

**50HC  
High Efficiency  
Cooling Only/Electric Heat Packaged Rooftop  
15 to 25 Nominal Tons**



## Product Data



(Unit shown with optional economizer and power exhaust.)

C101008



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

## **Easy to install:**

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

## **Easy to maintain:**

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

## **Easy to use:**

The newly designed, central terminal board by Carrier puts all your connections and troubleshooting points in one convenient place, standard. Most low voltage connections are made to the same board and make it easy to find what you’re looking for and easy to access it.

## **Reliable:**

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

## FEATURES AND BENEFITS

- Two stage cooling capacity with independent circuits and control.
- High performance copper tube/aluminum plate fin (RTPF) condenser and evaporator coils with optional coating.
- EER's up to 12.2.
- IEER's up to 13.4 with single speed indoor fan motor and up to 14.0 with 2-speed/VFD indoor fan motor.
- Dedicated vertical and horizontal air flow duct configuration models. No field kits required.
- Utility connections through the side or bottom. Bottom connections are also in an enclosed environment to help prevent water entry. Field supplied couplings are required.
- Standardized components and control box layout. Standardized components and controls make stocking parts and service easier.
- Scroll compressors on all units. This makes service, stocking parts, replacement, and trouble-shooting easier.
- Precision sized TXV metering device on each refrigerant circuit.
- 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 or thru-the-curb 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 (125°F to 35°F / 52°C to 2°C) standard on all models. Low ambient controller allows operation down to -20°F / -29°C.
- 2-in (51mm) disposable filters on all units, with 4-in (102mm) filter track - field installed.
- Refrigerant filter-drier on each circuit.
- High and low pressure switches. Added reliability with high pressure switch and low pressure switch.
- Many factory-installed options ranging from air management economizers, 2 position dampers, manual outdoor air dampers, plus convenience outlets, disconnect switch and smoke detectors.
- Factory-installed Humidi-MiZer® adaptive dehumidification system on all sizes with round tube/plate fin (RTPF) condenser coils, includes MotorMaster I controller.
- Standard Parts Warranty: 5 year compressor, 5 year electric heater, 1 year others.
- Optional Staged Air Volume (SAV) system utilizes a Variable Frequency Drive (VFD) to automatically adjust the indoor fan motor speed between cooling stages. Available on models with electromechanical, ComfortLink or RTU Open controls.

# MODEL NUMBER NOMENCLATURE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
5	0	H	C	-	D	2	4	A	3	A	5	-	0	A	0	A	0

## Product Type

50 = Elect Heat Pkg. Rooftop

## Model Series – WeatherMaster

HC = High Efficiency

## Electric Heat Option

- = Standard (No Electric Heat)  
 A = Low Electric Heat  
 B = Medium Electric Heat  
 C = High Electric Heat

## Refrigerant System Options

D = 2 stage Cooling w/RTPF  
 E = 2 stg cooling w/Humidi-MiZer  
 G = 2 stg cool w/Motormaster low amb cntl

## Cooling Tons

17 = 15 ton  
 20 = 17.5 ton  
 24 = 10 ton  
 28 = 25 ton

## Sensor Options

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

## 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 = Med Static High Eff Motor / Vert Supply Return Air Flow  
 C = High Static High Eff Motor / Vert Supply Return Air Flow  
 5 = Standard Static / Horizontal Supply, Return Air Flow  
 6 = Medium Static / Horizontal Supply, Return Air Flow  
 7 = High Static / Horizontal Supply, Return Air Flow  
 F = Med Static High Eff Motor / Horiz Supply Return Air Flow  
 G = High Static High Eff Motor / Horiz Supply Return Air Flow

## Coil Options (RTPF) (Outdoor-Indoor-Hail Guard)

A = Al/Cu – Al/Cu  
 B = Pre-coat 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 = Pre-Coat Al/Cu – Al/Cu – Louvered Hail Guard  
 P = E-Coat Al/Cu – Al/Cu Louvered Hail Guard  
 Q = E-Coat Al/Cu – E-coat Al/Cu – Louvered Hail Guard  
 R = Cu/Cu – Al/Cu – Louvered Hail Guard  
 S = Cu/Cu – Cu/Cu – Louvered Hail Guard

## Packaging

0 = Standard

## Electrical Options

A = None  
 B = HACR Breaker  
 C = Non-fused disconnect  
 G = 2-speed indoor fan (VFD) controller  
 J = 2-spd contr (VFD) & non-fused disc

## Service Options

0 = None  
 1 = Un-powered Convenience Outlet  
 2 = Powered Convenience Outlet  
 3 = Hinged Panels  
 4 = Hinged Panels, un-powered C.O.  
 5 = Hinged Panels, powered C.O.  
 C = Foil faced insulation

## Intake / Exhaust Options

A = None  
 B = Temperature Economizer w/Barometric Relief  
 F = Enthalpy Economizer w/Barometric Relief  
 K = 2 position Damper  
 U = Temp Ultra Low Leak Economizer w/Baro Relief  
 V = Temp Ultra Low Leak Econo w/PE(cent) Vert.  
 W = Enthalpy Ultra Low Leak Econo w/Baro Relief  
 X = Enth. Ultra Low Leak Econo w/PE(cent) Vert.

## Base Unit Controls

0 = Electromechanical Controls. Can be used with W7212 EconoMi\$er IV (Non-Fault Detection and Diagnostic)  
 1 = PremierLink Controller  
 2 = RTU Open Multi-Protocol Controller  
 6 = Electromechanical Controls. Can be used with W7220 EconoMi\$er 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

Not all possible options can be displayed above – see price pages or contact your Carrier Expert for more details

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

CATEGORY	ITEM	FACTORY INSTALLED OPTION	FIELD INSTALLED ACCESSORY
<b>Cabinet</b>	Dedicated Vertical Air Flow Duct Configuration	X	
	Dedicated Horizontal Air Flow Duct Configuration	X	
	Hinged Access Panels	X	
<b>Coil Options</b>	Cu/Cu (indoor) coils	X	
	E-coated indoor & outdoor coils	X	
	Pre-coated outdoor coils	X	
<b>Humidity Control</b>	Humidi-MiZer Adaptive Dehumidification System	X	
<b>Condenser Protection</b>	Condenser coil hail guard (louvered design)	X	X
<b>Controls</b>	Thermostats, temperature sensors, and subbases		X
	PremierLink DDC communicating controller	X	X
	RTU Open protocol controller	X	
	ComfortLink Controls	X	
	Smoke detector (supply and/or return air)	X	X
	Time Guard II compressor delay control circuit		X
	Phase Monitor		X
<b>Economizers &amp; Outdoor Air Dampers</b>	EconoMi\$er IV for electro-mechanical controls – Non FDD (Standard air leak damper models) <sup>7</sup>	X	X
	EconoMi\$er2 for DDC controls, complies with FDD (Standard and Ultra Low Leak air damper models) <sup>7, 8</sup>	X	X
	Motorized 2 position outdoor-air damper	X	X
	Manual outdoor-air damper (25%)		X
	Barometric relief <sup>1</sup>	X	X
	Barometric hood (Horizontal economizer)		X
	Power exhaust	X	X
<b>Economizer Sensors &amp; IAQ Devices</b>	EconoMi\$er X for electro-mechanical control, complies with FDD. (Standard and Ultra Low Leak air damper models) <sup>7</sup>	X	X
	Single dry bulb temperature sensors <sup>2</sup>	X	X
	Differential dry bulb temperature sensors <sup>2</sup>		X
	Single enthalpy sensors <sup>2</sup>	X	X
	Differential enthalpy sensors <sup>2</sup>		X
<b>Electric Heat</b>	CO <sub>2</sub> sensor (wall, duct, or unit mounted) <sup>2</sup>	X	X
	Electric Resistance Heaters	X	X
<b>Indoor Motor &amp; Drive</b>	Single Point Kit	X	X
	Multiple motor and drive packages	X	
	Staged Air Vol (SAV) system w/VFD controller (2-stage cool only with electrical mechanical and RTU Open controls)	X	
<b>Low Ambient Control</b>	Display Kit for SAV system with VFD		X
	Winter start kit <sup>3</sup>		X
	MotorMaster head pressure controller to -20°F (-29°C) <sup>3</sup>		X
<b>Power Options</b>	Cooling Low Ambient Controller to 0°F (-18°C) <sup>3</sup>	X	
	Convenience outlet (powered)	X	
	Convenience outlet (unpowered)	X	
	Non-fused disconnect <sup>4</sup>	X	
<b>Roof Curbs</b>	HACR circuit breaker <sup>5</sup>	X	
	Roof curb 14-in (356mm)		X
	Roof curb 24-in (610mm)		X
	Adapter Curb (Adapts to Models – DP/DR/HJ/TM/TJ) <sup>6</sup>		X

**NOTES:**

- Included with economizer.
- Sensors for optimizing economizer.
- See application data for assistance.
- Non-fused disconnect switch cannot be used when FLA electrical rating exceeds 100 amps at 460/575 volt and 200 amps at 208/230 volt. Carrier RTUBuilder selects this automatically.
- HACR circuit breaker cannot be used when rooftop MOCB electrical rating exceeds 200 amps at 208/230 volt, 90 amps at 460 volt and 90 amps at 575 volt. 575 volt can only be used on Wye power supply. Delta power supply is prohibited. Carrier RTUBuilder selects this automatically.
- Not for 48TJE028-028 models using 48DP900041, 48DP900051 or 48DP900061 roofcurbs.
- FDD (Fault Detection and Diagnostic) capability per California R\Title 24 section 120.2
- Models with RTU Open DDC controls comply with California Title 24 Fault Detection and Diagnostic (FDD). PremierLink in non FDD.

# FACTORY OPTIONS AND/OR ACCESSORIES

## **Economizer (dry-bulb or enthalpy)**

Economizers save energy, money and improve comfort levels in the conditioned space. They bring in fresh, outside air for ventilation; and provide cool outside air to cool your building. This also is the preferred method of low ambient cooling. When integrated with CO<sub>2</sub> sensors, economizers can provide even more savings by coupling the ventilation air to only that amount required based on space occupancy. Economizers are available, installed and tested by the factory, with either enthalpy or temperature dry-bulb inputs. There are also models for electromechanical, direct digital controllers and single speed fan or 2-speed indoor fan motors. Additional sensors are available as accessories to optimize the economizer. Economizers include gravity controlled barometric relief that helps equalize building pressure and ambient air pressures. This can be a cost effective solution to prevent building pressurization. Economizers are available in Ultra Low Leak and standard low leak versions.

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

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

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

## **Smoke Detectors**

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

## **Louvered Hail Guards**

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

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

Reduce service and/or installation costs by including a convenience outlet in your specification. Carrier will install this service feature at our factory. Provides a convenient, 15 amp, 115v GFCI receptacle with “Wet in Use” cover. The “powered” option allows the installer to power the outlet from the line side of the disconnect as required by code. The “unpowered” option is to be powered from a separate 115/120v power source.

## **Non-Fused Disconnect**

This OSHA-compliant, factory-installed, safety switch allows a service technician to locally secure power to the rooftop.

## **Power Exhaust with Barometric Relief**

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

## **PremierLink, DDC Controller**

This CCN controller regulates your rooftop’s performance to tighter tolerances and expanded limits, as well as facilitates zoning systems and digital accessories. It also unites your Carrier HVAC equipment together on one, coherent CCN network. The PremierLink can be factory-installed, or easily field-installed.

## **RTU Open Protocol Controller**

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

## **Time Guard II Control Circuit**

This accessory protects your compressor by preventing short-cycling in the event of some other failure, prevents the compressor from restarting for 30 seconds after stopping. Not required with PremierLink®, RTU Open, or authorized commercial thermostats.

## **Filter or Fan Status Switches**

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

## **Motorized 2-Position Damper**

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

## **Manual OA Damper**

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

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

### Optional Humidi-MiZer Adaptive Dehumidification System

Carrier's Humidi-MiZer adaptive dehumidification system is an all-inclusive factory installed option that can be ordered with any WeatherMaster 50HC17-28 rooftop unit.

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

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

The WeatherMaster 50HC17-28 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 2010 standard section 6.4.3.10.b, during the first stage of cooling operation the VFD will adjust the fan motor to provide 2/3rd of the total cfm established for the unit. When a call for the second stage of cooling is required, the VFD will allow the total cfm for the unit established (100%). During the heating mode the VFD will allow total design cfm (100%) operation and during the ventilation mode the VFD will allow operation to 2/3rd of total cfm.

Compared to single speed indoor fan motor systems, Carrier's SAV system can save substantial energy, 25%+\*, versus single speed indoor fan motor systems.

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

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

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

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

### Motormaster Head Pressure Controller

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

### Winter Start Kit

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

### Alternate Motors and Drives

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

### Thru-the-Base Connections

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

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

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

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

### **Barometric Hood**

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

### **Hinged Access Panels**

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

### **HACR Breaker**

These manual reset devices provide overload and short circuit protection for the unit. Factory wired and mounted with the units with access cover to help provide environment protection.

On 575V applications, HACR breaker can only be used with WYE power distribution systems. Use on Delta power distribution systems is prohibited.

### **Foil Faced Insulated Cabinet**

Cabinet is fully insulated with non-fibrous, foil faced cleanable insulation that is secured and encapsulated in unit design.

### **Low Ambient Controller**

The low ambient controller is a head pressure controller kit that is designed to maintain the unit's condenser head pressure during periods of low ambient cooling operation. This device should be used as an alternative to economizer free cooling not when economizer usage is either not appropriate or desired. The low ambient controller will either cycle the outdoor fan motors or operate them at reduced speed to maintain the unit operation, depending on the model. This controller allows cooling operation down to 0°F (-18°C) ambient conditions.



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

UNIT	COOLING STAGES	NOM. CAPACITY (TONS)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	EER	IEER WITH SINGLE SPEED INDOOR FAN	IEER WITH 2–SPEED INDOOR FAN
17	2	15.0	174.0	14.3	12.2	13.2	13.7
20	2	17.5	202.0	16.6	12.2	13.2	13.8
24	2	20.0	236.0	19.3	12.2	13.4	14.0
28	2	25.0	282.0	24.7	11.4	12.2	12.7

**LEGEND**

- AHRI – Air Conditioning, Heating and Refrigeration Institute
- ASHRAE – American Society of Heating, Refrigerating and Air Conditioning, Inc.
- EER – Energy Efficiency Ratio
- 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. All 50HC units comply with ASHRAE 90.1 and Energy Star Energy Standard for minimum EER and IEER requirements.
4. Where appropriate, 50HC 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.



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



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

MODEL SIZE	NOMINAL kW	ELECTRIC HEATERS		COOLING			
		MINIMUM	MAXIMUM	Minimum Single Speed Fan Motor	Minimum 2–speed Fan Motor (at high speed)	Minimum 2–speed Fan Motor (at low speed)	Maximum
17	25	4500	7500	4500	5070	3346	7500
	50						
	75						
20	25	5200	9000	5250	5915	3904	9000
	50						
	75						
24	25	6000	10000	6000	7500	4950	10000
	50						
	75						
28	25	7000	12500	7500	8450	5577	12500
	50						
	75						

**Table 4 – SOUND PERFORMANCE TABLE**

MODEL SIZE	COOLING STAGES	OUTDOOR SOUND (dB)									
		A–Wtg.	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

**LEGEND**

dB – Decibel

**NOTES:**

1. Outdoor sound data is measure 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 accounts for specific environmental factors which 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 an “average” human ear. A–weighted measurements for Carrier units are taken in accordance with 270–2008.

**Table 5 – PHYSICAL DATA**

**(COOLING)**

**15 - 25 TONS**

	<b>50HC*17</b>	<b>50HC*20</b>	<b>50HC*24</b>	<b>50HC*28</b>	
<b>Refrigeration System</b>					
# Circuits / # Comp. / Type	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	
R-410a charge circuit A/B (lbs)	17/16.4	17.5/16.8	23.8/23.1	24.9/27.7	
Humidi-MiZer R-410a charge circuit A/B (lbs)	24.5/25.7	25.5/25.5	30.0/30.7	35.1/35.4	
Metering device	TXV	TXV	TXV	TXV	
High-press. Trip / Reset (psig)	630 / 505	630 / 505	630 / 505	630 / 505	
Low-press. Trip / Reset (psig)	54 / 117	54 / 117	54 / 117	54 / 117	
Compressor Capacity Staging (%)	50% / 100%	50% / 100%	50% / 100%	50% / 100%	
<b>Evap. Coil</b>					
Material	Cu / Al	Cu / Al	Cu / Al	Cu / Al	
Tube Diameter	3/8-in RTPF	3/8-in RTPF	3/8-in RTPF	3/8-in RTPF	
Rows / FPI	4 / 15	4 / 15	4 / 15	4 / 15	
Total face area (ft2)	22	22	26	26	
Condensate drain conn. size	3/4-in	3/4-in	3/4-in	3/4-in	
<b>Humidi-MiZer Coil</b>					
Material	Cu / Al	Cu / Al	Cu / Al	Cu / Al	
Tube Diameter	3/8-in RTPF	3/8-in RTPF	3/8-in RTPF	3/8-in RTPF	
Rows / FPI	1 / 17	1 / 17	1 / 17	1 / 17	
Total face area (ft2)	22	22	26	26	
<b>Evap. fan and motor</b>					
<b>VERTICAL</b>					
Standard Static	Motor Qty / Drive type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	2.2	3.3	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 / Drive type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	3.3	4.9	6.5	6.5
	RPM range	679-863	713-879	835-1021	913-1116
	Motor frame size	56	56	184T	184T
	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 / Drive type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	4.9	6.5	8.7	8.7
	RPM range	826-1009	882-1078	941-1176	941-1176
	Motor frame size	56	184T	213T	213T
	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

HORIZONTAL		50HC*17	50HC*20	50HC*24	50HC*28
Standard Static	Motor Qty / Drive type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	2.2	3.3	4.9	4.9
	RPM range	514–680	622–822	690–863	647–791
	Motor frame size	56	56	56	184T
	Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	18 x 15/15 X 11	18 x 15/15 X 11	18 x 15/15 X 11	18 x 15/15 X 11
Medium Static	Motor Qty / Drive type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	3.3	4.9	6.5	6.5
	RPM range	614–780	713–879	835–1021	755–923
	Motor frame size	56	56	184T	184T
	Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	18 x 15/15 X 11	18 x 15/15 X 11	18 x 15/15 X 11	18 x 15/15 X 11
High Static	Motor Qty / Drive type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	4.9	6.5	8.7	8.7
	RPM range	746–912	882–1078	941–1176	827–1010
	Motor frame size	56	184T	213T	213T
	Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal
	Fan Diameter (in)	18 x 15/15 X 11	18 x 15/15 X 11	18 x 15/15 X 11	18 x 15/15 X 11
<b>Cond. Coil (Circuit A)</b>					
	Coil type	RTPF	RTPF	RTPF	RTPF
	Coil Length (in)	70	72	82	95
	Coil Height (in)	44	44	52	52
	Rows / FPI (fins per inch)	2 /17	2 /17	2 /17	2 /17
	Total face area (ft2)	21.4	22.0	29.6	34.3
<b>Cond. Coil (Circuit B)</b>					
	Coil type	RTPF	RTPF	RTPF	RTPF
	Coil Length (in)	70	64	80	95
	Coil Height (in)	44	44	52	52
	Rows / FPI (fins per inch)	2 /17	2 /17	2 /17	2 /17
	Total face area (ft2)	21.4	19.5	29.6	34.3
<b>Cond. fan / motor</b>					
	Qty / Motor drive type	3 / direct	4 / direct	4 / direct	6 / direct
	Motor HP / RPM	1/4 / 1100	1/4 / 1100	1/4 / 1100	1/4 / 1100
	Fan diameter (in)	22	22	22	22
<b>Filters</b>					
	RA Filter # / size (in)	6 / 20 x 25 x 2	6 / 20 x 25 x 2	9 / 16 x 25 x 2	9 / 16 x 25 x 2
	OA inlet screen # / size (in)	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1	4 / 16 x 25 x 1

