

**50TC
Single Package Rooftop
Cooling Only
Vertical Air Flow Unit
with Puron® (R-410A) Refrigerant
15, 17.5, 20, 25, 27.5 Tons – (Sizes 17, 20, 24, 28, 30)**



Product Data



(Unit shown with economizer and power exhaust.)

C12590



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The 15 to 27.5 ton WeatherMaker[®] Carrier rooftop unit (RTU) was designed by customers for customers. With “no-strip” screw collars, handled access panels, and more, we’ve made your unit easy to install, easy to maintain, easy to use and reliable.

Easy to install:

These WeatherMaker units are designed for dedicated factory-supplied vertical air flow duct configurations. No special field kits are required. Designed to fit on pre-installed curbs by 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.

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 unit operation once properly installed.

FEATURES AND BENEFITS

- 2-stage cooling capacity with independent circuits and control.
- Round tube/plate fin (RTPF) available on all sizes or Novation[®] all aluminum condenser (outdoor) coils available on 17-28 sizes only. Special coil-coating also available for coastal and industrial environments.
- EER's up to 11.0.
- IEER's up to 12.2 with single speed indoor fan motor and up to 12.9 with SAV[™] (Staged Air Volume) 2-speed/VFD indoor fan motor
- Dedicated vertical 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 troubleshooting easier.
- Proven Acutrol[™] 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 30°F / 46°C to -1°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. Available on 17-28 sizes with RTPF condenser coil models only.
- Standard Parts Warranty: 10 year aluminized heat exchanger, 5 year compressor, 3 year Novation condenser coil, 1 year others.
- Optional 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 17-30 with electro-mechanical controls or RTU Open controller.

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	4	A	1	G	6	-	0	A	0	A	0

Unit Heat Type

50 - Electric Heat
Packaged Rooftop

Model Series - WeatherMaker®

TC - Standard Efficiency

Heat Options

- = No Heat

Refrig. Systems Options

D = Two stage cooling model
E = Two stage cooling models with Humidi-MiZer® System (17-28 models with RTPF coils only)

Cooling Tons

17 = 15 tons 28 = 25 tons
20 = 17.5 tons 30 = 27.5 tons
24 = 20 tons

Sensor Options

A = None
B = RA Smoke Detector
C = SA Smoke Detector
D = RA + SA Smoke Detector
E = CO₂
F = RA Smoke Detector and CO₂
G = SA Smoke Detector and CO₂
H = RA + SA Smoke Detector and CO₂
J = Condensate Overflow Switch (electro-mechanical controls only)
K = Condensate Overflow Switch and RA Smoke Detectors
L = Condensate Overflow Switch and RA and SA Smoke Detectors

Indoor Fan Options & Air Flow Configuration

1 = Standard Static/Vertical Supply, Return Air Flow
2 = Medium Static/Vertical Supply, Return Air Flow
3 = High Static/Vertical Supply, Return Air Flow
B = Medium Static High-Efficiency Motor/Vertical Supply, Return Air Flow
C = High Static High-Efficiency Motor/Vertical 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

Coil Options – Novation® (Outdoor - Indoor - Hail Guard)

G = Al/Al - Al/Cu
H = Al/Al - Cu/Cu
J = Al/Al - E-coat Al/Cu
K = E-coat Al/Al - Al/Cu
L = E-coat Al/Al - E-coat Al/Cu
T = Al/Al - Al/Cu — Louvered Hail Guard
U = Al/Al - Cu/Cu — Louvered Hail Guard
V = Al/Al - E-coat Al/Cu — Louvered Hail Guard
W = E-coat Al/Al - Al/Cu — Louvered Hail Guard
X = E-coat Al/Al - E-coat Al/Cu — Louvered Hail Guard

Packaging & Seismic Compliance

0 = Standard
3 = California seismic compliant

Electrical Options

A = None
C = Non-Fused Disconnect
G = 2-Speed Indoor Fan (VFD) Controller
J = 2 Speed Fan Controller (VFD) and 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 with Barometric Relief
F = Enthalpy Economizer with Barometric Relief
K = 2-Position Damper
U = Temperature Ultra Low Leak Economizer with Barometric Relief
V = Temperature Ultra Low Leak Economizer with PE (cert) - Vertical Air Only
W = Enthalpy Ultra Low Leak Economizer with Barometric Relief
X = Enthalpy Ultra Low Leak Economizer PE (cert) - Vertical Air Only

Base Unit Controls

0 = Electro-mechanical Controls can be used with W7212 EconoMiSer® IV (Non-Fault Detection and Diagnostic)
1 = PremierLink™ Controller
2 = RTU Open Multi-Protocol Controller
6 = Electro-mechanical w/ 2-Speed Fan and W7220 Economizer Controls. Can be used with W7220 EconoMiSer X (with Fault Detection and Diagnostic).
D = ComfortLink Controls

Design Revision

- = Factory Design Revision

Voltage

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

NOTE:

Not all possible options are displayed. See the current 50TC Vertical 15 to 27.5 Ton Price Pages for more details.

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

CATEGORY	ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
Cabinet	Hinged Access Panels	X	
	California Seismic Compliant Labeling (17–28 sizes only)	X	
Coil Options	Cu/Cu (indoor) coils	X	
	E-coated indoor & outdoor coils	X	
Humidity Control	Humidi-MiZer [®] Adaptive Dehumidification System (17–28 RTPF)	X	
Condenser Protection	Condenser coil hail guard (louvered design)	X	X
Controls	Thermostats, temperature sensors, and subbases		X
	PremierLink™ DDC communicating controller	X	X
	RTU Open multi-protocol controller	X	
	Smoke detector (supply and/or return air)	X	X
	Horn/Strobe Annunciator ⁸		X
	Time Guard II compressor delay control circuit		X
	Phase Monitor		X
	Condensate Overflow switch – for electro-mechanical controls only	X	X
Carrier Energy Demand System (EDS)		X	
Economizers & Outdoor Air Dampers	EconoMi\$er [®] IV for electro-mechanical controls – Non FDD (Standard air leak damper models) ⁶	X	X
	EconoMi\$er2 for DDC controls, complies with FDD (Standard and Ultra Low Leak air damper models) ^{6,7}	X	X
	EconoMi\$er X for electro-mechanical controls, complies with FDD. (Standard and Ultra Low Leak air damper models) ⁶	X	X
	Motorized 2 position outdoor-air damper	X	X
	Manual outdoor-air damper (25%)	X	X
	Barometric relief ¹	X	X
	Power exhaust-centrifugal blower	X	X
Economizer Sensors & IAQ Devices	Single dry bulb temperature sensors ²	X	X
	Differential dry bulb temperature sensors ²		X
	Single enthalpy sensors ²	X	X
	Differential enthalpy sensors ²		X
	CO ₂ sensor (wall, duct, or unit mounted) ³	X	X
Electric Heat	Electric Resistance Heaters		X
	Single Point Kit ⁹		X
Indoor Motor & Drive	Multiple motor and drive packages	X	
	Staged Air Volume (SAV™) system w/VFD controller (2-stage cool only with electro-mechanical and RTU Open controls)	X	
	Display Kit for SAV system with VFD		X
Low Ambient Control	Winter start kit ³		X
	Motormaster [®] head pressure controller ³		X
Power Options	Convenience outlet (powered)	X	
	Convenience outlet (unpowered)	X	
	Non-fused disconnect ⁴	X	
Roof Curbs	Roof curb 14-in (356mm)		X
	Roof curb 24-in (610mm)		X
	Adapter Curb (Adapts to Models – DP/DR/HJ/TM/TJ) ⁵ (17–24)		X

NOTES:

- Included with economizer.
- Sensors for optimizing economizer.
- See application data for assistance.
- Non-fused disconnect switch cannot be used when unit FLA rating exceeds 200 amps on 208/230 volt and 100 amps on 460/575 volt units. Carrier Packaged RTUBuilder selects this automatically.
- Not for 48TJE028–028 models using 48DP900041, 48DP900051 or 48DP900061 roofcurbs.
- FDD – (Fault Detection and Diagnostic) capability per California Title 24 section 120.2.
- Models with RTU Open DDC controls comply with California Title 24 Fault Detection and Diagnostic (FDD). PremierLink is non FDD.
- Requires a field-supplied 24V transformer for each application. See price pages for details.
- See Tables 25–34 for single point kit requirements.

FACTORY OPTIONS AND/OR ACCESSORIES

Economizer (dry-bulb or enthalpy)

Economizers can reduce operating costs. 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 coupled to CO₂ sensors, economizers can limit the ventilation air to only that amount required.

Economizers are available, installed and tested by the factory, with either enthalpy or temperature dry-bulb inputs. There are also models for electro-mechanical, 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.

CO₂ Sensor

The CO₂ sensor works with the economizer to intake only the correct amount of outside air for ventilation. As occupants fill your building, the CO₂ sensor detects their presence through increasing CO₂ levels, and opens the economizer appropriately.

When the occupants leave, the CO₂ levels decrease, and the sensor appropriately closes the economizer. This intelligent control of the ventilation air, called Demand Controlled 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 unpowered)

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.

When selecting a factory-installed non-fused disconnect, note they are sized for unit as ordered from the factory. The sizing of these does not accommodate any power exhaust devices, etc.

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 controller 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 controller, RTU Open controller, 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 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.

* BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).

† Modbus is a registered trademark of Schneider Electric.

** LonWorks is a registered trademark of Echelon Corporation.

FACTORY OPTIONS AND/OR ACCESSORIES (cont)

Optional Humidi-MiZer[®] Adaptive Dehumidification System

The Humidi-MiZer adaptive dehumidification system is a factory-installed option that can be ordered with WeatherMaker[®] 50TC size 17-28 rooftop units equipped with RTPF (Cu/Al) condenser coils.

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 a unique dual operational mode setting. The Humidi-MiZer system provides greater dehumidification of the occupied space by two modes of dehumidification operations in addition to its normal design cooling mode.

The WeatherMaker 50TC 17-28 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 90.1-2016 and IECC-2015 standards, during the first stage of cooling operation the VFD will adjust the fan motor to provide 66% 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 66% 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.

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

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.

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 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.

The Motormaster controller 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.

Hinged Access Panels

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

* IECC is a registered trademark of International Code Council, Inc.

FACTORY OPTIONS AND/OR ACCESSORIES (cont)

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 and install, and are all pre-engineered and certified.

Condensate Overflow Switch (Factory-Installed Option)

This sensor and related controller monitors the condensate level in the drain pan and shuts down compression operation when overflow conditions occur. It includes:

- Indicator light - solid red (more than 10 seconds on water contact - compressors disabled), blinking red (sensor disconnected)
- 10 second delay to break - eliminates nuisance trips from splashing or waves in pan (sensor needs 10 seconds of constant water contact before tripping)
- Disables the compressor(s) operation when condensate plug is detected, but still allows fans to run for Economizer.

NOTE: The Condensate Overflow switch FIOP is only available for units with electro-mechanical controls.

California OSHPD Seismic Certification Label (17-28 sizes)

Units meet the seismic requirements of the International Code Council Evaluation Service (ICC-ES) document AC156 (Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems) and per International Building Code (IBC 2009) at an SDS (g) value of 2.00 z/h=1.0, Ip=1.5 and certified by independent structural engineers. A certification label is applied to the unit that meets the CA OSHPD Special Seismic Certification pre-approval labeling requirements on the external chassis of the unit.

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

Table 2 – AHRI COOLING RATING TABLE 2-STAGE COOLING

50TC UNIT SIZE	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
17	2	15	202.0	18.4	11.0	12.2	12.9
20	2	17.5	208.0	18.9	11.0	11.9	12.9
24	2	20	242.0	24.2	10.0	10.8	11.9
28	2	25	280.0	28.0	10.0	10.6	11.7
30	2	27.5	330.0	31.7	10.4	10.6	11.7

LEGEND

- AHRI – Air-Conditioning, Heating and Refrigeration Institute
- ASHRAE – American Society of Heating, Refrigerating and Air-Conditioning Engineers
- EER – Energy Efficiency Ratio
- IECC – International Energy Conservation Code
- IEER – Integrated Energy Efficiency Ratio

NOTES

1. Rated and certified under AHRI Standard 340/360, as appropriate.
2. Ratings are based on:
Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temp and 95°F 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.
3. The 50TC 17–30 rooftops meet ASHRAE 90.1–2016 and IECC–2015 minimum efficiency requirements when equipped with the SAV™ (staged air volume) option.
4. 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

50TC Unit 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
17	25	4500	5400	3000	7500	4500	7500
	50						
	75						
20	25	5250	5250	3500	9000	5200	9000
	50						
	75						
24	25	6000	6000	4000	10000	6000	10000
	50						
	75						
28	25	7500	8450	5633	12500	7000	12500
	50						
	75						
30	25	8250	9450	6300	13750	8500	13750
	50						

Table 4 – SOUND PERFORMANCE TABLE

50TC Unit Size	Cooling Stages	OUTDOOR SOUND (dB)									
		A-Weighted	AHRI 370 Rating	63	125	250	500	1000	2000	4000	8000
17	2	84.1	84	92.2	83.9	80.4	81.8	78.7	76.5	72.2	65.4
20	2	84.1	84	92.2	83.9	80.4	81.8	78.7	76.5	72.2	65.4
24	2	86.5	87	95.6	87.5	84.2	84.2	81.7	77.9	73.2	66.3
28	2	85.9	86	97.1	88.3	84.4	83.3	80.7	77.4	73.4	67.3
30	2	85.9	86	97.1	88.3	84.4	83.3	80.7	77.4	73.4	67.3

LEGEND

dB – Decibel

NOTES:

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

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

(COOLING)

15-27.5 TONS

		50TC–D17	50TC–E17	50TC–D20	50TC–E20
Refrigeration System		RTPF	RTPF	RTPF	RTPF
# Circuits / # Comp. / Type		2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll
R–410A charge A/B (lbs)		16.3/17.5	25.9/25.7	16.3/17.5	25.9/25.7
Metering device		Acutrol	TXV	Acutrol	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
Evaporator Coil					
Material		Cu / Al	Cu / Al	Cu / Al	Cu / Al
Tube Diameter		3/8"	3/8"	3/8"	3/8"
Rows / FPI		4 / 15	4 / 15	4 / 15	4 / 15
total face area (ft ²)		22.00	22.00	22.00	22.00
Condensate drain conn. size		3/4"	3/4"	3/4"	3/4"
Humidi–MiZer[®] Coil					
Material		n/a	Cu / Al	n/a	Cu / Al
Tube Diameter		n/a	3/8"	n/a	3/8"
Rows / FPI		n/a	1 / 17	n/a	1 / 17
total face area (ft ²)		n/a	22.00	n/a	22.00
Evaporator fan and motor					
VERTICAL					
Standard Static	Motor Qty / Belt Qty / Driver Type	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt
	Max BHP	2.9	2.9	3.7	3.7
	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)	15 x 15	15 x 15	15 x 15	15 x 15
Medium Static	Motor Qty / Belt Qty / Driver Type	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt
	Max BHP	3.7	3.7	4.9	4.9
	RPM range	679–863	679–863	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)	15 x 15	15 x 15	15 x 15	15 x 15
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	826–1009	826–1009	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)	15 x 15	15 x 15	n/a	n/a
Medium Static–High Efficiency	Motor Qty / Belt Qty / Driver Type	n/a	n/a	1 / 1 / Belt	1 / 1 / Belt
	Max BHP (208/230/460/575v)	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	713–879	713–879
	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	15 x 15	15 x 15
High Static–High Efficiency	Motor Qty / Belt Qty / Driver Type	n/a	n/a	1 / 1 / Belt	1 / 1 / Belt
	Max BHP (208/230/460/575v)	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	15 x 15	15 x 15

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

(COOLING)

15-27.5 TONS

		50TC-D24	50TC-E24	50TC-D28	50TC-E28	50TC-D30
Refrigeration System		RTPF	RTPF	RTPF	RTPF	RTPF
# Circuits / # Comp. / Type		2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll
R-410A charge A/B (lbs)		20.6/14.7	27.9/20.5	19.8/ 20.4	27.9/ 28.9	27.0/ 28.5
Metering device		Acutrol	TXV	Acutrol	TXV	Acutrol
High-press. Trip / Reset (psig)		630 / 505	630 / 505	630 / 505	630 / 505	630 / 505
Low-press. Trip / Reset (psig)		54 / 117	27 / 44	54 / 117	27 / 44	54 / 117
Evaporator Coil						
Material		Cu / Al	Cu / Al	Cu / Al	Cu / Al	Cu / Al
Tube Diameter		3/8"	3/8"	3/8"	3/8"	3/8"
Rows / FPI		4 / 15	4 / 15	4 / 15	4 / 15	4 / 15
total face area (ft ²)		22.00	22.00	23.11	23.11	26
Condensate drain conn. size		3/4"	3/4"	3/4"	3/4"	3/4"
Humidi-MiZer[®] Coil						
Material		n/a	Cu / Al	n/a	Cu / Al	n/a
Tube Diameter		n/a	3/8"	n/a	3/8"	n/a
Rows / FPI		n/a	1 / 17	n/a	1 / 17	n/a
total face area (ft ²)		n/a	22.00	n/a	23.11	n/a
Evaporator fan and motor						
VERTICAL						
Standard Static	Motor Qty / Belt Qty / Driver Type	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	n/a
	Max BHP	4.9	4.9	4.9	4.9	n/a
	RPM range	690-863	690-863	717-911	717-911	n/a
	motor frame size	56	56	56	56	n/a
	Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	n/a
	Fan Diameter (in)	15 x 15	15 x 15	15 x 15	15 x 15	n/a
Standard Static - High Efficiency	Motor Qty / Belt Qty / Driver Type	n/a	n/a	n/a	n/a	1 / 1 / Belt
	Max BHP	n/a	n/a	n/a	n/a	6.5/ 6.9/ 7.0/ 8.3
	RPM range	n/a	n/a	n/a	n/a	751-954
	motor frame size	n/a	n/a	n/a	n/a	184T
	Fan Qty / Type	n/a	n/a	n/a	n/a	2 / Centrifugal
	Fan Diameter (in)	n/a	n/a	n/a	n/a	15 x 15
Medium Static - High Efficiency	Motor Qty / Belt Qty / Driver Type	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt
	Max BHP (208/230/460/575v)	6.5/ 6.9/ 7.0/ 8.3	6.5/ 6.9/ 7.0/ 8.3	6.5/ 6.9/ 7.0/ 8.3	6.5/ 6.9/ 7.0/ 8.3	10.5/11.9/11.9/11
	RPM range	835-1021	835-1021	913-1116	913-1116	973-1175
	motor frame size	184T	184T	184T	184T	184T
	Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	15 x 15	15 x 15	15 x 15	15 x 15	15 x 15
High Static - High Efficiency	Motor Qty / Belt Qty / Driver Type	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	1 / 1 / Belt	1 / 2 Belt
	Max BHP (208/230/460/575v)	10.5/11.9/11.9/11	10.5/11.9/11.9/11	10.5/11.9/11.9/11	10.5/11.9/11.9/11	11.9/12.9/12.9/14.1
	RPM range	941-1176	941-1176	941-1176	941-1176	1015-1299
	motor frame size	213T	213T	213T	213T	213T
	Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	15 x 15	15 x 15	15 x 15	15 x 15	15 x 15

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

(COOLING)

15-27.5 TONS

	50TC-D17	50TC-E17	50TC-D20	50TC-E20	50TC-D24	50TC-E24	50TC-D28	50TC-E28	50TC-D30
Cond. Coil (Circuit A)									
Coil type	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF
Coil Length (in)	70	70	70	70	82	82	75	75	95
Coil Height (in)	44	44	44	44	44	44	52	52	52
Rows / FPI	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17
total face area (ft ²)	21.4	21.4	21.4	21.4	25.1	25.1	27.1	27.1	34.3
Cond. Coil (Circuit B)									
Coil type	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF	RTPF
Coil Length (in)	70	70	70	70	57	57	75	75	95
Coil Height (in)	44	44	44	44	44	44	52	52	52
Rows / FPI	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17	2 / 17
total face area (ft ²)	21.4	21.4	21.4	21.4	17.4	17.4	27.1	27.1	34.3
Cond. fan / motor									
Qty / Motor drive type	3 / direct	3 / direct	3 / direct	3 / direct	4 / direct	4 / direct	4 / direct	4 / 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	1/4 / 1100
Fan diameter (in)	22	22	22	22	22	22	22	22	22
Filters									
RA Filter # / size (in)	6 / 20 x 25 x 2	6 / 20 x 25 x 2	6 / 20 x 25 x 2	6 / 20 x 25 x 2	6 / 20 x 25 x 2	6 / 20 x 25 x 2	9 / 16 x 25 x 2	9 / 16 x 25 x 2	9 / 16 x 25 x 2
OA inlet screen # / size (in)	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1

Table 6 – PHYSICAL DATA
Novation® - All Aluminum Coil Design

(COOLING)

15-27.5 TONS

		50TC–D17	50TC–D20	50TC–D24	50TC–D28
Refrigeration System		MCHX	MCHX	MCHX	MCHX
# Circuits / # Comp. / Type		2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll
R–410A charge A/B (lbs)		9.5/12.0	9.5/12.0	14.4/12.5	12.5/13.0
Metering device		Acutrol	Acutrol	Acutrol	Acutrol
High–press. Trip / Reset (psig)		630 / 505	630 / 505	630 / 505	630 / 505
Low–press. Trip / Reset (psig)		54 / 117	54 / 117	54 / 117	54 / 117
Evaporator Coil					
Material		Cu / Al	Cu / Al	Cu / Al	Cu / Al
Tube Diameter		3/8"	3/8"	3/8"	3/8"
Rows / FPI		4 / 15	4 / 15	4 / 15	4 / 15
total face area (ft ²)		19.56	19.56	22.00	23.11
Condensate drain conn. size		3/4"	3/4"	3/4"	3/4"
Evaporator fan and motor					
VERTICAL					
Standard Static	Motor Qty / Belt Qty / Driver Type	1 / 1 Belt	1 / 1 Belt	1 / 1 Belt	1 / 1 Belt
	Max BHP	2.9	3.7	4.9	4.9
	RPM range	514–680	622–822	690–863	717–911
	motor frame size	56	56	56	56
	Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	15 x 15	15 x 15	15 x 15	15 x 15
Medium Static	Motor Qty / Belt Qty / Driver Type	1 / 1 Belt	n/a	n/a	n/a
	Max BHP	3.7	n/a	n/a	n/a
	RPM range	679–863	n/a	n/a	n/a
	motor frame size	56	n/a	n/a	n/a
	Fan Qty / Type	2 / Centrifugal	n/a	n/a	n/a
	Fan Diameter (in)	15 x 15	n/a	n/a	n/a
High Static	Motor Qty / Belt Qty / Driver Type	1 / 1 Belt	n/a	n/a	n/a
	Max BHP	4.9	n/a	n/a	n/a
	RPM range	826–1009	n/a	n/a	n/a
	motor frame size	56	n/a	n/a	n/a
	Fan Qty / Type	2 / Centrifugal	n/a	n/a	n/a
	Fan Diameter (in)	15 x 15	n/a	n/a	n/a
Medium Static – High Efficiency	Motor Qty / Belt Qty / Driver Type	n/a	1 / 1 Belt	1 / 1 Belt	1 / 1 Belt
	Max BHP (208/230/460/575v)	n/a	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	n/a	713–879	835–1021	913–1116
	motor frame size	n/a	184T	184T	184T
	Fan Qty / Type	n/a	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	n/a	15 x 15	15 x 15	15 x 15
High Static– High Efficiency	Motor Qty / Belt Qty / Driver Type	n/a	1 / 1 Belt	1 / 1 Belt	1 / 1 Belt
	Max BHP (208/230/460/575v)	n/a	6.5/ 6.9/ 7.0/ 8.3	10.5/11.9/11.9/11	10.5/11.9/11.9/11
	RPM range	n/a	882–1078	941–1176	941–1176
	motor frame size	n/a	184T	213T	213T
	Fan Qty / Type	n/a	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	n/a	15 x 15	15 x 15	15 x 15

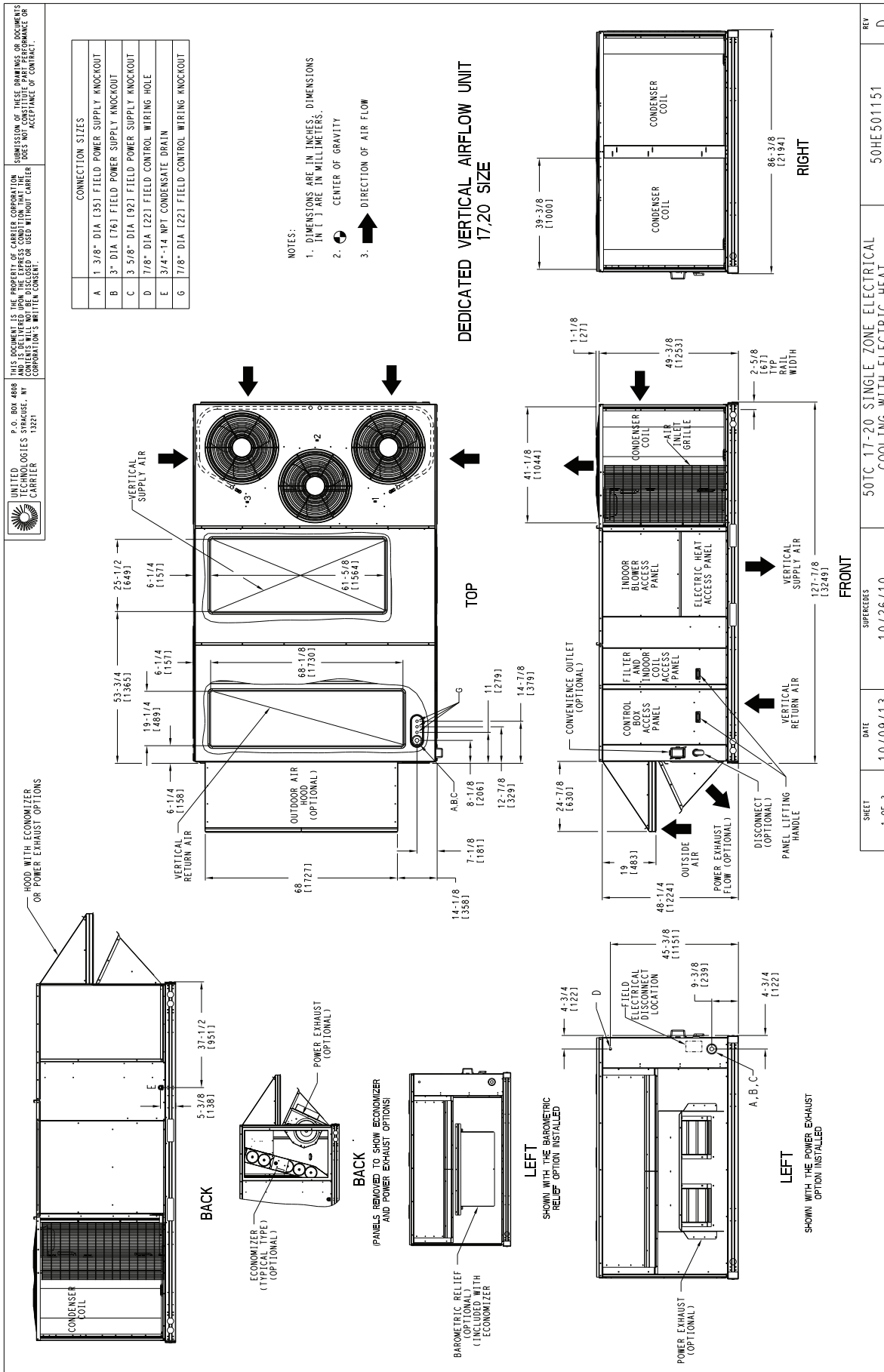
Table 6 - PHYSICAL DATA (cont)
Novation® - All Aluminum Coil Design

