50-60Hz, and consumer 15VA or less power.
3. Shall have an operating temperature range from -40°F (-40°C) to 130°F (54°C), 10% - 90% RH (non-condensing).
4. Shall include built-in protocol for BACNET (MS/TP and PTP modes), Modbus (RTU and ASCII), Johnson N2 and LonWorks. LonWorks Echelon processor required for all Lon applications shall be contained in separate communication board.
5. Shall allow access of up to 62 network variables (SNVT). Shall be compatible with all open controllers
6. Baud rate Controller shall be selectable using a dipswitch.
7. Shall have an LED display independently showing the status of serial communication, running, errors, power, all digital outputs, and all analog inputs.
8. Shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air quality, compressor lock-out, fire shutdown, enthalpy switch, and fan status/filter status/humidity/ remote occupancy.
9. Shall provide the following outputs: economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, heat stage 3/ exhaust/ reversing valve.
10. Shall have built-in surge protection circuitry through solid state polyswitches. Polyswitches shall be used on incoming power and network connections. Polyswitches will return to normal when the "trip" condition clears.
11. Shall have a battery back-up capable of a minimum of 10,000 hours of data and time clock retention during power outages.
12. Shall have built-in support for Carrier technician tool.
13. Shall include an EIA-485 protocol communication port, an access port for connection of either a computer or a Carrier technician tool, an EIA-485 port for network communication to intelligent space sensors and displays, and a port to connect an optional LonWorks communications card.
14. Software upgrades will be accomplished by either local or remote download. No software upgrades through chip replacements are allowed.

**23 09 33 Electric and Electronic Control System for HVAC**

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, DDC control options, 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 compressors 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, throwaway 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 panel.
4. 4-in filter capabilities shall be capable with pre-engineered and approved Carrier 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

23 81 19.13.A. General

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing hermetic scroll compressor(s) for cooling duty and with optional electrical heating 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 safe, Puron 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 and manufactured 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 from 35°F (2°C) , ambient outdoor temperatures. Accessory kits are necessary if mechanically cooling at ambient temperatures below 35°F (2°C).
3. Unit shall discharge supply air horizontally as shown on contract drawings.
4. Unit shall be factory furnished for horizontal 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 Standards 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 heat compartment.
4. Base of unit shall have a minimum of four locations for factory thru-the-base electrical connections. 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 at the end 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 interlocking 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 filters 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. permanently attached, and recessed into the panel.
  - e. Screws on the vertical portion of all removable access panel 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 high 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. 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.
  - b. Refrigerant filter drier - Solid core design.
  - c. Service gauge connections on suction and discharge lines.
  - d. Pressure gauge access through a specially designed screen on the side of the unit.
- 2. Compressors
  - a. Unit shall use one 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 lubricate fittings at are accessible 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. Staged Air Volume System (SAV) 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 (SAV):
  - 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. Integrated EconoMi\$er IV and EconoMi\$er 2, and EconoMi\$er X **standard leak rate models**. (Factory or field installed):
  - a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
  - b. Independent modules for horizontal return configuration shall be available.
  - 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 shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.
  - g. Economizer controller on EconoMi\$er IV models shall be Honeywell W7212 that provides:
    - (1.) Combined minimum and DCV maximum damper position potentiometers with compressor staging relay.