# DIMENSIONS

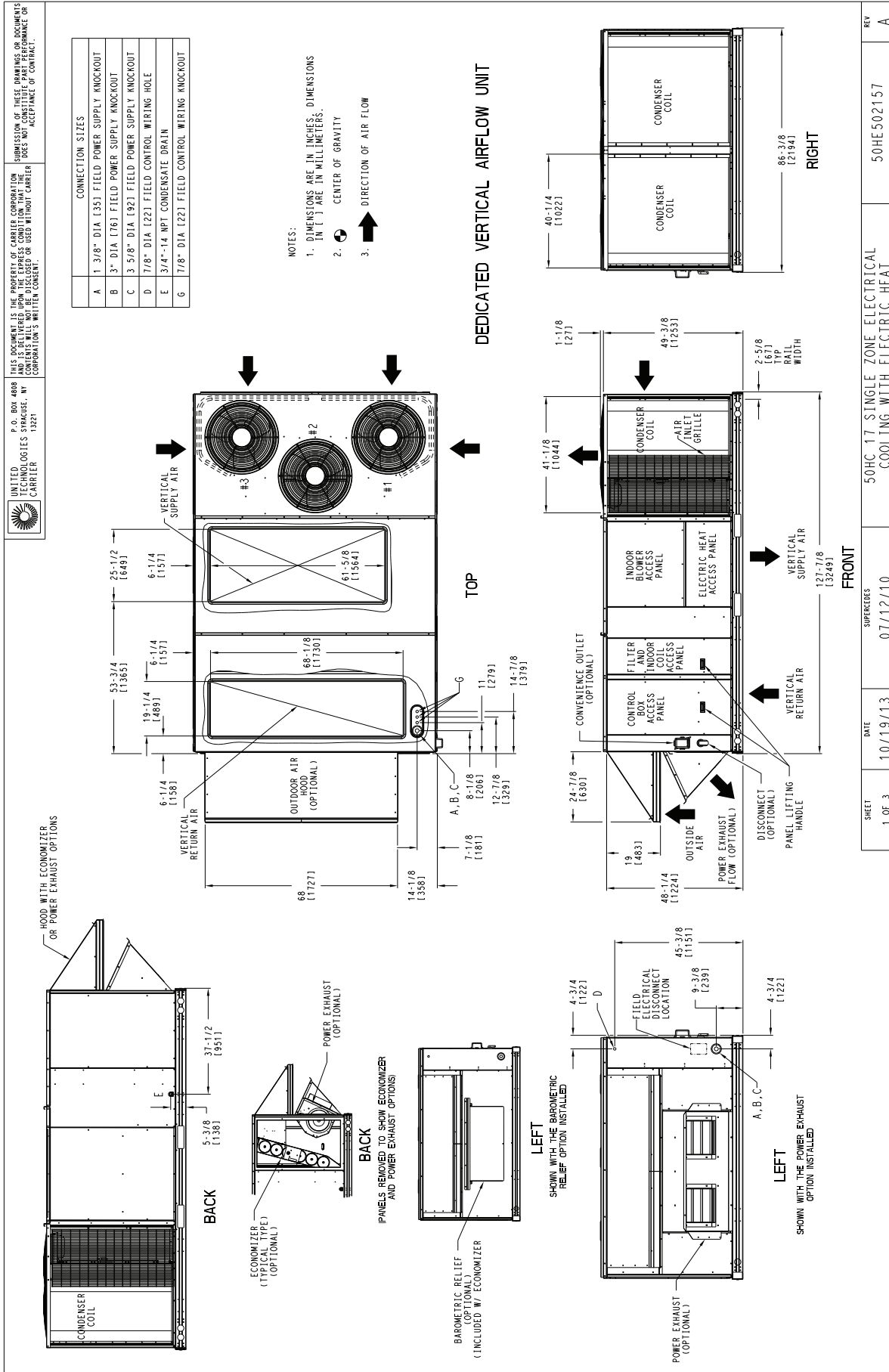
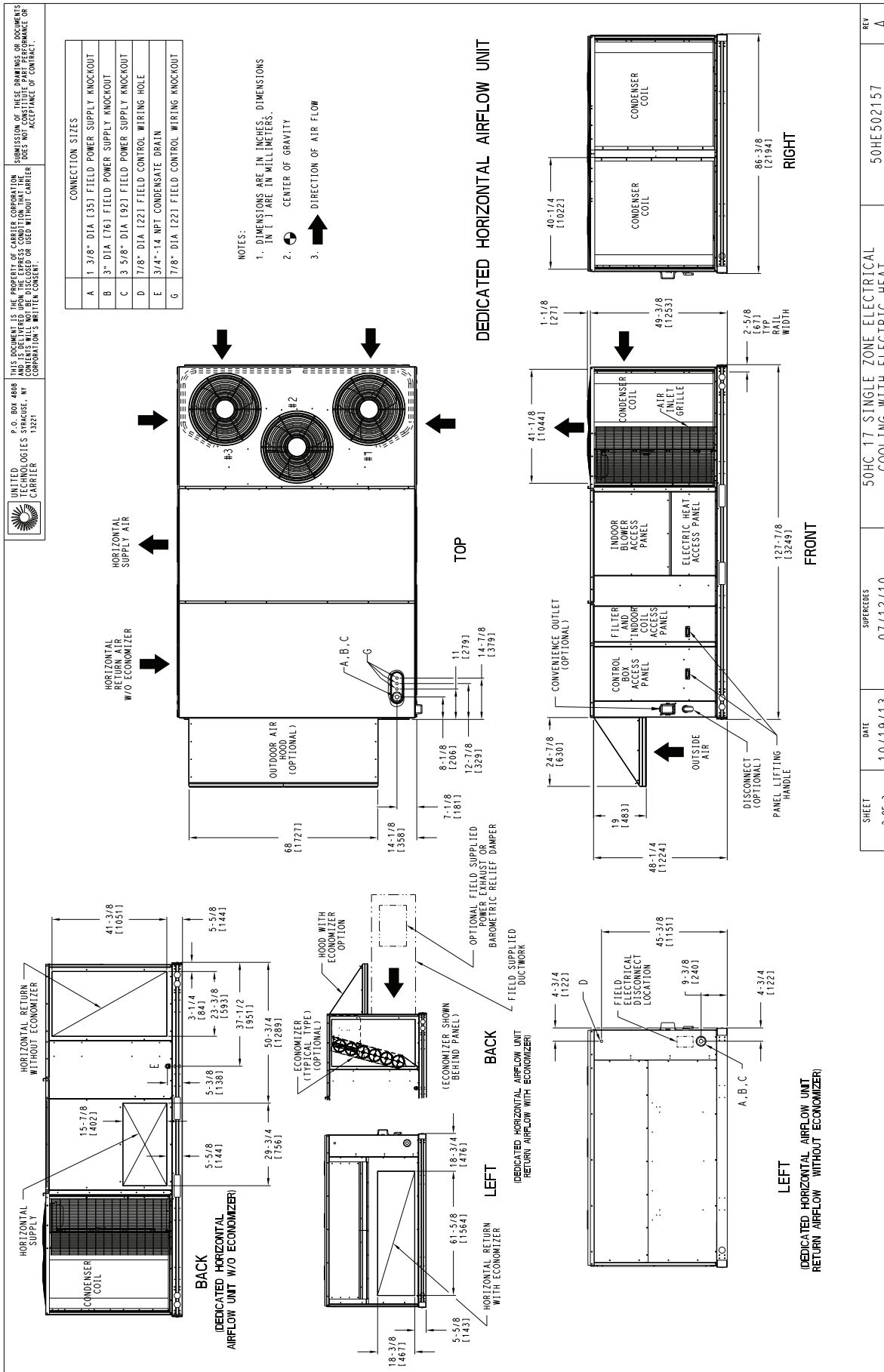


Fig. 1 - Dimensions 50HC-D17

# DIMENSIONS (cont.)



SHEET 2 OF 3	DATE 10/19/13	SUPERCEDES 07/12/10	50HC-17 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	50HE502157	REV A
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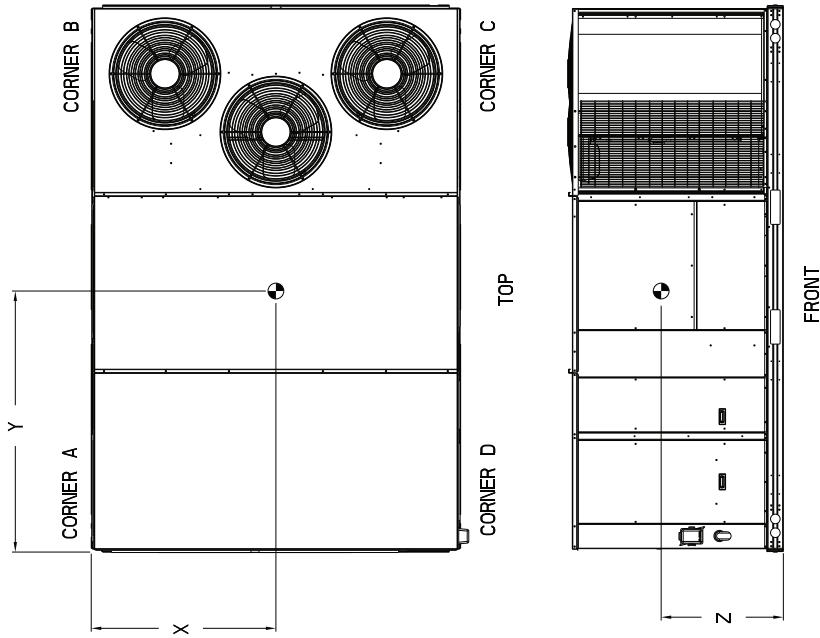
Fig. 2 - Dimensions 50HC-D17

# DIMENSIONS (cont.)


 UNITED TECHNOLOGIES STRACOSSE, NY  
 CARRIER  
 P.O. BOX 4806  
 13221  
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UNIT	CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.				
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z		
50HC17	1793	815	375	170	419	191	528	240	472	214	48 [13219]	167.378 [17111]	16.712 [419]

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



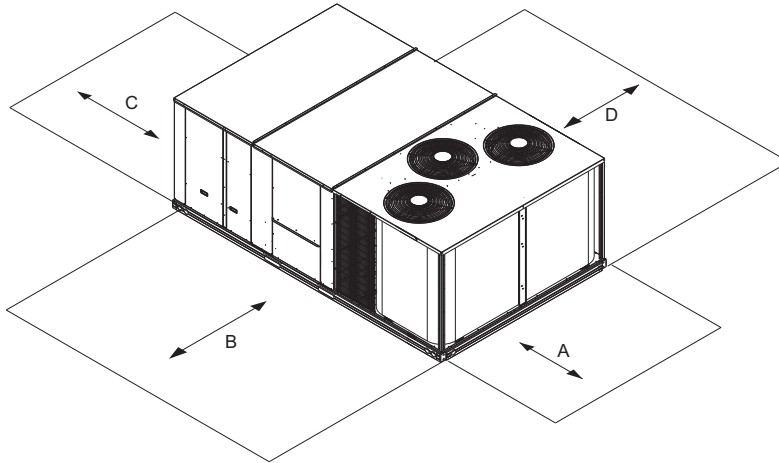
SHEET	DATE	SUPERCEDES	REV
3 OF 3	10/19/13	07/12/10	A

50HC 17 SINGLE ZONE ELECTRICAL  
COOLING WITH ELECTRIC HEAT

50HE502157

Fig. 3 - Dimensions 50HC-D17

## DIMENSIONS (cont.)



**Fig. 4 - Service Clearance**

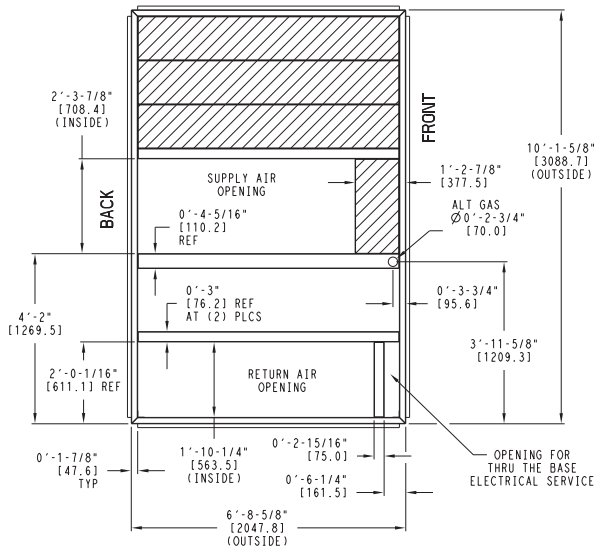
C11343

LOC	DIMENSION	CONDITION
A	36-in	Recommended clearance for airflow and service.
B	42-in	Recommended clearance for airflow and service.
C	18-in	1. No CO. 2. No Economizer. 3. No field installed disconnect on economizer hood side (Factory-installed disconnect installed).
	36-in	1. CO installed. 2. Vertical surface behind servicer is electrically non-conductive (e.g., wood, fiberglass).
	42-in	1. CO installed. 2. Vertical surface behind servicer is electrically conductive (e.g., metal, masonry)
	96-in	1. Economizer and/or Power Exhaust installed.
D	42-in	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.

# DIMENSIONS (cont.)

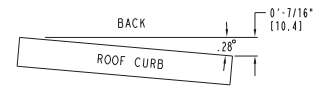
UNIT SIZE	"A"	ROOF CURB ACCESSORY
17	1'-2" [356.0] 2'-0" [610.0]	CRRFCURB045A00 CRRFCURB046A00



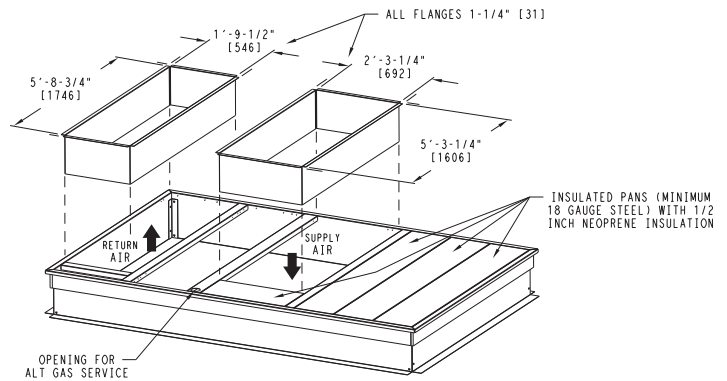
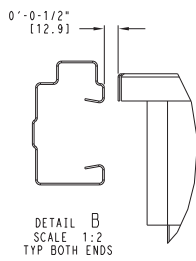
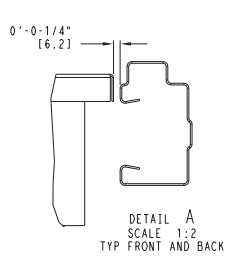
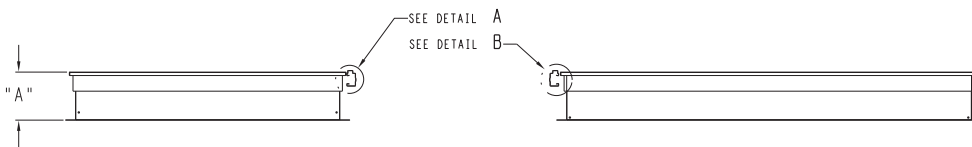
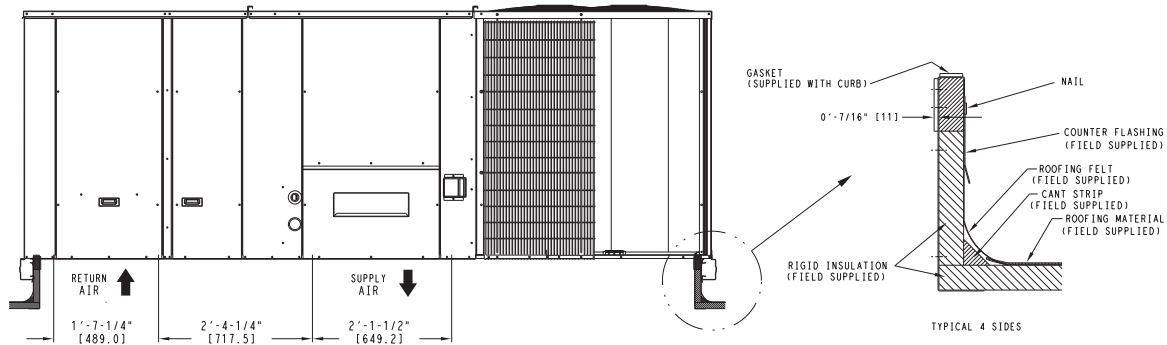
**NOTES:**

- 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 - Curb Dimensions 50HC\*D17**