(COOLING)

15-27.5 TONS

	50TC-D17	50TC-D20	50TC-D24	50TC-D28
Cond. Coil (Circuit A)				
Coil type	Novation	Novation	Novation	Novation
Coil Length (in)	70	70	82	75
Coil Height (in)	44	44	44	52
Rows / FPI	1 / 20.3	1 / 20.3	1 / 20.3	1 / 20.3
total face area (ft ²)	21.4	21.4	25.1	27.1
Cond. Coil (Circuit B)				
Coil type	Novation	Novation	Novation	Novation
Coil Length (in)	70	70	57	75
Coil Height (in)	44	44	44	52
Rows / FPI	1 / 20.3	1 / 20.3	1 / 20.3	1 / 20.3
total face area (ft ²)	21.4	21.4	17.4	27.1
Cond. fan / motor				
Qty / Motor drive type	3 / direct	3 / direct	4 / direct	4 / direct
Motor HP / RPM	1/4 / 1100	1/4 / 1100	1/4 / 1100	1/4 / 1100
Fan diameter (in)	22	22	22	22
Filters				
RA Filter # / size (in)	6 / 20 x 25 x 2	6 / 20 x 25 x 2	6 / 20 x 25 x 2	9 / 16 x 25 x 2
OA inlet screen # / size (in)	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1

DIMENSIONS



SHEET 1 OF 3	DATE 10/09/13	SUPERCEDES 10/26/10	REV D
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Fig. 1 - Unit Dimensional Drawing – 17 and 20 Size Units

DIMENSIONS (cont)

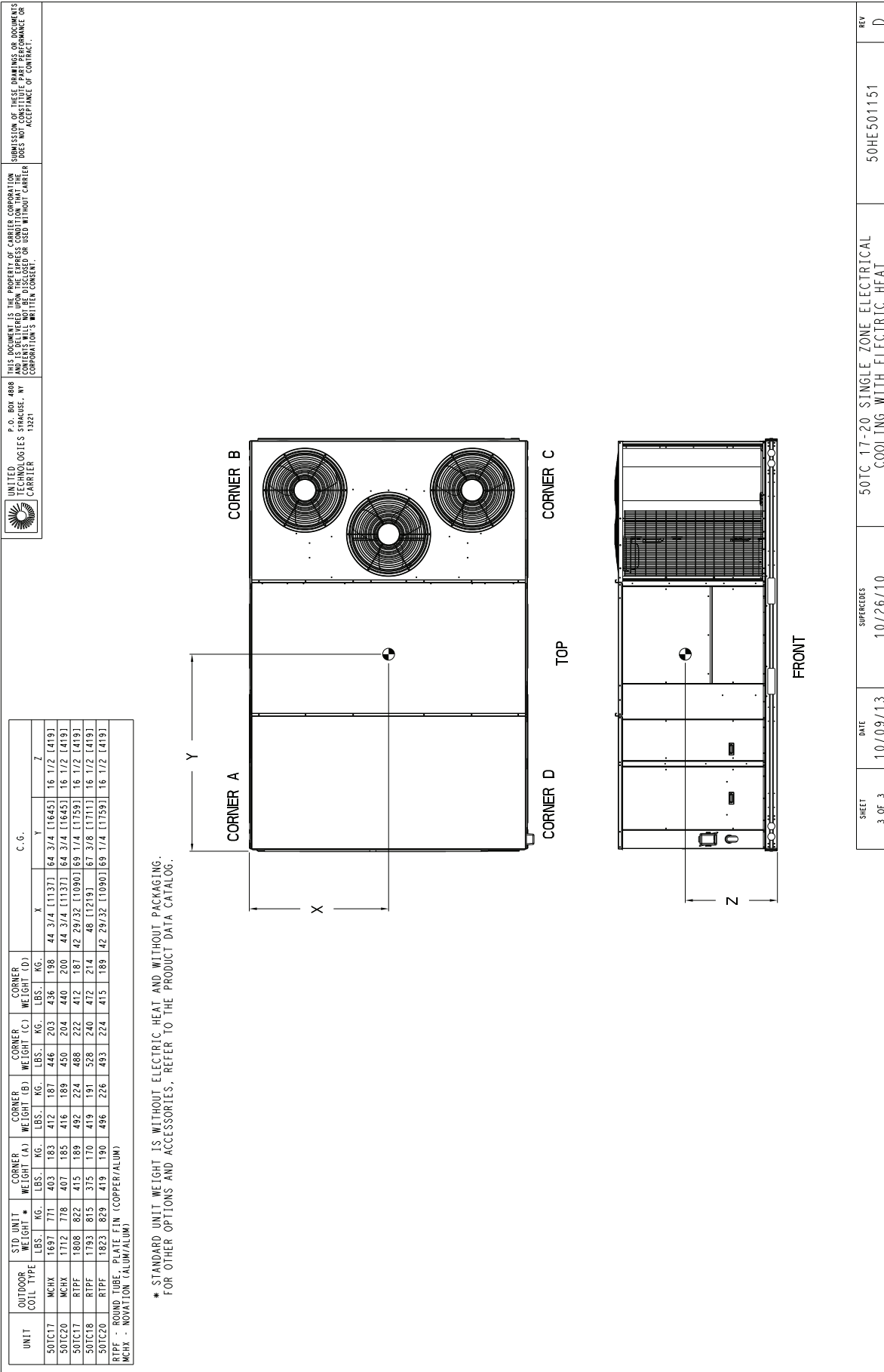
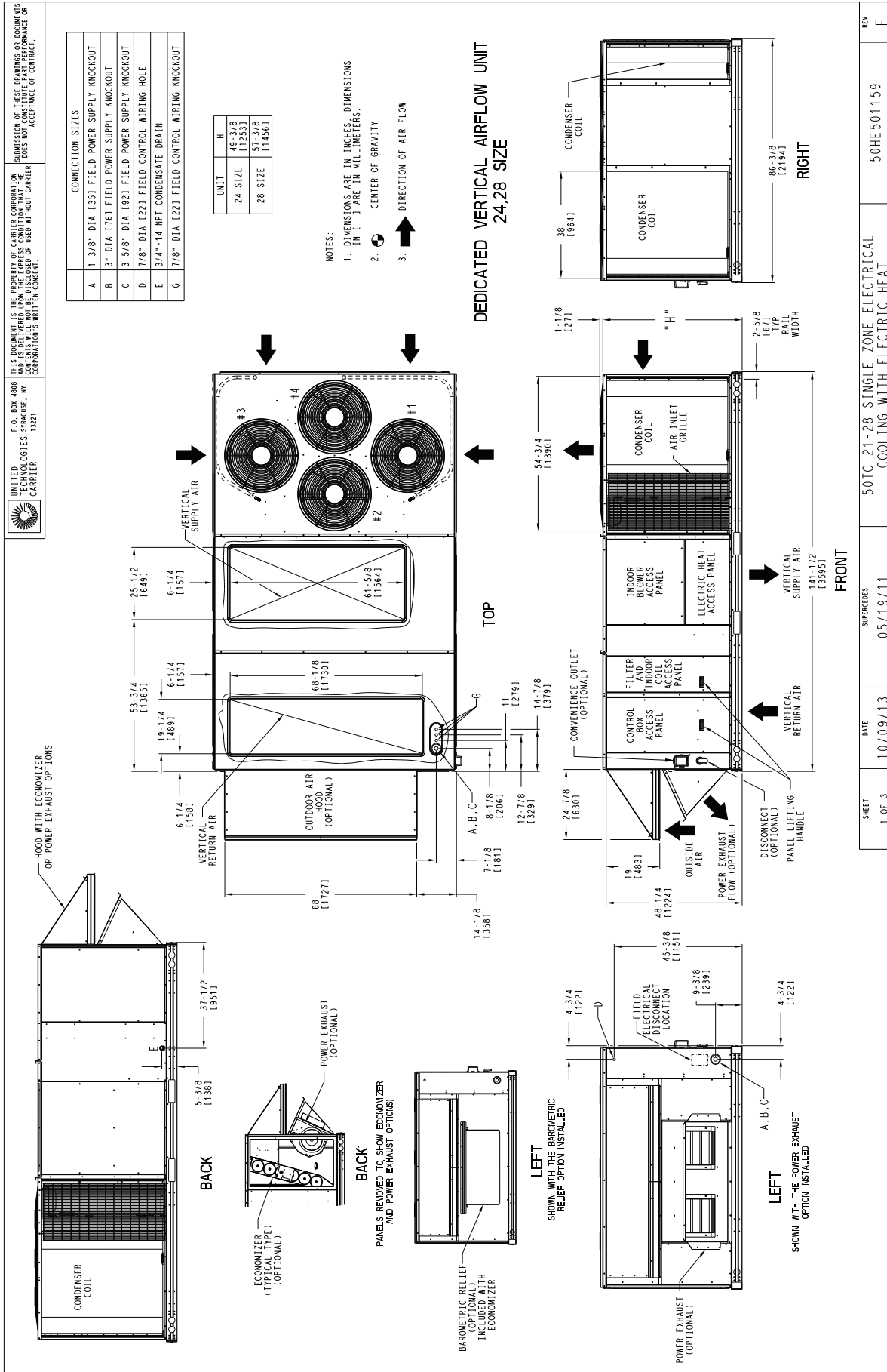


Fig. 1 - Unit Dimensional Drawing – 17 and 20 Size Units (cont.)

DIMENSIONS (cont)



SHEET 1 OF 3

DATE 10/09/13

SUPERCEDES 05/19/11

50TC 21-28 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT

REV F

Fig. 2 - Unit Dimensional Drawing – 24 and 28 Size Units

DIMENSIONS (cont)

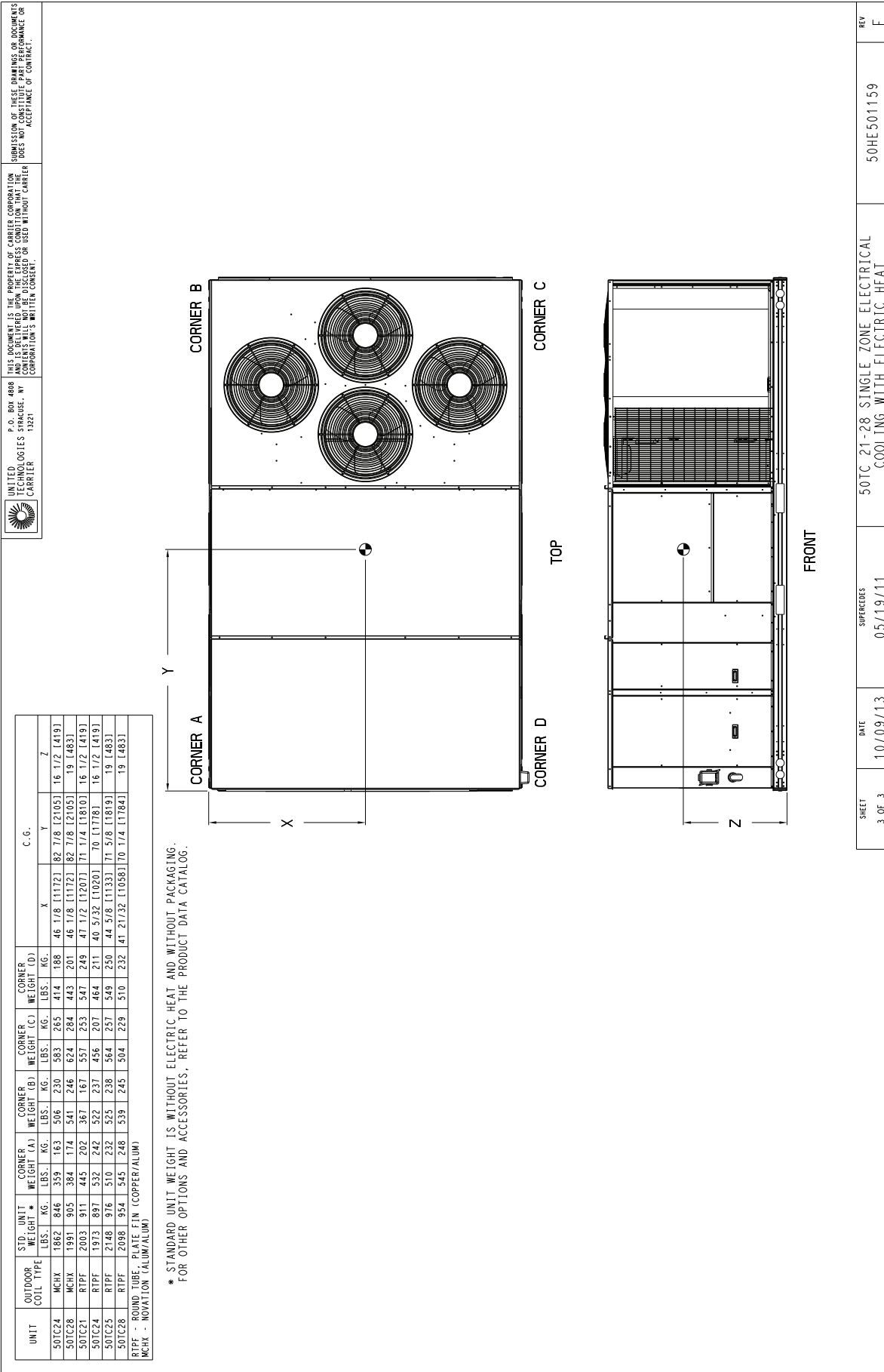


Fig. 2 - Unit Dimensional Drawing – 24 and 28 Size Units (cont.)

DIMENSIONS (cont)

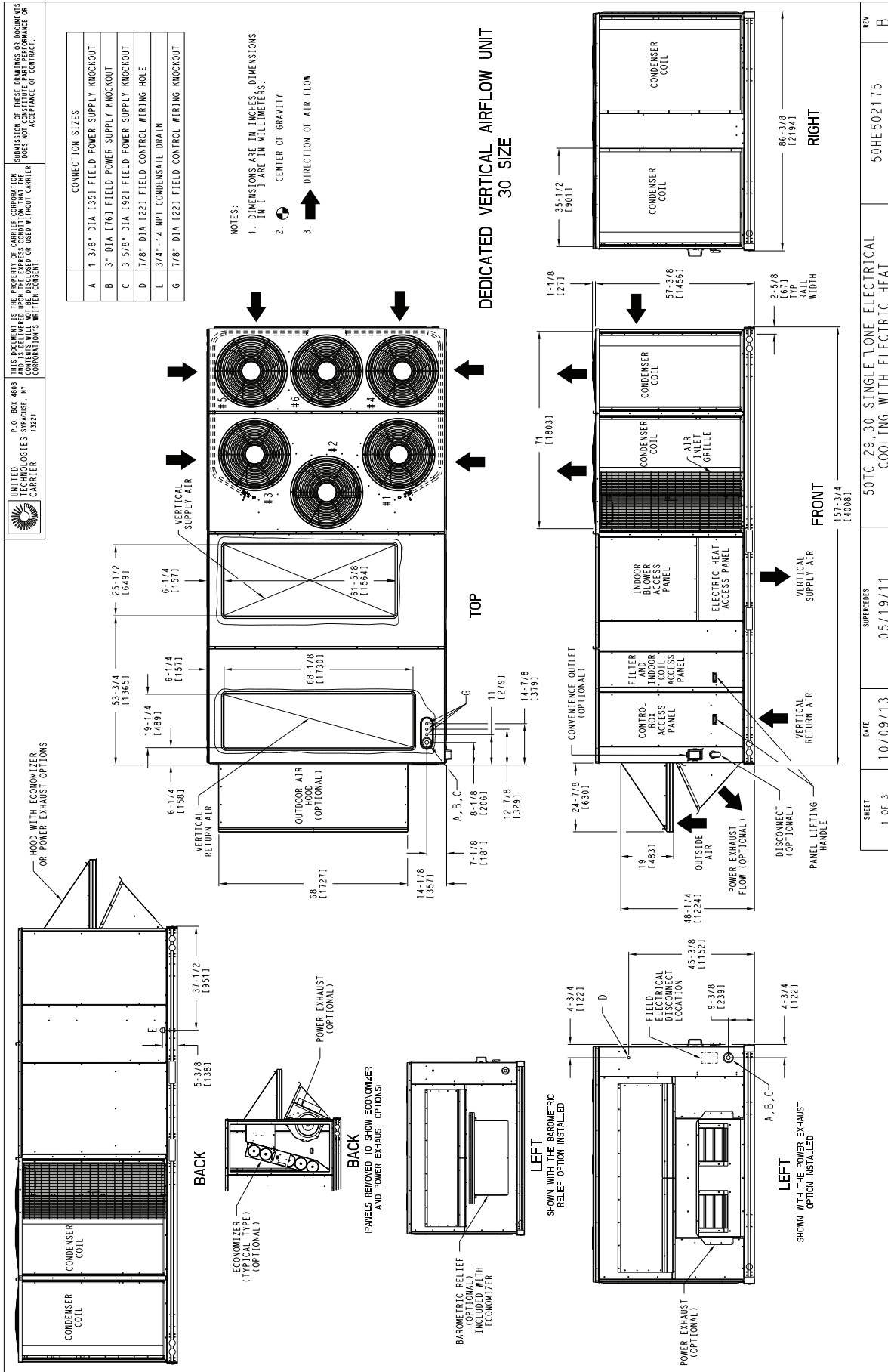


Fig. 3 - Unit Dimensional Drawing – 30 Size Units

DIMENSIONS (cont)

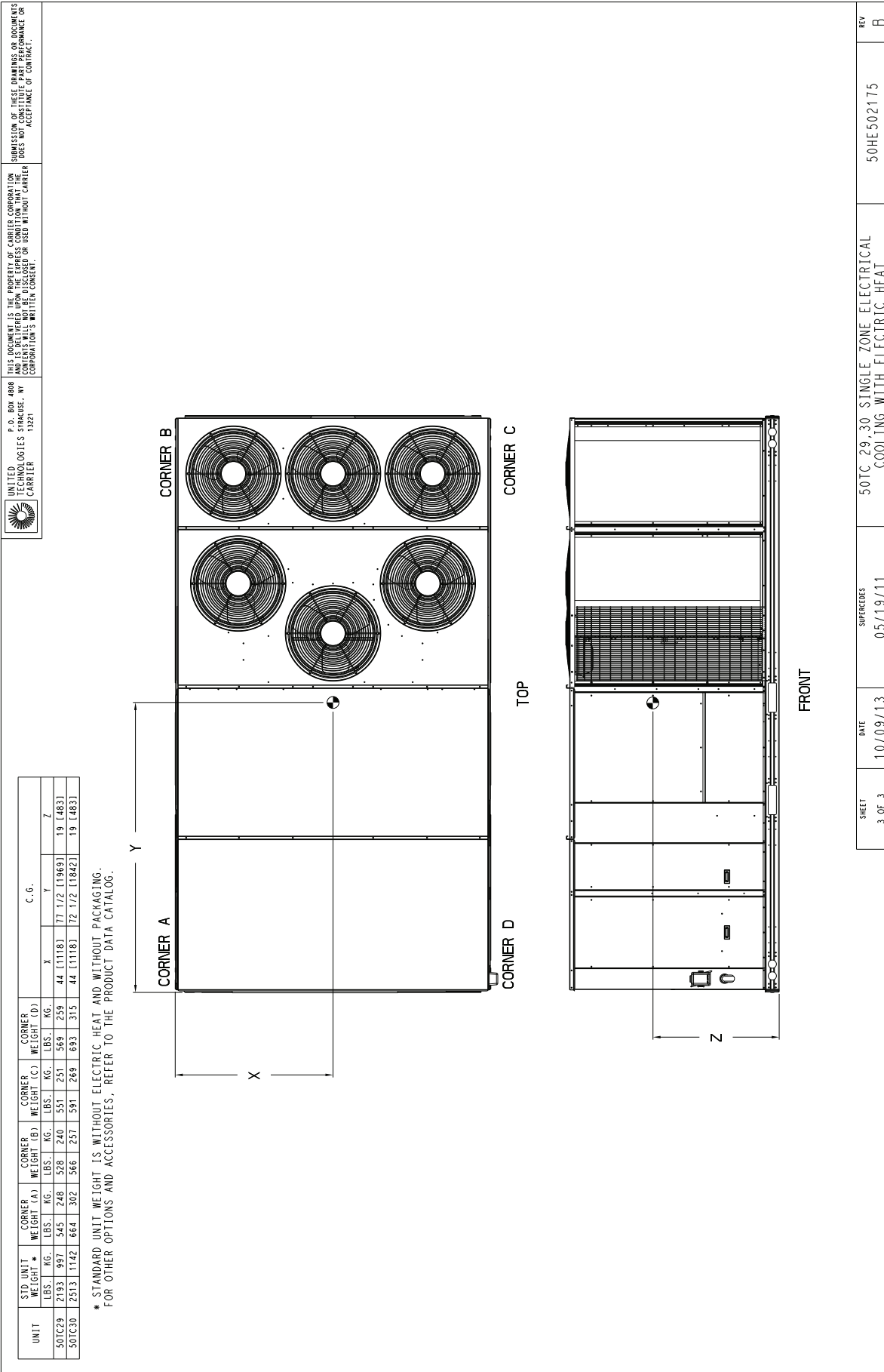
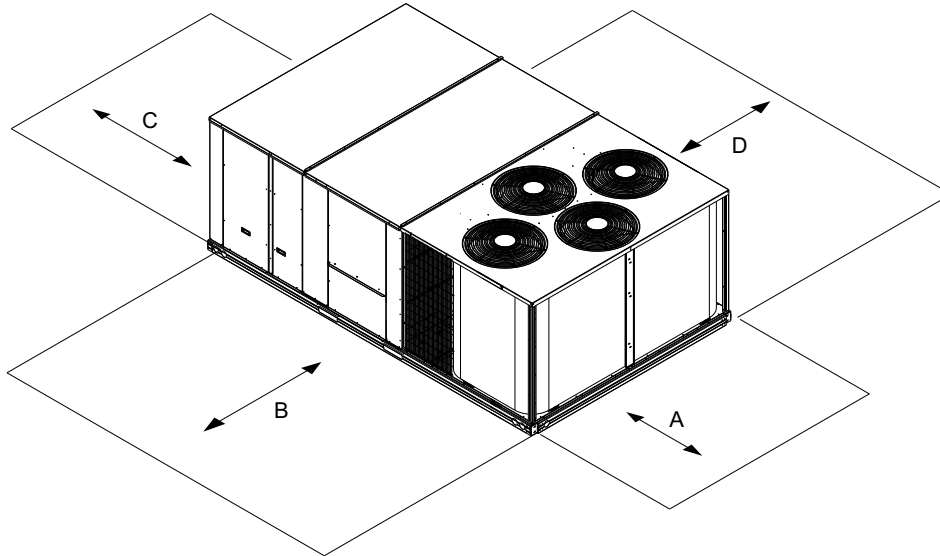


Fig. 3 - Unit Dimensional Drawing – 30 Size Units (cont.)

DIMENSIONS (cont)



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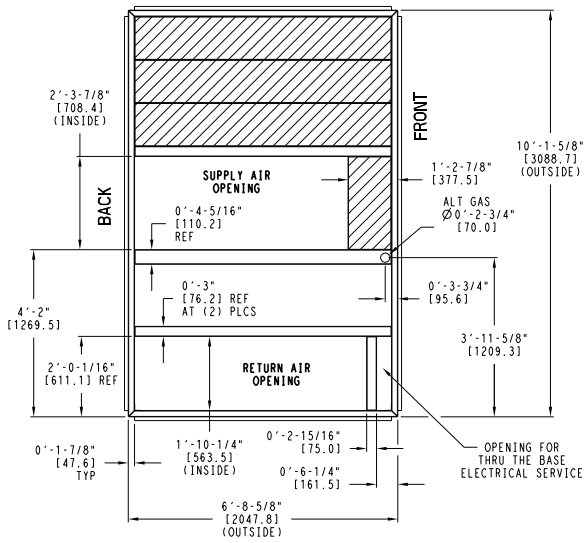
LOCATION	DIMENSION	CONDITION
A	36-in (914 mm)	<ul style="list-style-type: none"> Recommended clearance for air flow and service
B	42-in (1067 mm)	<ul style="list-style-type: none"> Recommended clearance for air flow and service
C	18-in (457 mm)	<ul style="list-style-type: none"> No Convenience Outlet No Economizer No field-installed disconnect on economizer hood side (Factory-installed disconnect installed).
	36-in (914 mm)	<ul style="list-style-type: none"> Convenience Outlet installed. Vertical surface behind servicer is electrically non-conductive (e.g.: wood, fiberglass).
	42-in (1067 mm)	<ul style="list-style-type: none"> Convenience Outlet installed. Vertical surface behind servicer is electrically conductive (e.g.: metal, masonry).
	96-in (2438 mm)	<ul style="list-style-type: none"> Economizer and/or Power Exhaust installed. Check for sources of flue products with 10 feet (3 meters) of economizer fresh air intake.
D	42-in (1067 mm)	<ul style="list-style-type: none"> 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. 4 - Service Clearance Dimensional Drawing

DIMENSIONS (cont)

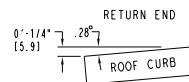
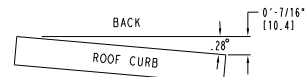
UNIT SIZE	"A"	ROOF CURB ACCESSORY
17, 20	1'-2" [356.0] 2'-0" [610.0]	CRRFCURB045A00 CRRFCURB046A00



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

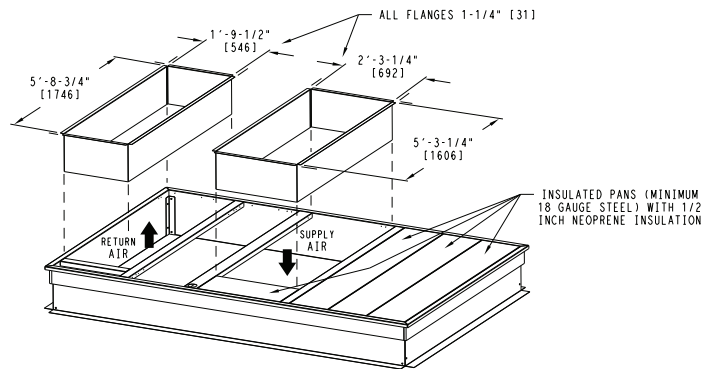
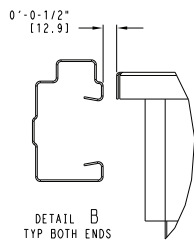
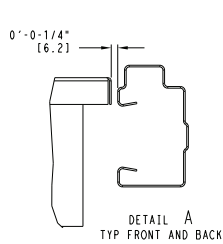
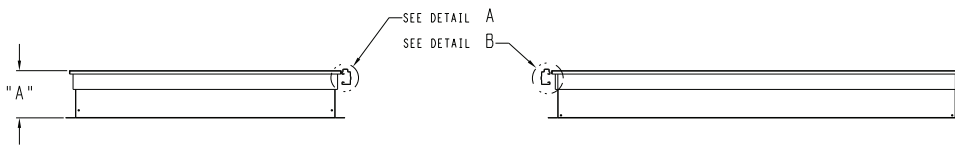
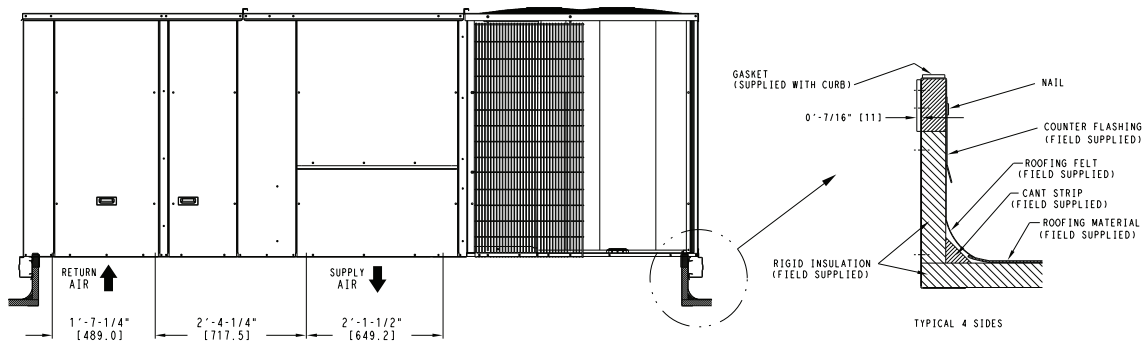
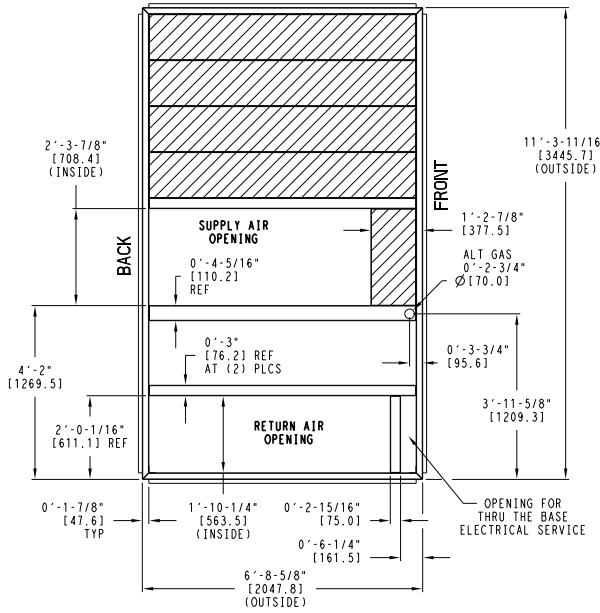