- (2.) Functions with solid state analog enthalpy or dry bulb changeover control sensing.
- (3.) Contain LED indicates for: when free cooling is available, when module is in DCV mode, when exhaust fan contact is closed.
- h. Economizer controller on EconoMi\$er X models shall be the Honeywell W7220 that provides:
  - (1.) 2-line LCD interface screen for setup, configuration and troubleshooting
  - (2.) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24.
  - (3.) Sensor failure loss of communication identification
  - (4.) Automatic sensor detection
  - (5.) Capabilities for use with multiple-speed indoor fan systems
  - (6.) Utilize digital sensors: Dry bulb and Enthalpy
- i. Economizer controller on EconoMi\$er 2 models with PremierLink shall be 4-20mA design and controlled by the PremierLink controller. PremierLink does not comply with California Title 24 Fault Detection & Diagnostic (FDD) requirements.
- j. Economizer controller on EconoMi\$er 2 models with RTU Open models shall be a 4-20mA design controlled directly by the RTU Open controller. RTU Open meets California Title 24 Fault Detection & Diagnostic (FDD) requirements.
- k. Shall be capable of introducing up to 100% outdoor air.
- l. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE90.1 requirements.
- m. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
- n. 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.
- o. 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%.
- p. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
- q. Dampers shall be completely closed when the unit is in the unoccupied mode.
- r. 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.
- s. Compressor lockout temperature on W7220 is adjustable from -45°F to 80°F, set at a factory default of 32°F. Others shall open at 35°F (2°C) and closes at 50°F (10°C).
- t. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
- u. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
- 4. **Integrated EconoMi\$er2, and EconoMi\$er X Ultra Low Leak rate models.** (Factory or field installed)
  - a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
  - b. Independent modules for horizontal return configuration shall be available.
  - 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. Ultra Low Leak design meets California Title 24 section 140.4 and ASHRAE90.1 requirements of 4 cfm per sq. ft. on the outside air dampers and 10 cfm per sq. ft. on the return dampers
  - g. Economizer controller on EconoMi\$er X models shall be the Honeywell W7220 that provides:
    - (1.) 2-line LCD interface screen for setup, configuration and troubleshooting
    - (2.) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24.
    - (3.) Sensor failure loss of communication identification
    - (4.) Automatic sensor detection
    - (5.) Capabilities for use with multiple-speed indoor fan systems
    - (6.) Utilize digital sensors: Dry bulb and Enthalpy

- h. Economizer controller on EconoMiSer 2 models with RTU Open models shall be a 4-20mA design controlled directly by the RTU Open controller. RTU Open meets California Title 24 Fault Detection & Diagnostic (FDD) requirements.
  - i. Shall be capable of introducing up to 100% outdoor air.
  - j. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.
  - k. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
  - l. 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.
  - m. 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%.
  - n. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
  - o. Dampers shall be completely closed when the unit is in the unoccupied mode.
  - p. 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.
  - q. Compressor lockout temperature on W7220 is adjustable from -45°F to 80°F, set at a factory default of 32°F. Others shall open at 35°F (2°C) and closes at 50°F (10°C).
  - r. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
  - s. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
5. Two-Position Damper
- a. Damper shall be a 2-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. Humidi-MiZer Adaptive Dehumidification System.
- a. The Humidi-MiZer Adaptive Dehumidification System shall be factory-installed 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. Powered convenience outlet.
    - (1.) Outlet shall be powered from main line power to the rooftop unit.
    - (2.) Outlet shall be powered from line side of disconnect by installing contractor, as required by code. If outlet is powered from load side of disconnect, unit electrical ratings shall be ETL certified and rated for additional outlet amperage.
    - (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.) Voltage required to operate convenience outlet shall be provided by a factory-installed step-down transformer.
    - (6.) Outlet shall be accessible from outside the unit.
    - (7.) Outlet shall include a field-installed "Wet in Use" cover.
  - b. 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 horizontal return configurations shall be available.
  - c. Horizontal power exhaust shall be mounted in return ductwork.
  - d. 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. High-Static Indoor Fan Motor(s) and Drive(s):
- a. High-static motor(s) and drive(s) shall be factory-installed to provide additional performance range.
15. 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.
16. 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.
17. 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, wall mount, or wall mount with LED display. The setpoint shall have adjustment capability.
18. Smoke detectors:
- 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.
19. 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).
20. 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.
21. 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.
22. Barometric Hood (Horizontal Economizer Applications)
  - a. Shall be required when a horizontal economizer and barometric relief are required. Barometric relief damper must be installed in the return air (horizontal) duct work. This hood provides weather protection.
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 SAV system 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.
25. Energy Demand System - EDS (field installed accessory):
  - a. Shall utilize wireless network communication to optimize rooftop unit energy usage, up to 875 yds and up to 49 load controllers for each gateway. A wireless cellular signal shall be utilized to communicate energy information to/from the customer web portal.
  - b. Shall utilize explicit algorithms to minimize rooftop electrical demand charges, customizable to each facility
  - c. Shall allow scheduling of rooftop units and provide a “staggered start” approach to minimize electrical consumption charges, customized to each facility
  - d. Scheduling, adjustments, and sub-metered electrical data shall be accessible through a web based customer portal
  - e. Shall provide demand response capability, including compliance with OpenADR protocol
  - f. Shall utilize an external 4-pole relay and an internal single pole relay
  - g. Shall use (2) split core transformers to provide real-time sub-metered electrical usage