C10954



# DIMENSIONS (cont.)

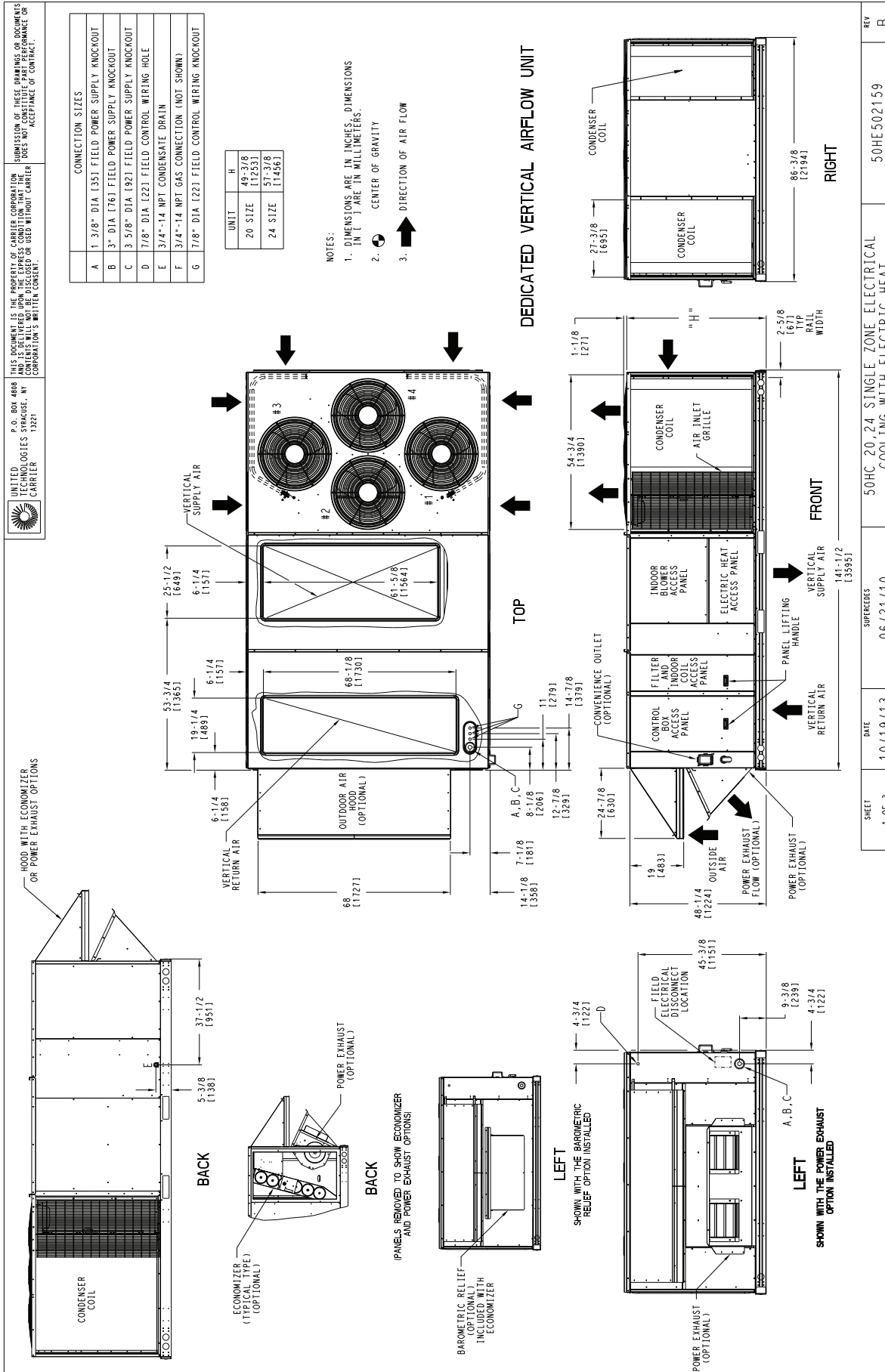


Fig. 6 - Dimensions 50HC-D20-24

# DIMENSIONS (cont.)

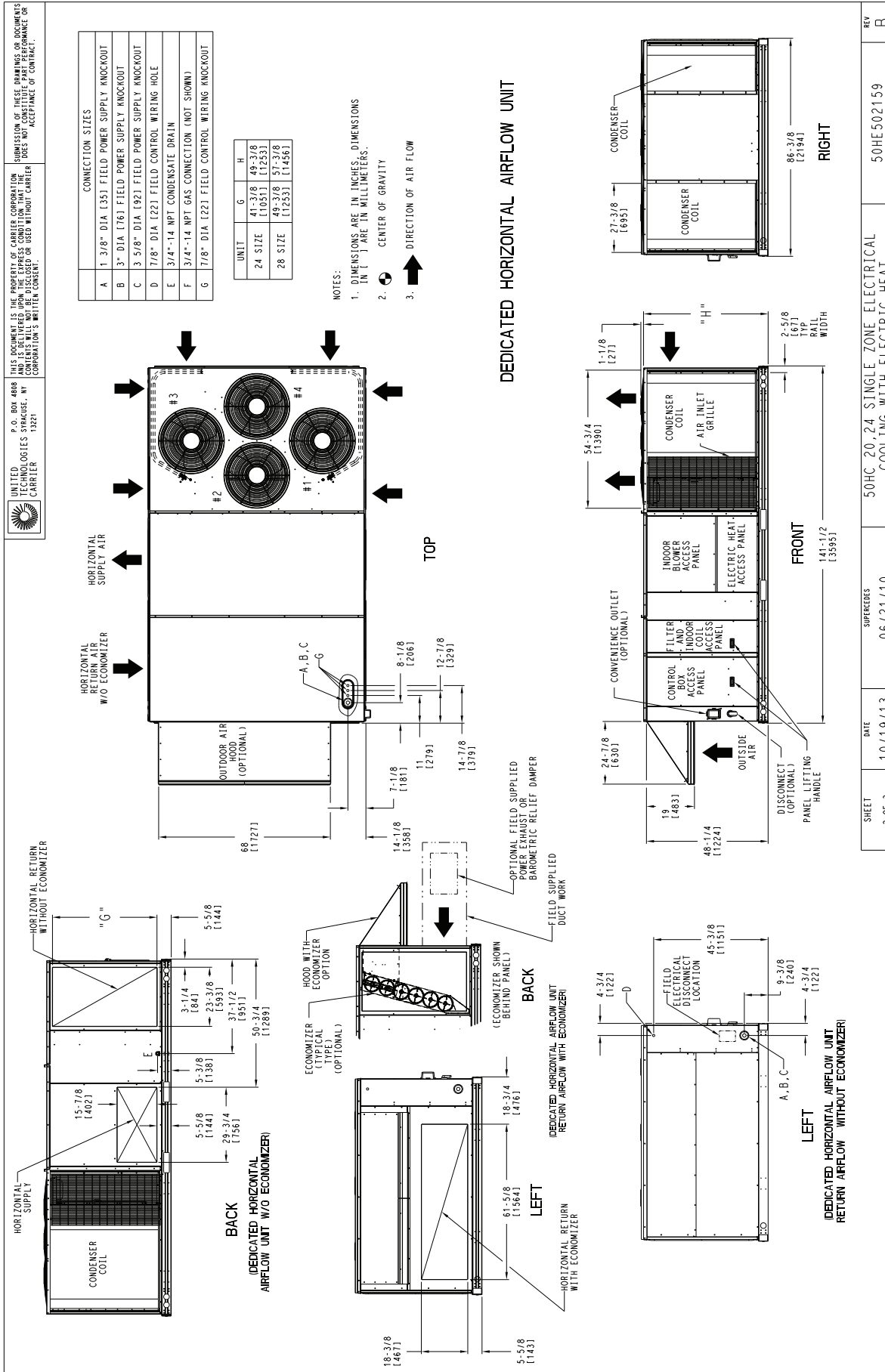


Fig. 7 - Dimensions 50HC-D20-24

# DIMENSIONS (cont.)

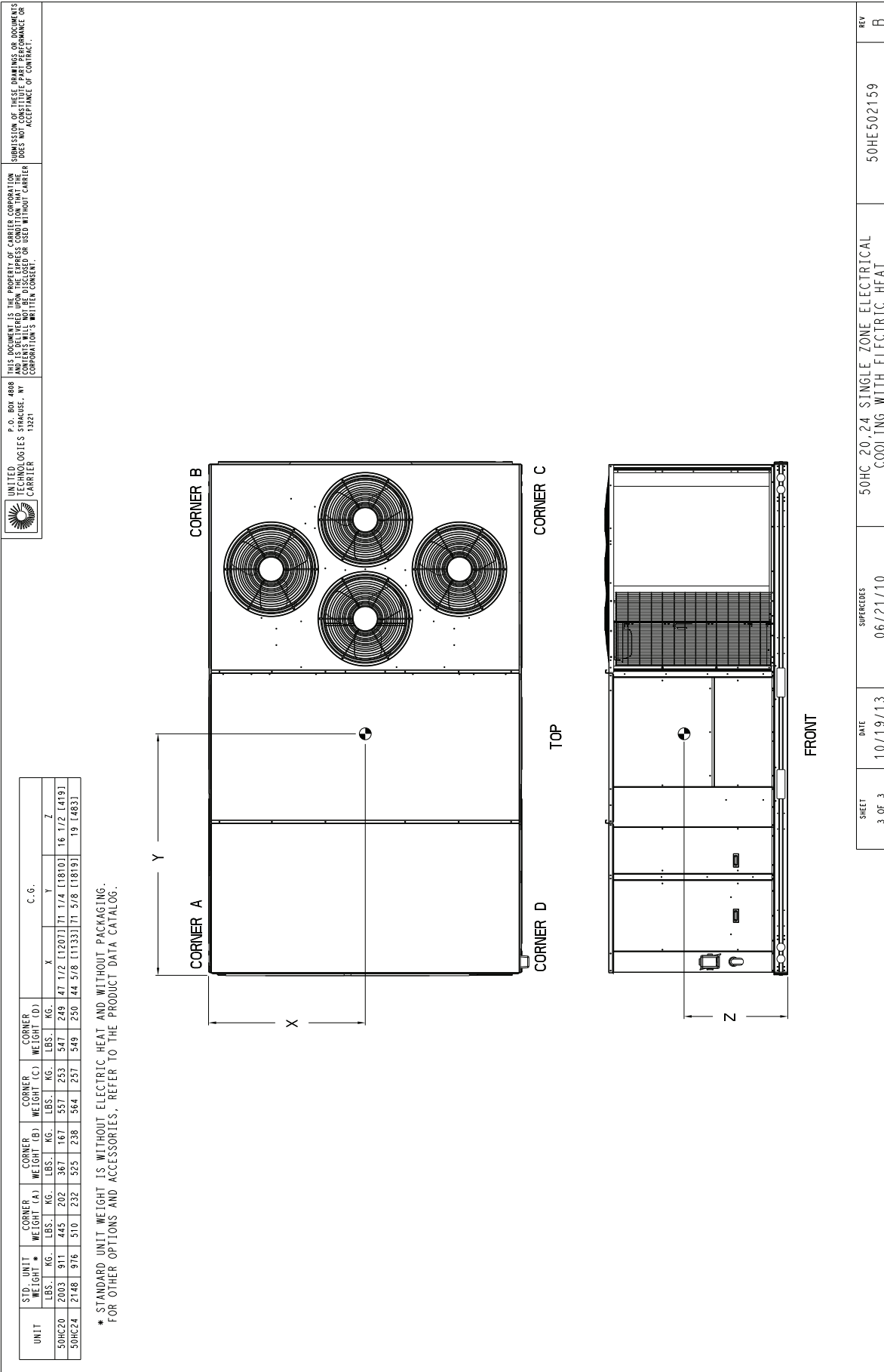
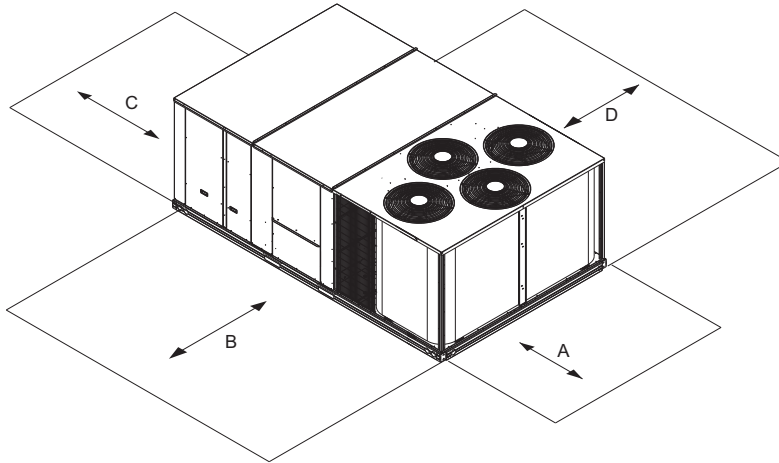


Fig. 8 - Dimensions 50HC-D20-24

## DIMENSIONS (cont.)



**Fig. 9 - Service Clearance**

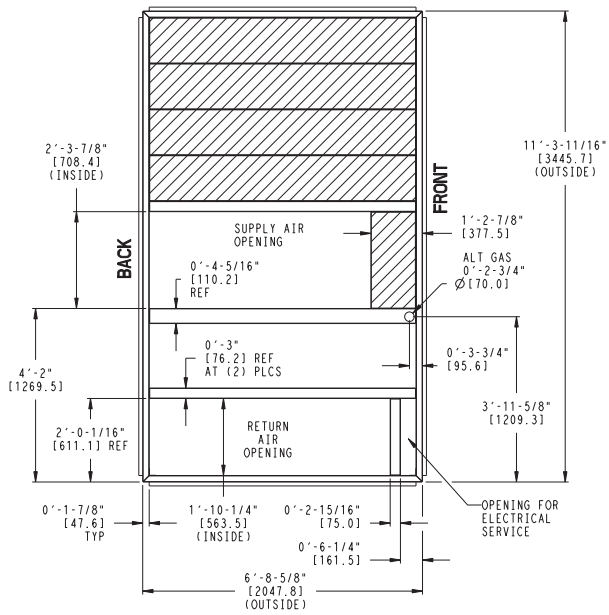
C11342

LOC	DIMENSION	CONDITION
A	36-in	Recommended clearance for airflow and service.
B	42-in	Recommended clearance for airflow and service.
C	18-in	1. No CO. 2. No Economizer. 3. No field installed disconnect on economizer hood side (Factory-installed disconnect installed).
C	36-in	1. CO installed. 2. Vertical surface behind servicer is electrically non-conductive (e.g., wood, fiberglass).
C	42-in	1. CO installed. 2. Vertical surface behind servicer is electrically conductive (e.g., metal, masonry)
C	96-in	1. Economizer and/or Power Exhaust installed.
D	42-in	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.

# DIMENSIONS (cont.)

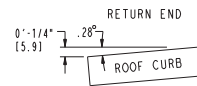
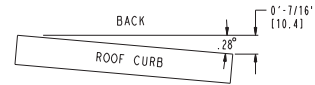
UNIT SIZE	"A"	ROOF CURB ACCESSORY
20, 24	1'-2" [356.0] 2'-0" [610.0]	CRRFCURB047A00 CRRFCURB048A00



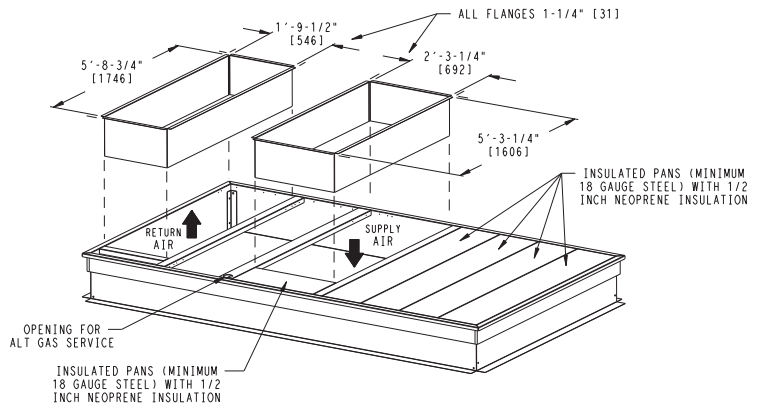
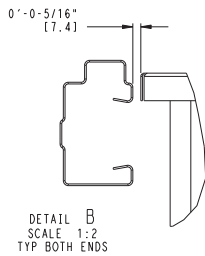
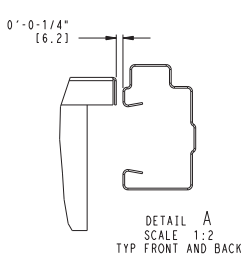
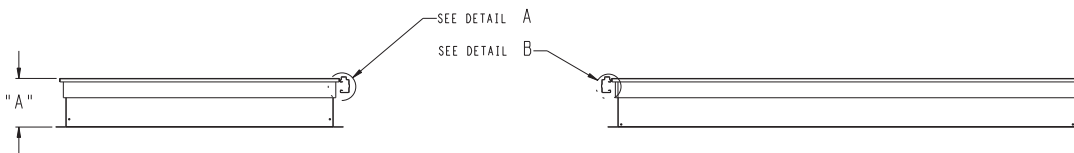
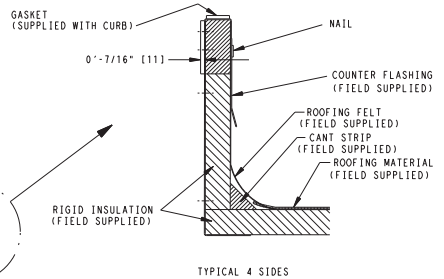
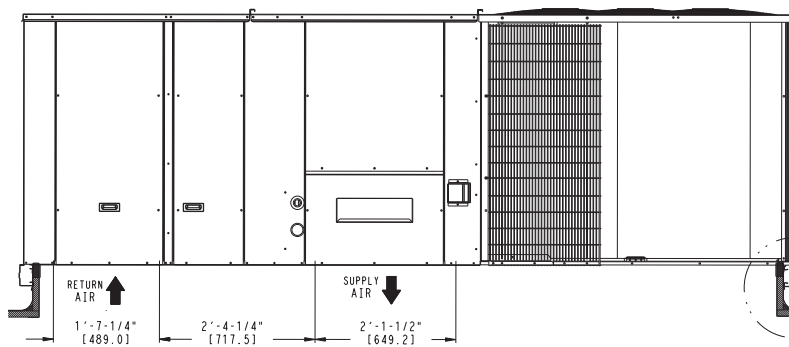
**NOTES:**