Fig. 5 - Roof Curb Details – 17 and 20 Size Units

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DIMENSIONS (cont)

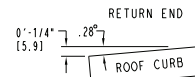
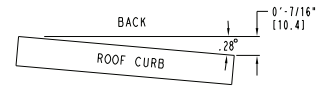
UNIT SIZE	"A"	ROOF CURB ACCESSORY
24, 28	1'-2" [356.0] 2'-0" [610.0]	CRRFCURB047A00 CRRFCURB048A00



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

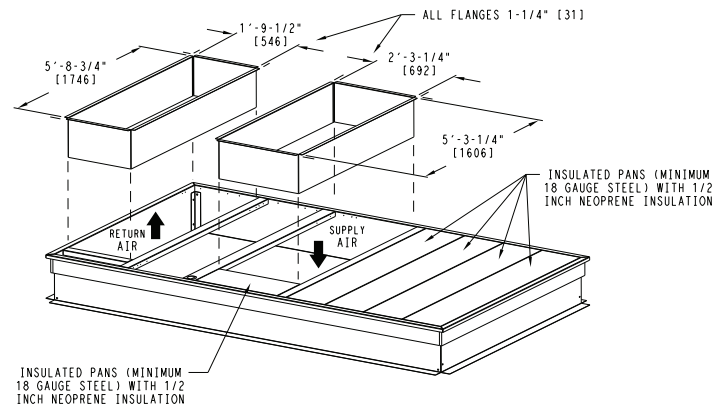
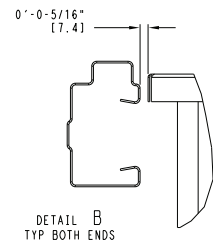
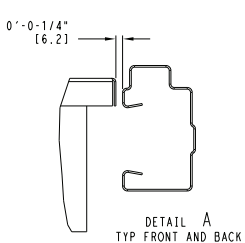
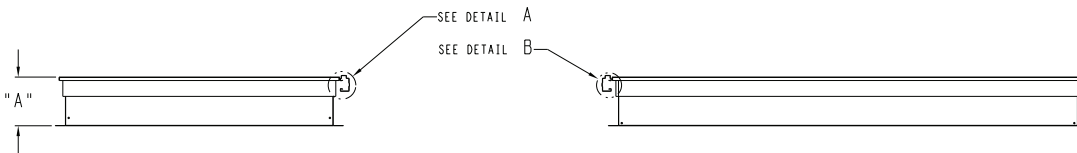
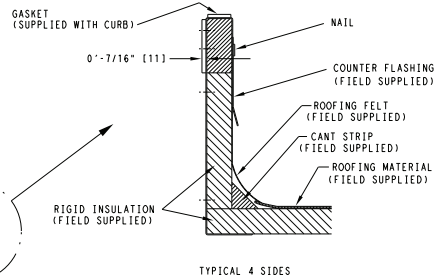
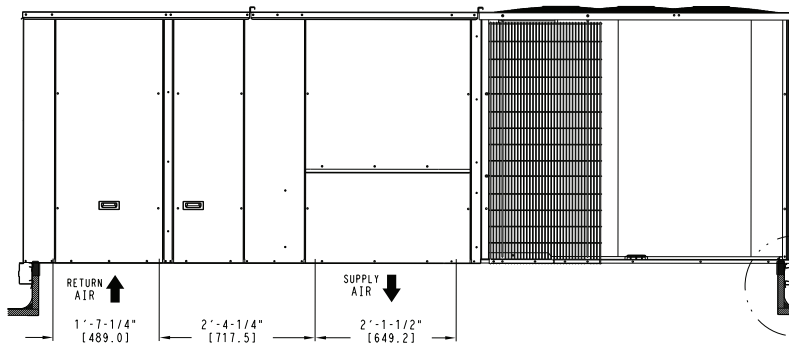
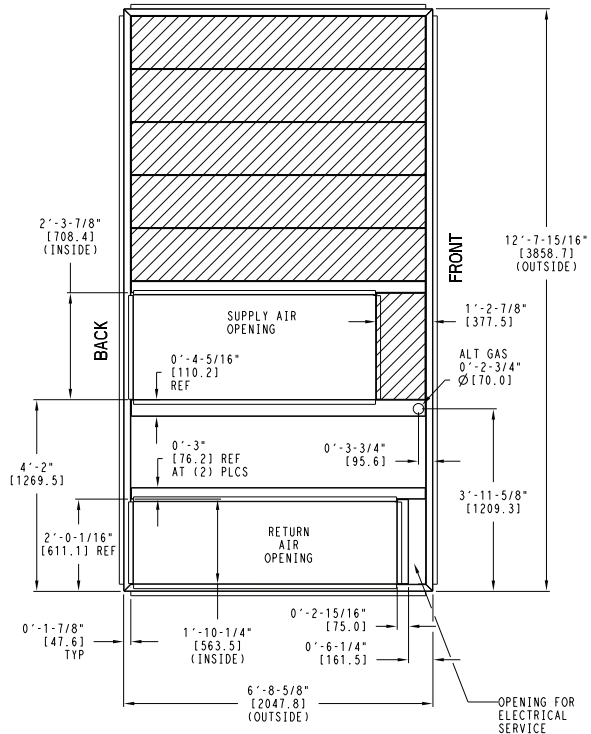


Fig. 6 - Roof Curb Details – 24 and 28 Size Units

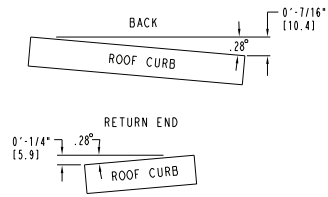
C09140A

DIMENSIONS (cont)

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



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



MAX CURB LEVELING TOLERANCES

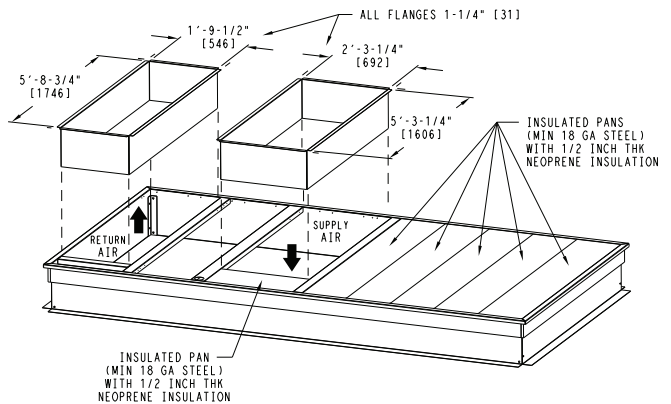
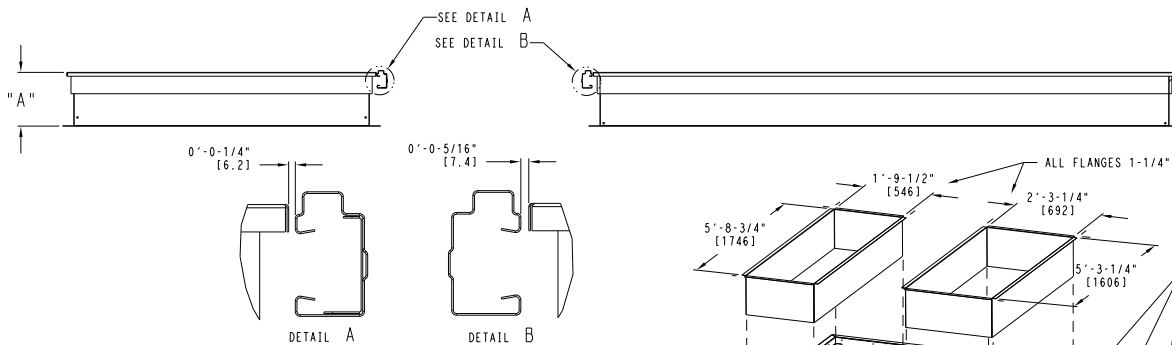
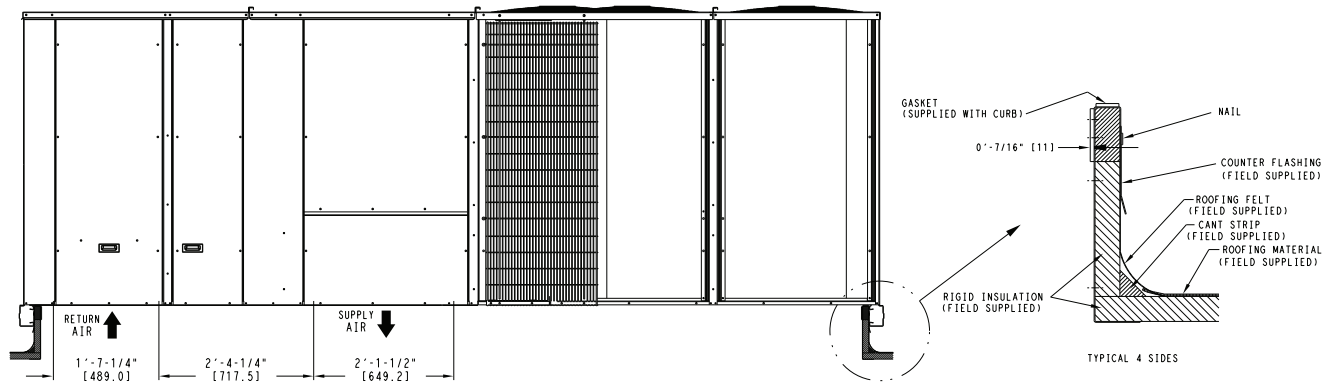


Fig. 7 - Roof Curb Details – 30 Size Unit

C11251

OPTIONS AND ACCESSORIES WEIGHT ADDERS

BASE UNIT WITH OPTIONS AND ACCESSORIES (Weight Adders)	MAX WEIGHT ADDER									
	50TC-*17		50TC-*20		50TC-*24		50TC-*28		50TC-*30	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
Base Unit Operating Weight w/ RTPF coil	1808	822	1823	829	1973	897	2098	954	2193	997
Base Unit Operating Weight w/ Novation® coil	1697	771	1712	778	1862	846	1991	905	---	---
Humidi-MiZer® System ¹	110	50	110	50	120	55	120	55	---	---
Power Exhaust	125	57	125	57	125	57	125	57	125	57
EconoMiSer® (IV, X, or 2)	246	112	246	112	246	112	246	112	246	112
Cu/Cu Condenser Coil ²	28	13	28	13	30	14	34	15	34	15
Cu/Cu Condenser and Evaporator Coils ²	53	24	53	24	58	26	64	29	64	29
Electric Heater	85	39	85	39	85	39	85	39	85	39
Single Point Kit	15	7	15	7	15	7	15	7	15	7
Roof Curb 24-in (610mm)	340	154	340	154	355	161	355	161	355	161
Roof Curb 24-in (610mm)	340	154	340	154	355	161	355	161	355	161
Louvered Hail Guard	60	27	60	27	120	54	150	68	150	68
CO ₂ sensor	5	2	5	2	5	2	5	2	5	2
Return Smoke Detector	5	2	5	2	5	2	5	2	5	2
Supply Smoke Detector	5	2	5	2	5	2	5	2	5	2
Fan/Filter Status Switch	2	1	2	1	2	1	2	1	2	1
Non-Fused Disconnect	15	7	15	7	15	7	15	7	15	7
Powered Convenience Outlet	35	16	35	16	35	16	35	16	35	16
Unpowered Convenience Outlet	5	2	5	2	5	2	5	2	5	2
Enthalpy Sensor	2	1	2	1	2	1	2	1	2	1
Differential Enthalpy Sensor	3	1	3	1	3	1	3	1	3	1
Two Position Motorized Damper	50	23	50	23	50	23	65	29	65	29
Manual Damper	35	16	35	16	35	16	40	18	40	18
Field Filter Track 4-in (102mm)	22	10	22	10	22	10	22	10	22	10
Motormaster® Controller	35	16	35	16	35	16	35	16	35	16
Medium Static Motor/Drive	5	2	6	3	6	3	6	3	10	5
High Static Motor/Drive	11	5	12	5	16	7	16	7	20	9
SAV™ System with VFD	20	9	20	9	20	9	20	9	20	9

¹ For Humidi-MiZer system add Motormaster controller

² Where available

--- Not Available

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 30°F (-1°C). It is possible to provide cooling at lower outdoor ambient temperatures by using less outside air, economizers, and/or accessory low ambient kits.

Max operating ambient temp (cooling):

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

Min and max airflow (cooling 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. For proper minimum and maximum CFM values see Table 3 on page 9.

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.

APPLICATION/SELECTION DATA (cont)

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 (for RTPF units) and Table 6 (for Novation® units), 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.

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 90.1-2016 and IECC-2015 standards, during the first stage of cooling operation the VFD will adjust the fan motor to provide 66% 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 66% 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 electro-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 operations.

50TC-D17				AMBIENT TEMPERATURE (F)												
				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	TC	159.6	159.1	163.4	148.7	148.4	155.2	136.1	137.1	146.0	122.4	127.2	136.2	
			SHC	132.6	149.6	163.4	127.0	143.9	155.2	120.7	137.1	146.0	113.9	127.2	136.2	
		62	TC	173.9	173.6	173.3	163.1	162.6	162.2	150.5	150.2	149.9	136.8	136.2	136.9	
			SHC	119.4	136.8	153.9	114.1	131.5	148.6	108.2	125.7	142.6	101.9	119.2	135.8	
		67	TC	193.4	193.0	192.5	182.5	182.1	181.7	169.9	169.5	169.1	156.0	155.5	155.2	
			SHC	102.3	119.7	137.0	97.3	114.8	132.3	91.7	109.4	126.9	85.7	103.5	121.1	
	72	TC	213.7	213.2	212.6	203.5	203.0	202.5	191.0	190.5	189.9	177.1	176.6	176.1		
		SHC	84.0	101.7	119.2	79.7	97.4	115.0	74.6	92.4	109.9	69.1	86.9	104.6		
	76	TC	-	227.8	228.5	-	219.6	219.1	-	207.9	207.4	-	194.1	193.5		
		SHC	-	89.9	103.7	-	82.5	100.2	-	78.1	95.8	-	73.0	97.2		
	5250 CFM	EAT (wb)	58	TC	168.7	168.5	176.4	157.0	158.2	167.7	143.9	148.2	158.0	129.5	137.5	147.4
				SHC	161.3	163.9	176.4	138.9	157.2	167.7	132.4	148.2	158.0	125.4	137.5	147.4
62			TC	184.2	183.8	183.2	172.3	171.8	171.5	159.1	158.5	159.3	144.4	143.8	147.8	
			SHC	129.4	149.6	168.9	123.9	144.0	163.5	117.9	137.9	156.4	111.4	131.3	147.8	
67			TC	204.7	204.0	203.5	193.1	192.6	192.2	179.7	179.2	178.7	164.8	164.3	163.6	
			SHC	109.3	129.5	149.6	104.3	124.7	144.9	98.6	119.1	139.4	92.5	113.1	133.3	
72		TC	224.6	224.1	223.6	214.4	213.7	213.1	202.0	201.4	200.7	187.0	186.4	185.8		
		SHC	87.5	107.9	128.2	83.4	103.9	124.3	78.6	99.2	119.6	72.9	93.6	114.1		
76		TC	-	239.1	239.6	-	230.6	230.1	-	218.4	217.7	-	204.4	203.7		
		SHC	-	92.6	110.2	-	86.4	107.0	-	82.0	102.6	-	77.1	97.8		
6000 CFM		EAT (wb)	58	TC	176.9	178.5	188.9	164.3	168.9	179.6	150.3	158.4	169.1	136.1	146.9	157.7
				SHC	157.4	178.5	188.9	151.1	168.9	179.6	144.3	158.4	169.1	136.1	146.9	157.7
	62		TC	193.2	192.7	192.2	180.4	179.7	180.7	166.2	165.6	170.1	150.5	150.0	158.1	
			SHC	140.2	162.8	184.2	134.4	156.9	177.8	128.1	150.6	168.9	121.3	143.5	158.1	
	67		TC	214.4	213.7	213.0	202.1	201.6	201.0	187.7	187.1	186.4	171.8	171.1	170.4	
			SHC	117.3	140.3	163.0	112.1	135.3	158.2	106.2	129.4	152.2	99.8	123.1	145.9	
	72	TC	234.9	234.6	234.2	224.0	223.3	222.5	210.9	210.1	209.3	194.9	194.1	193.4		
		SHC	92.7	115.9	139.1	88.4	111.8	134.8	83.4	106.8	130.0	77.5	101.0	124.3		
	76	TC	-	250.7	250.9	-	240.9	240.1	-	227.5	226.7	-	212.7	211.8		
		SHC	-	95.7	118.9	-	92.1	115.3	-	87.4	110.8	-	82.4	105.8		
	6750 CFM	EAT (wb)	58	TC	182.5	187.4	198.5	169.3	177.4	188.7	156.0	166.4	177.8	142.9	154.4	165.9
				SHC	167.5	187.4	198.5	161.2	177.4	188.7	153.0	166.4	177.8	142.9	154.4	165.9
62			TC	199.3	198.7	199.6	186.0	185.2	188.9	171.2	170.5	208.4	154.7	155.5	166.2	
			SHC	148.6	173.7	196.6	142.8	167.6	188.9	136.4	161.1	208.4	115.2	152.6	166.2	
67			TC	220.4	219.6	218.8	208.2	207.4	206.6	193.2	192.5	191.7	176.8	176.1	175.2	
			SHC	122.6	148.2	173.6	117.6	143.4	168.7	111.6	137.6	162.9	97.2	131.3	156.3	
72		TC	241.2	240.5	240.2	229.8	228.9	228.1	216.3	215.4	214.6	200.2	199.4	198.6		
		SHC	95.1	120.9	146.6	90.8	116.8	142.6	85.8	111.9	137.8	80.0	106.2	118.0		
76		TC	-	257.2	256.7	-	246.6	245.9	-	233.0	232.1	-	217.6	216.7		
		SHC	-	98.4	124.2	-	94.8	120.7	-	90.2	116.3	-	85.1	111.3		
7500 CFM		EAT (wb)	58	TC	187.3	195.3	206.8	174.4	184.9	196.8	161.5	173.5	185.5	148.9	161.1	173.2
				SHC	177.5	195.3	206.8	169.9	184.9	196.8	161.5	173.5	185.5	148.9	161.1	173.2
	62		TC	204.3	203.5	207.1	190.6	189.9	197.1	175.1	175.4	185.7	158.4	161.2	173.5	
			SHC	156.5	183.9	207.1	150.7	177.9	197.1	144.1	170.2	185.7	137.1	161.2	173.5	
	67		TC	225.2	224.4	223.4	213.1	212.2	211.3	197.8	197.0	196.2	180.8	179.9	179.1	
			SHC	127.5	155.8	183.5	122.8	151.2	178.9	116.8	145.5	173.1	110.3	139.0	166.3	
	72	TC	246.1	245.5	244.9	234.5	233.6	232.8	220.6	219.7	218.6	204.7	203.7	202.7		
		SHC	97.1	125.6	153.8	92.9	121.6	150.1	87.9	116.8	145.3	82.3	111.2	139.9		
	76	TC	-	262.3	261.6	-	251.3	250.5	-	237.3	236.3	-	221.6	220.6		
		SHC	-	100.9	129.2	-	97.3	125.8	-	92.8	121.5	-	87.7	116.6		

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 (1000 Btuh) Gross
- TC - Total capacity (1000 Btuh) Gross

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

Table 8 – COOLING CAPACITIES

2-STAGE COOLING

15 TONS (cont)

50TC–E17 (15 TONS) – UNIT WITH HUMIDI–MIZER IN SUBCOOLING MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		4,500			6,000			7,500		
		Air Entering Evaporator – Ewb (F)								
75	TC	208.5	190.6	172.6	229.2	208.6	188.1	247.8	224.9	202.0
	SHC	94.0	114.5	135.0	104.5	125.2	145.9	113.0	133.8	154.6
	kW	13.42	13.05	12.70	13.60	13.21	12.80	13.82	13.36	13.15
85	TC	198.3	180.7	163.0	214.9	194.8	174.6	229.8	207.4	185.1
	SHC	74.1	99.6	125.1	85.2	110.9	136.7	94.1	120.0	145.9
	kW	14.79	14.42	14.10	14.97	14.58	14.20	15.19	14.73	14.51
95	TC	188.2	170.8	153.4	200.6	180.9	161.1	211.9	190.0	168.1
	SHC	54.4	84.8	115.3	65.9	96.7	127.5	75.1	106.2	137.2
	kW	16.23	15.86	15.50	16.41	16.02	15.60	16.63	16.17	15.95
105	TC	178.1	160.9	143.8	186.4	167.0	147.7	193.9	172.5	151.2
	SHC	34.6	70.0	105.4	46.5	82.4	118.2	56.1	92.3	128.5
	kW	17.47	17.10	16.80	17.65	17.26	16.90	17.87	17.41	17.25
115	TC	167.9	151.1	134.2	172.1	153.2	134.2	175.9	155.1	134.5
	SHC	14.8	55.2	95.6	27.2	68.1	109.0	37.1	78.5	119.8
	kW	18.87	18.50	18.20	19.05	18.66	18.30	19.27	18.81	18.55

50TC–E17 (15 TONS) – UNIT WITH HUMIDI–MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative Humidity)			(56% Relative Humidity)			(60% Relative Humidity)		
		Air Entering Evaporator – Cfm								
		4,500	6,000	7,500	4,500	6,000	7,500	4,500	6,000	7,500
80	TC	80.10	85.50	91.30	82.70	90.90	97.10	86.00	95.40	100.50
	SHC	12.70	22.30	34.20	5.10	12.10	21.20	-2.10	4.20	10.50
	kW	12.44	12.67	12.78	12.55	12.88	13.10	12.65	13.02	13.12
75	TC	82.30	87.60	93.40	84.70	93.00	99.20	88.10	97.30	102.50
	SHC	14.30	24.20	36.00	6.70	13.70	23.10	-0.50	5.80	12.60
	kW	12.38	12.62	12.73	12.50	12.83	13.05	12.62	12.98	13.07
70	TC	84.40	89.60	94.70	87.00	95.10	101.30	90.30	99.50	104.60
	SHC	16.10	25.70	37.30	8.20	15.80	24.50	1.10	7.50	13.70
	kW	12.34	12.58	12.69	12.47	12.78	13.03	12.59	12.93	13.02
60	TC	88.50	93.90	99.80	91.20	99.40	105.50	94.40	103.70	108.90
	SHC	19.40	29.20	40.70	11.50	18.60	27.80	4.60	10.50	16.90
	kW	12.28	12.52	12.63	12.41	12.73	12.97	12.53	12.84	12.94
50	TC	92.80	98.10	104.80	95.40	103.60	110.50	98.80	108.00	113.90
	SHC	22.70	32.20	43.80	14.80	22.10	31.30	7.70	13.90	20.50
	kW	12.21	12.45	12.56	12.34	12.68	12.91	12.46	12.75	12.85
40	TC	97.10	102.50	108.50	99.60	108.00	114.30	103.00	112.40	117.70
	SHC	26.00	35.40	46.90	17.90	25.30	34.40	10.80	17.10	23.80
	kW	12.14	12.38	12.49	12.27	12.60	12.84	12.40	12.70	12.80

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:

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

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

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

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

50TC–D20				AMBIENT TEMPERATURE (F)												
				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	TC	180.4	185.6	196.3	167.7	176.1	186.9	154.7	165.3	176.6	142.2	153.6	164.9	
			SHC	166.5	185.6	196.3	160.6	176.1	186.9	152.7	165.3	176.6	142.2	153.6	164.9	
		62	TC	196.2	195.5	196.9	183.6	182.9	187.2	169.3	168.7	176.9	153.4	154.1	165.2	
			SHC	146.8	172.1	194.7	141.4	166.6	187.2	135.4	160.5	176.9	128.6	152.5	165.2	
		67	TC	216.7	215.9	215.2	204.9	204.1	203.1	190.6	189.7	189.0	174.8	174.0	173.3	
			SHC	120.0	146.1	171.8	115.4	141.5	167.1	109.8	136.1	161.7	103.8	130.2	155.6	
	72	TC	237.4	236.8	236.0	226.0	225.1	224.2	212.8	211.9	211.0	197.3	196.4	195.5		
		SHC	92.0	118.3	144.3	87.8	114.3	140.4	83.0	109.6	135.8	77.6	104.2	130.6		
	76	TC	–	252.9	253.0	–	242.5	241.6	–	229.1	228.2	–	214.1	213.1		
		SHC	–	95.1	121.4	–	91.7	118.0	–	87.3	113.8	–	82.5	107.1		
	6125 CFM	EAT (wb)	58	TC	188.8	198.5	209.3	176.5	188.2	200.2	164.5	176.7	189.0	151.9	164.2	176.7
				SHC	180.4	198.5	209.3	174.4	188.2	200.2	164.5	176.7	189.0	151.9	164.2	176.7
62			TC	205.2	204.6	209.6	191.8	191.5	200.4	176.6	177.6	189.2	159.9	164.2	176.9	
			SHC	159.9	188.7	209.6	154.2	183.0	200.4	147.9	174.8	189.2	141.0	164.2	176.9	
67			TC	225.5	224.5	223.5	213.5	212.5	211.7	199.1	198.3	197.4	182.3	181.4	180.9	
			SHC	128.3	158.4	187.8	123.8	154.1	183.5	118.4	148.9	178.1	112.2	142.7	171.6	
72		TC	245.6	245.3	244.6	234.7	233.6	232.6	220.9	219.9	218.8	205.5	204.4	203.4		
		SHC	95.4	125.9	155.7	91.7	122.2	152.4	86.9	117.7	148.1	81.7	112.5	143.1		
76		TC	–	262.0	261.2	–	250.7	250.1	–	237.3	236.2	–	221.6	220.6		
		SHC	–	99.5	129.4	–	95.9	126.2	–	91.8	122.4	–	87.0	117.8		
7000 CFM		EAT (wb)	58	TC	197.4	209.8	221.3	186.1	199.1	211.7	173.8	186.9	200.1	160.3	173.5	186.9
				SHC	196.8	209.8	221.3	186.1	199.1	211.7	173.8	186.9	200.1	160.3	173.5	186.9
	62		TC	212.7	212.4	221.5	198.4	199.8	212.0	182.3	186.9	200.3	164.7	173.8	187.1	
			SHC	173.4	205.1	221.5	167.4	197.4	212.0	160.8	186.8	200.3	153.4	173.8	187.1	
	67		TC	233.7	232.5	231.4	220.8	219.8	218.9	205.6	204.5	204.1	187.8	186.8	188.0	
			SHC	138.0	172.0	205.0	133.4	167.6	200.4	127.8	162.0	194.4	121.3	155.6	185.6	
	72	TC	254.3	253.3	252.8	242.7	241.5	240.3	228.0	226.8	225.7	211.8	210.6	209.3		
		SHC	101.3	135.4	169.2	97.3	131.8	165.9	92.3	127.2	161.5	86.9	121.8	156.3		
	76	TC	–	270.7	269.9	–	259.0	258.1	–	245.0	243.6	–	228.5	227.1		
		SHC	–	106.1	140.0	–	102.4	136.5	–	98.2	132.7	–	93.2	127.9		
	7875 CFM	EAT (wb)	58	TC	205.0	217.2	229.1	193.4	206.9	219.3	180.6	194.3	207.9	166.6	180.5	194.5
				SHC	205.0	217.2	229.1	193.4	206.9	219.3	180.6	194.3	207.9	166.6	180.5	194.5
62			TC	216.7	217.4	229.4	202.5	207.1	219.6	185.9	194.5	208.4	168.4	180.7	194.7	
			SHC	183.9	217.4	229.4	178.2	207.1	219.6	171.5	194.5	208.4	141.2	180.7	194.7	
67			TC	237.8	236.7	235.7	224.7	223.5	223.0	209.5	208.3	209.2	191.5	190.3	195.0	
			SHC	144.6	182.4	219.3	140.3	178.2	213.7	134.9	172.7	205.9	113.6	166.2	195.0	
72		TC	258.6	257.5	256.5	246.8	245.7	244.3	231.8	230.5	229.2	215.3	213.9	212.5		
		SHC	103.9	141.8	179.2	100.0	138.3	176.1	95.1	133.9	172.1	89.7	128.6	142.0		
76		TC	–	275.4	274.2	–	262.7	261.8	–	248.7	247.6	–	231.9	230.5		
		SHC	–	109.5	147.0	–	105.7	143.6	–	101.5	139.9	–	96.6	135.4		
8750 CFM		EAT (wb)	58	TC	211.3	223.6	235.9	199.7	213.4	225.7	186.4	200.7	214.3	172.1	186.5	200.9
				SHC	211.3	223.6	235.9	199.7	213.4	225.7	186.4	200.7	214.3	172.1	186.5	200.9
	62		TC	220.0	223.7	236.3	206.0	213.6	226.1	189.3	200.9	214.5	172.2	186.7	201.2	
			SHC	194.0	223.7	236.3	188.5	213.6	226.1	181.3	200.9	214.5	172.2	186.7	201.2	
	67		TC	241.1	240.1	239.7	227.9	226.6	226.9	212.7	211.4	214.9	194.4	193.0	201.4	
			SHC	151.0	192.1	230.2	146.9	188.3	225.2	141.6	182.9	214.8	135.3	176.3	201.4	
	72	TC	262.2	261.0	259.7	250.0	248.8	247.7	235.0	233.5	232.1	218.1	216.6	215.2		
		SHC	106.5	148.1	189.0	102.5	144.5	186.0	97.8	140.4	182.1	92.4	135.3	177.1		
	76	TC	–	278.9	277.4	–	266.0	264.8	–	251.5	250.6	–	234.7	233.0		
		SHC	–	112.7	153.7	–	108.9	150.4	–	104.7	146.7	–	100.0	142.4		

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 (1000 Btuh) Gross
- TC – Total capacity (1000 Btuh) Gross

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

Table 10 – COOLING CAPACITIES

2-STAGE COOLING

17.5 TONS (cont)

50TC–E20 (17.5 TONS) – UNIT WITH HUMIDI–MIZER IN SUBCOOLING MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		5,250			7,000			8,750		
		Air Entering Evaporator – Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	218.7	199.6	180.5	241.4	219.4	197.4	261.7	237.2	212.7
	SHC	99.9	123.9	147.8	112.7	136.9	161.1	122.9	147.3	171.7
	kW	11.81	11.56	11.20	13.81	13.48	13.16	14.82	14.58	14.16
85	TC	206.6	187.9	169.1	224.9	203.4	181.9	241.3	217.3	193.4
	SHC	78.9	108.4	137.9	92.2	122.1	152.0	103.0	133.1	163.3
	kW	13.18	12.53	12.53	15.18	14.85	14.52	16.21	15.85	15.54
95	TC	194.7	176.2	157.8	208.4	187.4	166.4	220.8	197.4	174.1
	SHC	57.8	92.9	128.0	71.7	107.3	142.9	83.0	118.9	154.9
	kW	14.56	14.21	13.88	16.56	16.21	15.87	17.56	17.22	16.01
105	TC	182.7	164.5	146.4	191.9	171.4	150.8	200.3	177.6	154.8
	SHC	36.8	77.4	118.1	51.3	92.5	133.8	63.0	104.7	146.4
	kW	15.93	15.58	15.20	17.94	17.58	17.22	18.95	18.59	18.24
115	TC	170.6	152.8	135.0	175.4	155.4	135.3	179.8	157.7	135.5
	SHC	15.7	62.0	108.2	30.8	77.8	124.7	43.0	90.5	128.0
	kW	17.31	16.95	16.58	19.32	18.95	18.58	20.32	19.96	19.59

50TC–E20 (17.5 TONS) – UNIT WITH HUMIDI–MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative Humidity)			(56% Relative Humidity)			(60% Relative Humidity)		
		Air Entering Evaporator – Cfm								
		5,250	7,000	8,750	5,250	7,000	8,750	5,250	7,000	8,750
80	TC	82.20	90.50	92.40	86.70	96.40	97.80	91.60	99.80	101.20
	SHC	18.20	29.40	41.60	8.60	17.20	27.50	0.50	9.30	13.20
	kW	12.64	12.73	12.88	12.78	13.06	13.15	12.96	13.07	13.22
75	TC	84.40	92.70	94.40	88.80	98.60	99.70	93.70	102.00	103.40
	SHC	19.70	31.30	43.50	10.10	18.80	29.20	12.10	10.80	15.30
	kW	12.60	12.71	12.85	12.75	13.02	13.12	12.93	13.03	13.19
70	TC	86.70	94.90	96.60	91.00	100.70	102.00	95.90	104.10	105.40
	SHC	21.30	32.80	44.80	11.60	20.40	30.70	3.80	12.30	16.50
	kW	12.56	12.66	12.82	12.70	12.99	13.08	12.89	13.00	13.14
60	TC	90.90	99.10	100.80	95.20	105.00	106.30	100.20	108.30	109.70
	SHC	24.80	36.00	48.20	14.90	23.90	35.90	7.20	15.60	19.60
	kW	12.49	12.60	12.75	12.64	12.92	13.02	12.83	12.93	13.09
50	TC	95.00	103.40	105.10	99.50	109.40	110.50	104.40	112.50	113.90
	SHC	28.10	39.30	51.30	18.20	27.20	37.40	10.30	18.90	23.20
	kW	12.43	12.53	12.67	12.57	12.86	12.95	12.76	12.87	13.02
40	TC	99.20	107.70	109.30	103.70	113.70	114.70	108.60	116.70	118.10
	SHC	31.40	42.50	54.40	21.30	30.40	40.50	13.40	22.00	26.50
	kW	12.35	12.45	12.61	12.50	12.79	12.87	12.68	12.80	12.94

LEGEND

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

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
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

50TC–D24				AMBIENT TEMPERATURE (F)												
				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	TC	213.1	217.2	228.7	199.9	207.5	219.4	184.8	195.8	208.4	169.6	182.6	195.6	
			SHC	194.3	217.2	228.7	188.0	207.5	219.4	179.0	195.8	208.4	169.6	182.6	195.6	
		62	TC	230.0	229.4	230.4	217.5	217.0	219.7	202.5	201.9	208.8	184.9	184.9	195.9	
			SHC	170.0	199.9	225.9	164.6	194.5	219.7	158.3	187.8	208.8	150.9	178.7	195.9	
		67	TC	251.5	251.1	250.6	239.4	238.7	238.1	225.4	224.7	224.0	208.8	208.2	207.4	
			SHC	137.5	168.1	198.4	132.9	163.4	193.7	127.5	158.1	188.2	121.1	151.9	181.9	
	72	TC	274.0	273.8	273.5	262.3	261.7	261.0	248.2	247.4	246.6	232.2	231.3	230.5		
		SHC	104.3	135.1	165.6	100.1	130.9	161.4	95.1	125.9	156.6	89.6	120.5	151.3		
	76	TC	–	292.9	292.2	–	280.5	279.9	–	266.3	265.6	–	250.6	249.8		
		SHC	–	108.1	138.6	–	104.1	134.9	–	99.6	130.4	–	94.6	125.5		
	7000 CFM	EAT (wb)	58	TC	220.8	229.7	241.7	208.4	219.7	232.2	194.3	208.1	221.0	180.1	194.2	207.9
				SHC	211.0	229.7	241.7	203.1	219.7	232.2	194.3	208.1	221.0	180.1	194.2	207.9
62			TC	237.8	237.3	241.9	225.1	224.6	232.3	209.6	210.2	221.3	191.3	196.0	208.2	
			SHC	183.3	217.8	241.9	178.2	212.1	232.3	171.8	203.8	221.3	164.3	196.0	208.2	
67			TC	260.0	259.2	258.5	247.2	246.4	245.7	232.7	231.9	231.7	215.8	215.0	214.3	
			SHC	146.0	181.0	215.7	141.3	176.5	211.2	136.0	171.3	206.3	129.8	165.3	199.4	
72		TC	283.3	282.5	281.8	270.6	269.8	268.9	255.9	255.0	254.1	240.0	238.9	238.0		
		SHC	107.9	143.2	178.1	103.6	139.0	174.1	98.6	134.2	169.5	93.2	129.0	164.4		
76		TC	–	302.3	301.6	–	289.1	288.4	–	274.4	273.6	–	257.9	256.8		
		SHC	–	112.3	147.5	–	108.3	143.7	–	103.9	139.4	–	98.9	134.5		
8000 CFM		EAT (wb)	58	TC	232.1	243.6	256.1	219.8	233.4	246.0	206.9	221.3	234.5	192.1	206.8	221.2
				SHC	227.5	243.6	256.1	219.8	233.4	246.0	206.9	221.3	234.5	192.1	206.8	221.2
	62		TC	247.8	247.1	256.4	234.7	235.5	246.2	218.7	221.1	234.7	199.5	207.0	221.4	
			SHC	199.5	236.7	256.4	194.3	229.1	246.2	187.8	221.1	234.7	179.9	207.0	221.4	
	67		TC	270.2	269.3	268.3	257.0	256.1	255.2	242.1	241.0	240.3	224.5	223.5	223.1	
			SHC	157.6	197.1	235.6	152.7	192.6	231.0	147.3	187.2	225.3	141.0	181.0	215.6	
	72	TC	294.1	293.1	292.2	280.7	279.7	278.4	265.9	264.7	263.8	248.9	247.6	246.6		
		SHC	114.8	154.6	193.9	110.3	150.4	190.0	105.4	145.6	185.5	99.7	140.1	180.2		
	76	TC	–	313.1	312.3	–	299.3	298.2	–	283.8	282.8	–	266.7	265.4		
		SHC	–	120.2	159.6	–	116.0	155.9	–	111.4	151.5	–	106.2	146.6		
	9000 CFM	EAT (wb)	58	TC	238.5	252.5	266.0	226.8	241.6	255.6	213.1	228.2	243.0	197.5	213.0	229.2
				SHC	238.5	252.5	266.0	226.8	241.6	255.6	213.1	228.2	243.0	197.5	213.0	229.2
62			TC	253.0	254.1	266.3	238.6	241.6	255.7	221.0	228.4	243.3	201.1	213.2	229.4	
			SHC	211.9	249.1	266.3	206.2	241.6	255.7	199.2	228.4	243.3	164.2	213.2	229.4	
67			TC	276.9	275.8	274.8	263.0	261.8	261.0	246.5	245.2	246.6	228.2	225.9	229.6	
			SHC	165.6	209.9	252.2	160.7	205.1	247.0	154.9	199.3	238.5	132.3	192.7	229.6	
72		TC	302.2	301.0	299.7	287.9	286.6	285.4	272.3	270.9	269.6	254.3	252.9	251.6		
		SHC	118.2	162.8	206.8	113.5	158.4	202.9	108.5	153.4	198.0	102.7	147.8	165.1		
76		TC	–	322.0	320.8	–	307.7	306.1	–	291.4	289.9	–	275.1	272.5		
		SHC	–	124.5	168.7	–	120.4	164.9	–	115.6	160.5	–	110.9	155.3		
10,000 CFM		EAT (wb)	58	TC	245.7	259.8	273.9	233.8	248.7	263.2	219.8	235.3	250.5	203.7	219.8	236.5
				SHC	245.7	259.8	273.9	233.8	248.7	263.2	219.8	235.3	250.5	203.7	219.8	236.5
	62		TC	256.8	260.7	274.2	242.2	249.0	263.3	224.6	235.6	250.6	205.6	220.0	236.8	
			SHC	223.8	258.4	274.2	218.1	249.0	263.3	211.0	235.6	250.6	199.3	220.0	236.8	
	67		TC	280.8	279.6	266.3	266.6	265.4	265.8	249.9	248.6	251.0	231.4	229.8	237.3	
			SHC	173.2	221.8	266.3	168.3	217.0	258.7	162.6	211.4	250.7	156.4	204.7	237.3	
	72	TC	306.4	305.0	274.8	292.1	290.6	289.3	276.0	274.3	273.0	257.5	256.0	254.6		
		SHC	121.2	170.1	252.2	116.6	165.9	214.8	111.5	161.0	210.0	105.7	155.4	204.5		
	76	TC	–	326.2	299.7	–	311.4	310.0	–	295.2	293.2	–	277.0	275.3		
		SHC	–	128.2	206.8	–	124.0	172.9	–	119.5	168.9	–	114.3	163.8		

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 (1000 Btuh) Gross
- TC – Total capacity (1000 Btuh) Gross

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

Table 12 – COOLING CAPACITIES

2-STAGE COOLING

20 TONS (cont)

50TC–E24 (20 TONS) – UNIT WITH HUMIDI–MIZER IN SUBCOOLING MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		6,000			8,000			10,000		
		Air Entering Evaporator – Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	263.0	240.4	217.7	301.0	274.0	246.9	336.9	305.6	274.4
	SHC	125.3	151.6	178.0	144.4	171.1	198.0	160.0	186.9	213.9
	kW	15.63	15.20	14.65	15.91	15.62	14.98	16.26	15.92	15.21
85	TC	248.2	226.1	204.0	279.2	252.9	226.6	308.4	278.2	248.0
	SHC	98.9	131.7	164.5	118.6	152.0	185.3	134.6	168.4	202.2
	kW	17.50	17.04	16.50	17.74	17.51	16.75	18.08	17.73	17.03
95	TC	233.4	211.8	190.2	257.3	231.8	206.4	279.8	250.7	221.5
	SHC	72.4	111.8	151.1	92.7	132.8	172.9	109.3	149.9	190.6
	kW	19.36	18.96	18.35	19.61	19.37	18.67	20.02	19.62	18.97
105	TC	218.6	197.5	176.5	235.4	210.7	186.1	251.3	223.2	195.1
	SHC	46.0	91.8	137.7	66.9	113.6	160.4	83.9	131.4	178.9
	kW	21.23	20.76	20.18	21.53	21.22	20.52	21.91	21.52	20.77
115	TC	203.7	183.3	162.8	213.5	189.7	165.8	222.7	195.7	168.7
	SHC	19.5	71.9	124.2	41.0	94.4	147.9	58.5	112.9	157.2
	kW	23.02	22.58	22.02	23.42	23.02	22.38	23.73	23.41	22.57

50TC–E24 (20 TONS) – UNIT WITH HUMIDI–MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative Humidity)			(56% Relative Humidity)			(60% Relative Humidity)		
		Air Entering Evaporator – Cfm								
		6,000	8,000	10,000	6,000	8,000	10,000	6,000	8,000	10,000
80	TC	91.50	100.80	109.50	95.80	105.70	112.40	102.30	110.80	118.60
	SHC	12.30	31.20	44.50	0.90	15.10	25.70	-6.50	3.60	13.90
	kW	14.82	15.01	15.24	15.35	15.45	15.52	15.56	15.65	15.73
75	TC	94.00	103.40	112.00	98.70	108.10	115.10	104.70	113.10	121.10
	SHC	13.60	32.40	45.70	2.00	16.00	26.60	-5.60	4.70	15.10
	kW	14.90	15.07	15.33	15.43	15.56	15.64	15.69	15.77	15.85
70	TC	96.50	106.00	114.30	100.90	110.60	117.20	107.20	115.80	123.50
	SHC	14.50	33.20	45.70	3.30	17.30	28.00	-4.00	5.90	16.20
	kW	14.97	15.17	15.41	15.50	15.66	15.75	15.80	15.87	15.94
60	TC	101.80	111.30	119.30	106.20	115.60	122.20	112.60	119.40	128.00
	SHC	16.70	35.50	48.60	5.60	19.40	30.30	-1.80	8.20	18.50
	kW	15.14	15.32	15.58	15.66	15.88	15.97	16.05	16.10	16.19
50	TC	107.20	116.40	124.30	111.50	120.70	127.30	117.70	125.20	132.90
	SHC	18.60	37.60	50.70	8.00	22.00	32.70	0.50	10.50	21.00
	kW	15.27	15.46	15.76	15.81	16.10	16.23	16.27	16.34	16.41
40	TC	112.20	121.80	129.20	116.60	125.70	132.00	123.20	130.00	138.00
	SHC	21.80	39.50	52.90	10.20	24.40	35.20	2.90	13.00	23.40
	kW	15.42	15.63	15.93	15.96	16.32	16.44	16.52	16.57	16.65

LEGEND

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

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
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

50TC–D28				AMBIENT TEMPERATURE (F)												
				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	TC	257.3	266.5	279.6	247.5	255.4	269.0	231.5	243.3	257.2	214.3	229.2	243.7	
			SHC	247.5	266.5	279.6	231.1	255.4	269.0	223.5	243.3	257.2	213.2	229.2	243.7	
		62	TC	281.4	280.5	280.6	267.5	267.0	269.3	251.3	251.0	257.6	232.7	232.5	244.1	
			SHC	208.2	244.0	278.0	202.3	238.4	269.3	195.8	231.5	257.6	188.1	223.4	244.1	
		67	TC	307.4	306.4	305.7	293.0	292.2	291.4	276.9	276.2	275.4	259.7	259.2	258.8	
			SHC	168.7	205.7	242.3	163.2	200.3	236.9	157.1	194.4	230.7	150.6	188.4	224.8	
	72	TC	333.9	333.2	332.5	320.1	319.3	318.6	304.5	303.7	302.7	287.2	285.3	284.5		
		SHC	128.1	165.4	202.3	123.1	160.6	197.8	117.6	155.1	192.5	111.5	149.0	186.6		
	76	TC	–	356.0	355.2	–	342.0	341.2	–	326.0	325.2	–	308.0	307.4		
		SHC	–	132.7	169.9	–	128.1	165.6	–	123.0	160.7	–	117.3	154.5		
	8,750 CFM	EAT (wb)	58	TC	269.8	280.2	294.4	255.3	268.9	283.2	241.1	256.1	270.7	225.5	241.3	257.3
				SHC	257.9	280.2	294.4	250.4	268.9	283.2	241.1	256.1	270.7	225.5	241.3	257.3
62			TC	289.9	289.3	294.6	275.3	274.9	283.6	258.7	258.2	271.0	238.8	241.6	257.6	
			SHC	224.2	265.0	294.6	218.6	258.6	283.6	212.0	251.7	271.0	203.9	241.6	257.6	
67			TC	316.2	315.7	314.5	301.7	300.8	299.8	285.1	284.2	283.4	266.7	266.0	265.2	
			SHC	179.0	221.6	263.1	173.5	216.4	257.9	167.5	210.5	251.9	161.0	204.5	245.1	
72		TC	343.7	342.7	341.6	315.3	327.9	327.0	313.1	311.4	310.4	294.3	293.2	292.2		
		SHC	132.4	175.4	217.7	127.6	170.7	213.3	122.0	165.3	208.3	115.6	159.2	202.5		
76		TC	–	366.0	364.9	–	351.2	350.1	–	334.2	333.2	–	315.4	314.3		
		SHC	–	138.0	180.7	–	133.4	176.5	–	128.2	171.6	–	122.5	166.1		
10,000 CFM		EAT (wb)	58	TC	277.1	291.8	306.8	264.9	280.2	295.3	251.2	267.0	282.3	235.1	252.2	268.1
				SHC	275.3	291.8	306.8	264.9	280.2	295.3	251.2	267.0	282.3	235.1	252.2	268.1
	62		TC	296.8	296.0	307.2	281.8	281.8	295.6	264.7	267.1	282.6	244.9	252.4	268.4	
			SHC	239.8	283.9	307.2	234.0	276.8	295.6	227.5	267.1	282.6	219.4	252.4	268.4	
	67		TC	323.5	322.6	321.4	308.5	307.4	306.5	291.3	290.2	289.3	272.5	271.5	270.8	
			SHC	188.8	236.9	282.9	183.5	231.9	277.4	177.5	226.1	271.2	171.2	219.7	264.3	
	72	TC	351.8	350.5	349.2	336.6	335.4	334.1	319.7	318.3	317.1	300.2	298.9	297.8		
		SHC	136.6	185.1	232.8	131.6	180.4	228.6	126.0	175.1	223.7	119.7	169.1	217.9		
	76	TC	–	374.2	372.8	–	358.6	357.3	–	340.9	339.7	–	321.3	320.1		
		SHC	–	143.1	191.2	–	138.5	187.1	–	133.3	182.3	–	127.6	176.8		
	11,250 CFM	EAT (wb)	58	TC	285.8	301.5	317.0	273.8	289.0	305.1	259.8	276.1	291.7	244.0	260.9	277.4
				SHC	285.8	301.5	317.0	273.8	289.0	305.1	259.8	276.1	291.7	244.0	260.9	277.4
62			TC	302.2	302.3	317.4	286.3	289.5	305.4	269.6	276.4	208.4	249.3	261.1	277.6	
			SHC	254.3	300.2	317.4	245.8	289.5	305.4	242.1	276.4	208.4	201.5	261.1	277.6	
67			TC	328.7	327.7	326.7	313.5	312.2	311.1	296.0	294.8	294.3	277.5	275.7	277.9	
			SHC	197.9	251.1	301.0	192.8	246.4	295.4	187.0	240.4	288.0	160.9	234.6	277.9	
72		TC	357.4	355.9	354.4	341.8	340.3	339.0	324.4	322.8	321.6	304.8	303.2	302.0		
		SHC	140.2	193.9	246.7	135.2	189.4	242.8	129.7	184.3	238.2	123.5	178.4	198.1		
76		TC	–	379.7	378.2	–	363.9	362.3	–	345.7	344.2	–	327.5	324.0		
		SHC	–	147.6	200.8	–	143.1	196.9	–	138.0	192.3	–	132.9	187.1		
12,500 CFM		EAT (wb)	58	TC	293.7	309.8	325.6	280.3	297.3	313.5	267.0	283.5	299.8	250.8	268.3	284.8
				SHC	293.7	309.8	325.6	280.3	297.3	313.5	267.0	283.5	299.8	250.8	268.3	284.8
	62		TC	310.5	310.2	326.1	290.7	297.6	313.9	273.7	283.7	300.1	253.1	268.5	285.0	
			SHC	264.9	310.1	326.1	262.1	297.6	313.9	255.7	283.7	300.1	246.9	268.5	285.0	
	67		TC	333.1	331.7	330.9	317.5	316.2	315.9	299.8	298.7	300.3	280.7	279.6	285.5	
			SHC	206.6	264.7	317.6	201.9	260.2	311.0	196.2	254.9	300.3	190.0	248.1	285.5	
	72	TC	362.1	360.3	358.7	346.0	344.3	343.0	328.2	326.6	325.1	308.4	306.6	305.3		
		SHC	143.6	202.4	260.2	138.7	198.1	256.5	133.2	193.2	252.1	127.1	187.5	246.5		
	76	TC	–	384.3	382.5	–	368.1	366.3	–	349.5	347.8	–	331.0	328.7		
		SHC	–	151.9	210.1	–	147.5	206.4	–	142.5	201.9	–	137.4	195.2		

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 (1000 Btuh) Gross
- TC – Total capacity (1000 Btuh) Gross

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

50TC–E28 (25 TONS) – UNIT WITH HUMIDI–MIZER IN SUBCOOLING MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		7,500			10,000			12,500		
		Air Entering Evaporator – Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	335.3	305.5	275.8	368.3	334.4	300.5	398.1	360.5	322.9
	SHC	149.6	181.7	213.7	172.8	205.5	238.2	191.7	224.9	258.2
	kW	19.50	18.70	17.70	19.50	18.70	17.70	19.70	18.80	17.90
85	TC	316.3	287.0	257.7	341.5	308.4	275.3	364.3	327.8	291.2
	SHC	120.8	160.5	200.2	144.6	185.2	225.8	164.0	205.4	246.7
	kW	21.90	21.30	20.10	22.30	21.30	20.30	22.50	21.70	20.60
95	TC	297.3	268.5	239.6	314.7	282.4	250.1	330.5	295.0	259.5
	SHC	92.1	139.4	186.7	116.4	164.9	213.5	136.3	185.8	235.3
	kW	24.30	23.50	22.50	24.40	23.50	22.60	24.40	23.60	22.50
105	TC	278.2	249.9	221.6	287.9	256.4	224.9	296.7	262.3	227.8
	SHC	63.3	118.2	173.2	88.3	144.7	201.1	108.7	166.3	223.9
	kW	26.70	26.00	25.00	27.30	26.00	25.00	27.30	26.10	25.10
115	TC	259.2	231.4	203.5	261.1	230.4	199.7	262.9	229.5	196.1
	SHC	34.5	97.1	159.7	60.1	124.4	188.7	81.0	146.7	191.2
	kW	28.70	28.00	27.10	29.30	28.10	26.90	29.10	27.90	27.20

50TC–E28 (25 TONS) – UNIT WITH HUMIDI–MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Entering Condenser (Edb)		AIR ENTERING EVAPORATOR (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative Humidity)			(56% Relative Humidity)			(60% Relative Humidity)		
		Air Entering Evaporator – Cfm								
		7,500	10,000	12,500	7,500	10,000	12,500	7,500	10,000	12,500
80	TC	132.40	136.80	148.40	138.20	142.40	154.60	144.30	146.40	162.50
	SHC	37.80	61.50	85.50	21.80	44.40	52.40	16.10	32.10	48.90
	kW	17.90	18.15	18.21	18.05	18.33	18.43	18.26	18.55	18.62
75	TC	138.00	142.20	154.10	143.50	148.00	160.30	148.90	151.00	167.10
	SHC	44.20	68.00	91.80	28.10	51.50	58.80	22.70	38.20	56.00
	kW	17.77	18.00	18.07	17.92	18.19	18.29	18.14	18.40	18.48
70	TC	143.80	148.10	160.00	149.30	154.00	165.90	155.50	157.60	173.80
	SHC	50.50	73.80	98.10	34.20	56.50	65.30	28.30	44.00	62.30
	kW	17.63	17.86	17.93	17.78	18.04	18.14	18.03	18.26	18.34
60	TC	154.80	159.50	171.10	160.20	165.20	177.20	166.70	168.80	185.10
	SHC	63.10	84.50	110.10	46.50	69.50	75.70	41.40	56.50	74.30
	kW	17.35	17.58	17.65	17.50	17.76	17.85	17.70	17.97	18.04
50	TC	166.30	170.50	181.20	171.30	176.40	188.40	178.00	180.00	196.40
	SHC	75.80	96.50	122.20	58.30	79.80	87.80	53.70	69.10	85.90
	kW	17.06	17.30	17.37	17.22	17.46	17.56	17.42	17.69	17.76
40	TC	177.50	181.70	192.30	182.40	187.60	199.70	189.30	191.20	207.70
	SHC	85.70	109.80	134.30	71.50	92.30	100.50	66.10	79.50	97.90
	kW	16.76	17.01	17.09	16.93	17.18	17.28	17.14	17.41	17.47