- 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



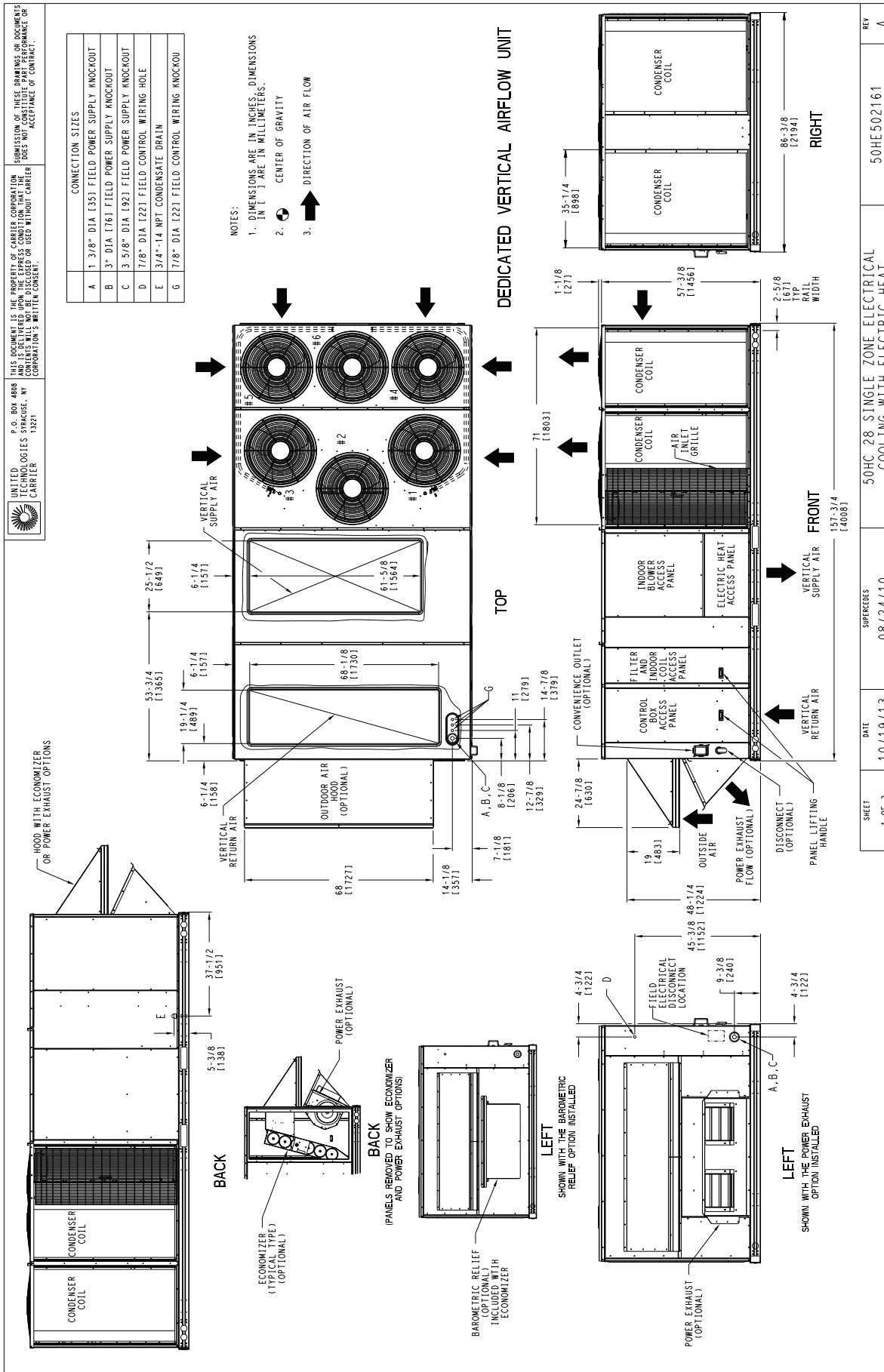
MAX CURB LEVELING TOLERANCES



**Fig. 10 - Curb Dimensions 50HC\*D20 - 24**

C10955

# DIMENSIONS (cont.)



**Fig. 11 - Dimensions 50HC\*D28**

# DIMENSIONS (cont.)

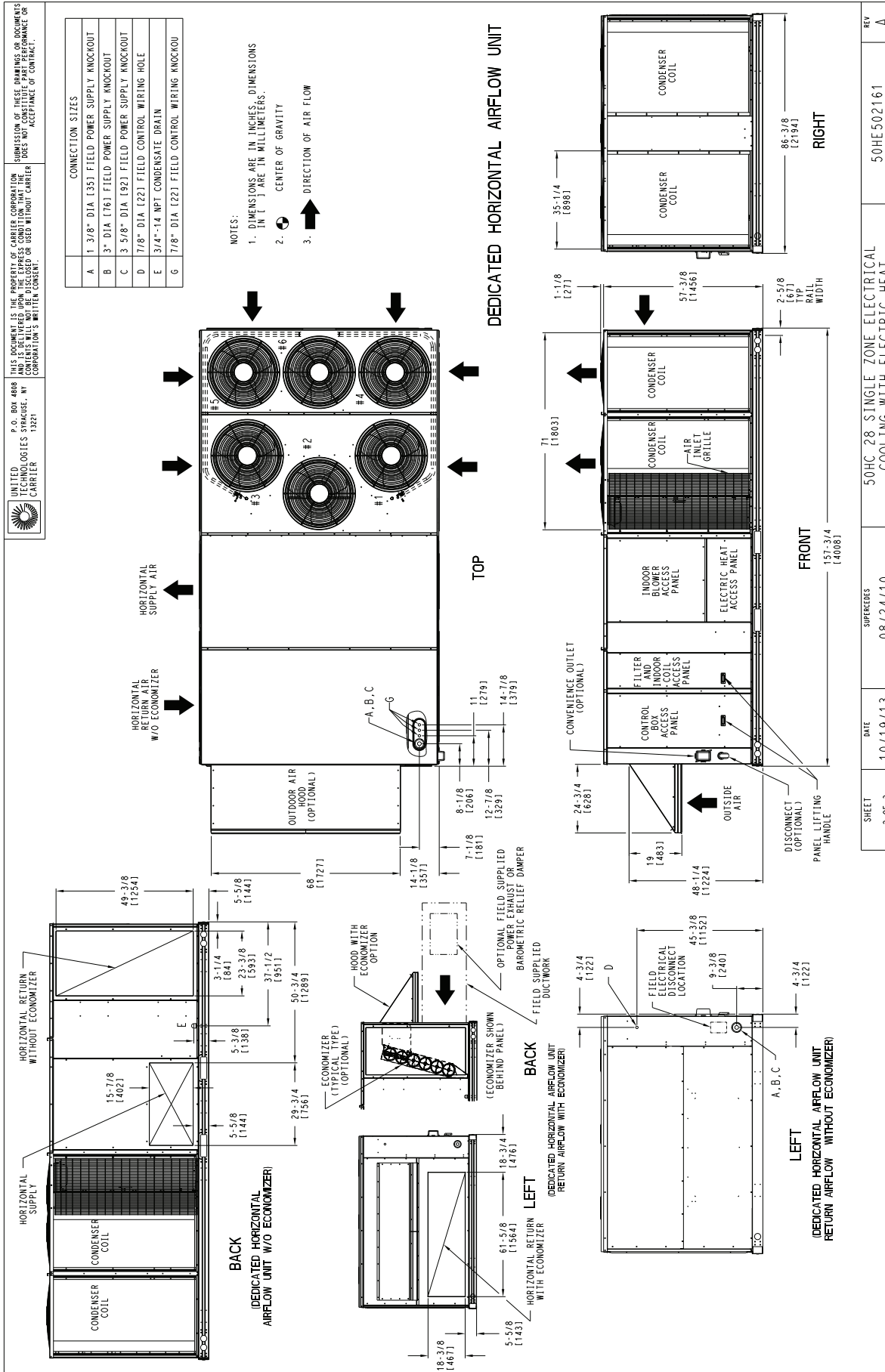


Fig. 12 - Dimensions 50HC\*D28

# DIMENSIONS (cont.)

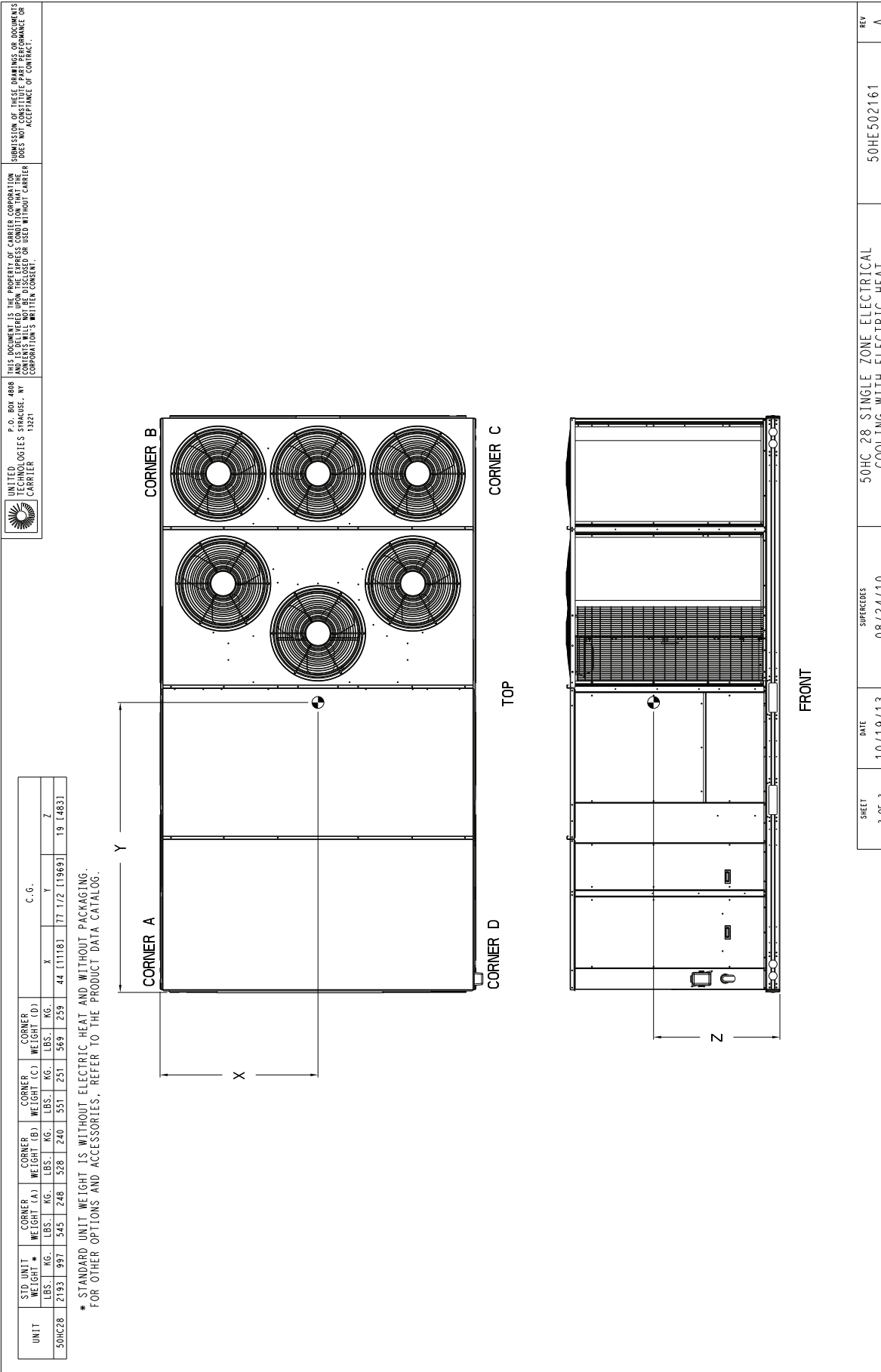
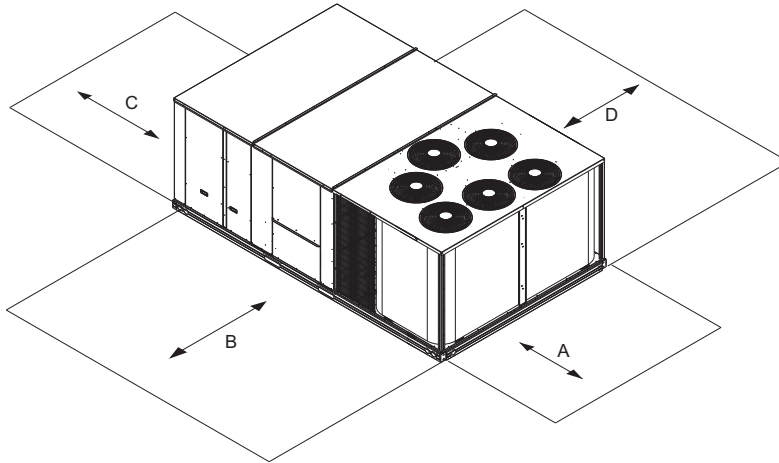


Fig. 13 - Dimensions 50HC\*D28



## DIMENSIONS (cont.)



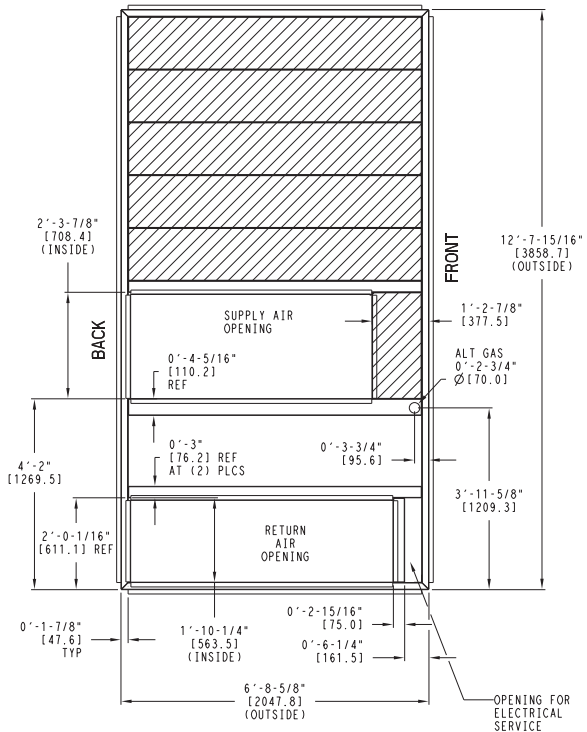
C11344

LOC	DIMENSION	CONDITION
A	36-in	Recommended clearance for airflow and service.
B	42-in	Recommended clearance for airflow and service.
C	18-in	1. No CO. 2. No Economizer. 3. No field installed disconnect on economizer hood side (Factory-installed disconnect installed).
	36-in	1. CO installed. 2. Vertical surface behind servicer is electrically non-conductive (e.g., wood, fiberglass).
	42-in	1. CO installed. 2. Vertical surface behind servicer is electrically conductive (e.g., metal, masonry)
	96-in	1. Economizer and/or Power Exhaust installed.
D	42-in	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.

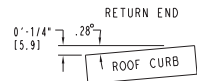
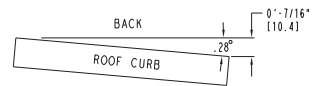
# DIMENSIONS (cont.)

UNIT SIZE	"A"	ROOF CURB ACCESSORY
28	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
  - 7 GAS SERVICE PLATE IS PART OF A SEPARATELY SHIPPED ACCESSORY PACKAGE.
  - 8 GAS SERVICE PLATE CAN BE USED WITH EITHER ACCESSORY ROOFCURB.

➔ DIRECTION OF AIR FLOW



MAX CURB LEVELING TOLERANCES

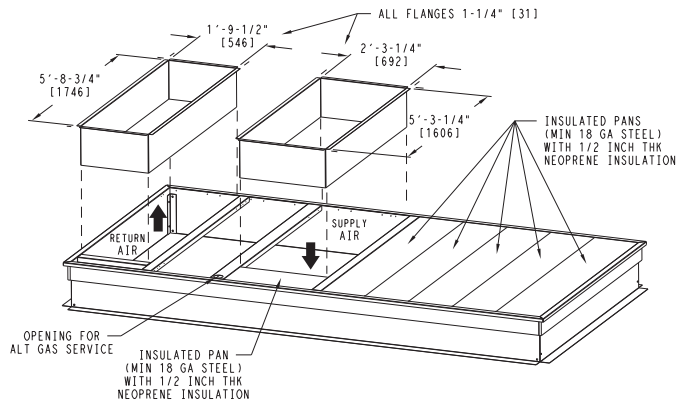
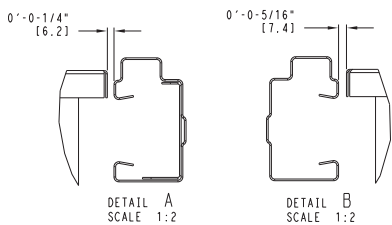
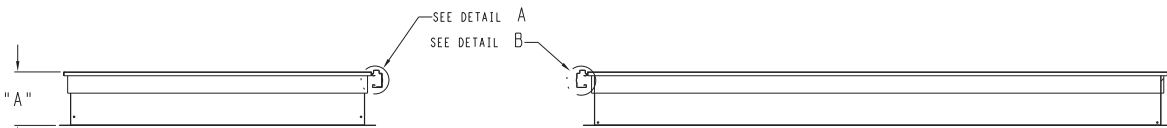
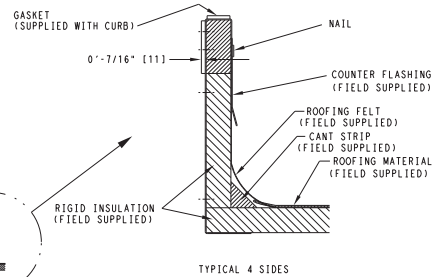
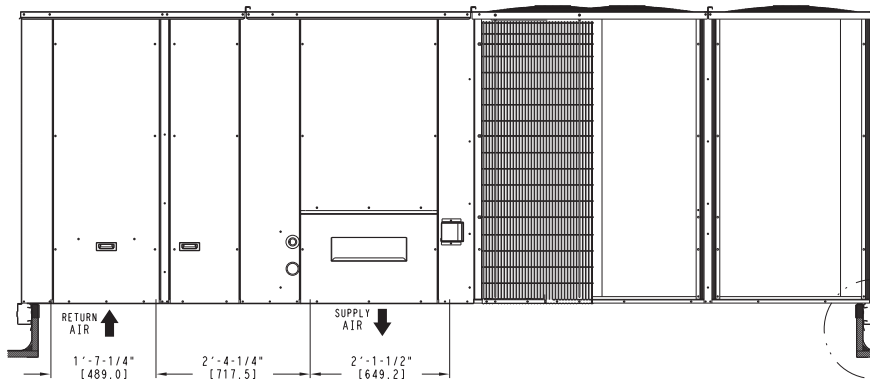


Fig. 14 - Curb Dimensions 50HC\*D28

## OPTIONS AND ACCESSORIES WEIGHT ADDERS

BASE UNIT WITH OPTIONS AND ACCESSORIES (Weight Adders)	MAX WEIGHT ADD							
	50HC*17		50HC*20		50HC*24		50HC*28	
	lb	kg	lb	kg	lb	kg	lb	kg
Humidi-MiZer	110	50	120	55	120	55	120	55
Base Unit Operating Weight	1793	813	2003	909	2148	974	2193	975
Power Exhaust	125	57	125	57	125	57	125	57
Economizer	170	77	170	77	170	77	195	88
Copper Tube/Fin Evaporator Coil	110	50	110	50	135	61	161	73
Electric Heater	85	39	85	39	85	39	85	39
Single Point Kit	15	7	15	7	15	7	15	7
Roof Curb 14-in (356mm)	240	109	240	109	240	109	255	116
Roof Curb 24-in (610mm)	340	154	340	154	340	154	355	161
Louvered Hail Guard	60	27	60	27	120	54	150	68
CO <sub>2</sub> sensor	5	2	5	2	5	2	5	2
Return Smoke Detector	5	2	5	2	5	2	5	2
Supply Smoke Detector	5	2	5	2	5	2	5	2
Fan/Filter Status Switch	2	1	2	1	2	1	2	1
Non-Fused Disconnect	15	7	15	7	15	7	15	7
HACR Circuit Breaker	15	7	15	7	15	7	15	7
Powered Convenience Outlet	35	16	35	16	35	16	35	16
Non-Powered Convenience Outlet	5	2	5	2	5	2	5	2
Enthalpy Sensor	2	1	2	1	2	1	2	1
Differential Enthalpy Sensor	3	1	3	1	3	1	3	1
Two Position Motorized Damper	50	23	50	23	50	23	65	29
Manual Damper	35	16	35	16	35	16	40	18
Field Filter Track 4-in (102mm)	12	5	12	5	12	5	12	5
MotorMaster Controller	35	16	35	16	35	16	35	16
Standard Static Motor/Drive	0	0	0	0	0	0	0	0
Medium Static Motor/Drive	5	2	6	3	6	3	6	3
High Static Motor/Drive	11	5	12	5	16	7	16	7
Barometric Relief Hood (Horizontal)	25	11	25	11	25	11	25	11
SAV System with VFD	20	9	20	9	20	9	20	9

## APPLICATION/SELECTION DATA

### Min operating ambient temp (cooling):

In mechanical cooling mode, your Carrier rooftop can safely operate down to an outdoor ambient temperature of 35°F (2°C). It is possible to provide cooling at lower outdoor ambient temperatures by using less outside air, economizers, and/or accessory low ambient kits.

### Max operating ambient temp (cooling):

The maximum operating ambient temperature for cooling mode is 125°F (52°C). While cooling operation above 125°F (52°C) may be possible, it could cause either a reduction in performance, reliability, or a protective action by the unit's internal safety devices.

### Min and max airflow (cooling mode):

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

### Airflow:

All units are draw-through in cooling mode.

### Outdoor air application strategies:

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

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

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

### 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.

## APPLICATION/SELECTION DATA (cont.)

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

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

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

This SAV system is available on models with 2-stage cooling operation with electrical mechanical or RTU Open (multi Protocol) controls. Both space sensor and conventional thermostats controls can be used to provide accurate control in any application.