LEGEND

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

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
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 – COOLING CAPACITIES

2-STAGE COOLING

27.5 TONS

50TC–D30			Ambient Temperature (F)													
			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	TC	298.0	298.0	336.8	285.3	285.3	322.4	270.1	270.1	305.3	253.5	253.5	286.5	
		58	SHC	259.2	298.0	336.8	248.2	285.3	322.4	235.0	270.1	305.3	220.5	253.5	286.5	
		62	TC	318.3	318.3	318.3	301.9	301.9	309.0	282.4	282.4	299.5	260.5	260.5	288.5	
		62	SHC	233.5	275.2	316.9	225.8	267.4	309.0	216.6	258.1	299.5	206.1	247.3	288.5	
		67	TC	352.3	352.3	352.3	335.9	335.9	335.9	317.1	317.1	317.1	294.0	294.0	294.0	
		67	SHC	193.3	235.0	276.8	186.4	228.3	270.1	178.7	220.5	262.4	169.3	211.1	252.9	
	72	TC	383.6	383.6	383.6	368.5	368.5	368.5	350.7	350.7	350.7	329.6	329.6	329.6		
	72	SHC	149.7	191.9	234.2	144.0	186.2	228.4	137.3	179.5	221.7	129.6	171.7	213.8		
	76	TC	–	404.0	404.0	–	390.3	390.3	–	373.1	373.1	–	353.4	353.4		
	76	SHC	–	154.8	200.2	–	150.2	195.6	–	144.5	189.9	–	138.0	183.2		
	8,750 CFM	EAT (wb)	58	TC	315.7	315.7	356.8	302.4	302.4	341.8	286.8	286.8	324.1	269.2	269.2	304.3
			58	SHC	274.6	315.7	356.8	263.0	302.4	341.8	249.4	286.8	324.1	234.2	269.2	304.3
62			TC	329.7	329.7	346.7	312.7	312.7	338.3	293.0	293.0	328.0	271.1	271.1	314.6	
62			SHC	251.3	299.0	346.7	243.3	290.8	338.3	233.7	280.9	328.0	222.0	268.3	314.6	
67			TC	363.1	363.1	363.1	346.4	346.4	346.4	327.1	327.1	327.1	303.7	303.7	303.7	
67			SHC	204.4	252.2	299.9	197.8	245.7	293.6	190.2	238.3	286.3	181.0	229.1	277.2	
72		TC	392.4	392.4	392.4	377.4	377.4	377.4	359.5	359.5	359.5	338.6	338.6	338.6		
72		SHC	153.8	201.6	249.3	148.4	196.3	244.3	141.9	190.0	238.0	134.5	182.7	230.8		
76		TC	–	410.9	410.9	–	397.4	397.4	–	380.0	380.0	–	359.9	359.9		
76		SHC	–	160.7	213.6	–	156.2	208.9	–	150.1	201.8	–	143.2	194.1		
10,000 CFM		EAT (wb)	58	TC	330.4	330.4	373.4	316.6	316.6	357.8	300.7	300.7	339.9	282.3	282.3	319.0
			58	SHC	287.4	330.4	373.4	275.4	316.6	357.8	261.6	300.7	339.9	245.6	282.3	319.0
	62		TC	338.9	338.9	373.5	321.8	321.8	364.5	301.9	301.9	354.3	282.6	282.6	331.6	
	62		SHC	267.2	320.3	373.5	258.9	311.7	364.5	249.5	301.9	354.3	233.5	282.6	331.6	
	67		TC	371.1	371.1	371.1	354.3	354.3	354.3	334.7	334.7	334.7	310.9	310.9	310.9	
	67		SHC	214.5	267.9	321.3	208.2	262.0	315.7	200.9	254.9	308.9	191.9	246.0	300.1	
	72	TC	398.6	398.6	398.6	383.8	383.8	383.8	365.7	365.7	365.7	344.9	344.9	344.9		
	72	SHC	157.3	210.1	262.8	152.2	205.4	258.7	145.8	199.4	252.9	138.7	192.5	246.3		
	76	TC	–	415.7	415.7	–	402.3	402.3	–	384.9	384.9	–	364.5	364.5		
	76	SHC	–	165.2	223.6	–	160.5	218.0	–	154.6	211.3	–	147.8	203.9		
	11,250 CFM	EAT (wb)	58	TC	342.7	342.7	387.3	328.7	328.7	371.4	312.7	312.7	353.3	293.5	293.5	331.7
			58	SHC	298.1	342.7	387.3	285.9	328.7	371.4	272.0	312.7	353.3	255.3	293.5	331.7
62			TC	346.8	346.8	396.7	329.7	329.7	387.0	313.0	313.0	367.3	293.8	293.8	344.8	
62			SHC	281.1	338.9	396.7	272.5	329.7	387.0	258.6	313.0	367.3	242.8	293.8	344.8	
67			TC	377.2	377.2	377.2	360.4	360.4	360.4	340.7	340.7	340.7	316.6	316.6	321.8	
67			SHC	223.7	282.5	341.2	217.9	277.2	336.5	210.8	270.5	330.2	202.1	261.9	321.8	
72		TC	403.1	403.1	403.1	388.6	388.6	388.6	370.3	370.3	370.3	349.5	349.5	349.5		
72		SHC	160.3	217.7	275.1	155.5	213.7	271.9	149.3	208.0	266.7	142.4	201.4	260.5		
76		TC	–	419.3	419.3	–	406.0	406.0	–	388.5	388.5	–	367.8	367.8		
76		SHC	–	168.8	231.3	–	164.4	226.3	–	158.6	220.0	–	151.9	212.8		
12,500 CFM		EAT (wb)	58	TC	353.0	353.0	398.9	338.8	338.8	382.9	322.5	322.5	364.5	303.1	303.1	342.5
			58	SHC	307.1	353.0	398.9	294.7	338.8	382.9	280.6	322.5	364.5	263.7	303.1	342.5
	62		TC	353.9	353.9	415.3	339.1	339.1	397.9	322.8	322.8	378.9	303.4	303.4	356.0	
	62		SHC	292.4	353.9	415.3	280.2	339.1	397.9	266.8	322.8	378.9	250.7	303.4	356.0	
	67		TC	381.9	381.9	381.9	365.2	365.2	365.2	345.3	345.3	350.4	321.3	321.3	342.2	
	67		SHC	232.3	296.1	360.0	227.0	291.6	356.3	220.1	285.2	350.4	211.5	276.8	342.2	
	72	TC	406.6	406.6	406.6	392.2	392.2	392.2	373.9	373.9	373.9	352.9	352.9	352.9		
	72	SHC	163.1	224.8	286.6	158.5	221.4	284.3	152.5	216.1	279.6	145.7	209.8	273.9		
	76	TC	–	422.1	422.1	–	408.9	408.9	–	391.2	391.2	–	370.3	370.3		
	76	SHC	–	172.2	238.5	–	167.9	234.0	–	162.3	228.1	–	155.7	221.2		

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

NOTES: 1. See Minimum–Maximum Airflow Ratings in Table 3. Do not operate outside these limits.
 2. Humidi–MiZer not available for 27.5 ton units.

Table 16 – STATIC PRESSURE ADDERS (IN. WG) - FACTORY OPTIONS AND/OR ACCESSORIES

Humidi-MiZer® System

MODEL SIZES 17 & 20											
CFM	3750	4750	5750	6750	7750	8750	9750	10750	110750	12750	13750
Static Pressure Adder (in. wg)	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.14	0.16	0.19	0.21

MODEL SIZES 24 & 28											
CFM	3750	4750	5750	6750	7750	8750	9750	10750	110750	12750	13750
Static Pressure Adder (in. wg)	0.02	0.03	0.04	0.05	0.07	0.08	0.09	0.11	0.13	0.14	0.16

Economizer - Horizontal Duct Configuration

MODEL SIZES 17–30										
CFM	4750	5750	6750	7750	8750	9750	10750	11750	12750	13750
Static Pressure Adder (in. wg)	0.00	0.01	0.01	0.02	0.03	0.05	0.06	0.07	0.09	0.11

Electric Heaters - Horizontal Duct Configuration

MODEL SIZES 17–30										
CFM	4750	5750	6750	7750	8750	9750	10750	11750	12750	13750
25 kW Heater	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.11	0.13
50 kW Heater	0.02	0.03	0.05	0.07	0.10	0.12	0.15	0.19	0.22	0.26
75 kW Heater	0.03	0.05	0.08	0.11	0.14	0.18	0.23	0.28	0.34	0.40

DAMPER, BAROMETRIC RELIEF AND PE PERFORMANCE

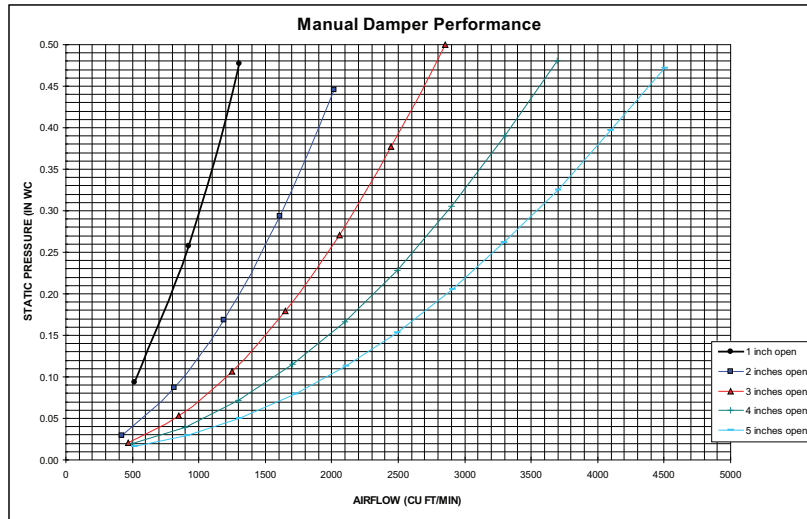


Fig. 8 - Manual Damper Performance

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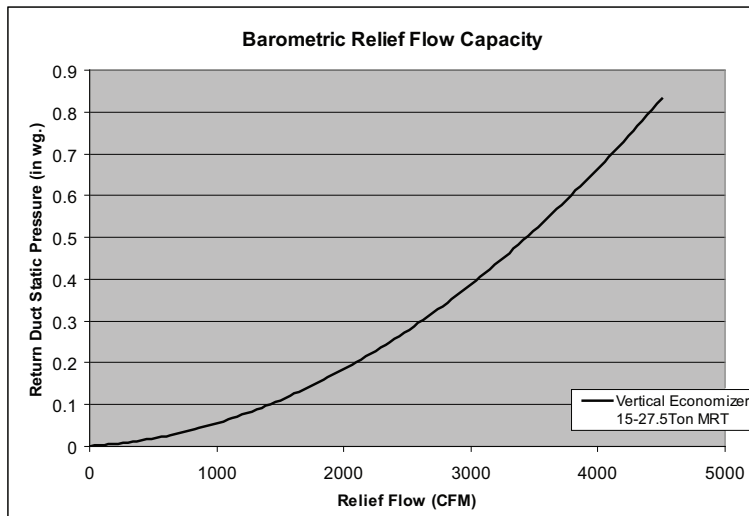


Fig. 9 - Barometric Relief Flow Capacity

C11307

Power Exhaust Fan Performance

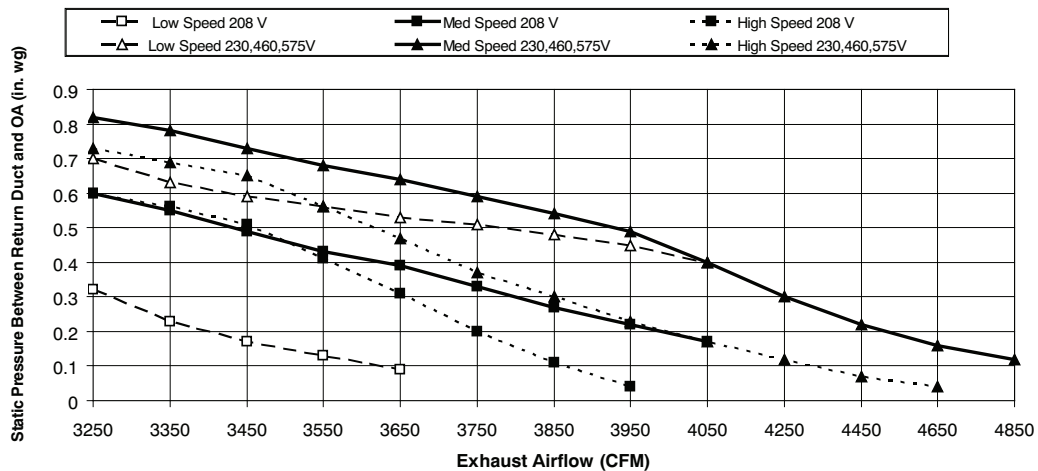


Fig. 10 - Power Exhaust Fan Performance

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 17 – 50TC-*17

VERTICAL 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	436	0.60	529	0.89	611	1.20	684	1.54	749	1.90
4900	458	0.72	546	1.02	625	1.36	696	1.72	760	2.09
5250	479	0.85	561	1.16	638	1.51	708	1.88	771	2.27
5600	503	1.01	580	1.33	654	1.70	721	2.09	784	2.50
6000	525	1.17	598	1.50	668	1.88	734	2.28	795	2.71
6400	551	1.38	619	1.72	686	2.11	750	2.53	810	2.97
6750	574	1.58	638	1.93	702	2.33	764	2.76	822	3.22
7100	601	1.84	661	2.20	722	2.61	781	3.06	838	3.53
7500	625	2.09	682	2.46	740	2.88	797	3.34	852	3.82
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	808	2.27	864	2.66	916	3.06	965	3.38	<i>1012</i>	<i>3.92</i>
4900	819	2.48	874	2.89	926	3.31	975	3.74	<i>1021</i>	<i>4.19</i>
5250	829	2.68	884	3.10	935	3.53	983	3.98	<i>1029</i>	<i>4.44</i>
5600	841	2.92	895	3.36	946	3.81	994	4.28	<i>1040</i>	<i>4.76</i>
6000	852	3.15	906	3.61	956	4.08	1003	4.56	–	–
6400	865	3.43	918	3.91	968	4.40	<i>1015</i>	<i>4.90</i>	–	–
6750	878	3.70	929	4.19	979	4.69	–	–	–	–
7100	892	4.03	943	4.53	–	–	–	–	–	–
7500	905	4.33	955	4.88	–	–	–	–	–	–
Std Static Motor and Drive – 514–680 RPM, Max BHP 2.9					BOLD – Requires alternate standard static drive package.					
Medium Static Motor and Drive – 679–863 RPM, Max BHP 3.7					<i>ITALIC</i> – Requires high static drive package with different motor pulley.					
High Static Motor and Drive – 826–1009 RPM, Max BHP 4.9					– Outside operating range					

Table 18 – 50TC-*20

VERTICAL 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	479	0.85	561	1.16	638	1.51	708	1.88	771	2.27
5700	506	1.03	582	1.35	658	1.72	723	2.11	785	2.53
6100	535	1.25	605	1.58	734	1.96	740	2.37	801	2.81
6500	561	1.46	627	1.81	675	2.20	756	2.63	815	3.08
7000	591	1.74	652	2.10	693	2.50	775	2.94	832	3.41
7500	622	2.05	679	2.42	714	2.84	795	3.30	850	3.78
7900	653	2.40	706	2.78	737	3.21	816	3.68	869	4.18
8300	681	2.75	731	3.14	783	3.58	836	4.06	887	4.57
8750	713	3.18	760	3.58	809	4.03	859	4.53	908	5.05
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	829	2.68	884	3.10	935	4.07	983	3.98	1029	4.44
5700	843	2.95	897	3.40	947	4.42	995	4.32	1041	4.80
6100	857	3.26	910	3.72	960	4.76	1008	4.68	1053	5.18
6500	871	3.54	923	4.03	972	5.13	1019	5.03	1064	5.55
7000	886	3.90	938	4.40	987	5.65	1033	5.45	1077	5.98
7500	903	4.29	953	4.81	1001	6.22	1047	5.89	1091	6.45
7900	921	4.71	970	5.25	1017	6.72	1062	6.38	1105	6.96
8300	937	5.11	985	5.67	1131	7.26	1076	6.83	1119	7.43
8750	956	5.61	1003	6.19	1048	6.78	1092	7.39	1134	8.01
Std Static Motor and Drive – 622–822 RPM, Max BHP 3.7					BLACK	Requires high static drive package with different motor pulley; Confirm Max BHP coverage based on unit voltage selected.				
Medium Static Motor and Drive – 713–879 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3					<u>UNDERSCORE</u>	Operation point covered by factory package; Confirm Max BHP coverage based on unit voltage selected.				
High Static Motor and Drive – 882–1078 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3					BOLD	Requires alternate standard static drive package.				
					<i>ITALIC</i>	Requires high static drive package with different motor pulley.				

FAN PERFORMANCE (cont)

Table 19 – 50TC-*24

VERTICAL 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	519	1.13	609	1.48	682	1.80	747	2.13	806	2.46
6500	545	1.36	633	1.75	705	2.11	768	2.46	826	2.82
7000	571	1.63	658	2.06	728	2.45	791	2.83	847	3.21
7500	597	1.93	683	2.40	753	2.83	814	3.24	869	3.65
8000	624	2.27	709	2.78	777	3.25	837	3.69	892	4.13
8500	650	2.64	734	3.20	802	3.71	861	4.19	915	4.66
9000	677	3.05	760	3.67	827	4.21	886	4.73	939	5.23
9500	703	3.50	786	4.17	853	4.76	910	5.31	963	5.85
10000	730	3.99	813	4.73	878	5.36	935	5.95	987	6.52
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	861	2.80	912	3.15	962	3.50	1008	3.86	1053	4.23
6500	880	3.18	930	3.55	978	3.92	1024	4.30	1068	4.69
7000	900	3.60	949	3.99	996	4.38	1041	4.78	1085	5.19
7500	921	4.06	969	4.47	1016	4.89	1060	5.31	1102	5.74
8000	943	4.57	990	5.00	1036	5.44	1079	5.89	1121	6.34
8500	965	5.12	1012	5.58	1056	6.05	1099	6.52	1140	6.99
9000	988	5.72	1034	6.21	1078	6.70	1120	7.19	1160	7.69
9500	1011	6.37	1057	6.89	1100	7.41	1141	7.93	<i>1181</i>	<i>8.45</i>
10000	1035	7.07	1080	7.62	1123	8.17	1163	8.72	–	–
Std Static Motor and Drive – 690–863 RPM, Max BHP 4.9					BOLD – Requires alternate standard static drive package.					
Medium Static Motor and Drive – 835–1021 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3					<i>ITALIC</i> – Requires high static drive package with different motor pulley.					
High Static Motor and Drive – 941–1176 RPM, Voltage 208V/230V/460V/575V, Max BHP 10.5/11.9/11.9/11.0					– Outside operating range					

Table 20 – 50TC-*28

VERTICAL 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	555	1.35	664	1.85	744	2.29	812	2.70	872	3.12
8150	579	1.62	690	2.19	771	2.68	838	3.14	889	3.60
8750	599	1.89	714	2.54	795	3.08	863	3.59	923	4.08
9400	619	2.20	739	2.96	822	3.56	889	4.12	949	4.65
10000	635	2.50	762	3.38	846	4.04	914	4.65	974	5.23
10650	649	2.82	787	3.86	872	4.61	940	5.28	1000	5.91
11250	653	3.09	808	4.35	895	5.17	965	5.90	1025	6.58
11900	647	3.31	831	4.91	921	5.83	991	6.63	1051	7.37
12500	641	3.51	851	5.46	943	6.48	1015	7.34	1075	8.14
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	927	3.53	978	3.94	1026	4.36	1071	4.79	1114	5.21
8150	953	4.04	1003	4.49	1051	4.94	1096	5.39	1138	5.85
8750	977	4.56	1027	5.04	1074	5.53	1119	6.01	1161	6.49
9400	1003	5.18	1053	5.70	1100	6.21	1144	6.73	<i>1186</i>	<i>7.25</i>
10000	1028	5.80	1077	6.35	1124	6.90	1168	7.45	–	–
10650	<i>1054</i>	<i>6.52</i>	<i>1104</i>	<i>7.12</i>	1150	7.71	–	–	–	–
11250	<i>1079</i>	<i>7.24</i>	1128	7.88	1174	8.51	–	–	–	–
11900	<i>1105</i>	<i>8.07</i>	1150	8.76	–	–	–	–	–	–
12500	1130	8.90	<i>1179</i>	9.63	–	–	–	–	–	–
Std Static Motor and Drive – 717–911 RPM, Max BHP 4.9					BOLD – Requires alternate standard static drive package.					
Medium Static Motor and Drive – 913–1116 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3					<u>UNDERScore</u> – Operation point covered by factory package; Confirm Max BHP coverage based on unit voltage selected.					
High Static Motor and Drive – 941–1176 RPM, Voltage 208V/230V/460V/575V, Max BHP 10.5/11.9/11.9/11.0					<i>ITALIC</i> – Requires high static drive package with different motor pulley.					
					– Outside operating range					

FAN PERFORMANCE (cont)

Table 21 – 50TC-*30

VERTICAL SUPPLY / RETURN

27.5 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
8250	582	1.66	694	2.25	775	2.75	842	3.22	902	3.67
8950	605	1.98	722	2.67	803	3.32	871	3.75	931	4.25
9650	626	2.32	749	3.13	832	3.76	900	4.34	959	4.89
10300	642	2.65	774	3.60	858	4.30	926	4.93	986	5.54
11000	653	2.99	800	4.14	886	4.93	955	5.64	1014	6.29
11700	647	3.22	824	4.73	913	5.62	983	6.40	1043	7.12
12400	641	3.47	848	5.36	940	6.37	1011	7.22	1071	8.01
13050	635	3.70	868	5.98	964	7.11	1036	8.04	1097	8.90
13750	629	3.96	888	6.67	989	7.95	1063	8.99	1125	9.92
CFM	Available External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8250	957	4.13	1007	4.58	1055	5.04	1099	5.49	1142	5.95
8950	985	4.75	1035	5.24	1082	5.73	1126	6.22	1169	6.72
9650	1013	5.43	1063	5.96	1110	6.49	1154	7.02	1196	7.56
10300	1040	6.12	1089	6.70	1136	7.27	1180	7.83	1221	8.40
11000	1068	6.93	1118	7.55	1164	8.17	1208	8.77	1249	9.38
11700	1097	7.81	1147	8.48	1193	9.14	1236	9.79	1277	10.44
12400	1126	8.76	1175	9.48	1221	10.19	1265	10.89	–	–
13050	1152	9.71	1202	10.48	1248	11.24	1291	11.99	–	–
13750	1180	10.79	1230	11.63	1277	12.45	–	–	–	–
Std Static Motor and Drive – 751–954 RPM, Max BHP 6.5					BOLD – Requires alternate standard static drive package.					
Medium Static Motor and Drive – 973–1175 RPM, Voltage 208V/230V/460V/575V, Max BHP 10.5/11.9/11.9/11.0					BLACK Requires high static drive package with different motor pulley; Confirm Max BHP coverage based on unit voltage selected.					
High Static Motor and Drive – 1015 –1300 RPM, Voltage 208V/230V/460V/575V, Max BHP 11.9/12.9/12.9/14.1					– Outside operating range					

FAN PERFORMANCE (cont)

Table 22 – PULLEY ADJUSTMENT - VERTICAL

50TC SIZE	MOTOR/DRIVE COMBO	MOTOR PULLEY TURNS OPEN										
		0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
17	Standard Static	680	663	647	630	614	597	580	564	547	531	514
	Medium Static	863	845	826	808	789	771	753	734	716	697	679
	High Static	1009	991	972	954	936	918	899	881	863	844	826
20	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
24	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
28	Standard Static	911	892	872	853	833	814	795	775	756	736	717
	Medium Static	1116	1096	1075	1055	1035	1015	994	974	954	933	913
	High Static	1176	1153	1129	1106	1082	1059	1035	1012	988	965	941
30	Standard Static	954	934	913	893	873	853	832	812	792	771	751
	Medium Static	1175	1155	1135	1114	1094	1074	1054	1034	1013	993	973
	High Static	1299	1271	1242	1213	1185	1185	1129	1100	1072	1043	1015

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

■ – Factory settings

Legend and Notes for Tables 23 - 36

LEGEND:

- BRKR – Circuit breaker
- C.O. – Convenience outlet
- DISC – Disconnect
- FLA – Full load amps
- IFM – Indoor fan motor
- LRA – Locked rotor amps
- MCA – Minimum circuit amps
- OFM – Outdoor fan motor
- PE. – Power exhaust
- Pwrdr fr/ unit – Powered from unit
- PWRD C.O. – Powered convenience outlet
- UNPWR C.O. – Unpowered convenience 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. For 208/230 v units, where one value is shown it is the same for either 208 or 230 volts.
3. **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

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

Determine maximum deviation from average voltage.

(AB) 227 – 224 = 3 v

(BC) 231 – 227 = 4 v

(AC) 227 – 226 = 1 v

Maximum deviation is 4 v.

Determine percent of voltage imbalance.

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

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

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

ELECTRICAL INFORMATION

Table 23 – 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR

15 - 27.5 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-*17	208-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	88.6%	8.4
										MED	87.0%	10.6
										HIGH	82.9%	13.6
	230-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	88.6%	8.3
										MED	87.0%	10.6
										HIGH	82.9%	12.7
	460-3-60	414	506	14.7	95	14.7	130	277	0.9	STD	88.6%	4.2
										MED	87.0%	5.3
										HIGH	82.9%	6.4
	575-3-60	518	633	12.2	80	11.3	94	397	0.6	STD	81.1%	2.8
										MED	81.1%	2.8
										HIGH	83.6%	5.6
50TC-*20	208-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	87.0%	10.6
										MED	89.5%	17.1
										HIGH-High Eff.	89.5%	17.1
	230-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	87.0%	10.6
										MED	89.5%	17.1
										HIGH-High Eff.	89.5%	17.1
	460-3-60	414	506	14.7	95	14.7	130	277	0.9	STD	87.0%	5.3
										MED	89.5%	8.6
										HIGH-High Eff.	89.5%	8.6
	575-3-60	518	633	12.2	80	11.3	94	397	0.6	STD	81.1%	2.8
										MED	83.6%	5.6
										HIGH-High Eff.	89.5%	7.6
50TC-*24	208-3-60	187	253	48.1	245	29.5	195	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	48.1	245	29.5	195	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	18.6	125	14.7	95	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	14.7	100	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 42

ELECTRICAL INFORMATION (cont)

Table 23 - 2-STAGE COOLING WITH SINGLE SPEED INDOOR FAN MOTOR

15 - 27.5 TONS (cont)

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-*28	208-3-60	187	253	48.1	245	48.1	245	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	48.1	245	48.1	245	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	18.6	125	18.6	125	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	14.7	100	14.7	100	397	0.6	STD	83.6%	5.6
										MED-High Eff.	89.5%	7.6
										HIGH-High Eff.	91.7%	9.5
50TC-*30	208-3-60	187	253	51.3	300	51.3	300	350	1.5	STD	89.5%	17.1
										MED-High Eff.	91.7%	28.5
										HIGH-High Eff.	91.7%	30.4
	230-3-60	187	253	51.3	300	51.3	300	350	1.5	STD	89.5%	17.1
										MED-High Eff.	91.7%	28.5
										HIGH-High Eff.	91.7%	30.4
	460-3-60	414	506	23.1	150	23.1	150	277	0.9	STD	89.5%	8.6
										MED-High Eff.	91.7%	14.3
										HIGH-High Eff.	91.7%	15.2
	575-3-60	518	633	19.9	109	19.9	109	397	0.6	STD	89.5%	7.6
										MED-High Eff.	91.7%	9.5
										HIGH-High Eff.	91.7%	12.4

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 24 – 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR

15 - 27.5 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-*17	208-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	85.0%	8.6
										MED	81.5%	10.8
										HIGH	83.6%	13.6
	230-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	85.0%	7.8
										MED	81.5%	9.8
										HIGH	83.6%	12.7
	460-3-60	414	506	14.7	95	14.7	130	277	0.9	STD	85.0%	3.8
										MED	81.5%	4.9
										HIGH	83.6%	6.4
	575-3-60	518	633	12.2	80	11.3	94	397	0.6	STD	81.1%	4.5
										MED	81.1%	4.5
										HIGH	83.6%	6.2
50TC-*20	208-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	81.5%	10.8
										MED	83.6%	13.6
										HIGH	89.5%	17.1
	230-3-60	187	253	29.5	195	28.2	239	350	1.5	STD	81.5%	9.8
										MED	83.6%	12.7
										HIGH	89.5%	17.1
	460-3-60	414	506	14.7	95	14.7	130	277	0.9	STD	81.5%	4.9
										MED	83.6%	6.4
										HIGH	89.5%	8.6
	575-3-60	518	633	12.2	80	11.3	94	397	0.6	STD	81.1%	4.5
										MED	83.6%	6.2
										HIGH	89.5%	7.6
50TC-*24	208-3-60	187	253	48.1	245	29.5	195	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	29.5	195	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	14.7	95	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	12.2	80	397	0.6	STD	83.6%	6.2
										MED	89.5%	7.6
										HIGH	91.7%	9.5
50TC-*28	208-3-60	187	253	48.1	245	48.1	245	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	48.1	245	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	18.6	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	14.7	100	397	0.6	STD	83.6%	6.2
										MED	89.5%	7.6
										HIGH	91.7%	9.5
50TC-*30	208-3-60	187	253	51.3	300	51.3	300	350	1.5	STD	89.5%	17.1
										MED	91.7%	28.5
										HIGH	91.7%	30.4
	230-3-60	187	253	51.3	300	51.3	300	350	1.5	STD	89.5%	17.1
										MED	91.7%	28.5
										HIGH	91.7%	30.4
	460-3-60	414	506	23.1	150	23.1	150	277	0.9	STD	89.5%	8.6
										MED	91.7%	14.3
										HIGH	91.7%	15.2
	575-3-60	518	633	19.9	109	19.9	109	397	0.6	STD	89.5%	7.6
										MED	91.7%	9.5
										HIGH	91.7%	12.4

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 25 – 50TC-*17

SINGLE SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
17	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	-	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	-	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	-	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 26 – 50TC-*20

SINGLE SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
20	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH- High Eff.	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	-	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH- High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 27 – 50TC-*24

SINGLE SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
24	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED- High Eff.	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH- High Eff.	282A00	25.0	23.0	78.3	-	057	-	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED- High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH- High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 28 – 50TC-*28

SINGLE SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
28	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED-High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH-High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED-High Eff.	282A00	25.0	23.0	78.3	-	-	-	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH-High Eff.	282A00	25.0	23.0	78.3	-	057	057	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED-High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH-High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 29 – 50TC-*30

SINGLE SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
30	208/230-3-60	STD- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD- High Eff.	282A00	25.0	23.0	78.3	057	057	057	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED- High Eff.	282A00	25.0	23.0	78.3	057	057	057	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH- High Eff.	282A00	25.0	23.0	78.3	057	057	057	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD- High Eff.	285A00	24.8	22.8	77.7	-	057	-	057
			286A00	49.6	45.6	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED- High Eff.	285A00	24.8	22.8	77.7	-	057	-	057
			286A00	49.6	45.6	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH- High Eff.	285A00	24.8	22.8	77.7	057	057	057	057
			286A00	49.6	45.6	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 30 – 50TC-*17

2-SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
17	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	-	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 31 – 50TC-*20

2-SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrdr fr/unit)	NO P.E.	w/ P.E. (pwrdr fr/unit)
20	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH-High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	-	-	-	-
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH-High Eff.	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH-High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 32 – 50TC-*24

2-SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
24	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED- High Eff.	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH- High Eff.	282A00	25.0	23.0	78.3	-	057	-	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED- High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH- High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 33 – 50TC-*28

2-SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00			
							NO C.O. Or Unpowered C.O.		w/PWRD C.O.	
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)
28	208/230-3-60	STD	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		MED- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD	282A00	25.0	23.0	78.3	-	-	-	-
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		MED- High Eff.	282A00	25.0	23.0	78.3	-	-	-	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
		HIGH- High Eff.	282A00	25.0	23.0	78.3	-	057	057	057
			283A00	50.0	45.9	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	-	057
			287A00	74.4	68.3	233.1	057	057	057	057
		MED- High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057
		HIGH- High Eff.	285A00	24.8	22.8	77.7	-	-	-	-
			286A00	49.6	45.6	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRIC HEAT - ELECTRICAL INFORMATION (cont)

Table 34 – 50TC-*30

2-SPEED INDOOR FAN MOTOR

Model Number 50TC-*	NOM. V-Ph-Hz	IFM TYPE	Electric Heater Part Number CRHEATERXXXXXX	Nominal (kW)	Application (kW)	Application Output (MBH)	Single Point or Junction Kit Part Number CRSINGLEXXA00				
							NO C.O. or Un- powered C.O.		w/PWRD C.O.		
							NO P.E.	w/ P.E. (pwrd fr/unit)	NO P.E.	w/ P.E. (pwrd fr/unit)	
30	208/230-3-60	STD- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056	
			280A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056	
			281A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056	
		MED- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	192.2/235.0	056	056	056	056
		HIGH- High Eff.	279A00	25.0	18.8/23.0	64.1/78.3	64.1/78.3	056	056	056	056
			280A00	50.0	37.6/45.9	128.1/156.7	128.1/156.7	056	056	056	056
			281A00	75.0	56.3/68.9	192.2/235.0	192.2/235.0	056	056	056	056
	460-3-60	STD- High Eff.	282A00	25.0	23.0	78.3	78.3	057	057	057	057
			283A00	50.0	45.9	156.7	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	235.0	057	057	057	057
		MED- High Eff.	282A00	25.0	23.0	78.3	78.3	057	057	057	057
			283A00	50.0	45.9	156.7	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	235.0	057	057	057	057
		HIGH- High Eff.	282A00	25.0	23.0	78.3	78.3	057	057	057	057
			283A00	50.0	45.9	156.7	156.7	057	057	057	057
			284A00	75.0	68.9	235.0	235.0	057	057	057	057
	575-3-60	STD- High Eff.	285A00	24.8	22.8	77.7	77.7	-	057	-	057
			286A00	49.6	45.6	155.4	155.4	-	057	057	057
			287A00	74.4	68.3	233.1	233.1	057	057	057	057
		MED- High Eff.	285A00	24.8	22.8	77.7	77.7	-	057	-	057
			286A00	49.6	45.6	155.4	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	233.1	057	057	057	057
		HIGH- High Eff.	285A00	24.8	22.8	77.7	77.7	057	057	057	057
			286A00	49.6	45.6	155.4	155.4	057	057	057	057
			287A00	74.4	68.3	233.1	233.1	057	057	057	057

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 35 – 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	MCA	NO P.E.		w/ P.E. (pwrd fr/unit)		NO P.E.		w/ P.E. (pwrd fr/unit)									
						MAX FUSE or HACR BRKR	DISC. SIZE	FLA	LRA	MCA	DISC. SIZE	FLA	LRA	MCA	DISC. SIZE	FLA	LRA				
50T0-17	STD	NONE	18.8/25.0	52.1/60.1	78.00/77.9	100/100	81/81	515	89.8/89.7	100/100	95/95	535	82.8/82.7	100/100	87/87	520	94.6/94.5	110/110	100/100	540	
		279A00	18.8/25.0	52.1/60.1	78.0/85.5	100/100	81/81	515/515	90.4/100.3	100/110	95/95	535/535	82.8/91.5	100/100	87/87	520/520	96.4/106.3	110/110	100/100	540/540	
		280A00	37.6/50.0	104.2/120.3	140.8/130.7	150/150	129/148	515/515	155.5/145.4	175/175	150/150	149/161	535/535	146.8/136.7	150/150	135/153	520/520	161.5/151.4	175/175	149/167	540/540
		281A00	56.3/75.0	156.4/180.4	166.9/190.8	200/200	190/217	515/515	181.7/205.5	200/225	200/225	203/231	535/535	172.9/196.8	200/225	195/223	520/520	187.7/211.5	200/225	209/236	540/540
208/230-3-60	MED	NONE	18.8/25.0	52.1/60.1	80.2	100	84	529	92.0	100	97	549	85.0	100	89	534	96.8	125	103	554	
		279A00	18.8/25.0	52.1/60.1	80.2/88.4	100/100	84/84	529/529	92.0/103.1	100/100	97/97	549/549	85.0/94.4	100/100	89/89	534/534	99.1/109.1	125/125	103/103	554/554	
		280A00	37.6/50.0	104.2/120.3	143.5/133.6	150/150	132/151	529/529	158.3/148.3	175/175	146/164	549/549	149.5/139.6	150/150	138/156	534/534	164.3/154.3	175/175	151/170	554/554	
		281A00	56.3/75.0	156.4/180.4	169.7/193.7	200/225	192/220	529/529	184.4/208.4	200/225	206/233	549/549	175.7/199.7	200/225	198/225	534/534	190.4/214.4	200/225	211/239	554/554	
460-3-60	HIGH	NONE	18.8/25.0	52.1/60.1	83.2/82.3	100/100	87/86	531	95.0/94.1	110/110	101/100	551	88.0/87.1	100/100	93/92	536	99.8/98.9	125/125	106/105	556	
		279A00	18.8/25.0	52.1/60.1	83.2/91.0	100/100	87/86	531/531	96.9/105.8	110/110	101/100	551/551	88.0/87.1	100/100	93/92	536/536	102.9/111.8	125/125	106/105	556/556	
		280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	531/531	162.0/150.9	175/175	149/167	551/551	153.3/142.2	175/175	141/158	536/536	168.0/156.9	175/175	155/172	556/556	
		281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	531/531	188.2/211.0	200/225	209/236	551/551	179.4/202.3	200/225	201/228	536/536	194.2/217.0	200/250	215/241	556/556	
575-3-60	STD	NONE	25.0	30.1	40.0	50	42	267	46.2	60	49	279	42.7	50	44	269	48.4	60	51	281	
		282A00	25.0	30.1	42.9	50	42	267	50.6	60	49	279	45.6	50	44	269	53.4	60	51	281	
		283A00	50.0	60.1	65.4	70	74	267	73.1	80	81	279	68.1	80	76	269	75.9	80	84	281	
		284A00	75.0	90.2	95.5	100	109	267	103.2	110	116	279	98.2	100	111	269	106.0	110	118	281	
575-3-60	MED	NONE	25.0	30.1	41.1	50	43	274	47.3	60	50	286	43.3	50	46	276	49.5	60	53	288	
		282A00	25.0	30.1	44.3	50	43	274	52.0	60	50	286	47.0	50	46	276	54.8	60	53	288	
		283A00	50.0	60.1	66.7	80	75	274	74.5	80	82	286	69.5	80	78	276	77.2	80	85	288	
		284A00	75.0	90.2	96.8	100	110	258	104.6	110	117	286	99.6	110	112	276	107.3	125	119	288	
575-3-60	HIGH	NONE	25.0	30.1	42.2	50	44	275	48.4	60	51	287	44.4	50	47	277	50.6	60	54	289	
		282A00	25.0	30.1	45.6	50	44	275	53.4	60	51	287	48.4	50	47	277	56.1	60	54	289	
		283A00	50.0	60.1	68.1	80	76	275	75.9	80	84	287	70.9	80	79	277	78.6	80	86	289	
		284A00	75.0	90.2	98.2	100	111	275	106.0	125	118	287	101.0	110	114	277	108.7	125	121	289	
575-3-60	STD	NONE	24.8	23.9	31.2	40	32	202	36.0	45	38	210	32.9	45	34	204	37.7	45	40	212	
		285A00	24.8	23.9	33.4	40	32	202	39.4	45	38	210	35.5	45	34	204	41.5	45	40	212	
		286A00	49.6	47.7	63.1	70	58	202	69.1	70	64	210	65.3	70	60	204	71.3	80	66	212	
		287A00	74.4	71.6	75.1	80	86	202	81.1	90	91	210	77.2	80	88	204	83.2	90	93	212	
575-3-60	MED	NONE	24.8	23.9	32.1	40	32	202	36.0	45	38	210	32.9	45	34	204	37.7	45	40	212	
		285A00	24.8	23.9	33.4	40	32	202	39.4	45	38	210	35.5	45	34	204	41.5	45	40	212	
		286A00	49.6	47.7	63.1	70	58	202	69.1	70	64	210	65.3	70	60	204	71.3	80	66	212	
		287A00	74.4	71.6	75.1	80	86	202	81.1	90	91	210	77.2	80	88	204	83.2	90	93	212	
575-3-60	HIGH	NONE	24.8	23.9	34.0	45	36	216	38.8	50	41	224	35.7	45	37	218	40.5	50	43	226	
		285A00	24.8	23.9	36.9	45	36	216	42.9	50	41	224	39.0	45	37	218	45.0	50	43	226	
		286A00	49.6	47.7	66.6	70	61	216	72.6	80	67	224	68.8	70	63	218	74.8	80	69	226	
		287A00	74.4	71.6	78.6	90	89	216	84.6	90	94	224	80.7	90	91	218	86.7	90	96	226	

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 35 - Unit Wire/Fuse or HACR Breaker Sizing Data with Single Speed Indoor Fan Motor (cont)

UNIT	NO M, V-Ph-HZ	ELEC. HTR				NO C.O. or UNPWR C.O.						w/ PWRD C.O.									
		IFM TYPE	CRHEATER*****	Nom (kW)	FLA	NO PE.			w/ PE. (pwrdd fr/unit)			NO PE.			w/ PE. (pwrdd fr/unit)						
						MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA				
50TC *20	460-3-60	STD	NONE	-	-	80.2	100	84	529	92.0	100	97	549	85.0	100	89	534	96.8	125	103	554
			279A00	18.8/25.0	52.1/60.1	80.2/88.4	100/100	84/84	529/529	93.1/103.1	100/110	97/97	549/549	85.0/94.4	100/100	89/89	534/534	99.1/109.1	125/125	103/103	554/554
			280A00	37.6/50.0	104.2/120.3	143.5/133.6	150/150	132/151	529/529	158.3/148.3	175/175	146/164	549/549	149.5/139.6	150/150	138/156	534/534	164.3/154.3	175/175	151/170	554/554
			281A00	56.3/75.0	156.4/180.4	169.7/193.7	200/225	192/220	529/529	184.4/208.4	200/225	206/233	549/549	175.7/199.7	200/225	198/225	534/534	190.4/214.4	200/225	211/239	554/554
			NONE	-	-	86.7	100	91	527	98.5	125	105	547	91.5	100	97	532	103.3	125	110	552
			279A00	18.8/25.0	52.1/60.1	86.7/96.5	100/100	91/91	527/527	101.3/111.3	125/125	105/105	547/547	92.5/102.5	100/110	97/97	532/532	107.3/117.3	125/125	110/110	552/552
			280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	527/527	166.4/156.4	175/175	159/172	547/547	157.6/147.7	175/175	145/164	532/532	172.4/162.4	175/175	159/177	552/552
			281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	527/527	192.5/216.5	200/250	213/241	547/547	183.8/207.8	200/225	205/233	532/532	198.5/222.5	200/250	219/246	552/552
			NONE	-	-	86.7	100	91	527	98.5	125	105	547	91.5	100	97	532	103.3	125	110	552
			279A00	18.8/25.0	52.1/60.1	86.7/96.5	100/100	91/91	527/527	101.3/111.3	125/125	105/105	547/547	92.5/102.5	100/110	97/97	532/532	107.3/117.3	125/125	110/110	552/552
50TC *20	460-3-60	STD	NONE	-	-	41.1	50	43	274	47.3	60	50	286	43.3	50	46	276	49.5	60	53	288
			282A00	25	30.1	44.3	50	43	274	52.0	60	50	286	47.0	50	46	276	54.8	60	53	288
			283A00	50	60.1	66.7	80	75	274	74.5	80	82	286	69.5	80	78	276	77.2	80	85	288
			284A00	75	90.2	96.8	100	110	274	104.6	110	117	286	99.6	110	112	276	107.3	125	119	288
			NONE	-	-	44.4	50	47	273	50.6	60	54	285	46.6	60	49	275	52.8	60	56	287
			282A00	25	30.1	48.4	50	47	273	56.1	60	54	285	51.1	60	49	275	58.9	60	56	287
			283A00	50	60.1	70.9	80	79	273	78.6	80	86	285	73.6	80	82	275	81.4	90	89	287
			284A00	75	90.2	101.0	100	114	273	108.7	125	121	285	103.7	125	116	275	111.5	125	123	287
			NONE	-	-	44.4	50	47	273	50.6	60	54	285	46.6	60	49	275	52.8	60	56	287
			282A00	25	30.1	48.4	50	47	273	56.1	60	54	285	51.1	60	49	275	58.9	60	56	287
575-3-60	575-3-60	STD	NONE	-	-	31.2	40	32	202	36.0	45	38	210	32.9	45	34	204	37.7	45	40	212
			285A00	24.8	23.9	33.4	40	32	202	39.4	45	38	210	35.5	45	34	204	41.5	45	40	212
			286A00	49.6	47.7	63.1	70	58	202	69.1	70	64	210	65.3	70	60	204	71.3	80	66	212
			287A00	74.4	71.6	75.1	80	66	202	81.1	90	91	210	77.2	80	88	204	83.2	90	93	212
			NONE	-	-	34.0	45	36	216	38.8	50	41	224	35.7	45	37	218	40.5	50	43	226
			285A00	24.8	23.9	36.9	45	36	216	42.9	50	41	224	39.0	45	37	218	45.0	50	43	226
			286A00	49.6	47.7	66.6	70	61	216	72.6	80	67	224	68.8	70	63	218	74.8	80	69	226
			287A00	74.4	71.6	78.6	90	89	216	84.6	90	94	224	80.7	90	91	218	86.7	90	96	226
			NONE	-	-	36.0	45	38	214	40.8	50	43	222	37.7	45	40	216	42.5	50	45	224
			285A00	24.8	23.9	39.4	45	38	214	45.4	50	43	222	41.5	45	40	216	47.5	50	45	224
286A00	49.6	47.7	69.1	70	64	214	75.1	80	69	222	71.3	80	66	216	77.3	80	71	224			
287A00	74.4	71.6	81.1	90	91	214	87.1	90	97	222	83.2	90	93	216	89.2	90	99	224			

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 35 - Unit Wire/Fuse or HACR Breaker Sizing Data with Single Speed Indoor Fan Motor (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/ PE. (pwrd fr/unit)				NO PE.				w/ PE. (pwrd fr/unit)				
					MCA	MAX FUSE OF HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE OF HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE OF HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE OF HACR BRKR	FLA	DISC. SIZE	
STD		NONE	-	-	109.2/108.3	150/150	112/111	540	125/124	560	114.0/113.1	150/150	117/116	545	125.8/124.9	150/150	131/130	565			
		279A00	18.8/25.0	52.1/60.1	109.2/108.3	150/150	112/111	540/540	125/124	560/560	114.0/113.1	150/150	117/116	545/545	125.8/124.9	150/150	131/130	565/565			
		280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	540/540	149/167	560/560	153.3/142.2	175/175	141/158	545/545	168.0/156.9	175/175	155/172	565/565			
		281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	540/540	209/236	560/560	179.4/202.3	200/225	201/228	545/545	194.2/17.0	200/250	215/241	565/565			
MED - High Eff.	208/230-3-60	NONE	-	-	112.7	150	116	536	129	556	117.5	150	121	541	129.3	175	135	561			
		279A00	18.8/25.0	52.1/60.1	112.7/112.7	150/150	116/116	536/536	129/129	556/556	117.5/117.5	150/150	121/121	541/541	129.3/129.3	175/175	135/135	561/561			
		280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	536/536	153/172	556/556	157.6/147.7	175/175	145/164	541/541	172.4/162.4	175/175	159/177	561/561			
		281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	536/536	213/241	556/556	183.8/207.8	200/225	205/233	541/541	196.5/222.5	200/250	219/246	561/561			
HIGH	460-3-60	NONE	-	-	124.1	150	129	615	142	635	128.9	175	134	620	140.7	175	148	640			
		279A00	18.8/25.0	52.1/60.1	124.1/124.1	150/150	129/129	615/615	142/142	635/635	128.9/128.9	175/175	134/134	620/620	140.7/140.7	175/175	148/148	640/640			
		280A00	37.6/50.0	104.2/120.3	165.9/155.9	175/175	153/171	615/615	166/185	635/635	171.9/161.9	175/175	158/177	620/620	186.6/176.7	200/200	172/190	640/640			
		281A00	56.3/75.0	156.4/180.4	192.0/216.0	200/250	213/240	615/615	226/254	635/635	198.0/222.0	225/250	218/246	620/620	212.8/236.8	225/250	232/259	640/640			
STD		NONE	-	-	48.0	60	50	272	57	284	50.2	60	52	274	56.4	70	59	286			
		282A00	25	30.1	48.0	60	50	272	57	284	50.2	60	52	274	56.4	70	59	286			
		283A00	50	60.1	68.1	80	76	272	84	284	70.9	80	79	274	78.6	80	86	286			
		284A00	75	90.2	98.2	100	111	272	118	284	101.0	110	114	274	108.7	125	121	286			
MED - High Eff.	50TC-24	NONE	-	-	50.2	60	52	270	59	282	52.4	60	55	272	58.6	70	62	284			
		282A00	25	30.1	50.2	60	52	270	59	282	52.4	60	55	272	58.6	70	62	284			
		283A00	50	60.1	70.9	80	79	270	86	282	73.6	80	82	272	81.4	90	89	284			
		284A00	75	90.2	101.0	110	114	270	125	282	103.7	125	116	272	111.5	125	123	284			
HIGH		NONE	-	-	55.9	70	59	310	66	322	58.1	70	61	312	64.3	80	69	324			
		282A00	25	30.1	55.9	70	59	310	66	322	58.3	70	61	312	66.0	80	69	324			
		283A00	50	60.1	78.0	80	86	310	93	322	80.7	90	88	312	88.5	100	95	324			
		284A00	75	90.2	108.1	125	120	310	127	322	110.8	125	123	312	118.6	125	130	324			
STD		NONE	-	-	38.6	50	40	224	46	232	40.3	50	42	226	45.1	50	48	234			
		285A00	24.8	23.9	38.6	50	40	224	46	232	40.3	50	42	226	45.1	50	48	234			
		286A00	49.6	47.7	66.6	70	61	224	67	232	68.8	70	63	226	74.8	80	69	234			
		287A00	74.4	71.6	78.6	90	89	224	94	232	80.7	90	91	226	86.7	90	96	234			
MED - High Eff.	575-3-60	NONE	-	-	40.6	50	42	222	48	230	42.3	50	44	224	47.1	60	50	232			
		285A00	24.8	23.9	40.6	50	42	222	48	230	42.3	50	44	224	47.5	60	50	232			
		286A00	49.6	47.7	69.1	70	64	222	69	230	71.3	80	66	224	77.3	80	71	232			
		287A00	74.4	71.6	81.1	90	91	222	97	230	83.2	90	93	224	89.2	90	99	232			
HIGH		NONE	-	-	42.5	50	45	249	50	257	44.2	50	47	251	49.0	60	52	259			
		285A00	24.8	23.9	42.5	50	45	249	50	257	44.2	50	47	251	49.9	60	52	259			
		286A00	49.6	47.7	71.5	80	66	249	71	257	73.6	80	68	251	79.6	80	73	259			
		287A00	74.4	71.6	83.5	90	93	249	99	257	85.6	90	95	251	91.6	100	101	259			

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 35 - Unit Wire/Fuse or HACR Breaker Sizing Data with Single Speed Indoor Fan Motor (cont)

UNIT	NO M, V-Ph-HZ	ELEC. HTR				NO C.O. or UNPWR C.O.						W/ PWRD C.O.							
		IFM TYPE	CRHEATER*****	Nom (kW)	FLA	NO PE.			w/ PE. (pwrdd fr/unit)			NO PE.			w/ PE. (pwrdd 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	MCA	MAX FUSE or HACR BRKR	DISC. SIZE FLA LRA		
50TC *28	460-3-60	STD	NONE	-	-	127.8/126.9	175/175	133/132	590	147/146	610	132.6/131.7	175/175	139/138	595	144.4/143.5	175/175	152/151	615
						127.8/126.9	175/175	133/132	590/590	147/146	610/610	132.6/131.7	175/175	139/138	595/595	144.4/143.5	175/175	152/151	615/615
						147.3/136.2	175/175	135/153	590/590	149/167	610/610	153.3/142.2	175/175	141/158	595/595	168.0/156.9	175/175	155/172	615/615
						173.4/196.3	200/225	196/222	590/590	209/236	610/610	179.4/202.3	200/225	201/228	595/595	194.2/217.0	200/250	215/241	615/615
50TC *28	460-3-60	MED - High Eff.	NONE	-	-	131.3	175	137	586	151	606	136.1/136.1	175	143	591	147.9	175	156	611
						131.3/131.3	175/175	137/137	586/586	151/151	606/606	136.1/136.1	175/175	143/143	591/591	147.9/147.9	175/175	156/156	611/611
						151.6/141.7	175/175	139/158	586/586	159/172	606/606	157.6/147.7	175/175	145/164	591/591	172.4/162.4	175/175	159/177	611/611
						177.8/201.8	200/225	200/227	586/586	213/241	606/606	183.8/207.8	200/225	205/233	591/591	198.5/222.5	200/250	219/246	611/611
50TC *28	460-3-60	HIGH - High Eff.	NONE	-	-	142.7	175	150	665	164	685	147.5/147.5	175	156	670	159.3	200	169	690
						142.7/142.7	175/175	150/150	665/665	164/164	685/685	147.5/147.5	175/175	156/156	670/670	159.3/159.3	200/200	169/169	690/690
						165.9/155.9	175/175	153/171	665/665	166/185	685/685	171.9/161.9	175/175	158/177	670/670	186.6/176.7	200/200	172/190	690/690
						192.0/216.0	200/250	213/240	665/665	226/254	685/685	198.0/222.0	225/250	218/246	670/670	212.9/236.8	225/250	232/259	690/690
50TC *28	460-3-60	STD	NONE	-	-	51.9	60	54	302	61	314	54.1	60	57	304	60.3	70	64	316
						51.9	60	54	302	61	314	54.1	60	57	304	60.3	70	64	316
						60.1	80	76	302	84	314	70.9	80	79	304	78.6	80	86	316
						90.2	100	111	302	118	314	101.0	110	114	304	108.7	125	121	316
50TC *28	460-3-60	MED - High Eff.	NONE	-	-	54.1	60	57	300	64	312	56.3	70	59	302	62.5	80	66	314
						54.1	60	57	300	64	312	56.3	70	59	302	62.5	80	66	314
						70.9	80	79	300	86	312	73.6	80	82	302	81.4	90	89	314
						101.0	110	114	300	121	312	103.7	125	116	302	111.5	125	123	314
50TC *28	460-3-60	HIGH - High Eff.	NONE	-	-	59.8	70	63	340	70	352	62.0	80	66	342	68.2	80	73	354
						59.8	70	63	340	70	352	62.0	80	66	342	68.2	80	73	354
						60.1	90	86	340	93	352	80.7	90	88	342	88.5	100	95	354
						90.2	125	120	340	127	340	110.8	125	123	342	118.6	125	130	354
50TC *28	460-3-60	STD	NONE	-	-	41.1	50	43	244	49	252	42.8	60	45	246	47.6	60	50	254
						41.1	50	43	244	49	252	42.8	60	45	246	47.6	60	50	254
						66.6	70	61	244	67	252	68.8	70	63	246	74.8	80	69	254
						78.6	90	89	244	94	252	80.7	90	91	246	86.7	90	96	254
50TC *28	460-3-60	MED - High Eff.	NONE	-	-	43.1	50	45	242	51	250	44.8	60	47	244	49.6	60	53	252
						43.1	50	45	242	51	250	44.8	60	47	244	49.6	60	53	252
						69.1	70	64	242	69	250	71.3	80	66	244	77.3	80	71	252
						81.1	90	91	242	97	250	83.2	90	93	244	89.2	90	99	252
50TC *28	460-3-60	HIGH - High Eff.	NONE	-	-	45.0	50	47	269	53	277	46.7	60	49	271	51.5	60	55	279
						45.0	50	47	269	53	277	46.7	60	49	271	51.5	60	55	279
						71.5	80	66	269	71	277	73.6	80	68	271	79.6	80	73	279
						83.5	90	89	269	99	277	85.6	90	95	271	91.6	100	101	279