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

**Table 6 – COOLING CAPACITIES**

**2-STAGE COOLING**

**15 TONS**

50HC*D17			AMBIENT TEMPERATURE																
			85			95			105			115			125				
			EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)				
			75	80	85	75	80	85	75	80	85	75	80	85	75	80	85		
4500 CFM	EAT (wb)	58	TC	158.3	158.3	179.2	152.6	152.6	172.9	146.6	146.6	166.1	140.2	140.2	158.8	133.2	133.2	150.8	
			SHC	137.3	158.3	179.2	132.4	152.6	172.9	127.2	146.6	166.1	121.6	140.2	158.8	115.5	133.2	150.8	
		62	TC	166.8	166.8	169.0	159.5	159.5	165.6	151.8	151.8	161.9	143.6	143.6	157.9	134.9	134.9	153.4	
			SHC	123.1	146.1	169.0	119.7	142.6	165.6	116.1	139.0	161.9	112.3	135.1	157.9	108.2	130.8	153.4	
		67	TC	182.9	182.9	182.9	174.9	174.9	174.9	166.3	166.3	166.3	157.2	157.2	157.2	147.6	147.6	147.6	
			SHC	100.0	123.1	146.1	96.7	119.8	142.8	93.2	116.3	139.4	89.7	112.7	135.7	85.9	108.9	131.9	
	72	TC	200.5	200.5	200.5	191.6	191.6	191.6	182.2	182.2	182.2	172.2	172.2	172.2	161.7	161.7	161.7		
		SHC	76.1	99.5	122.8	72.9	96.2	119.5	69.5	92.8	116.1	66.0	89.3	112.5	62.4	85.6	108.8		
	76	TC	-	215.4	215.4	-	205.8	205.8	-	195.6	195.6	-	184.8	184.8	-	173.6	173.6		
		SHC	-	80.2	105.0	-	77.1	101.7	-	73.7	98.2	-	70.2	94.5	-	66.7	90.7		
	5250 CFM	EAT (wb)	58	TC	166.7	166.7	188.8	160.6	160.6	181.9	154.0	154.0	174.4	147.0	147.0	166.5	139.5	139.5	157.9
				SHC	144.6	166.7	188.8	139.3	160.6	181.9	133.6	154.0	174.4	127.6	147.0	166.5	121.0	139.5	157.9
62			TC	172.0	172.0	185.1	164.3	164.3	181.2	156.3	156.3	177.0	147.8	147.8	172.4	139.6	139.6	164.3	
			SHC	132.5	158.8	185.1	128.9	155.1	181.2	125.0	151.0	177.0	120.9	146.6	172.4	114.9	139.6	164.3	
67			TC	188.3	188.3	188.3	179.7	179.7	179.7	170.7	170.7	170.7	161.0	161.0	161.0	150.9	150.9	150.9	
			SHC	106.1	132.7	159.3	102.8	129.3	155.9	99.3	125.8	152.4	95.6	122.1	148.6	91.7	118.2	144.7	
72		TC	206.1	206.1	206.1	196.7	196.7	196.7	186.7	186.7	186.7	176.2	176.2	176.2	165.3	165.3	165.3		
		SHC	78.8	105.6	132.5	75.5	102.3	129.1	72.1	98.8	125.6	68.5	95.2	121.9	64.8	91.4	118.0		
76		TC	-	221.2	221.2	-	211.0	211.0	-	200.3	200.3	-	189.0	189.0	-	177.2	177.2		
		SHC	-	83.6	111.7	-	80.3	108.2	-	76.9	104.6	-	73.3	100.9	-	69.7	97.1		
6000 CFM		EAT (wb)	58	TC	173.8	173.8	196.8	167.2	167.2	189.4	160.2	160.2	181.4	152.7	152.7	173.0	144.7	144.7	163.8
				SHC	150.8	173.8	196.8	145.1	167.2	189.4	139.0	160.2	181.4	132.5	152.7	173.0	125.5	144.7	163.8
	62		TC	176.3	176.3	199.5	168.5	168.5	194.9	160.5	160.5	188.9	152.9	152.9	179.9	144.8	144.8	170.4	
			SHC	140.9	170.2	199.5	136.9	165.9	194.9	132.1	160.5	188.9	125.8	152.9	179.9	119.2	144.8	170.4	
	67		TC	192.3	192.3	192.3	183.4	183.4	183.4	173.9	173.9	173.9	164.0	164.0	164.0	153.4	153.4	156.9	
			SHC	112.0	142.0	172.0	108.5	138.5	168.5	104.9	134.9	164.8	101.2	131.1	161.0	97.2	127.1	156.9	
	72	TC	210.4	210.4	210.4	200.6	200.6	200.6	190.2	190.2	190.2	179.3	179.3	179.3	167.9	167.9	167.9		
		SHC	81.2	111.4	141.7	77.9	108.0	138.2	74.4	104.5	134.6	70.7	100.8	130.8	67.0	96.9	126.9		
	76	TC	-	225.6	225.6	-	215.0	215.0	-	203.8	203.8	-	192.1	192.1	-	180.0	180.0		
		SHC	-	86.7	117.9	-	83.3	114.5	-	79.9	110.8	-	76.3	107.1	-	72.6	103.2		
	6750 CFM	EAT (wb)	58	TC	179.8	179.8	203.7	172.9	172.9	195.8	165.5	165.5	187.4	157.5	157.5	178.4	149.0	149.0	168.8
				SHC	156.0	179.8	203.7	150.0	172.9	195.8	143.5	165.5	187.4	136.7	157.5	178.4	129.3	149.0	168.8
62			TC	180.5	180.5	210.7	173.0	173.0	203.6	165.6	165.6	194.9	157.7	157.7	185.5	149.1	149.1	175.5	
			SHC	147.6	179.2	210.7	142.4	173.0	203.6	136.3	165.6	194.9	129.8	157.7	185.5	122.8	149.1	175.5	
67			TC	195.6	195.6	195.6	186.2	186.2	186.2	176.5	176.5	176.8	166.2	166.2	172.7	155.4	155.4	168.4	
			SHC	117.5	150.8	184.1	114.0	147.3	180.5	110.4	143.6	176.8	106.5	139.6	172.7	102.4	135.4	168.4	
72		TC	213.8	213.8	213.8	203.6	203.6	203.6	192.9	192.9	192.9	181.6	181.6	181.6	169.9	169.9	169.9		
		SHC	83.5	117.0	150.5	80.1	113.5	147.0	76.5	109.9	143.3	72.8	106.1	139.4	69.1	102.3	135.5		
76		TC	-	229.1	229.1	-	218.1	218.1	-	206.6	206.6	-	194.6	194.6	-	182.1	182.1		
		SHC	-	89.6	124.0	-	86.2	120.5	-	82.7	116.8	-	79.0	113.0	-	75.2	109.0		
7500 CFM		EAT (wb)	58	TC	185.1	185.1	209.6	177.7	177.7	201.3	170.0	170.0	192.5	161.6	161.6	183.0	152.8	152.8	173.0
				SHC	160.6	185.1	209.6	154.2	177.7	201.3	147.5	170.0	192.5	140.2	161.6	183.0	132.5	152.8	173.0
	62		TC	185.2	185.2	218.0	177.9	177.9	209.3	170.1	170.1	200.2	161.8	161.8	190.4	152.9	152.9	179.9	
			SHC	152.5	185.2	218.0	146.4	177.9	209.3	140.0	170.1	200.2	133.2	161.8	190.4	125.8	152.9	179.9	
	67		TC	198.1	198.1	198.1	188.6	188.6	192.1	178.6	178.6	188.1	168.1	168.1	183.8	157.2	157.2	179.1	
			SHC	122.8	159.3	195.9	119.2	155.7	192.1	115.5	151.8	188.1	111.5	147.7	183.8	107.3	143.2	179.1	
	72	TC	216.6	216.6	216.6	206.1	206.1	206.1	195.1	195.1	195.1	183.5	183.5	183.5	171.6	171.6	171.6		
		SHC	85.6	122.3	159.0	82.2	118.8	155.5	78.6	115.2	151.7	74.9	111.3	147.8	71.1	107.4	143.8		
	76	TC	-	231.9	231.9	-	220.7	220.7	-	208.9	208.9	-	196.5	196.5	-	183.8	183.8		
		SHC	-	92.4	129.9	-	88.9	126.3	-	85.4	122.6	-	81.6	118.7	-	77.8	114.6		

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

**LEGEND:**

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

50HC017 (15 TONS) – UNIT WITH HUMIDI-MIZER IN SUBCOOLING MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		4,500			6,000			7,500		
		Air Entering Evaporator – Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	202.9	184.6	166.2	213.7	194.6	175.4	222.3	202.5	182.7
	SHC	91.9	112.4	132.9	106.1	126.4	146.8	117.5	137.7	158.0
	kW	10.19	10.12	9.78	10.51	10.19	9.95	10.61	10.36	10.12
85	TC	189.8	171.8	153.8	201.0	182.2	163.3	209.9	190.4	170.8
	SHC	75.9	101.0	126.2	91.2	116.3	141.3	103.4	128.4	153.5
	kW	11.57	11.49	11.15	11.88	11.56	11.32	11.98	11.73	11.49
95	TC	176.7	159.1	141.4	188.3	169.7	151.2	197.5	178.2	159.0
	SHC	59.8	89.7	119.6	76.2	106.1	135.9	89.4	119.2	149.0
	kW	12.87	12.81	12.47	13.20	12.88	12.64	13.30	13.05	12.81
105	TC	163.6	146.3	129.0	175.6	157.3	139.1	185.1	166.1	147.1
	SHC	43.8	78.4	112.9	61.3	95.9	130.4	75.3	109.9	144.4
	kW	14.05	14.00	13.65	14.39	14.07	13.82	14.40	14.24	14.00
115	TC	150.5	133.5	116.5	162.9	144.9	127.0	172.7	154.0	135.3
	SHC	27.7	67.0	106.3	46.4	85.7	125.0	61.3	100.6	133.4
	kW	15.44	15.36	15.02	15.75	15.43	15.19	15.85	15.60	15.36
125	TC	137.4	120.8	104.1	150.2	132.5	114.9	160.3	141.9	123.5
	SHC	11.7	55.7	99.6	31.4	75.5	112.9	47.3	91.3	123.0
	kW	16.77	16.71	16.37	17.10	16.78	16.54	17.20	16.95	16.71

50HC017 (15 TONS) – UNIT WITH HUMIDI-MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – Ewb (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative)			(56% Relative)			(60% Relative)		
		Air Entering Evaporator – Cfm								
		4,500	6,000	7,500	4,500	6,000	7,500	4,500	6,000	7,500
80	TC	64.50	71.00	73.30	68.40	74.50	77.30	71.20	79.70	80.60
	SHC	12.60	24.90	36.80	6.80	13.70	23.90	-0.80	5.50	13.80
	kW	10.10	10.26	10.42	10.18	10.40	10.56	10.33	10.47	10.67
75	TC	66.60	73.10	75.60	70.50	76.60	79.50	73.20	80.80	82.90
	SHC	14.30	26.70	38.50	8.10	14.90	25.70	0.70	7.00	15.00
	kW	10.05	10.22	10.36	10.14	10.36	10.52	10.28	10.43	10.62
70	TC	68.70	75.10	77.40	72.50	78.60	81.40	75.20	82.80	84.90
	SHC	15.40	27.80	40.00	9.50	16.20	26.80	2.10	8.40	16.30
	kW	10.00	10.18	10.33	10.10	10.31	10.47	10.23	10.40	10.58
60	TC	72.80	79.30	81.60	76.70	82.80	85.70	79.40	86.90	88.80
	SHC	19.00	31.10	43.20	12.70	19.90	30.10	5.30	11.60	20.00
	kW	9.92	10.09	10.24	10.01	10.22	10.37	10.14	10.31	10.49
50	TC	76.80	83.40	85.70	80.80	86.90	89.70	83.50	90.90	92.80
	SHC	21.70	34.20	46.20	15.80	22.70	33.20	8.40	14.70	22.80
	kW	9.83	10.00	10.15	9.92	10.13	10.29	10.05	10.21	10.39
40	TC	80.90	87.30	89.60	84.90	90.80	93.60	87.40	94.80	96.70
	SHC	24.90	37.10	49.30	19.00	26.00	36.10	11.60	17.90	26.20
	kW	9.74	9.91	10.06	9.83	10.04	10.20	9.96	10.12	10.30

**LEGEND**

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

**NOTES:**

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

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

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

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

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

Table 8 – COOLING CAPACITIES

2-STAGE COOLING

17.5 TONS

50HC*D20			AMBIENT TEMPERATURE															
			85			95			105			115			125			
			EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)			
			75	80	85	75	80	85	75	80	85	75	80	85	75	80	85	
5250 CFM	EAT (wb)	58 TC	185.1	185.1	209.2	178.7	178.7	201.9	171.8	171.8	194.1	164.5	164.5	185.8	156.7	156.7	177.0	
		58 SHC	161.1	185.1	209.2	155.4	178.7	201.9	149.4	171.8	194.1	143.1	164.5	185.8	136.3	156.7	177.0	
		62 TC	193.8	193.8	199.5	185.6	185.6	195.4	176.9	176.9	191.1	167.7	167.7	186.4	158.2	158.2	181.1	
		62 SHC	145.6	172.6	199.5	141.7	168.6	195.4	137.6	164.4	191.1	133.2	159.8	186.4	128.3	154.7	181.1	
		67 TC	212.2	212.2	212.2	203.3	203.3	203.3	193.8	193.8	193.8	183.8	183.8	183.8	173.1	173.1	173.1	
		67 SHC	119.0	146.0	173.1	115.3	142.3	169.4	111.4	138.4	165.4	107.3	134.3	161.3	103.0	130.0	157.0	
	72 TC	232.3	232.3	232.3	222.7	222.7	222.7	212.4	212.4	212.4	201.6	201.6	201.6	190.1	190.1	190.1		
	72 SHC	91.5	118.8	146.2	87.9	115.2	142.5	84.1	111.4	138.7	80.2	107.4	134.6	76.0	103.2	130.4		
	76 TC	-	249.5	249.5	-	239.2	239.2	-	228.2	228.2	-	216.6	216.6	-	204.3	204.3		
	76 SHC	-	96.7	125.3	-	93.2	121.7	-	89.5	117.9	-	85.6	113.8	-	81.5	109.5		
	6125 CFM	EAT (wb)	58 TC	194.7	194.7	220.0	187.8	187.8	212.2	180.4	180.4	203.8	172.5	172.5	194.9	164.1	164.1	185.5
			58 SHC	169.4	194.7	220.0	163.3	187.8	212.2	156.9	180.4	203.8	150.1	172.5	194.9	142.8	164.1	185.5
62 TC			199.6	199.6	218.0	191.1	191.1	213.5	182.1	182.1	208.4	173.0	173.0	201.2	164.3	164.3	192.8	
62 SHC			156.5	187.2	218.0	152.3	182.9	213.5	147.7	178.0	208.4	141.8	171.5	201.2	135.8	164.3	192.8	
67 TC			218.0	218.0	218.0	208.7	208.7	208.7	198.7	198.7	198.7	188.2	188.2	188.2	177.1	177.1	177.1	
67 SHC			126.2	157.4	188.6	122.4	153.6	184.7	118.4	149.6	180.7	114.3	145.4	176.5	109.9	141.0	172.1	
72 TC		238.5	238.5	238.5	228.4	228.4	228.4	217.7	217.7	217.7	206.3	206.3	206.3	194.3	194.3	194.3		
72 SHC		94.7	126.1	157.5	91.0	122.4	153.8	87.2	118.5	149.8	83.1	114.4	145.7	78.9	110.1	141.4		
76 TC		-	255.9	255.9	-	245.1	245.1	-	233.6	233.6	-	221.4	221.4	-	208.5	208.5		
76 SHC		-	100.7	133.3	-	97.1	129.6	-	93.3	125.6	-	89.3	121.5	-	85.1	117.1		
7000 CFM		EAT (wb)	58 TC	202.7	202.7	229.1	195.4	195.4	220.8	187.5	187.5	211.9	179.2	179.2	202.5	170.3	170.3	192.4
			58 SHC	176.4	202.7	229.1	170.0	195.4	220.8	163.1	187.5	211.9	155.9	179.2	202.5	148.1	170.3	192.4
	62 TC		204.6	204.6	234.4	196.0	196.0	228.0	187.7	187.7	220.3	179.3	179.3	210.5	170.4	170.4	200.0	
	62 SHC		166.0	200.2	234.4	160.8	194.4	228.0	155.1	187.7	220.3	148.2	179.3	210.5	140.8	170.4	200.0	
	67 TC		222.5	222.5	222.5	212.8	212.8	212.8	202.4	202.4	202.4	191.5	191.5	191.5	180.0	180.0	186.4	
	67 SHC		133.0	168.2	203.4	129.2	164.3	199.5	125.1	160.3	195.4	120.9	156.0	191.0	116.4	151.4	186.4	
	72 TC	243.3	243.3	243.3	232.7	232.7	232.7	221.6	221.6	221.6	209.9	209.9	209.9	197.4	197.4	197.4		
	72 SHC	97.5	132.9	168.3	93.8	129.2	164.5	89.9	125.2	160.5	85.8	121.1	156.3	81.6	116.7	151.9		
	76 TC	-	260.8	260.8	-	249.6	249.6	-	237.7	237.7	-	225.1	225.1	-	211.7	211.7		
	76 SHC	-	104.4	140.8	-	100.7	137.0	-	96.9	133.0	-	92.8	128.8	-	88.5	124.4		
	7875 CFM	EAT (wb)	58 TC	209.6	209.6	236.8	201.8	201.8	228.1	193.6	193.6	218.8	184.8	184.8	208.9	175.5	175.5	198.3
			58 SHC	182.3	209.6	236.8	175.6	201.8	228.1	168.4	193.6	218.8	160.8	184.8	208.9	152.7	175.5	198.3
62 TC			209.8	209.8	246.2	202.0	202.0	237.1	193.8	193.8	227.4	185.0	185.0	217.1	175.6	175.6	206.1	
62 SHC			173.4	209.8	246.2	167.0	202.0	237.1	160.1	193.8	227.4	152.9	185.0	217.1	145.1	175.6	206.1	
67 TC			226.1	226.1	226.1	216.0	216.0	216.0	205.4	205.4	209.4	194.2	194.2	204.8	182.4	182.4	199.9	
67 SHC			139.6	178.6	217.7	135.6	174.7	213.7	131.5	170.5	209.4	127.1	166.0	204.8	122.5	161.2	199.9	
72 TC		247.0	247.0	247.0	236.2	236.2	236.2	224.7	224.7	224.7	212.7	212.7	212.7	199.9	199.9	199.9		
72 SHC		100.2	139.5	178.8	96.5	135.7	174.9	92.5	131.7	170.9	88.4	127.5	166.6	84.1	123.1	162.1		
76 TC		-	264.7	264.7	-	253.1	253.1	-	240.9	240.9	-	227.9	227.9	-	-	-		
76 SHC		-	107.9	148.1	-	104.2	144.3	-	100.2	140.2	-	96.1	135.9	-	-	-		
8750 CFM		EAT (wb)	58 TC	215.4	215.4	243.4	207.3	207.3	234.3	198.7	198.7	224.6	189.6	189.6	214.2	179.9	179.9	203.2
			58 SHC	187.4	215.4	243.4	180.3	207.3	234.3	172.9	198.7	224.6	164.9	189.6	214.2	156.5	179.9	203.2
	62 TC		215.5	215.5	253.0	207.5	207.5	243.5	198.9	198.9	233.4	189.7	189.7	222.7	180.0	180.0	211.2	
	62 SHC		178.1	215.5	253.0	171.5	207.5	243.5	164.4	198.9	233.4	156.8	189.7	222.7	148.8	180.0	211.2	
	67 TC		228.9	228.9	231.5	218.7	218.7	227.3	207.8	207.8	222.8	196.4	196.4	217.9	184.5	184.5	212.6	
	67 SHC		145.8	188.6	231.5	141.8	184.5	227.3	137.5	180.1	222.8	133.0	175.5	217.9	128.2	170.4	212.6	
	72 TC	250.1	250.1	250.1	239.0	239.0	239.0	227.3	227.3	227.3	214.9	214.9	214.9	201.8	201.8	201.8		
	72 SHC	102.8	145.8	188.9	99.0	142.0	185.0	95.0	137.9	180.9	90.8	133.7	176.5	86.4	129.2	172.0		
	76 TC	-	267.8	267.8	-	256.0	256.0	-	243.5	243.5	-	230.2	230.2	-	-	-		
	76 SHC	-	111.2	155.2	-	107.4	151.3	-	103.5	147.1	-	99.3	142.8	-	-	-		

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

LEGEND:

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



50HC020 (17.5 TONS) – UNIT WITH HUMIDI-MIZER IN SUBCOOLING MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		5,250			7,000			8,750		
		Air Entering Evaporator – Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	232.0	211.3	190.6	242.4	221.0	199.7	250.7	228.9	207.0
	SHC	110.9	133.7	156.4	127.6	150.3	173.0	141.1	163.7	186.4
	kW	12.45	12.16	11.81	12.74	12.41	12.02	12.93	12.51	12.18
85	TC	215.9	195.7	175.5	226.0	205.2	184.4	234.2	212.8	191.5
	SHC	90.6	118.8	147.0	108.4	136.6	164.9	122.7	151.0	179.2
	kW	13.48	13.20	12.88	13.77	13.47	13.07	13.96	13.58	13.23
95	TC	199.7	180.0	160.3	209.7	189.4	169.1	217.6	196.8	176.1
	SHC	70.3	104.0	137.7	89.2	123.0	156.7	104.4	138.2	172.1
	kW	14.60	14.25	13.94	14.89	14.51	14.15	15.08	14.63	14.31
105	TC	183.6	164.5	145.2	193.3	173.5	153.8	201.0	180.8	160.6
	SHC	50.0	89.1	128.3	70.0	109.3	148.6	86.0	125.5	158.6
	kW	15.64	15.36	15.01	15.93	15.60	15.21	16.12	15.72	15.37
115	TC	167.5	148.8	130.1	176.9	157.7	138.5	184.5	164.8	145.1
	SHC	29.7	74.3	118.9	50.7	95.6	138.1	67.7	112.7	145.1
	kW	16.70	16.38	15.82	16.98	16.63	16.03	17.17	16.75	16.19
125	TC	151.4	133.2	115.0	160.6	141.9	123.1	167.9	148.8	129.7
	SHC	9.4	59.5	109.6	31.5	81.9	123.0	49.3	100.0	129.7
	kW	17.71	17.39	17.09	18.01	17.65	17.30	18.20	17.76	17.46

50HC020 (17.5 TONS) – UNIT WITH HUMIDI-MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – Ewb (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative)			(56% Relative)			(60% Relative)		
		Air Entering Evaporator – Cfm								
		5,250	7,000	8,750	5,250	7,000	8,750	5,250	7,000	8,750
80	TC	67.80	71.30	74.10	70.50	74.80	79.80	73.30	78.20	82.40
	SHC	9.00	26.50	41.70	2.20	13.20	26.90	-5.20	2.90	13.80
	kW	11.65	11.75	11.87	11.82	11.90	11.98	11.93	12.10	12.19
75	TC	72.50	76.00	78.80	75.00	79.20	84.30	78.00	83.00	86.90
	SHC	13.40	30.90	46.10	6.50	18.00	31.30	-2.10	7.20	17.90
	kW	11.44	11.54	11.66	11.61	11.68	11.75	11.70	11.86	11.95
70	TC	77.10	80.60	83.40	79.50	83.90	88.90	82.40	87.30	91.10
	SHC	17.60	34.70	49.90	10.80	22.20	35.10	3.20	11.50	22.20
	kW	11.22	11.33	11.45	11.40	11.46	11.54	11.49	11.64	11.75
60	TC	86.30	89.90	92.70	88.80	93.20	98.20	91.70	96.60	100.50
	SHC	26.20	43.20	58.40	19.40	30.80	43.60	11.60	20.10	30.70
	kW	10.76	10.86	10.98	10.93	11.00	11.07	11.03	11.18	11.28
50	TC	95.50	99.10	101.90	98.00	102.40	107.40	101.00	106.00	109.80
	SHC	34.80	51.80	67.00	28.00	39.40	52.20	20.10	28.70	39.40
	kW	10.33	10.43	10.55	10.50	10.52	10.63	10.59	10.74	10.85
40	TC	104.80	108.40	111.20	107.30	111.70	116.60	110.30	115.30	119.10
	SHC	43.40	60.40	75.60	36.60	48.00	60.80	28.80	37.30	47.90
	kW	9.87	9.97	10.09	10.04	10.11	10.18	10.14	10.28	10.40