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 35 - Unit Wire/Fuse or HACR Breaker Sizing Data with Single Speed Indoor Fan Motor (cont)

UNIT	NO M, V-Ph-HZ	ELEC. HTR				NO C.O. or UNPWR C.O.						w/ PWRD C.O.										
		IFM TYPE	CRHEATER*****	Nom (kW)	FLA	NO PE.		w/ PE. (pwrdr fr/unit)		NO PE.		w/ PE. (pwrdr fr/unit)		NO PE.		w/ PE. (pwrdr fr/unit)						
						MCA	FUSE or HACR BRKR	FLA	LRA	MCA	FUSE or HACR BRKR	FLA	LRA	MCA	FUSE or HACR BRKR	FLA	LRA	MCA	FUSE or HACR BRKR	FLA	LRA	
50TC-D30	460-3-60	HIGH - High Eff.	NONE	-	-	-	141.5	175	148	702	153.3	200	162	722	146.3	175	154	707	158.1	200	167	727
			279A00	18.8/25.0	52.1/60.1	141.5/141.5	175/175	148/148	702/702	153.3/153.3	200/200	162/162	722/722	146.3/146.3	175/175	154/154	707/707	158.1/158.1	200/200	167/167	727/727	
			280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	148/158	702/702	166.4/156.4	200/200	162/172	722/722	157.6/147.7	175/175	154/164	707/707	172.4/162.4	200/200	167/177	727/727	
			281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	702/702	192.5/216.5	200/250	213/241	722/722	183.8/207.8	200/225	205/233	707/707	198.5/222.5	200/250	219/246	727/727	
			NONE	-	-	152.9	200	161	781	164.7	200	175	801	157.7	200	167	786	169.5	200	180	806	
			279A00	18.8/25.0	52.1/60.1	152.9/152.9	200/200	161/161	781/781	164.7/164.7	200/200	175/175	801/801	157.7/157.7	200/200	167/167	786/786	169.5/169.5	200/200	180/180	806/806	
			280A00	37.6/50.0	104.2/120.3	165.9/155.9	200/200	161/171	781/781	180.6/170.7	200/200	175/185	801/801	171.9/161.9	200/200	167/177	786/786	186.6/176.7	200/200	180/190	806/806	
			281A00	56.3/75.0	156.4/180.4	192.0/216.0	200/250	213/240	781/781	206.8/230.8	225/250	226/254	801/801	198.0/222.0	225/250	218/246	786/786	212.8/236.8	225/250	232/259	806/806	
			NONE	-	-	154.8	200	163	812	166.6	200	177	832	159.6	200	189	817	171.4	200	182	837	
			279A00	18.8/25.0	52.1/60.1	154.8/154.8	200/200	163/163	812/812	166.6/166.6	200/200	177/177	832/832	159.6/159.6	200/200	189/169	817/817	171.4/171.4	200/200	182/182	837/837	
280A00	37.6/50.0	104.2/120.3	168.3/158.3	200/200	163/173	812/812	183.0/173.1	200/200	177/187	832/832	174.3/164.3	200/200	169/179	817/817	189.0/179.1	200/200	182/192	837/837				
281A00	56.3/75.0	156.4/180.4	194.4/218.4	225/250	215/242	812/812	209.2/233.2	225/250	228/256	832/832	200.4/224.4	225/250	220/248	817/817	215.2/239.2	225/250	234/262	837/837				
50TC-D30	460-3-60	STD	NONE	-	-	66.0	80	69	354	72.2	90	76	366	68.2	90	72	356	74.4	90	79	368	
			282A00	25.0	30.1	66.0	80	69	354	72.2	90	76	366	68.2	90	72	356	74.4	90	79	368	
			283A00	50.0	60.1	70.9	80	79	354	78.6	90	86	366	73.6	90	82	356	81.4	90	89	368	
			284A00	75.0	90.2	101.0	110	114	354	108.7	125	121	366	103.7	125	116	356	111.5	125	123	368	
			NONE	-	-	71.7	90	76	394	77.9	100	83	406	73.9	90	78	396	80.1	100	85	408	
			282A00	25.0	30.1	71.7	90	76	394	77.9	100	83	406	73.9	90	78	396	80.1	100	85	408	
			283A00	50.0	60.1	78.0	90	86	394	85.7	100	93	406	80.7	90	88	396	88.5	100	95	408	
			284A00	75.0	90.2	108.1	125	120	394	115.8	125	127	406	110.8	125	123	396	118.6	125	130	408	
			NONE	-	-	72.6	90	77	409	78.8	100	84	421	74.8	90	79	411	81.0	100	86	423	
			282A00	25.0	30.1	72.6	90	77	409	78.8	100	84	421	74.8	90	79	411	81.0	100	86	423	
283A00	50.0	60.1	79.1	90	87	409	86.9	100	94	421	81.9	90	89	411	89.6	100	96	423				
284A00	75.0	90.2	109.2	125	121	409	117.0	125	128	421	112.0	125	124	411	119.7	125	131	423				
575-3-60	STD	NONE	-	-	56.0	70	59	264	60.8	80	64	272	57.7	70	61	266	62.5	80	66	274		
		285A00	24.8	23.9	56.0	70	59	264	60.8	80	64	272	57.7	70	61	266	62.5	80	66	274		
		286A00	49.6	47.7	69.1	70	64	264	75.1	80	69	272	71.3	80	66	266	77.3	80	71	274		
		287A00	74.4	71.6	81.1	90	91	264	87.1	90	97	272	83.2	90	93	266	89.2	90	99	274		
		NONE	-	-	57.9	70	61	291	62.7	80	66	299	59.6	70	63	293	64.4	80	68	301		
		285A00	24.8	23.9	57.9	70	61	291	62.7	80	66	299	59.6	70	63	293	64.4	80	68	301		
		286A00	49.6	47.7	71.5	80	66	291	77.5	80	71	299	73.6	80	68	293	79.6	80	73	301		
		287A00	74.4	71.6	83.5	90	93	291	89.5	100	99	299	85.6	90	95	293	91.6	100	101	301		
		NONE	-	-	60.8	80	64	302	65.6	80	70	310	62.5	80	66	304	67.3	80	72	312		
		285A00	24.8	23.9	60.8	80	64	302	65.6	80	70	310	62.5	80	66	304	67.3	80	72	312		
286A00	49.6	47.7	75.1	80	69	302	81.1	90	75	310	77.3	80	71	304	83.3	90	77	312				
287A00	74.4	71.6	87.1	100	97	302	93.1	100	102	310	89.2	100	99	304	95.2	100	104	312				

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 36 – Unit Wire/Fuse or HACR Breaker Sizing Data with Factory-Installed 2-Speed Indoor Fan Option

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)				
					MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	
STD		NONE	-	-	78.2/77.4	100/100	81/81	496	90.0/89.2	100/100	95/94	516	83.0/82.2	100/100	87/86	501	94.8/94.0	110/110	101/102	521	
		279A00	18.8/25.0	52.1/60.1	80.2/84.9	100/100	81/81	496/496	90.6/99.6	100/100	95/94	516/516	83.0/90.9	100/100	87/86	501/501	96.8/105.6	110/110	101/100	521/521	
		280A00	37.6/50.0	104.2/120.3	141.0/130.1	150/150	130/147	496/496	155.8/144.8	175/150	143/161	516/516	147.0/136.1	150/150	135/153	501/501	161.8/150.8	175/175	149/166	521/521	
		281A00	56.3/75.0	156.4/180.4	167.2/190.2	200/200	190/216	496/496	181.9/204.9	200/225	203/230	516/516	173.2/196.2	200/225	195/222	501/501	187.9/210.9	200/225	209/236	521/521	
MED	208/230-3-60	NONE	-	-	80.4/79.4	100/100	84/83	520	92.2/91.2	100/100	98/96	540	85.2/84.2	100/100	89/88	525	97.0/96.0	125/125	103/102	545	
		279A00	18.8/25.0	52.1/60.1	80.4/87.4	100/100	84/83	520/520	93.4/102.1	100/110	98/96	540/540	85.2/93.4	100/100	89/88	525/525	99.4/108.1	125/125	103/102	545/545	
		280A00	37.6/50.0	104.2/120.3	143.8/132.6	150/150	132/150	520/520	158.5/147.3	175/175	146/163	540/540	149.8/138.6	150/150	138/155	525/525	164.5/153.3	175/175	151/169	545/545	
		281A00	56.3/75.0	156.4/180.4	169.9/192.7	200/225	192/219	520/520	184.7/207.4	200/225	206/232	540/540	175.9/198.7	200/225	198/224	525/525	190.7/213.4	200/225	211/238	545/545	
HIGH		NONE	-	-	83.2/82.3	100/100	87/86	531	95.0/94.1	111/110	101/100	551	88.0/87.1	100/100	93/92	536	98.8/98.9	125/125	106/105	556	
		279A00	18.8/25.0	52.1/60.1	83.2/91.0	100/100	87/86	531/531	96.9/105.8	110/110	101/100	551/551	88.1/97.0	100/100	93/92	536/536	102.9/111.8	125/125	106/105	556/556	
		280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	531/531	162.0/150.9	175/175	149/167	551/551	153.3/142.2	175/175	141/158	536/536	168.0/156.9	175/175	155/172	556/556	
		281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	531/531	188.2/211.0	200/225	209/236	551/551	179.4/202.3	200/225	201/228	536/536	194.2/217.0	200/250	215/241	556/556	
STD	460-3-60	NONE	-	-	39.6	50	41	258	45.8	60	48	270	41.8	50	44	260	48.0	60	51	272	
		282A00	25.0	30.1	42.4	50	41	258	50.1	60	48	270	45.1	50	44	260	52.9	60	51	272	
		283A00	50.0	60.1	64.9	70	73	258	72.6	80	81	270	67.6	80	76	260	75.4	80	83	272	
		284A00	75.0	90.2	95.0	100	108	258	102.7	110	115	270	97.7	100	111	260	105.5	110	118	272	
MED	50TC-17	NONE	-	-	40.7	50	43	270	46.9	60	50	282	42.9	50	45	272	49.1	60	52	284	
		282A00	25.0	30.1	43.8	50	43	270	51.5	60	50	282	46.5	50	45	272	54.3	60	52	284	
		283A00	50.0	60.1	66.2	80	75	270	74.0	80	82	282	69.0	80	77	272	76.7	80	84	284	
		284A00	75.0	90.2	96.3	100	109	270	104.1	110	116	282	99.1	100	112	272	106.8	110	119	284	
HIGH		NONE	-	-	42.2	50	44	275	48.4	60	51	287	44.4	50	47	277	50.6	60	54	289	
		282A00	25.0	30.1	45.6	50	44	275	53.4	60	51	287	48.4	50	47	277	56.1	60	54	289	
		283A00	50.0	60.1	68.1	80	76	275	75.9	80	84	287	70.9	80	79	277	78.6	80	86	289	
		284A00	75.0	90.2	98.2	100	111	275	106.0	125	118	287	101.0	110	114	277	108.7	125	121	289	
STD		NONE	-	-	32.9	45	34	202	37.7	45	40	210	34.6	45	36	204	39.4	50	42	212	
		285A00	24.8	23.9	35.5	45	34	202	41.5	45	40	210	37.6	45	36	204	43.6	50	42	212	
		286A00	49.6	47.7	65.3	70	60	202	71.3	80	66	210	67.4	70	62	204	73.4	80	68	212	
		287A00	74.4	71.6	77.2	90	88	202	83.2	90	93	210	79.4	90	89	204	85.4	90	95	212	
MED	575-3-60	NONE	-	-	32.9	45	34	202	37.7	45	40	210	34.6	45	36	204	39.4	50	42	212	
		285A00	24.8	23.9	35.5	45	34	202	41.5	45	40	210	37.6	45	36	204	43.6	50	42	212	
		286A00	49.6	47.7	65.3	70	60	202	71.3	80	66	210	67.4	70	62	204	73.4	80	68	212	
		287A00	74.4	71.6	77.2	90	88	202	83.2	90	93	210	79.4	90	89	204	85.4	90	95	212	
HIGH		NONE	-	-	34.6	45	36	216	39.4	50	42	224	36.3	45	38	218	41.1	50	44	226	
		285A00	24.8	23.9	37.6	45	36	216	43.6	50	42	224	39.8	45	38	218	45.8	50	44	226	
		286A00	49.6	47.7	67.4	70	62	216	73.4	80	68	224	69.5	70	64	218	75.5	80	69	226	
		287A00	74.4	71.6	79.4	90	89	216	85.4	90	95	224	81.5	90	91	218	87.5	90	97	226	

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 36 - 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 P.E.				w/ P.E. (pwrd fr/unit)				NO P.E.				w/ P.E. (pwrd fr/unit)				
					MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	MCA	MAX FUSE or HACR BRKR	FLA	DISC. SIZE	
STD		NONE	-	-	80.4/79.4	100/100	84/83	520	92.2/91.2	100/100	98/96	540	85.2/84.2	100/100	89/88	525	97.0/96.0	125/125	103/102	545	
		279A00	18.8/25.0	52.1/60.1	80.4/87.4	100/100	84/83	520/520	93.4/102.1	100/110	98/96	540/540	85.2/93.4	100/100	89/88	525/525	99.4/108.1	125/125	103/102	545/545	
		280A00	37.6/50.0	104.2/120.3	143.8/132.6	150/150	132/150	520/520	158.5/147.3	175/175	146/163	540/540	149.8/138.6	150/150	138/155	525/525	164.5/153.3	175/175	151/169	545/545	
		281A00	56.3/75.0	156.4/180.4	189.9/192.7	200/225	192/219	520/520	184.7/207.4	200/225	206/232	540/540	175.9/198.7	200/225	198/224	525/525	190.7/213.4	200/225	211/238	545/545	
MED	208/230-3-60	NONE	-	-	83.2/82.3	100/100	87/86	531	95.0/94.1	110/110	101/100	551	88.0/87.1	100/100	93/92	536	98.8/98.9	125/125	106/105	556	
		279A00	18.8/25.0	52.1/60.1	83.2/91.0	100/100	87/86	531/531	96.9/105.8	110/110	101/100	551/551	88.1/97.0	100/100	93/92	536/536	102.9/111.8	125/125	106/105	556/556	
		280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	531/531	162.0/150.9	175/175	149/167	551/551	153.3/142.2	175/175	141/158	536/536	168.0/156.9	175/175	155/172	556/556	
		281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	531/531	188.2/211.0	200/225	209/236	551/551	179.4/202.3	200/225	201/228	536/536	194.2/217.0	200/250	215/241	556/556	
HIGH	208/230-3-60	NONE	-	-	86.7	100	91	527	98.5	125	105	547	91.5	100	97	532	103.3	125	110	552	
		279A00	18.8/25.0	52.1/60.1	86.7/96.5	100/100	91/91	527/527	101.3/111.3	125/125	105/105	547/547	92.5/102.5	100/110	97/97	532/532	107.3/117.3	125/125	110/110	552/552	
		280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	527/527	166.4/156.4	175/175	159/172	547/547	157.6/147.7	175/175	145/164	532/532	172.4/162.4	175/175	159/177	552/552	
		281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	527/527	192.5/216.5	200/250	213/241	547/547	183.8/207.8	200/225	205/233	532/532	198.5/222.5	200/250	219/246	552/552	
STD	460-3-60	NONE	-	-	40.7	50	43	270	46.9	60	50	282	42.9	50	45	272	49.1	60	52	284	
		282A00	25.0	30.1	43.8	50	43	270	51.5	60	50	282	46.5	50	45	272	54.3	60	52	284	
		283A00	50.0	60.1	66.2	80	75	270	74.0	80	82	282	69.0	80	77	272	76.7	80	84	284	
		284A00	75.0	90.2	96.3	100	109	270	104.1	110	116	282	99.1	100	112	272	106.8	110	119	284	
MED	460-3-60	NONE	-	-	42.2	50	44	275	48.4	60	51	287	44.4	50	47	277	50.6	60	54	289	
		282A00	25.0	30.1	45.6	50	44	275	53.4	60	51	287	48.4	50	47	277	56.1	60	54	289	
		283A00	50.0	60.1	68.1	80	76	275	75.9	80	84	287	70.9	80	79	277	78.6	80	86	289	
		284A00	75.0	90.2	98.2	100	111	275	106.0	125	118	287	101.0	110	114	277	108.7	125	121	289	
HIGH	460-3-60	NONE	-	-	44.4	50	47	273	50.6	60	54	285	46.6	60	49	275	52.8	60	56	287	
		282A00	25.0	30.1	48.4	50	47	273	56.1	60	54	285	51.1	60	49	275	58.9	60	56	287	
		283A00	50.0	60.1	70.9	80	79	273	78.6	80	86	285	73.6	80	82	275	81.4	90	89	287	
		284A00	75.0	90.2	101.0	110	114	273	108.7	125	121	285	103.7	125	116	275	111.5	125	123	287	
STD	575-3-60	NONE	-	-	32.9	45	34	202	37.7	45	40	210	34.6	45	36	204	39.4	50	42	212	
		285A00	24.8	23.9	35.5	45	34	202	41.5	45	40	210	37.6	45	36	204	43.6	50	42	212	
		286A00	49.6	47.7	65.3	70	60	202	71.3	80	66	210	67.4	70	62	204	73.4	80	68	212	
		287A00	74.4	71.6	77.2	90	88	202	83.2	90	93	210	79.4	90	89	204	85.4	90	95	212	
MED	575-3-60	NONE	-	-	34.6	45	36	216	39.4	50	42	224	36.3	45	38	218	41.1	50	44	226	
		285A00	24.8	23.9	37.6	45	36	216	43.6	50	42	224	39.8	45	38	218	45.8	50	44	226	
		286A00	49.6	47.7	67.4	70	62	216	73.4	80	68	224	69.5	70	64	218	75.5	80	69	226	
		287A00	74.4	71.6	79.4	90	89	216	85.4	90	95	224	81.5	90	91	218	87.5	90	97	226	
HIGH	575-3-60	NONE	-	-	36.0	45	38	214	40.8	50	43	222	37.7	45	40	216	42.5	50	45	224	
		285A00	24.8	23.9	39.4	45	38	214	45.4	50	43	222	41.5	45	40	216	47.5	50	45	224	
		286A00	49.6	47.7	69.1	70	64	214	75.1	80	69	222	71.3	80	66	216	77.3	80	71	224	
		287A00	74.4	71.6	81.1	90	91	214	87.1	90	97	222	83.2	90	93	216	89.2	90	99	224	

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 36 - 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.										
		IFM TYPE	CRHEATER*****	Nom (kW)	FLA	NO PE.			w/ PE. (pwrdd fr/unit)			NO PE.			w/ PE. (pwrdd fr/unit)							
						MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA					
STD	208/230-3-60	NONE	-	-	-	109.2/108.3	150/150	112/111	540	121.0/120.1	150/150	125/124	560	114.0/113.1	150/150	117/116	545	125.8/124.9	150/150	131/130	565	
		279A00	18.8/25.0	52.1/60.1	109.2/108.3	150/150	112/111	540/540	121.0/120.1	150/150	125/124	560/560	117/116	545/545	114.0/113.1	150/150	117/116	545/545	125.8/124.9	150/150	131/130	565/565
		280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	540/640	162.0/150.9	175/175	149/167	560/560	141/158	545/545	153.3/142.2	175/175	141/158	545/545	168.0/156.9	175/175	155/172	565/565
		281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	540/640	188.2/111.0	200/225	209/236	560/560	201/228	545/545	179.4/202.3	200/225	201/228	545/545	194.2/217.0	200/250	215/241	565/565
MED	208/230-3-60	NONE	-	-	-	112.7	150	116	536	124.5	150	129	556	117.5	150	121	541	129.3	175	135	561	
		279A00	18.8/25.0	52.1/60.1	112.7/112.7	150/150	116/116	536/536	124.5/124.5	150/150	129/129	556/556	129/129	556/556	117.5/117.5	150/150	121/121	541/541	129.3/129.3	175/175	135/135	561/561
		280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	536/536	166.4/156.4	175/175	159/172	556/556	159/172	556/556	157.6/147.7	175/175	145/164	541/541	172.4/162.4	175/175	159/177	561/561
		281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	536/536	192.5/216.5	200/250	213/241	556/556	213/241	556/556	183.8/207.8	200/225	205/233	541/541	198.5/222.5	200/250	219/246	561/561
HIGH	208/230-3-60	NONE	-	-	-	124.1	150	129	615	135.9	175	142	635	128.9	175	134	620	140.7	175	148	640	
		279A00	18.8/25.0	52.1/60.1	124.1/124.1	150/150	129/129	615/615	135.9/135.9	175/175	142/142	635/635	142/142	635/635	128.9/128.9	175/175	134/134	620/620	140.7/140.7	175/175	148/148	640/640
		280A00	37.6/50.0	104.2/120.3	165.9/155.9	175/175	153/171	615/615	180.6/170.7	200/175	166/185	635/635	166/185	635/635	171.9/161.9	175/175	158/177	620/620	186.6/176.7	200/200	172/190	640/640
		281A00	56.3/75.0	156.4/180.4	192.0/216.0	200/250	213/240	615/615	206.8/230.8	225/250	226/254	635/635	226/254	635/635	198.0/222.0	225/250	218/246	620/620	212.8/236.8	225/250	232/259	640/640
STD	460-3-60	NONE	-	-	-	48.0	60	50	272	54.2	60	57	284	50.2	60	52	274	56.4	70	59	286	
		282A00	25.0	30.1	48.0	60	50	272	54.2	60	57	284	50.2	60	52	274	56.4	70	59	286		
		283A00	50.0	60.1	68.1	80	76	272	75.9	80	84	284	84	284	70.9	80	79	274	78.6	80	86	286
		284A00	75.0	90.2	98.2	100	111	272	106.0	125	118	284	118	284	101.0	110	114	274	108.7	125	121	286
MED	460-3-60	NONE	-	-	-	50.2	60	52	270	56.4	70	59	282	52.4	60	55	272	58.6	70	62	284	
		282A00	25.0	30.1	50.2	60	52	270	56.4	70	59	282	52.4	60	55	272	58.6	70	62	284		
		283A00	50.0	60.1	70.9	80	79	270	78.6	80	86	282	86	282	73.6	80	82	272	81.4	90	89	284
		284A00	75.0	90.2	101.0	110	114	270	108.7	125	121	282	121	282	103.7	125	116	272	111.5	125	123	284
HIGH	460-3-60	NONE	-	-	-	55.9	70	59	310	62.1	80	66	322	58.1	70	61	312	64.3	80	69	324	
		282A00	25.0	30.1	55.9	70	59	310	63.3	80	66	322	58.3	70	61	312	66.0	80	69	324		
		283A00	50.0	60.1	78.0	90	86	310	85.7	90	93	322	80.7	90	88	312	88.5	100	95	324		
		284A00	75.0	90.2	108.1	125	120	310	115.8	125	127	322	110.8	125	123	312	118.6	125	125	324		
STD	575-3-60	NONE	-	-	-	39.2	50	41	224	44.0	50	46	232	40.9	50	43	226	45.7	60	48	234	
		285A00	24.8	23.9	39.2	50	41	224	44.0	50	46	232	40.9	50	43	226	45.8	60	48	234		
		286A00	49.6	47.7	67.4	70	62	224	73.4	80	68	232	69.5	70	64	226	75.5	80	69	234		
		287A00	74.4	71.6	79.4	90	89	224	85.4	90	95	232	81.5	90	91	226	87.5	90	97	234		
MED	575-3-60	NONE	-	-	-	40.6	50	42	222	45.4	60	48	230	42.3	50	44	224	47.1	60	50	232	
		285A00	24.8	23.9	40.6	50	42	222	45.4	60	48	230	42.3	50	44	224	47.5	60	50	232		
		286A00	49.6	47.7	69.1	70	64	222	75.1	80	69	230	71.3	80	66	224	77.3	80	71	232		
		287A00	74.4	71.6	81.1	90	91	222	87.1	90	97	230	83.2	90	93	224	89.2	90	99	232		
HIGH	575-3-60	NONE	-	-	-	42.5	50	45	249	47.3	60	50	257	44.2	50	47	251	49.0	60	52	259	
		285A00	24.8	23.9	42.5	50	45	249	47.8	60	50	257	44.2	50	47	251	49.9	60	52	259		
		286A00	49.6	47.7	71.5	80	66	249	77.5	80	71	257	73.6	80	68	251	79.6	80	73	259		
		287A00	74.4	71.6	83.5	90	69	249	89.5	100	99	257	85.6	90	95	251	91.6	100	101	259		