**LEGEND**

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

**NOTES:**

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

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

$t_{lwb}$  = 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



50HC024 (20 TONS) – UNIT WITH HUMIDI-MIZER IN SUBCOOLING MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		6,000			8,000			10,000		
		Air Entering Evaporator – Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	281.6	256.5	231.3	293.1	267.0	240.9	302.3	275.4	248.6
	SHC	114.7	141.0	167.4	140.6	166.6	192.6	161.6	187.3	212.9
	kW	13.52	13.25	12.95	13.82	13.46	13.21	13.97	13.60	13.31
85	TC	261.3	236.9	212.4	272.1	247.7	221.3	280.7	254.6	228.5
	SHC	90.9	123.5	156.1	118.8	151.1	183.3	141.4	173.4	205.4
	kW	14.95	14.68	14.48	15.25	14.89	14.64	15.40	15.03	14.74
95	TC	241.1	217.2	193.4	251.1	226.4	201.7	259.2	233.8	208.4
	SHC	67.2	106.0	144.8	97.1	120.1	174.1	121.2	159.5	197.8
	kW	16.52	16.25	15.95	16.82	16.46	16.21	16.97	16.60	16.31
105	TC	220.8	197.5	174.4	230.2	206.2	182.2	237.7	213.0	188.4
	SHC	43.4	88.4	133.5	75.3	120.1	164.9	101.0	145.7	178.9
	kW	18.09	17.82	17.52	18.39	18.03	17.78	18.54	18.17	17.88
115	TC	200.5	178.0	155.5	209.2	185.9	162.6	216.2	192.2	168.7
	SHC	19.7	70.9	122.2	53.5	104.6	155.7	80.9	131.8	161.2
	kW	19.65	19.38	19.08	19.95	19.59	19.34	20.10	19.73	19.44
125	TC	180.2	158.4	136.5	188.2	165.6	143.0	194.7	171.4	148.2
	SHC	-4.1	53.4	110.8	31.7	89.1	142.2	60.7	118.0	145.1
	kW	20.59	20.32	20.02	20.89	20.53	20.28	21.04	20.67	20.38

50HC024 (20 TONS) – UNIT WITH HUMIDI-MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – Ewb (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative)			(56% Relative)			(60% Relative)		
		Air Entering Evaporator – Cfm								
		6,000	8,000	10,000	6,000	8,000	10,000	6,000	8,000	10,000
80	TC	115.20	123.30	130.60	120.40	129.30	138.20	122.80	135.00	143.70
	SHC	40.80	58.30	76.10	32.30	45.50	60.40	20.10	34.30	48.00
	kW	13.24	13.32	13.39	13.43	13.57	13.65	13.49	13.68	13.74
75	TC	119.80	128.60	135.90	125.50	135.30	143.20	128.00	139.50	148.40
	SHC	45.60	62.80	82.10	37.00	49.80	65.20	24.30	38.70	52.60
	kW	13.05	13.10	13.17	13.21	13.35	13.43	13.27	13.46	13.52
70	TC	122.50	133.10	140.20	129.80	140.70	147.60	132.40	144.40	153.20
	SHC	49.80	76.00	86.10	41.10	54.30	69.20	28.80	41.40	56.80
	kW	12.80	12.87	12.94	12.98	13.12	13.20	13.04	13.23	13.29
60	TC	133.80	142.50	149.60	139.30	150.40	157.40	141.50	154.20	163.00
	SHC	58.60	76.00	95.00	50.20	63.50	78.10	37.80	52.10	65.90
	kW	12.34	12.42	12.49	12.53	12.67	12.75	12.59	12.78	12.84
50	TC	143.50	151.80	159.30	149.00	160.00	167.00	151.30	163.60	172.50
	SHC	67.70	84.80	103.80	59.10	72.40	87.00	46.70	61.00	74.90
	kW	11.88	11.95	12.03	12.07	12.21	12.29	12.13	12.32	12.38
40	TC	153.20	161.30	168.70	158.60	169.20	176.60	160.80	173.10	182.00
	SHC	76.50	93.60	111.60	68.00	81.50	95.80	55.80	69.80	84.00
	kW	11.42	11.49	11.56	11.60	11.74	11.82	11.66	11.85	11.91

**LEGEND**

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

**NOTES:**

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

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

$t_{lwb}$  = 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



50HC028 (25 TONS) – UNIT WITH HUMIDI-MIZER IN SUBCOOLING MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – CFM								
		7,500			10,000			12,500		
		Air Entering Evaporator – Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	351.3	319.5	287.8	370.4	337.3	304.1	385.8	351.5	317.2
	SHC	166.5	199.4	232.3	191.2	245.6	258.5	211.4	245.6	279.9
	kW	16.75	16.55	15.20	17.30	16.75	15.85	17.80	17.50	16.50
85	TC	327.5	296.4	265.3	346.1	313.6	281.2	361.1	327.5	294.0
	SHC	137.4	178.2	219.0	162.6	204.5	246.4	183.3	226.0	268.7
	kW	18.65	18.45	17.25	19.20	18.65	17.80	19.45	19.15	18.15
95	TC	303.7	273.3	242.9	321.8	290.0	258.3	336.4	303.5	270.7
	SHC	108.2	157.0	205.8	134.0	184.1	234.3	155.1	206.4	257.6
	kW	20.60	20.40	19.34	21.15	20.60	19.95	21.60	21.30	20.30
105	TC	279.9	250.2	220.4	297.5	266.4	235.3	311.7	279.5	247.4
	SHC	79.0	135.8	192.5	105.4	163.8	222.2	127.1	186.7	246.4
	kW	22.85	22.65	21.45	23.40	22.85	22.05	23.70	23.40	22.40
115	TC	256.2	227.1	198.0	273.2	242.8	212.4	287.0	255.5	224.1
	SHC	49.9	114.5	179.2	76.8	143.4	210.1	98.9	167.1	223.8
	kW	25.05	24.85	23.65	25.60	25.05	24.25	25.90	25.60	24.60
125	TC	232.4	203.9	175.5	248.9	219.2	189.5	262.3	231.5	200.8
	SHC	20.7	93.3	166.0	48.2	123.1	188.9	70.8	147.4	200.8
	kW	27.25	27.05	25.80	27.80	27.25	26.50	28.15	27.85	26.85

50HC028 (25 TONS) – UNIT WITH HUMIDI-MIZER IN HOT GAS REHEAT MODE										
Temp (F) Air Ent Condenser (Edb)		AIR ENTERING EVAPORATOR – Ewb (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative)			(56% Relative)			(60% Relative)		
		Air Entering Evaporator – Cfm								
		7,500	10,000	12,500	7,500	10,000	12,500	7,500	10,000	12,500
80	TC	124.40	133.90	139.00	132.00	142.10	145.10	135.60	149.10	151.50
	SHC	37.60	60.70	82.20	27.80	45.40	65.80	17.50	34.20	50.10
	kW	15.83	15.90	16.00	15.97	16.13	16.16	16.11	16.31	16.38
75	TC	129.00	138.50	144.60	136.60	147.60	150.10	140.60	154.00	156.30
	SHC	47.10	70.60	92.10	37.30	55.30	75.70	27.00	43.70	60.00
	kW	15.77	15.83	15.94	15.91	16.07	16.10	16.05	16.25	16.32
70	TC	133.60	143.10	149.20	141.20	152.30	154.80	145.30	158.80	161.10
	SHC	57.30	80.70	102.20	47.50	65.40	85.80	37.20	53.90	70.10
	kW	15.68	15.75	15.86	15.83	16.00	16.04	15.88	16.08	16.15
60	TC	142.80	158.40	158.40	150.40	161.40	163.90	153.90	167.40	169.70
	SHC	76.50	121.40	121.40	66.70	84.60	105.00	56.40	73.10	89.30
	kW	15.54	15.60	15.71	15.68	15.84	15.87	15.82	16.02	16.09
50	TC	151.80	161.30	167.40	159.40	170.50	173.20	162.80	176.20	178.80
	SHC	94.10	117.50	139.00	84.30	102.20	122.60	74.00	90.70	106.90
	kW	15.40	15.47	15.58	15.54	15.68	15.71	15.66	15.86	15.93
40	TC	161.20	170.70	176.80	168.80	179.80	182.50	172.20	185.70	188.20
	SHC	114.10	137.60	159.10	104.30	122.30	142.70	94.00	110.70	127.00
	kW	15.24	15.31	15.42	15.39	15.55	15.58	15.53	15.73	15.80

**LEGEND**

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

**NOTES:**

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

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

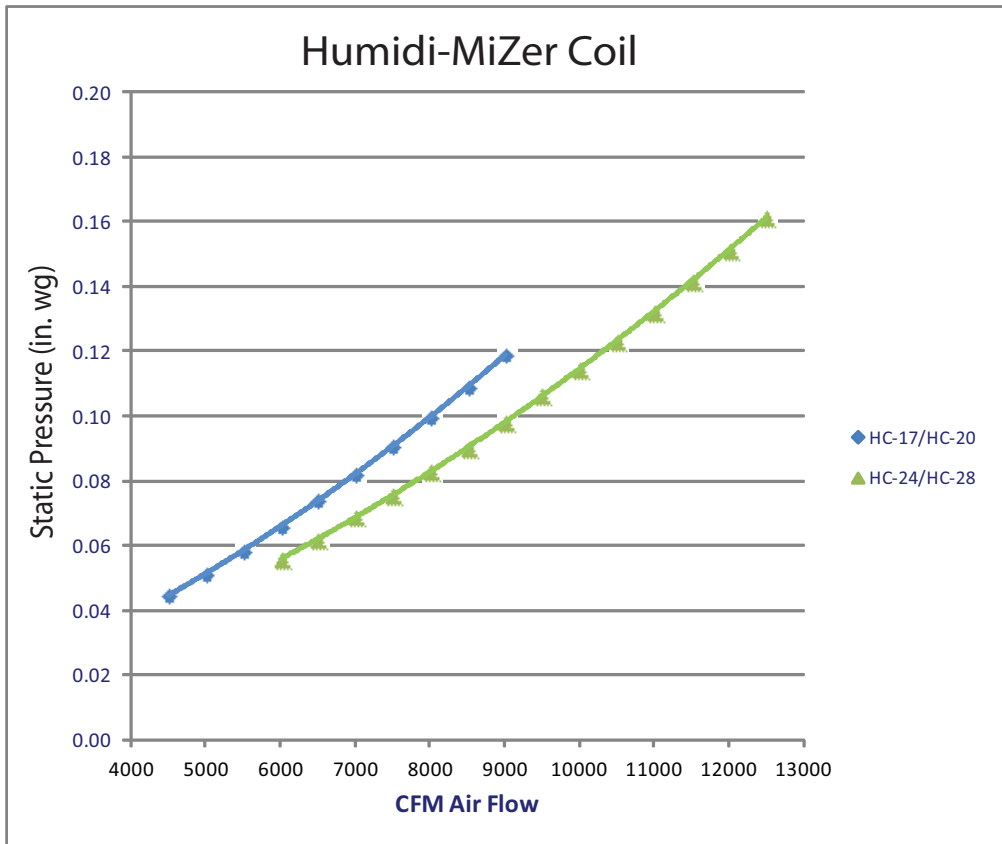
$t_{lwb}$  = Wet–bulb temperature corresponding to enthalpy of air leaving evaporator coil ( $h_{lwb}$ )

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

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

**Table 14 – STATIC PRESSURE ADDERS (in. wg) - Factory Options and/or Accessories**

**Humidi-MiZer**



C11174

**Economizer - Vertical and Horizontal Duct Configuration**

MODEL SIZES 17 – 28								
CFM	4500	5000	5500	6000	6500	7000	7500	8000
Static Pressure Adder (in. wg)	0.047	0.052	0.057	0.062	0.067	0.072	0.077	0.082

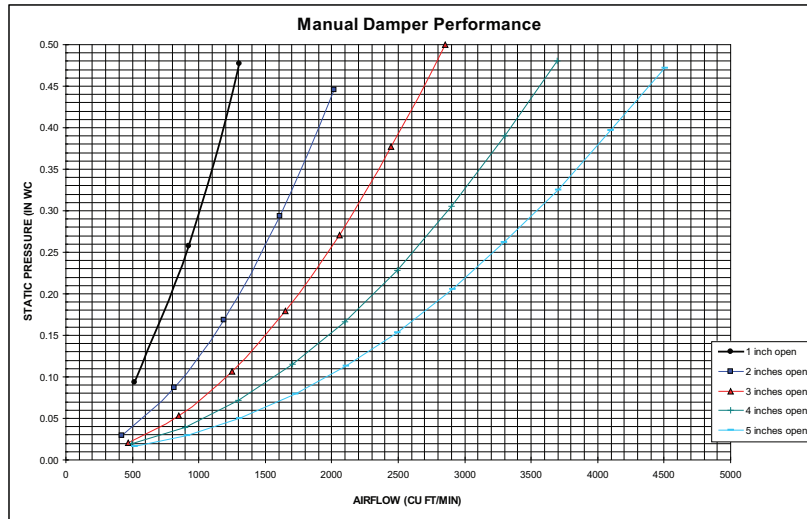
MODEL SIZES 17 – 28									
CFM	8500	9000	9500	10000	10500	11000	11500	12000	12500
Static Pressure Adder (in. wg)	0.088	0.093	0.098	0.103	0.109	0.114	0.119	0.125	0.131

**Electric Heaters - Vertical and Horizontal Duct Configuration**

MODEL SIZES 17 – 28								
CFM	4500	5000	5500	6000	6500	7000	7500	8000
25 kW Heater	0.010	0.010	0.015	0.020	0.025	0.030	0.035	0.040
50 kW Heater	0.020	0.020	0.030	0.040	0.050	0.060	0.070	0.080
75 kW Heater	0.030	0.040	0.050	0.060	0.070	0.080	0.100	0.120

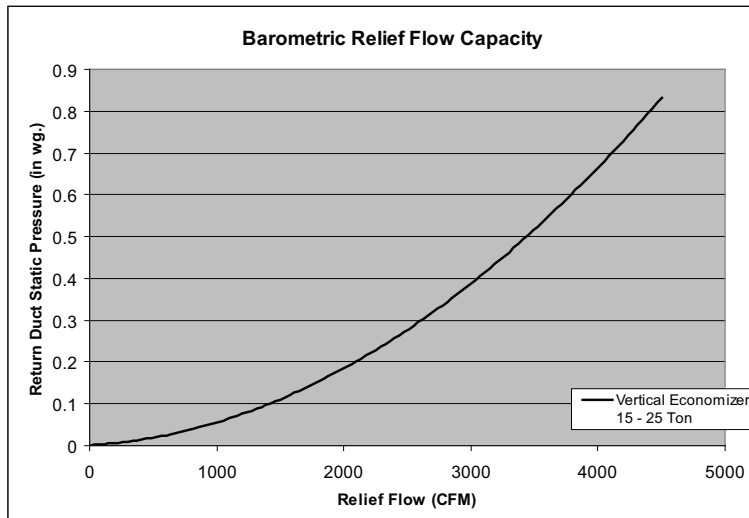
MODEL SIZES 17 – 28									
CFM	8500	9000	9500	10000	10500	11000	11500	12000	12500
25 kW Heater	0.045	0.050	0.055	0.060	0.070	0.080	0.090	0.100	0.105
50 kW Heater	0.090	0.100	0.120	0.130	0.150	0.160	0.180	0.200	0.230
75 kW Heater	0.140	0.150	0.180	0.200	0.230	0.250	0.270	0.300	0.330

# DAMPER, BAROMETRIC RELIEF AND PE PERFORMANCE



**Fig. 15 - Manual Damper Performance**

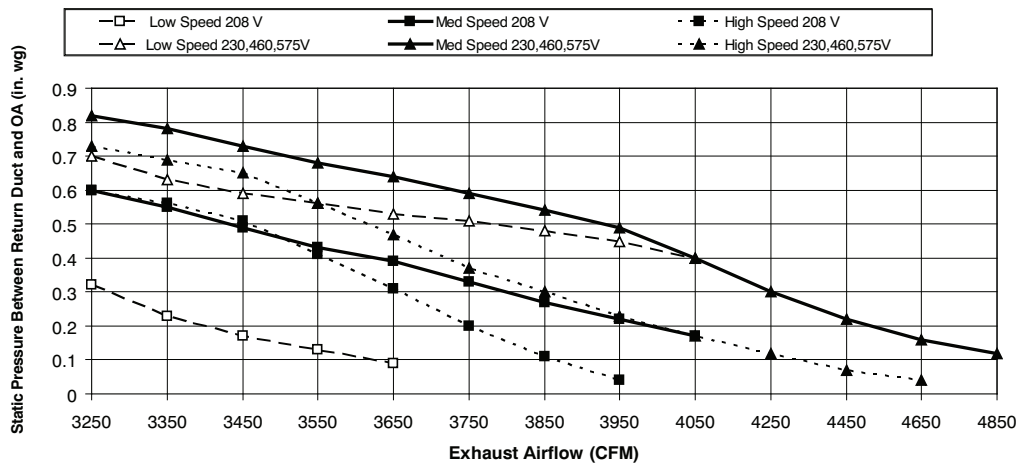
C09264



**Fig. 16 - Barometric Relief Flow Capacity**

C10583

## Power Exhaust Fan Performance



**Fig. 17 - Power Exhaust Fan Performance**

C09270

## 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 15 – 50HC-D17

## 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	<b>436</b>	<b>0.60</b>	530	0.90	611	1.22	684	1.57	751	1.94
4900	<b>456</b>	<b>0.71</b>	546	1.03	625	1.37	695	1.73	760	2.12
5250	<b>473</b>	<b>0.83</b>	560	1.16	637	1.51	706	1.89	770	2.30
5600	<b>491</b>	<b>0.95</b>	575	1.30	650	1.67	717	2.07	780	2.48
6000	513	1.11	593	1.48	665	1.87	731	2.28	792	2.71
6400	534	1.29	611	1.68	681	2.09	745	2.52	805	2.97
6750	553	1.46	628	1.87	696	2.29	758	2.74	817	3.20
7100	573	1.65	645	2.07	711	2.51	772	2.98	829	3.46
7500	595	1.88	<b>665</b>	<b>2.33</b>	729	2.79	788	3.27	<b>844</b>	<b>3.77</b>

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	812	2.33	869	2.74	924	3.17	975	3.62	<b>1024</b>	<b>4.08</b>
4900	821	2.53	877	2.95	931	3.40	981	3.86	<b>1030</b>	<b>4.34</b>
5250	829	2.72	885	3.16	938	3.61	988	4.09	<b>1036</b>	<b>4.57</b>
5600	838	2.92	893	3.37	945	3.84	994	4.33	<b>1042</b>	<b>4.83</b>
6000	849	3.17	903	3.63	954	4.12	1003	4.62	-----	-----
6400	<b>861</b>	<b>3.43</b>	914	3.92	964	4.42	<b>1012</b>	<b>4.94</b>	-----	-----
6750	872	3.69	924	4.18	973	4.70	-----	-----	-----	-----
7100	883	3.95	934	4.47	-----	-----	-----	-----	-----	-----
7500	897	4.28	947	4.81	-----	-----	-----	-----	-----	-----

Std Static Motor and Drive – 514–680 RPM, Max BHP 2.2

Medium Static Motor and Drive – 679–863 RPM, Max BHP 3.3

High Static Motor and Drive – 826–1009 RPM, Max BHP 4.9

----- Outside operating range

**Boldface** – Field-supplied Drive

Table 16 – 50HC-D20

## 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	<b>473</b>	<b>0.83</b>	<b>560</b>	<b>1.16</b>	637	1.51	706	1.89	770	2.30
5700	<b>497</b>	<b>0.99</b>	<b>580</b>	<b>1.34</b>	654	1.72	721	2.12	783	2.54
6100	<b>518</b>	<b>1.15</b>	<b>598</b>	<b>1.53</b>	669	1.92	735	2.34	795	2.78
6500	<b>540</b>	<b>1.33</b>	<b>616</b>	<b>1.73</b>	685	2.14	749	2.58	808	3.03
7000	<b>567</b>	<b>1.59</b>	640	2.01	707	2.45	768	2.91	826	3.38
7500	<b>595</b>	<b>1.88</b>	665	2.33	729	2.79	788	3.27	844	3.77
7900	<b>618</b>	<b>2.14</b>	685	2.60	747	3.09	805	3.59	859	4.10
8300	641	2.42	705	2.91	765	3.41	822	3.93	875	4.46
8750	666	2.77	729	3.28	787	3.80	842	4.34	<b>893</b>	<b>4.90</b>

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	2.72	885	3.16	938	3.61	988	4.09	1036	4.57
5700	841	2.98	895	3.43	947	3.91	997	4.40	1044	4.90
6100	852	3.23	906	3.70	957	4.19	1005	4.70	1052	5.22
6500	864	3.50	917	3.99	967	4.50	1015	5.02	1060	5.55
7000	<b>880</b>	<b>3.88</b>	931	4.38	980	4.91	1027	5.45	1072	6.01
7500	897	4.28	947	4.81	995	5.36	1041	5.92	<b>1085</b>	<b>6.49</b>
7900	911	4.63	960	5.18	1007	5.75	1052	6.32	-----	-----
8300	926	5.01	974	5.58	1020	6.16	-----	-----	-----	-----
8750	943	5.47	990	6.05	-----	-----	-----	-----	-----	-----

Std Static Motor and Drive – 622–822 RPM, Max BHP 3.3

Medium Static Motor and Drive – 713–879 RPM, Max BHP 4.9

High Static Motor and Drive – 882–1078 RPM, Max BHP 6.5

----- Outside operating range

**Boldface** – Field-supplied Drive

## FAN PERFORMANCE (cont.)

Table 17 – 50HC-D24

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	<b>506</b>	<b>1.12</b>	<b>593</b>	<b>1.43</b>	<b>668</b>	<b>1.74</b>	736	2.07	798	2.40
6500	<b>533</b>	<b>1.36</b>	<b>616</b>	<b>1.70</b>	689	2.04	754	2.39	815	2.74
7000	<b>561</b>	<b>1.64</b>	<b>640</b>	<b>2.01</b>	710	2.37	774	2.74	833	3.11
7500	<b>588</b>	<b>1.96</b>	<b>664</b>	<b>2.35</b>	732	2.74	795	3.13	852	3.53
8000	<b>617</b>	<b>2.32</b>	689	2.74	755	3.15	816	3.57	872	3.99
8500	<b>645</b>	<b>2.73</b>	715	3.17	779	3.60	837	4.04	892	4.49
9000	<b>674</b>	<b>3.18</b>	741	3.64	803	4.10	860	4.57	913	5.04
9500	703	3.67	767	4.16	827	4.65	883	5.14	935	5.64
10000	732	4.22	794	4.74	852	5.25	906	5.77	957	6.29

CFM	Available External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	855	2.75	909	3.11	959	3.47	1008	3.85	1054	4.24
6500	871	3.11	924	3.48	974	3.87	1022	4.26	1067	4.67
7000	888	3.50	940	3.89	989	4.30	1036	4.71	1081	5.13
7500	906	3.94	957	4.35	1005	4.77	1052	5.20	1096	5.64
8000	925	4.42	975	4.85	1022	5.29	1068	5.74	1111	6.20
8500	944	4.94	993	5.40	1040	5.86	1084	6.33	1127	6.81
9000	964	5.51	1012	5.99	1058	6.48	1102	6.97	1144	7.46
9500	984	6.13	1032	6.64	1077	7.14	1120	7.65	1161	8.17
10000	1006	6.81	1052	7.33	1096	7.86	1138	8.40	-----	-----

Std Static Motor and Drive – 690–863 RPM, Max BHP 4.9      Medium Static Motor and Drive – 835–1021 RPM, Max BHP 6.5  
 High Static Motor and Drive – 941–1176 RPM, Max BHP 8.7      ----- Outside operating range  
**Boldface** – Field-supplied Drive

Table 18 – 50HC-D28

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	<b>541</b>	<b>1.50</b>	<b>636</b>	<b>1.88</b>	<b>716</b>	<b>2.27</b>	787	2.66	850	3.06
8000	<b>563</b>	<b>1.76</b>	<b>656</b>	<b>2.17</b>	735	2.58	804	3.00	867	3.42
8500	<b>585</b>	<b>2.05</b>	<b>676</b>	<b>2.50</b>	753	2.93	822	3.37	884	3.81
9000	<b>608</b>	<b>2.37</b>	<b>697</b>	<b>2.85</b>	772	3.31	840	3.77	901	4.24
9500	<b>631</b>	<b>2.73</b>	717	3.24	791	3.73	858	4.21	918	4.70
10000	<b>654</b>	<b>3.12</b>	738	3.66	811	4.18	876	4.69	936	5.20
10500	<b>678</b>	<b>3.56</b>	759	4.12	831	4.67	<b>895</b>	<b>5.21</b>	954	5.74
11000	<b>701</b>	<b>4.02</b>	781	4.62	<b>851</b>	<b>5.20</b>	914	5.76	972	6.33
11500	725	4.53	<b>802</b>	<b>5.16</b>	<b>871</b>	<b>5.77</b>	933	6.36	991	6.95
12000	<b>748</b>	<b>5.09</b>	<b>824</b>	<b>5.75</b>	<b>892</b>	<b>6.38</b>	953	7.00	1010	7.62
12500	<b>772</b>	<b>5.68</b>	<b>846</b>	<b>6.38</b>	<b>912</b>	<b>7.04</b>	973	7.69	1029	8.34

CFM	Available External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
7500	909	3.47	963	3.89	1014	4.32	1062	4.77	1108	5.23
8000	925	3.85	978	4.29	1029	4.74	1077	5.20	1122	5.68
8500	941	4.26	994	4.72	1044	5.19	1092	5.67	1137	6.16
9000	957	4.71	1010	5.19	1060	5.67	1107	6.17	1152	6.68
9500	974	5.19	1027	5.69	1076	6.20	1123	6.72	1167	7.24
10000	991	5.72	1043	6.24	1092	6.77	1138	7.30	-----	-----
10500	1009	6.28	1060	6.83	1109	7.37	1155	7.93	-----	-----
11000	1026	6.89	1077	7.46	1125	8.03	1171	8.60	-----	-----
11500	1044	7.54	1095	8.13	1142	8.72	-----	-----	-----	-----
12000	1062	8.23	1112	8.85	-----	-----	-----	-----	-----	-----
12500	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Std Static Motor and Drive – 717–911 RPM, Max BHP 4.9      Medium Static Motor and Drive – 913–1116 RPM, Max BHP 6.5  
 High Static Motor and Drive – 941–1176 RPM, Max BHP 8.7      ----- Outside operating range  
**Boldface** – Field-supplied Drive

## FAN PERFORMANCE (cont.)

**Table 19 – 50HC-D17**

**HORIZONTAL SUPPLY / RETURN**

**15 TON**

CFM	Available External Static Pressure (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4500	<b>451</b>	<b>0.84</b>	533	1.21	605	1.63	668	2.12	726	2.67
4900	<b>476</b>	<b>1.01</b>	554	1.40	623	1.84	685	2.34	742	2.89
5250	<b>498</b>	<b>1.18</b>	573	1.60	640	2.05	701	2.55	756	3.11
5600	520	1.37	593	1.82	658	2.28	717	2.79	<b>771</b>	<b>3.35</b>
6000	546	1.61	616	2.10	679	2.58	736	3.10	789	3.67
6400	572	1.88	640	2.41	700	2.91	<b>756</b>	<b>3.45</b>	808	4.03
6750	595	2.13	661	2.70	720	3.23	774	3.79	825	4.38
7100	619	2.41	683	3.02	<b>740</b>	<b>3.59</b>	793	4.16	842	4.76
7500	646	2.75	<b>708</b>	<b>3.42</b>	764	4.02	815	4.62	-----	-----

CFM	Available External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4500	778	3.25	826	3.86	871	4.49	<b>913</b>	<b>5.15</b>	-----	-----
4900	794	3.49	842	4.12	887	4.78	-----	-----	-----	-----
5250	808	3.72	856	4.36	-----	-----	-----	-----	-----	-----
5600	822	3.97	870	4.62	-----	-----	-----	-----	-----	-----
6000	839	4.29	-----	-----	-----	-----	-----	-----	-----	-----
6400	857	4.65	-----	-----	-----	-----	-----	-----	-----	-----
6750	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7100	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7500	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Std Static Motor and Drive – 514–680 RPM, Max BHP 2.2

Medium Static Motor and Drive – 614–780 RPM, Max BHP 3.3

High Static Motor and Drive – 746–912 RPM, Max BHP 4.9

----- Outside operating range

**Boldface** – Field-supplied Drive

**Table 20 – 50HC-D20**

**HORIZONTAL SUPPLY / RETURN**

**17.5 TON**

CFM	Available External Static Pressure (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
5250	<b>498</b>	<b>1.18</b>	<b>573</b>	<b>1.60</b>	640	2.05	701	2.55	756	3.11
5700	<b>526</b>	<b>1.43</b>	<b>599</b>	<b>1.89</b>	663	2.35	721	2.86	776	3.43
6100	<b>552</b>	<b>1.67</b>	622	2.17	684	2.66	741	3.18	794	3.76
6500	<b>579</b>	<b>1.95</b>	646	2.49	706	3.00	761	3.54	813	4.12
7000	<b>612</b>	<b>2.33</b>	677	2.93	734	3.48	788	4.05	837	4.64
7500	646	2.75	<b>708</b>	<b>3.42</b>	764	4.02	815	4.62	<b>863</b>	<b>5.23</b>
7900	673	3.13	734	3.86	788	4.50	<b>838</b>	<b>5.12</b>	884	5.75
8300	<b>700</b>	<b>3.53</b>	760	4.33	<b>812</b>	<b>5.01</b>	<b>861</b>	<b>5.66</b>	906	6.32
8750	731	4.03	789	4.90	<b>840</b>	<b>5.63</b>	887	6.33	-----	-----

CFM	Available External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
5250	808	3.72	856	4.36	901	5.04	943	5.75	983	6.48
5700	826	4.05	874	4.71	918	5.40	960	6.13	-----	-----
6100	843	4.38	890	5.05	934	5.75	976	6.50	-----	-----
6500	861	4.75	907	5.43	951	6.14	-----	-----	-----	-----
7000	885	5.28	929	5.96	-----	-----	-----	-----	-----	-----
7500	909	5.88	-----	-----	-----	-----	-----	-----	-----	-----
7900	929	6.42	-----	-----	-----	-----	-----	-----	-----	-----
8300	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8750	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Std Static Motor and Drive – 622–822 RPM, Max BHP 3.3

Medium Static Motor and Drive – 713–879 RPM, Max BHP 4.9

High Static Motor and Drive – 882–1078 RPM, Max BHP 6.5

----- Outside operating range

**Boldface** – Field-supplied Drive

## FAN PERFORMANCE (cont.)

Table 21 – 50HC-D24

### HORIZONTAL SUPPLY / RETURN

20 TON

CFM	Available External Static Pressure (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	<b>546</b>	<b>1.57</b>	<b>617</b>	<b>2.10</b>	<b>680</b>	<b>2.67</b>	738	3.29	790	3.93
6500	<b>579</b>	<b>1.90</b>	<b>646</b>	<b>2.46</b>	707	3.07	763	3.71	814	4.39
7000	<b>613</b>	<b>2.28</b>	<b>677</b>	<b>2.87</b>	735	3.51	789	4.19	839	4.89
7500	<b>648</b>	<b>2.71</b>	708	3.34	764	4.01	816	4.72	865	5.46
8000	<b>683</b>	<b>3.20</b>	740	3.86	794	4.57	846	5.30	892	6.08
8500	718	3.76	773	4.45	825	5.18	873	5.95	<b>919</b>	<b>6.75</b>
9000	754	4.37	<b>814</b>	<b>5.10</b>	856	5.87	<b>903</b>	<b>6.67</b>	947	7.50
9500	-----	-----	840	5.82	<b>887</b>	<b>6.51</b>	<b>933</b>	<b>7.45</b>	976	8.31
10000	-----	-----	874	6.50	<b>920</b>	<b>7.44</b>	965	8.30	-----	-----

CFM	Available External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	839	4.60	885	5.29	928	6.01	969	6.75	1008	7.51
6500	862	5.09	907	5.82	950	6.57	990	7.34	1028	8.13
7000	886	5.63	930	6.39	972	7.17	1012	7.97	1050	8.70
7500	911	6.22	954	7.01	995	7.83	1035	8.66	-----	-----
8000	<b>936</b>	<b>6.87</b>	979	7.69	1019	8.54	-----	-----	-----	-----
8500	965	7.58	1004	8.44	-----	-----	-----	-----	-----	-----
9000	990	8.36	-----	-----	-----	-----	-----	-----	-----	-----
9500	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Std Static Motor and Drive – 690–863 RPM, Max BHP 4.9      Medium Static Motor and Drive – 835–1021 RPM, Max BHP 6.5  
 High Static Motor and Drive – 941–1176 RPM, Max BHP 8.7      ----- Outside operating range  
**Boldface** – Field-supplied Drive

Table 22 – 50HC-D28

### HORIZONTAL SUPPLY / RETURN

25 TON

CFM	Available External Static Pressure (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
7500	<b>553</b>	<b>1.92</b>	<b>621</b>	<b>2.46</b>	683	3.07	741	3.72	795	4.42
8000	<b>575</b>	<b>2.21</b>	<b>639</b>	<b>2.77</b>	700	3.39	756	4.07	809	4.78
8500	<b>596</b>	<b>2.52</b>	658	3.10	716	3.73	771	4.43	823	5.16
9000	<b>616</b>	<b>2.86</b>	675	3.44	732	4.10	786	4.80	836	5.55
9500	<b>636</b>	<b>3.22</b>	693	3.82	747	4.48	800	5.20	849	5.97
10000	656	3.60	710	4.21	763	4.89	813	5.62	862	6.40
10500	675	4.02	727	4.64	778	5.32	827	6.07	874	6.86
11000	694	4.46	<b>744</b>	<b>5.09</b>	793	5.79	841	6.50	887	7.34
11500	<b>713</b>	<b>4.93</b>	761	5.57	808	6.27	854	7.03	899	7.84

CFM	Available External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
7500	845	5.14	892	5.90	936	6.68	978	7.48	<b>1018</b>	<b>8.31</b>
8000	859	5.53	905	6.31	949	7.11	991	7.94	-----	-----
8500	872	5.93	918	6.73	961	7.56	1003	8.41	-----	-----
9000	884	6.34	930	7.16	973	8.01	-----	-----	-----	-----
9500	896	6.77	941	7.61	984	8.48	-----	-----	-----	-----
10000	908	7.22	953	8.08	-----	-----	-----	-----	-----	-----
10500	920	7.69	963	8.56	-----	-----	-----	-----	-----	-----
11000	931	8.18	-----	-----	-----	-----	-----	-----	-----	-----
11500	943	8.70	-----	-----	-----	-----	-----	-----	-----	-----

Std Static Motor and Drive – 647–791 RPM, Max BHP 4.9      Medium Static Motor and Drive – 755–923 RPM, Max BHP 6.5  
 High Static Motor and Drive – 827–1010 RPM, Max BHP 8.7      ----- Outside operating range  
**Boldface** – Field-supplied Drive

## FAN PERFORMANCE (cont.)

**Table 23 – PULLEY ADJUSTMENT**

MODEL 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

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

■ – Factory settings

## ELECTRICAL INFORMATION

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

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
17	208-3-60	187	253	25.0	164	25.0	164	350	1.5	STD	88.6%	8.4
										MED	87.0%	10.6
										HIGH	82.9%	13.6
	230-3-60	187	253	25.0	164	25.0	164	350	1.5	STD	88.6%	8.3
										MED	87.0%	10.6
										HIGH	82.9%	12.7
	460-3-60	414	506	12.8	100	12.8	100	277	0.9	STD	88.6%	4.2
										MED	87.0%	5.3
										HIGH	82.9%	6.4
	575-3-60	518	633	9.6	78	9.6	78	397	0.6	STD	81.1%	2.8
										MED	81.1%	2.8
										HIGH	83.6%	5.6
20	208-3-60	187	253	27.6	191	25.0	164	350	1.5	STD	87.0%	10.6
										MED	82.9%	13.6
										HIGH	89.5%	17.1
	230-3-60	187	253	27.6	191	25.0	164	350	1.5	STD	87.0%	10.6
										MED	82.9%	12.7
										HIGH	89.5%	17.1
	460-3-60	414	506	12.8	100	12.2	100	277	0.9	STD	87.0%	5.3
										MED	82.9%	6.4
										HIGH	89.5%	8.6
	575-3-60	518	633	9.6	78	9.0	78	397	0.6	STD	81.1%	2.8
										MED	83.6%	5.6
										HIGH	89.5%	7.6
24	208-3-60	187	253	30.1	225	30.1	225	350	1.5	STD	82.9%	13.6
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	230-3-60	187	253	30.1	225	30.1	225	350	1.5	STD	82.9%	12.7
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	460-3-60	414	506	16.7	114	16.7	114	277	0.9	STD	82.9%	6.4
										MED	89.5%	8.6
										HIGH	91.7%	14.3
	575-3-60	518	633	12.2	80	12.2	80	397	0.6	STD	83.6%	5.6
										MED	89.5%	7.6
										HIGH	91.7%	9.5
28	208-3-60	187	253	48.1	245	33.3	239	350	1.5	STD	82.9%	13.6
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	230-3-60	187	253	48.1	245	33.3	239	350	1.5	STD	82.9%	12.7
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	460-3-60	414	506	18.6	125	17.9	125	277	0.9	STD	82.9%	6.4
										MED	89.5%	8.6
										HIGH	91.7%	14.3
	575-3-60	518	633	14.7	100	12.8	80	397	0.6	STD	83.6%	5.6
										MED	89.5%	7.6
										HIGH	91.7%	9.5

# ELECTRICAL INFORMATION

**Table 25 – 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR**

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
17	208-3-60	187	253	25.0	164	25.0	164	350	1.5	STD	85.0%	8.6
										MED	81.5%	10.8
										HIGH	83.6%	13.6
	230-3-60	187	253	25.0	164	25.0	164	350	1.5	STD	85.0%	7.8
										MED	81.5%	9.8
										HIGH	83.6%	12.7
	460-3-60	414	506	12.8	100	12.8	100	277	0.9	STD	85.0%	3.8
										MED	81.5%	4.9
										HIGH	83.6%	6.4
	575-3-60	518	633	9.6	78	9.6	78	397	0.6	STD	81.1%	4.5
										MED	81.1%	4.5
										HIGH	83.6%	6.2
20	208-3-60	187	253	27.6	191	25.0	164	350	1.5	STD	81.5%	10.8
										MED	83.6%	13.6
										HIGH	89.5%	17.1
	230-3-60	187	253	27.6	191	25.0	164	350	1.5	STD	81.5%	9.8
										MED	83.6%	12.7
										HIGH	89.5%	17.1
	460-3-60	414	506	12.8	100	12.2	100	277	0.9	STD	81.5%	4.9
										MED	83.6%	6.4
										HIGH	89.5%	8.6
	575-3-60	518	633	9.6	78	9.0	78	397	0.6	STD	81.1%	4.5
										MED	83.6%	6.2
										HIGH	89.5%	7.6
24	208-3-60	187	253	30.1	225	30.1	225	350	1.5	STD	83.6%	13.6
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	230-3-60	187	253	30.1	225	30.1	225	350	1.5	STD	83.6%	12.7
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	460-3-60	414	506	16.7	114	16.7	114	277	0.9	STD	83.6%	6.4
										MED	89.5%	8.6
										HIGH	91.7%	14.3
	575-3-60	518	633	12.2	80	12.2	80	397	0.6	STD	83.6%	6.2
										MED	89.5%	7.6
										HIGH	91.7%	9.5
28	208-3-60	187	253	48.1	245	33.3	239	350	1.5	STD	83.6%	13.6
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	230-3-60	187	253	48.1	245	33.3	239	350	1.5	STD	83.6%	12.7
										MED	89.5%	17.1
										HIGH	91.7%	28.5
	460-3-60	414	506	18.6	125	17.9	125	277	0.9	STD	83.6%	6.4
										MED	89.5%	8.6
										HIGH	91.7%	14.3
	575-3-60	518	633	14.7	100	12.8	80	397	0.6	STD	83.6%	6.2
										MED	89.5%	7.6
										HIGH	91.7%	9.5