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 36 - 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.										
		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 OF HACR BRKR	FLA	LRA	MCA	MAX FUSE OF HACR BRKR	FLA	LRA	MCA	MAX FUSE OF HACR BRKR	FLA	LRA				
50TC-128	STD	NONE	-	-	127.8/126.9	175/175	133/132	590	139.6/138.7	175/175	147/146	610	132.6/131.7	175/175	139/138	595	144.4/143.5	175/175	152/151	615
		279A00	18.8/25.0	52.1/60.1	127.8/126.9	175/175	133/132	590/590	139.6/138.7	175/175	147/146	610/610	132.6/131.7	175/175	139/138	595/595	144.4/143.5	175/175	152/151	615/615
		280A00	37.6/50.0	104.2/120.3	147.3/136.2	175/175	135/153	590/590	182.0/150.9	175/175	149/167	610/610	153.3/142.2	175/175	141/158	595/595	168.0/156.9	175/175	155/172	615/615
		281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	590/590	188.2/211.0	200/225	209/236	610/610	179.4/202.3	200/225	201/228	595/595	194.2/217.0	200/250	215/241	615/615
		NONE	-	-	131.3	175	137	586	143.1	175	151	606	136.1	175	143	591	147.9	175	156	611
		279A00	18.8/25.0	52.1/60.1	131.3/131.3	175/175	137/137	586/586	143.1/143.1	175/175	151/151	606/606	136.1/136.1	175/175	143/143	591/591	147.9/147.9	175/175	156/156	611/611
		280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	586/586	186.4/156.4	175/175	153/172	606/606	157.6/147.7	175/175	145/164	591/591	172.4/162.4	175/175	159/177	611/611
		281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	586/586	192.5/216.5	200/250	213/241	606/606	183.8/207.8	200/225	205/233	591/591	198.5/222.5	200/250	219/246	611/611
		NONE	-	-	142.7	175	150	665	154.5	200	164	685	147.5	175	156	670	159.3	200	169	690
		279A00	18.8/25.0	52.1/60.1	142.7/142.7	175/175	150/150	665/665	154.5/154.5	200/200	164/164	685/685	147.5/147.5	175/175	156/156	670/670	159.3/159.3	200/200	169/169	690/690
		280A00	37.6/50.0	104.2/120.3	165.9/155.9	175/175	153/171	665/665	180.6/170.7	200/200	166/185	685/685	171.9/161.9	175/175	158/177	670/670	186.6/176.7	200/200	172/190	690/690
		281A00	56.3/75.0	156.4/180.4	192.0/216.0	200/250	213/240	665/665	206.8/230.8	225/250	226/254	685/685	198.0/222.0	225/250	218/246	670/670	212.8/236.8	225/250	232/259	690/690
460-3-60	STD	NONE	-	-	51.9	60	54	302	58.1	70	61	314	54.1	60	57	304	60.3	70	64	316
		282A00	25.0	30.1	51.9	60	54	302	58.1	70	61	314	54.1	60	57	304	60.3	70	64	316
		283A00	50.0	60.1	68.1	80	76	302	75.9	80	84	314	70.9	80	79	304	78.6	80	86	316
		284A00	75.0	90.2	98.2	100	111	302	106.0	125	118	314	101.0	110	114	304	108.7	125	121	316
		NONE	-	-	54.1	60	57	300	60.3	70	64	312	56.3	70	59	302	62.5	80	66	314
		282A00	25.0	30.1	54.1	60	57	300	60.3	70	64	312	56.3	70	59	302	62.5	80	66	314
		283A00	50.0	60.1	70.9	80	79	300	78.6	80	86	312	73.6	80	82	302	81.4	90	89	314
		284A00	75.0	90.2	101.0	110	114	300	108.7	125	121	312	103.7	125	116	302	111.5	125	123	314
		NONE	-	-	59.8	70	63	340	66.0	80	70	352	62.0	80	66	342	68.2	80	73	354
		282A00	25.0	30.1	59.8	70	63	340	66.0	80	70	352	62.0	80	66	342	68.2	80	73	354
		283A00	50.0	60.1	78.0	90	86	340	85.7	90	93	352	80.7	90	88	342	88.5	100	95	354
		284A00	75.0	90.2	108.1	125	120	340	115.8	125	127	352	110.8	125	123	342	118.6	125	130	354
575-3-60	STD	NONE	-	-	41.7	50	44	244	46.5	60	49	252	43.4	50	46	246	48.2	60	51	254
		285A00	24.8	23.9	41.7	50	44	244	46.5	60	49	252	43.4	50	46	246	48.2	60	51	254
		286A00	49.6	47.7	67.4	70	62	244	73.4	80	68	252	69.5	70	64	246	75.5	80	69	254
		287A00	74.4	71.6	79.4	90	89	244	85.4	90	95	252	81.5	90	91	246	87.5	90	97	254
		NONE	-	-	43.1	50	45	242	47.9	60	51	250	44.8	50	47	244	49.6	60	53	252
		285A00	24.8	23.9	43.1	50	45	242	47.9	60	51	250	44.8	50	47	244	49.6	60	53	252
		286A00	49.6	47.7	69.1	70	64	242	75.1	80	69	250	71.3	80	66	244	77.3	80	71	252
		287A00	74.4	71.6	81.1	90	91	242	87.1	90	97	250	83.2	90	93	244	89.2	90	99	252
		NONE	-	-	45.0	50	47	269	49.8	60	53	277	46.7	60	49	271	51.5	60	55	279
		285A00	24.8	23.9	45.0	50	47	269	49.8	60	53	277	46.7	60	49	271	51.5	60	55	279
		286A00	49.6	47.7	71.5	80	66	269	77.5	80	71	277	73.6	80	68	271	79.6	80	73	279
		287A00	74.4	71.6	83.5	90	93	269	89.5	100	99	277	85.6	90	95	271	91.6	100	101	279

See: "Legend and Notes" on page 42

ELECTRICAL INFORMATION (cont)

Table 36 - 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.				NO PE.				w/ PWRD C.O.							
		IFM TYPE	CRHEATER*****	Nom (kW)	FLA	MCA	MAX FUSE or BRKR	DISC. SIZE		MCA	MAX FUSE or BRKR	FLA	LRA	MCA	DISC. SIZE		MAX FUSE or BRKR	FLA	LRA		
								FLA	LRA						FLA	LRA					
50TC-D30	460-3-60	STD	NONE	18.8/25.0	52.1/60.1	141.5	175	148	702	153.3	200	162	722	146.3	175	154	707	158.1	200	167	727
						141.5/141.5	175/175	148/148	702/702	153.3/153.3	200/200	162/162	722/722	146.3/146.3	175/175	154/154	707/707	158.1/158.1	200/200	167/167	727/727
						151.6/141.7	175/175	148/158	702/702	166.4/156.4	200/200	162/172	722/722	157.6/147.7	175/175	154/164	707/707	172.4/162.4	200/200	167/177	727/727
						177.8/201.8	200/225	200/227	702/702	192.5/216.5	200/250	213/241	722/722	183.8/207.8	200/225	205/233	707/707	198.5/222.5	200/250	219/246	727/727
50TC-D30	460-3-60	MED	NONE	18.8/25.0	52.1/60.1	152.9	200	161	781	164.7	200	175	801	157.7	200	167	786	169.5	200	180	806
						152.9/152.9	200/200	161/161	781/781	164.7/164.7	200/200	175/175	801/801	157.7/157.7	200/200	167/167	786/786	169.5/169.5	200/200	180/180	806/806
						165.9/155.9	200/200	161/171	781/781	180.6/170.7	200/200	175/185	801/801	171.9/161.9	200/200	167/177	786/786	186.6/176.7	200/200	180/190	806/806
						192.0/216.0	200/250	213/240	781/781	206.8/230.8	225/250	226/254	801/801	198.0/222.0	225/250	218/246	786/786	212.8/236.8	225/250	232/259	806/806
50TC-D30	460-3-60	HIGH	NONE	18.8/25.0	52.1/60.1	154.8	200	163	812	166.6	200	177	832	159.6	200	169	817	171.4	200	182	837
						154.8/154.8	200/200	163/163	812/812	166.6/166.6	200/200	177/177	832/832	159.6/159.6	200/200	169/169	817/817	171.4/171.4	200/200	182/182	837/837
						168.3/158.3	200/200	163/173	812/812	183.0/173.1	200/200	177/187	832/832	174.3/164.3	200/200	169/179	817/817	189.0/179.1	200/200	182/192	837/837
						194.4/218.4	225/250	215/242	812/812	209.2/233.2	225/250	228/256	832/832	200.4/224.4	225/250	220/248	817/817	215.2/239.2	225/250	234/262	837/837
50TC-D30	460-3-60	STD	282A00	25.0	30.1	66.0	80	69	354	72.2	90	76	366	68.2	90	72	356	74.4	90	79	368
						66.0	80	69	354	72.2	90	76	366	68.2	90	72	356	74.4	90	79	368
						70.9	80	79	354	78.6	90	86	366	73.6	90	82	356	81.4	90	89	368
						101.0	110	114	354	108.7	125	121	366	103.7	125	116	356	111.5	125	123	368
50TC-D30	460-3-60	MED	283A00	50.0	60.1	71.7	90	76	394	77.9	100	83	406	73.9	100	78	396	80.1	100	85	408
						71.7	90	76	394	77.9	100	83	406	73.9	100	78	396	80.1	100	85	408
						78.0	90	86	394	85.7	100	93	406	80.7	100	88	396	88.5	100	95	408
						108.1	125	120	394	115.8	125	127	406	110.8	125	123	396	118.6	125	130	408
50TC-D30	460-3-60	HIGH	284A00	75.0	90.2	72.6	90	77	409	78.8	100	84	421	74.8	100	79	411	81.0	100	86	423
						72.6	90	77	409	78.8	100	84	421	74.8	100	79	411	81.0	100	86	423
						79.1	90	87	409	86.9	100	94	421	81.9	100	89	411	89.6	100	96	423
						109.2	125	121	409	117.0	125	128	421	112.0	125	124	411	119.7	125	131	423
50TC-D30	460-3-60	STD	285A00	24.8	23.9	56.0	70	59	264	60.8	80	64	272	57.7	70	61	266	62.5	80	66	274
						56.0	70	59	264	60.8	80	64	272	57.7	70	61	266	62.5	80	66	274
						69.1	70	64	264	75.1	80	69	272	71.3	80	66	266	77.3	80	71	274
						81.1	90	91	264	87.1	90	97	272	83.2	90	93	266	89.2	90	99	274
50TC-D30	460-3-60	MED	286A00	49.6	47.7	57.9	70	61	291	62.7	80	66	299	59.6	70	63	293	64.4	80	68	301
						57.9	70	61	291	62.7	80	66	299	59.6	70	63	293	64.4	80	68	301
						71.5	80	66	291	77.5	80	71	299	73.6	80	68	293	79.6	80	73	301
						83.5	90	83	291	89.5	100	99	299	85.6	90	95	293	91.6	100	101	301
50TC-D30	460-3-60	HIGH	287A00	74.4	71.6	60.8	80	64	302	65.6	80	70	310	62.5	80	66	304	67.3	80	72	312
						60.8	80	64	302	65.6	80	70	310	62.5	80	66	304	67.3	80	72	312
						75.1	80	69	302	81.1	90	75	310	77.3	80	71	304	83.3	90	77	312
						87.1	100	97	302	93.1	100	102	310	89.2	100	99	304	95.2	100	104	312

See: "Legend and Notes" on page 42

SEQUENCE OF OPERATION

General

The sequence below describes the sequence of operation for an electro-mechanical unit with and without a factory-installed EconoMi\$er® 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 90.1-2016 and IECC-2015 standards during the first stage of cooling operation the VFD will adjust the fan motor to provide 66% 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 2-stage heating, when additional heating is required, the second stage of electric heat (if equipped) will be energized when power is applied at the W2 terminal on the unit.

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 EconoMi\$er 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 CO₂ sensors are connected to the EconoMi\$er IV and X control, a demand controlled ventilation strategy will begin to operate. As the CO₂ level in the zone increases above the CO₂ setpoint, the minimum position of the damper will be increased proportionally. As the CO₂ level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed. For EconoMi\$er 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 EconoMi\$er 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 EconoMi\$er IV and X damper to the minimum position.

On the initial power to the EconoMi\$er 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 EconoMi\$er IV and X damper will be open at maximum position. EconoMi\$er 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 66% of the total cfm established.

SEQUENCE OF OPERATION (cont)

Heating —

The sequence of operation for the heating is the same as an electro-mechanical 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.

Optional Humidi-MiZer[®] Dehumidification System

Units with the factory equipped Humidi-MiZer system option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle. The Humidi-MiZer system 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.

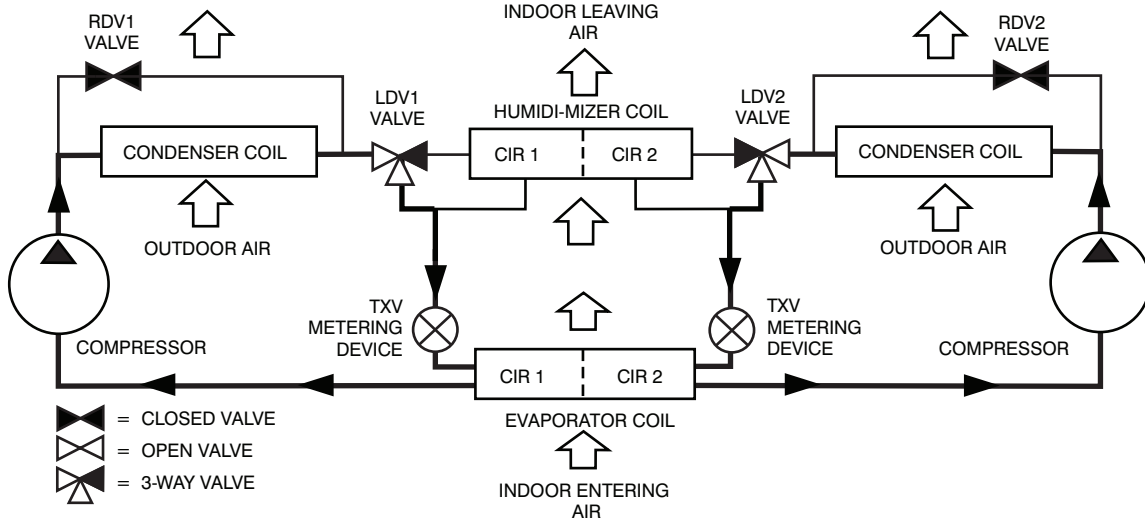
Reheat2 - provides normal Latent Cooling but with null or minimum Sensible Cooling effect delivered to the space.

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.

RTU Open (Factory Option)

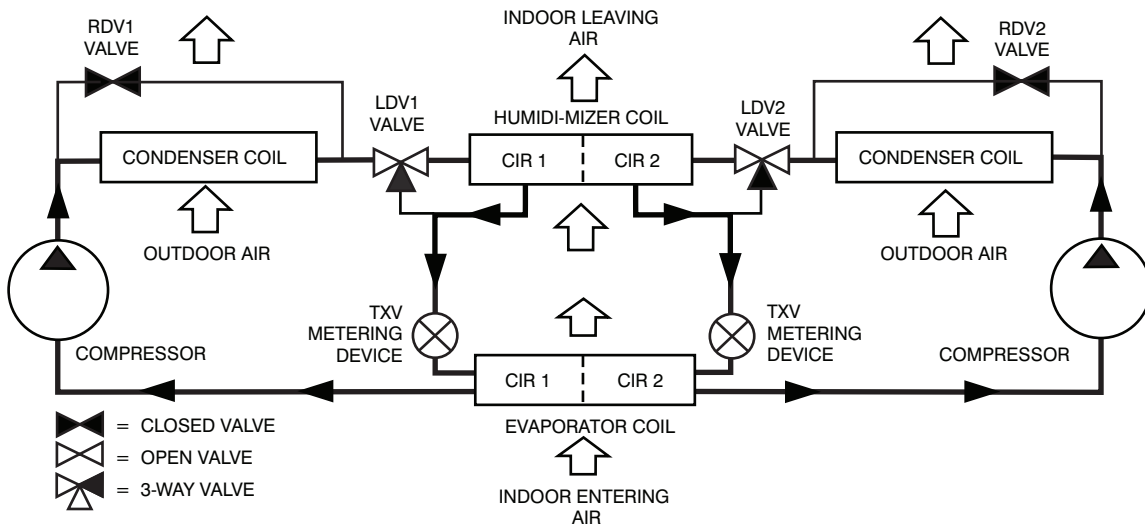
For details on operating 50TC units equipped with the factory-installed RTU Open option refer to *Factory Installed Option RTU Open Multi-Protocol Controller Controls, Start-Up, Operation and Troubleshooting* manual.

SEQUENCE OF OPERATION (cont.)



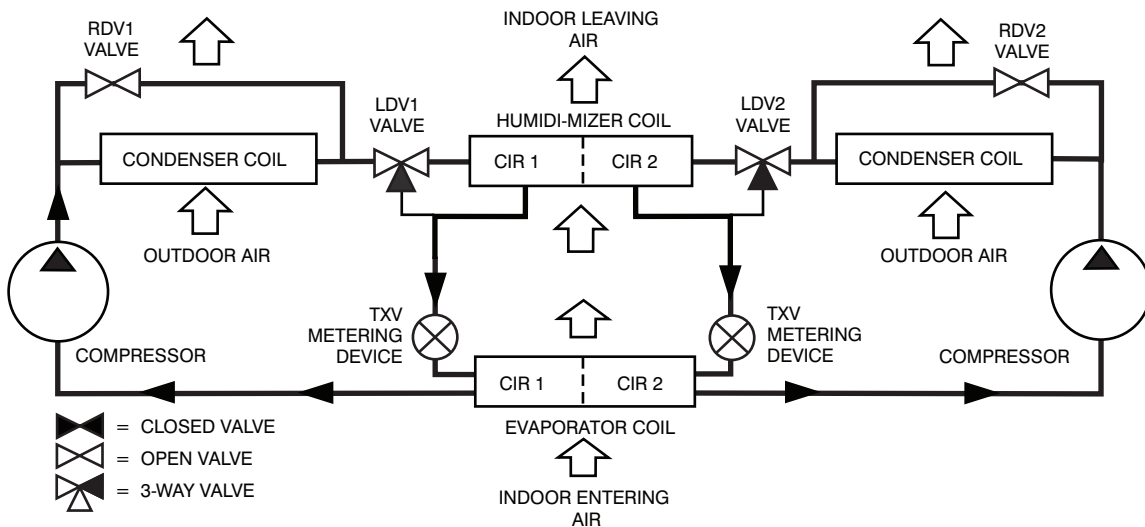
Normal Cooling Mode - Humidi-MiZer[®] System

C13792



Subcooling Mode (Reheat 1) - Humidi-MiZer System

C13809



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

C13793

GUIDE SPECIFICATIONS - 50TC-*17-30

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 27.5 Nominal Tons



<u>Section</u>	<u>Description</u>
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23 06 80	Schedules for Decentralized HVAC Equipment
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- | | |
|----------------|---|
| 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
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- | | |
|----------------|--|
| 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. |
| 3. | Unit internal insulation linings shall be resistant to mold growth in accordance with “mold growth and humidity” test in ASTM C1338, G21, and UL 181 or comparable test method. Air stream surfaces shall be evaluated in accordance with the “Erosion Test” in UL 181, as part of ASTM C1071. |
| 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
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- | | |
|----------------|---|
| 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
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|----------------|--|
| 23 09 23.13 | Decentralized, Rooftop Units: |
| 23 09 23.13.A. | PremierLink™ controller |
| 1. | Shall be ASHRAE 62 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 ₂ sensor in the conditioned space, and be Demand Controlled 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 at 20-300 Hz.
17. Shall support a bus length of 4000 ft max (1219 m), 60 devices per 1000 ft (305 m) section, and 1 RS-485 repeater per 1000ft sections.

* LonWorks is a registered trademark of Echelon Corporation.

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.

[†] BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).

** Modbus is a registered trademark of Schneider Electric.

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 33.13.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.A. 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 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 90.1-2016 and IECC-2015 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 internal insulation linings shall be resistant to mold growth in accordance with "mold growth and humidity" test in ASTM C1338, G21, and UL 181 or comparable test method. Air stream surfaces shall be evaluated in accordance with the "Erosion Test" in UL 181, as part of ASTM C1071.
7. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
8. Roof curb shall be designed to conform to NRCA Standards.
9. 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.
10. Unit shall be designed in accordance with UL Standard 1995, ETL listed including tested to withstand rain.
11. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.
12. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.
13. High Efficiency 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 ± 10% voltage.
2. Compressor with standard controls shall be capable of operation from 30°F (-1°C), ambient outdoor temperatures. Accessory kits are necessary if mechanically cooling at ambient temperatures below 30°F (-1°C).
3. Unit shall discharge supply air vertically as shown on contract drawings.
4. Unit shall be factory configured and ordered for vertical supply and return configurations.
5. Unit shall be factory furnished for vertical configuration. No field conversion is required.

23 81 19.13.F. Electrical Requirements

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

23 81 19.13.G. Unit Cabinet

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a pre-painted baked enamel finish on all externally exposed surfaces.
2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003 inches minimum, gloss (per ASTM D523, 60°F / 16°C): 60, Hardness: H-2H Pencil hardness.
3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI 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. Unit internal insulation linings shall be resistant to mold growth in accordance with “mold growth and humidity” test in ASTM C1338, G21, and UL 181 or comparable test method. Air stream surfaces shall be evaluated in accordance with the “Erosion Test” in UL 181, as part of ASTM C1071.
5. 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.
6. 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.
7. 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.
8. Top panel:
 - a. Shall be a multi-piece top panel linked with water tight flanges and interlocking systems.
9. 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.
10. 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. They shall be 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. 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.
 - d. Corrosion durability of fin stock shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90.
 - e. Corrosion durability of fin stock shall be confirmed through testing to have no visible corrosion after 48 hour immersion in a room temperature solution of 5% salt, 1% acetic acid.
 - f. Fin stock coating shall pass 2000 hours of the following: one week exposure in the prohesion chamber followed by one week of accelerated ultraviolet light testing. Prohesion chamber: the solution shall contain 3.5% sodium chloride and 0.35% ammonium sulfate. The exposure cycle is one hour of salt fog application at ambient followed by one hour drying at 95°F (35°C).
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 6000 hours salt spray per ASTM B117-90.
5. Standard All Aluminum Novation® Coils:
 - a. Standard condenser coils shall have all aluminum Novation Heat Exchanger Technology design consisting of aluminum multi port flat tube design and aluminum fin. Coils shall be a furnace brazed design and contain epoxy lined shrink wrap on all aluminum to copper connections.
 - b. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
6. Optional E-coated aluminum-fin, aluminum tube condenser coils:
 - a. Shall have a flexible epoxy polymer coating uniformly applied to all coil external surface areas without material bridging between fins.
 - b. Coating process shall ensure complete coil encapsulation, including all exposed fin edges.
 - c. E-coat thickness of 0.8 to 1.2 mil with top coat having a uniform dry film thickness from 1.0 to 2.0 mil on all external coil surface areas, including fin edges, shall be provided.
 - d. Shall have superior hardness characteristics of 2H per ASTM D3363-00 and cross-hatch adhesion of 4B-5B per ASTM D3359-02.
 - e. Shall have superior impact resistance with no cracking, chipping or peeling per NSF/ANSI 51-2002 Method 10.2.

23 81 19.13.I. Refrigerant Components

1. Refrigerant circuit shall include the following control, safety, and maintenance features:
 - a. Fixed orifice metering system (on non-Humidi-MiZer[®] system units) shall prevent mal-distribution of two-phase refrigerant by including multiple fixed orifice devices in each refrigeration circuit. Each orifice is to be optimized to the coil circuit it serves.
 - b. Thermostatic Expansion Valve (TXV) shall help provide optimum performance across the entire operating range. Shall contain removable power element to allow change-out of power element and bulb without removing the valve body (for Humidi-MiZer system units only).
 - c. Refrigerant filter drier - Solid core design.
 - d. Service gauge connections on suction and discharge lines.
 - e. Pressure gauge access through a specially designed 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.J. 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.K. 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 lubricated fittings that 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 finish that aids with corrosion resistance and dynamically balanced.

23 81 19.13.L. 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 steel spiders that have corrosion resistant properties and shall be dynamically balanced.

23 81 19.13.M. 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. Factory-supplied VFDs qualify, through ABB, for a 24-month warranty from date of commissioning or 30 months from date of sale, whichever occurs first.
 - b. Shall be installed inside the unit cabinet, mounted, wired and tested.
 - c. Shall contain Electromagnetic Interference (EMI) frequency protection.
 - d. Insulated Gate Bi-Polar Transistors (IGBT) used to produce the output pulse width modulated (PWM) waveform, allowing for quiet motor operation.
 - e. Self diagnostics with fault and power code LED indicator. Field accessory Display Kit available for further diagnostics and special setup applications.
 - f. RS485 capability standard.
 - g. Electronic thermal overload protection.
 - h. 5% swinging chokes for harmonic reduction and improved power factor.
 - i. All printed circuit boards shall be conformal coated.
 3. Integrated EconoMiSer® IV, EconoMiSer 2, and EconoMiSer 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 vertical 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 models shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.
 - g. Economizer controller on EconoMiSer IV models shall be the 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 EconoMiSer 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 EconoMiSer 2 models with PremierLink™ controller shall be 4-20mA design and controlled by the PremierLink controller. PremierLink controller does not comply with California Title 24 Fault Detection & Diagnostic (FDD) requirements.
 - j. Economizer controller on EconoMiSer 2 models with RTU Open controller shall be 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 ASHRAE 90.1-2016 and IECC-2015 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 for factory-installed economizers 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 close 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\$er[®] 2, 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 vertical 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 ASHRAE 90.1-2016 and IECC-2015 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 EconoMi\$er 2 models with RTU Open controller shall be 4-20mA design controlled directly by the RTU Open controller. RTU Open controller 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 90.1-2016 and IECC-2015 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 for factory-installed economizers 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 close 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 Motorized Damper :
 - a. Damper shall be a Two-Position Damper. Damper travel shall be from the full closed position to the field adjustable %-open setpoint.
 - b. Damper shall include adjustable damper travel from 25% to 100% (full open).
 - c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
 - d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
 - e. Damper will admit up to 100% outdoor air for applicable rooftop units.
 - f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
 - g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
 - h. Outside air hood shall include aluminum water entrainment filter.
- 6. Manual damper
 - a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25% outdoor air for year round ventilation.
- 7. Humidi-MiZer[®] Adaptive Dehumidification System (not available on 30 size models)
 - a. The Humidi-MiZer Adaptive Dehumidification System shall be factory-installed in 50TC17-28 models with RTPF (round tube plate fin) condenser coils, and shall provide greater dehumidification of the occupied space by two modes of dehumidification operations beside its normal design cooling mode:
 - (1.) Subcooling mode further subcools the hot liquid refrigerant leaving the condenser coil when both temperature and humidity in the space are not satisfied.
 - (2.) Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to create a two-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.
 - (3.) Includes head pressure controller.
- 8. Head Pressure Control Package (Motormaster[®])
 - a. Controller shall control coil head pressure by condenser-fan speed modulation or condenser-fan cycling and wind baffles.
 - b. Shall consist of solid-state control and condenser-coil temperature sensor to maintain condensing temperature between 90°F (32°C) and 110°F (43°C) at outdoor ambient temperatures down to -20°F (-29°C).
- 9. Condenser Coil Hail Guard Assembly
 - a. Shall protect against damage from hail.
 - b. Shall be louvered style design.
- 10. Unit-Mounted, Non-Fused Disconnect Switch:
 - a. Switch shall be factory-installed, internally mounted.
 - b. National Electric Code (NEC) and ETL approved non-fused switch shall provide unit power shutoff.
 - c. Shall be accessible from outside the unit
 - d. Shall provide local shutdown and lockout capability.
 - e. Sized only for the unit as ordered from the factory. Does not accommodate field-installed devices.
- 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. Unpowered 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. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0-100% adjustable setpoint on the economizer control.
 14. Roof Curbs (Vertical):
 - a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
 - b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
 - c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
 15. Adapter Curb (Vertical):
 - a. Full perimeter – fully assembled and welded roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
 - b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
 - c. Permits installation of new 48TC17-28 models to past Carrier design curb models: DP, DR, HJ, TM, and TJ. (Not for 48TJE024-028 models.) Check with Carrier sales expert of further details and information.
 16. 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.
 17. 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.
 18. 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.
 19. Indoor Air Quality (CO₂) 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.
 20. 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.
 21. Horn/Strobe Annunciator
 - a. Provides an audible/visual signaling device for use with factory-installed option or field-installed accessory smoke detectors.
 - (1.) Requires installation of a field-supplied 24-v transformer suitable for 4.2 VA (AC) or 3.0 VA (DC) per horn/strobe accessory.
 - (2.) Requires field-supplied electrical box, North American 1-gang box, 2-in (51 mm) x 4-in (102 mm).

- (3.) Shall have a clear colored lens.
- 22. 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).
- 23. 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.
- 24. 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.
- 25. California OSHPD Seismic Certification Label (17-28 sizes only)
 - a. Units meet the seismic requirements of the International Code Council Evaluation Service (ICC-ES) document AC156 (Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems) and per International Building Code (IBC 2009) at an SDS (g) value of 2.00 $z/h=1.0$, $I_p=1.5$ and certified by independent structural engineers.
 - b. Units shall include a certification label that meets the CA OSHPD Special Seismic Certification pre-approval labeling requirements on the external chassis of the unit.
- 26. 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.
- 27. 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.
- 28. 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 Open ADR 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.