# ELECTRICAL INFORMATION

Table 26 – 50HC\*\*17

## ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING SINGLE SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	-	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	-	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	-	-	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057



# ELECTRICAL INFORMATION

Table 27 – 50HC\*\*20

## ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING SINGLE SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	-	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	057	057
		287/278A00	74.4	68.3	057	057	057	057

# ELECTRICAL INFORMATION

Table 28 – 50HC\*\*24

## ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING SINGLE SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	-	056	-	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	-	-	057
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	057	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	057	057	057	057
		287/278A00	74.4	68.3	057	057	057	057

## ELECTRICAL INFORMATION

Table 29 – 50HC\*\*28

### ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING SINGLE SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	056	056	056	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	056	056	056	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	056	056	056	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	057
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	057	057	057
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	057	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	057	057	057	057
		287/278A00	74.4	68.3	057	057	057	057

## ELECTRICAL INFORMATION

Table 30 – 50HC\*\*17

### ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING 2-SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	-	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057

## ELECTRICAL INFORMATION

Table 31 – 50HC\*\*20

### ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING 2-SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	057	057
		287/278A00	74.4	68.3	057	057	057	057

# ELECTRICAL INFORMATION

Table 32 – 50HC\*\*24

## ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING 2-SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	-	-	-	-
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	-	056	-	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	-	-	057
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	057	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	057	057	057	057
		287/278A00	74.4	68.3	057	057	057	057

# ELECTRICAL INFORMATION

Table 33 – 50HC\*\*28

## ELECTRIC HEAT - ELECTRICAL DATA 2-STAGE COOLING 2-SPEED INDOOR FAN MOTOR

NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER CRHEATER	NOM. PWR (kW)	APP PWR (kW)	SINGLE POINT KIT PART NUMBER CRSINGLE			
					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)
208/ 230-3-60	STD	279/270A00	25.0	18.8/23.0	056	056	056	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	MED	279/270A00	25.0	18.8/23.0	056	056	056	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
	HIGH	279/270A00	25.0	18.8/23.0	056	056	056	056
		280/271A00	50.0	37.6/45.9	056	056	056	056
		281/272A00	75.0	56.3/68.9	056	056	056	056
460-3-60	STD	282/273A00	25.0	23.0	-	-	-	-
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	MED	282/273A00	25.0	23.0	-	-	-	057
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
	HIGH	282/273A00	25.0	23.0	-	057	057	057
		283/274A00	50.0	45.9	057	057	057	057
		284/275A00	75.0	68.9	057	057	057	057
575-3-60	STD	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	-	057
		287/278A00	74.4	68.3	057	057	057	057
	MED	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	-	057	057	057
		287/278A00	74.4	68.3	057	057	057	057
	HIGH	285/276A00	24.8	22.8	-	-	-	-
		286/277A00	49.6	45.6	057	057	057	057
		287/278A00	74.4	68.3	057	057	057	057

## ELECTRICAL INFORMATION

**Table 34 – UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR**

UNIT	NO M, V-PH-HZ	ELEC. HTR			NO C.O. or UNPWR C.O.																		
		IFM TYPE	Nom (kW)	FLA	NO PE.			w/ PE. (pwrd fr/unit)			NO PE.			w/ PE. (pwrd fr/unit)									
					MAX FUSE or HACR BRKR	DISC. SIZE		MCA	MAX FUSE or HACR BRKR	MCA	DISC. SIZE		MAX FUSE or HACR BRKR	MCA	DISC. SIZE		MAX FUSE or HACR BRKR	MCA	DISC. SIZE				
		FLA	LRA	FLA		LRA	FLA				LRA	FLA			LRA	FLA			LRA				
50HC**17	460-3-60	HIGH	NONE	-	-	37	242	41.9	50	45	254	37.9	39.0	37.9	44.1	50	44.1	44.1	50	47	256	256	
			282A00	25.0	30.1	39	242	50.6	60	47	254	42.9	45.6	42.9	53.4	60	53.4	53.4	60	49	256	256	
			283A00	50.0	60.1	74	242	73.1	80	81	254	68.1	68.1	68.1	68.1	80	75.9	75.9	75.9	80	84	256	256
			284A00	75.0	90.2	109	242	103.2	110	116	254	98.2	98.2	98.2	98.2	110	106.0	106.0	106.0	110	118	256	256
			NONE	-	-	39	249	43.0	50	46	261	36.8	39.0	36.8	39.0	44.1	50	45.2	45.2	50	48	263	263
50HC**17	460-3-60	MED	282A00	25.0	30.1	41	249	52.0	60	48	261	47.0	47.0	47.0	47.0	60	54.8	54.8	60	50	263	263	
			283A00	50.0	60.1	75	249	74.5	80	82	261	69.5	69.5	69.5	69.5	80	77.2	77.2	80	85	263	263	
			284A00	75.0	90.2	110	249	104.6	110	117	261	99.6	99.6	99.6	99.6	110	107.3	107.3	125	119	263	263	
			NONE	-	-	40	250	44.1	50	47	262	37.9	40.1	37.9	40.1	50	46.3	46.3	50	50	264	264	
			282A00	25.0	30.1	42	250	53.4	60	49	262	45.6	48.4	45.6	48.4	60	56.1	56.1	60	52	264	264	
575-3-60	575-3-60	STD	283A00	50.0	60.1	76	250	75.9	80	84	262	70.9	70.9	70.9	70.9	80	78.6	78.6	80	86	264	264	
			284A00	75.0	90.2	111	250	106.0	125	118	262	101.0	101.0	101.0	101.0	110	108.7	108.7	125	121	264	264	
			NONE	-	-	27	184	31.0	40	33	192	27.9	27.9	27.9	27.9	35	32.7	32.7	40	35	194	194	
			285A00	24.8	23.9	31	184	39.4	40	36	192	35.5	35.5	35.5	35.5	40	41.5	41.5	45	38	194	194	
			286A00	49.6	47.7	58	184	69.1	70	64	192	65.3	65.3	65.3	65.3	70	71.3	71.3	80	66	194	194	
575-3-60	575-3-60	MED	287A00	74.4	71.6	86	184	81.1	90	91	192	77.2	77.2	77.2	77.2	80	83.2	83.2	90	93	194	194	
			NONE	-	-	30	27	31.0	40	33	192	27.9	27.9	27.9	27.9	35	32.7	32.7	40	35	194	194	
			285A00	24.8	23.9	31	184	39.4	40	36	192	35.5	35.5	35.5	35.5	40	41.5	41.5	45	38	194	194	
			286A00	49.6	47.7	58	184	69.1	70	64	192	65.3	65.3	65.3	65.3	70	71.3	71.3	80	66	194	194	
			287A00	74.4	71.6	86	184	81.1	90	91	192	77.2	77.2	77.2	77.2	80	83.2	83.2	90	93	194	194	
575-3-60	575-3-60	HIGH	NONE	-	-	31	198	33.8	40	36	206	30.7	30.7	30.7	30.7	40	35.5	35.5	45	38	208	208	
			285A00	24.8	23.9	34	198	42.9	45	39	206	39.0	39.0	39.0	39.0	40	45.0	45.0	50	41	208	208	
			286A00	49.6	47.7	61	198	72.6	80	67	206	68.8	68.8	68.8	68.8	70	74.8	74.8	80	69	208	208	
			287A00	74.4	71.6	89	198	84.6	90	84	206	80.7	80.7	80.7	80.7	90	86.7	86.7	90	96	208	208	
			287A00	74.4	71.6	89	198	84.6	90	84	206	80.7	80.7	80.7	80.7	90	86.7	86.7	90	96	208	208	



**ELECTRICAL INFORMATION**  
**Table 34 - 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**A00	Nom (kW)	FLA	MCA	NO PE.				w/ PE. (pwrd fr/unit)				NO PE.				w/ PE. (pwrd fr/unit)					
						MAX FUSE or BRKR	DISC. SIZE FLA	DISC. SIZE LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA	DISC. SIZE LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA	DISC. SIZE LRA	MCA	MAX FUSE or BRKR	DISC. SIZE FLA	DISC. SIZE LRA	MCA		
50HC**20	208/230-3-60	STD	NONE	-	-	76.1	100	80	453	87.9	100	93	473	80.9	100	85	458	92.7	100	99	478	478/478	
			279A00	18.8/25.0	52.1/60.1	78.4/88.4	100/100	80/81	453/453	93.1/103.1	100/110	89/95	473/473	84.4/94.4	100/100	85/87	458/458	99.1/109.1	100/110	98/100	100	478/478	
			280A00	37.6/50.0	104.2/120.3	143.5/133.6	150/150	132/151	453/453	158.3/148.3	175/175	146/164	473/473	149.5/139.6	150/150	138/156	458/458	164.3/154.3	175/175	151/170	151/170	478/478	
			281A00	56.3/75.0	156.4/180.4	169.7/193.7	200/225	192/220	453/453	184.4/208.4	200/225	206/233	473/473	175.7/199.7	200/225	198/225	458/458	190.4/214.4	200/225	211/239	211/239	478/478	
			NONE	-	-	79.1/78.2	100/100	83/82	455	90.9/90.0	100/100	97/96	475	88.9/83.0	100/100	89/88	460	95.7/94.8	110/110	102/101	102/101	480	
			279A00	18.8/25.0	52.1/60.1	82.1/91.0	100/100	83/84	455/455	96.9/105.8	100/110	97/97	475/475	88.1/97.0	100/100	89/89	460/460	102.9/111.8	110/125	102/103	102/103	480/480	
	HIGH	208/230-3-60	MED	280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	455/455	162.0/150.9	175/175	149/167	475/475	153.3/142.2	175/175	141/158	460/460	168.0/156.9	175/175	155/172	155/172	480/480
				281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	455/455	188.2/211.0	200/225	209/236	475/475	179.4/202.3	200/225	201/228	460/460	194.2/217.0	200/250	215/241	215/241	480/480
				NONE	-	-	82.6	100	87	451	94.4	110	101	471	87.4	100	93	456	99.2	125	106	106	476
				279A00	18.8/25.0	52.1/60.1	86.5/96.5	100/100	87/89	451/451	101.3/111.3	110/125	101/102	471/471	92.5/102.5	100/110	93/94	456/456	107.3/117.3	125/125	106/108	106/108	476/476
				280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	451/451	166.4/156.4	175/175	153/172	471/471	157.6/147.7	175/175	145/164	456/456	172.4/162.4	175/175	159/177	159/177	476/476
				281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	451/451	192.5/216.5	200/250	213/241	471/471	183.8/207.8	200/225	205/233	456/456	198.5/222.5	200/250	219/246	219/246	476/476
460-3-60	STD	STD	NONE	-	-	37.1	45	39	251	43.3	50	46	263	39.3	50	42	253	45.5	50	49	265	265	
			282A00	25.0	30.1	44.3	45	41	251	52.0	60	48	263	47.0	50	43	253	54.8	60	50	265	265	
			283A00	50.0	60.1	66.7	80	75	251	74.5	80	82	263	69.5	80	78	253	77.2	80	85	265	265	
			284A00	75.0	90.2	96.8	100	110	251	104.6	110	117	263	99.6	110	112	253	107.3	125	119	265	265	
			NONE	-	-	38.2	50	40	252	44.4	50	47	264	40.4	50	43	254	46.6	50	50	266	266	
			282A00	25.0	30.1	45.6	50	42	252	53.4	60	49	264	48.4	50	45	254	56.1	60	52	266	266	
	MED	460-3-60	HIGH	283A00	50.0	60.1	68.1	80	76	252	75.9	80	84	264	70.9	80	79	254	78.6	80	86	266	266
				284A00	75.0	90.2	98.2	100	111	252	106.0	125	118	264	101.0	110	114	254	108.7	125	121	266	266
				NONE	-	-	40.4	50	43	250	46.6	50	50	262	42.6	50	45	252	48.8	60	52	264	264
				282A00	25.0	30.1	48.4	50	45	250	56.1	60	52	262	51.1	60	47	252	58.9	60	54	264	264
				283A00	50.0	60.1	70.9	80	79	250	78.6	80	86	262	73.6	80	82	252	81.4	90	89	264	264
				284A00	75.0	90.2	101.0	110	114	250	108.7	125	121	262	103.7	125	116	252	111.5	125	123	264	264
575-3-60	STD	STD	NONE	-	-	26.2	30	27	186	31.0	40	33	194	27.9	35	29	188	32.7	40	35	196	196	
			285A00	24.8	23.9	33.4	35	31	186	39.4	40	36	194	35.5	40	33	188	41.5	45	38	196	196	
			286A00	49.6	47.7	63.1	70	58	186	69.1	70	64	194	65.3	70	60	188	71.3	80	66	196	196	
			287A00	74.4	71.6	75.1	80	86	186	81.1	90	91	194	77.2	80	88	188	83.2	90	93	196	196	
			NONE	-	-	29.0	35	31	200	33.8	40	36	208	30.7	40	33	202	35.5	45	38	210	210	
			285A00	24.8	23.9	36.9	40	34	200	42.9	45	39	208	39.0	40	36	202	45.0	50	41	210	210	
	MED	575-3-60	HIGH	286A00	49.6	47.7	66.6	70	61	200	72.6	80	67	208	68.8	70	63	202	74.8	80	69	210	210
				287A00	74.4	71.6	78.6	90	89	200	84.6	90	94	208	80.7	90	91	202	86.7	90	96	210	210
				NONE	-	-	31.0	40	33	198	35.8	45	38	206	32.7	40	35	200	37.5	45	40	208	208
				285A00	24.8	23.9	39.4	40	36	198	45.4	50	42	206	41.5	45	38	200	47.5	50	44	208	208
				286A00	49.6	47.7	69.1	70	64	198	75.1	80	69	206	71.3	80	66	200	77.3	80	71	208	208
				287A00	74.4	71.6	81.1	90	91	198	87.1	90	97	206	83.2	90	93	200	89.2	90	99	208	208

# ELECTRICAL INFORMATION

**Table 34 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR (cont)**

UNIT	NO M, V-PH-HZ	ELEC. HTR				NO P.E.				NO C.O. or UNPWR C.O.				w/ PWRD C.O.							
		IFM TYPE	ORHEATER***A00	Nom (kW)	FLA	MCA	MAX FUSE or HACR BRKR	DISC. SIZE		MCA	MAX FUSE or HACR BRKR	DISC. SIZE		MCA	MAX FUSE or HACR BRKR	DISC. SIZE					
								FLA	LRA			FLA	LRA			FLA	LRA	FLA	LRA		
STD		NONE	279A00	18.8/25.0	52.1/60.1	87.3/86.4	100/100	92/91	550	99.1/98.2	125/125	105/104	570	92.1/91.2	100/100	97/96	555	103.9/103.0	125/125	111/110	575
							100/100	92/91	550/550	99.1/105.8	125/125	105/104	570/570	92.1/97.0	100/100	97/96	555/555	103.9/111.8	125/125	111/110	575/575
							150/150	135/153	550/550	102.0/150.9	175/175	149/167	570/570	153.3/142.2	175/175	141/158	555/555	168.0/156.9	175/175	155/172	575/575
							200/225	196/222	550/550	188.2/211.0	200/225	209/236	570/570	179.4/202.3	200/225	201/228	555/555	194.2/217.0	200/250	215/241	575/575
MED	208/230-3-60	NONE	279A00	18.8/25.0	52.1/60.1	90.8	100	96	546	102.6	125	109	566	95.6	125	101	551	107.4	125	115	571
							100/100	96/96	546/546	102.6/111.3	125/125	109/109	566/566	95.6/102.5	125/125	101/101	551/551	107.4/117.3	125/125	115/115	571/571
							175/175	139/158	546/546	166.4/156.4	175/175	153/172	566/566	157.6/147.7	175/175	145/164	551/551	172.4/162.4	175/175	159/177	571/571
							200/225	200/227	546/546	192.5/216.5	200/250	213/241	566/566	183.8/207.8	200/225	205/233	551/551	198.5/222.5	200/250	219/246	571/571
HIGH	208/230-3-60	NONE	279A00	18.8/25.0	52.1/60.1	102.2	125	109	625	114.0	125	122	645	107.0	125	114	630	118.8	150	128	650
							125/125	109/109	625/625	115.5/125.5	125/150	122/122	645/645	107.0/116.8	125/125	114/114	630/630	121.5/131.5	150/150	128/128	650/650
							175/175	153/171	625/625	180.6/170.7	200/175	166/185	645/645	171.9/161.9	175/175	159/177	630/630	186.6/176.7	200/200	172/190	650/650
							200/250	213/240	625/625	206.8/230.8	225/250	228/254	645/645	198.0/222.0	225/250	218/246	630/630	212.8/236.8	225/250	232/259	650/650
STD	460-3-60	NONE	282A00	25.0	30.1	47.6	60	50	280	53.8	60	57	292	49.8	60	52	282	56.0	70	60	294
							60	50	280	53.8	60	57	292	49.8	60	52	282	56.1	70	60	294
							80	76	280	75.9	80	84	292	70.9	80	79	282	78.6	80	86	294
							100	111	280	106.0	125	118	292	101.0	110	114	282	108.7	125	121	294
MED	460-3-60	NONE	282A00	25.0	30.1	49.8	60	52	278	56.0	70	60	290	52.0	60	55	280	58.2	70	62	292
							60	52	278	56.1	70	60	290	52.0	60	55	280	58.9	70	62	292
							80	79	278	78.6	80	86	290	73.6	80	82	280	81.4	90	89	292
							110	114	278	108.7	125	121	290	103.7	125	116	280	111.5	125	123	292
HIGH	50HC**24	NONE	282A00	25.0	30.1	55.5	60	59	318	61.7	70	66	330	57.7	70	62	320	63.9	80	69	332
							60	59	318	63.3	70	66	330	58.3	70	62	320	66.0	80	69	332
							90	86	318	85.7	90	93	330	80.7	90	88	320	88.5	100	95	332
							125	120	318	115.8	125	127	330	110.8	125	123	320	118.6	125	130	332
STD	575-3-60	NONE	285A00	24.8	23.9	35.5	45	37	204	40.3	50	43	212	37.2	45	39	206	42.0	50	45	214
							45	37	204	42.9	50	43	212	39.0	45	39	206	45.0	50	45	214
							70	61	204	72.6	80	67	212	68.8	70	63	206	74.8	80	69	214
							90	89	204	84.6	90	94	212	80.7	90	91	206	86.7	90	96	214
MED	575-3-60	NONE	285A00	24.8	23.9	37.5	45	40	202	42.3	50	45	210	39.2	50	42	204	44.0	50	47	212
							45	40	202	45.4	50	45	210	41.5	50	42	204	47.5	50	47	212
							70	64	202	75.1	80	69	210	71.3	80	66	204	77.3	80	71	212
							90	91	202	87.1	90	97	210	83.2	90	93	204	89.2	90	99	212
HIGH	575-3-60	NONE	285A00	24.8	23.9	39.4	50	42	229	44.2	50	47	237	41.1	50	44	231	45.9	50	49	239
							50	42	229	47.8	50	47	237	43.9	50	44	231	48.9	50	49	239
							80	66	229	77.5	80	71	237	73.6	80	68	231	79.6	80	73	239
							90	93	229	89.5	100	99	237	85.6	90	95	231	91.6	100	101	239

**ELECTRICAL INFORMATION**  
**Table 34 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH SINGLE SPEED INDOOR FAN MOTOR (cont)**

UNIT	NO M, V-PH-HZ	IFM TYPE	ELEC. HTR			NO C.O. or UNPWR C.O.						w/ PWRD C.O.									
			CRHEATER**A00	Nom (kW)	FLA	NO PE.			w/ PE. (pwrd fr/unit)			NO PE.			w/ PE. (pwrd 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				
50HC**28	460-3-60	STD	NONE	-	-	116.0/115.1	150/150	120/119	590	127.8/126.9	175/175	133/132	610	120.8/119.9	150/150	125/124	595	132.6/131.7	175/175	139/138	615
			279A00	18.8/25.0	52.1/60.1	116.0/115.1	150/150	120/119	590/590	127.8/126.9	175/175	133/132	610/610	120.8/119.9	150/150	125/124	595/595	132.6/131.7	175/175	139/138	615/615
			280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	590/590	162.0/150.9	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	194.4/217.0	200/250	215/241	615/615
			NONE	-	-	119.5	150	124	586	131.3	175	137	606	124.3	150	129	591	136.1	175	143	611
			279A00	18.8/25.0	52.1/60.1	119.5/119.5	150/150	124/124	586/586	131.3/131.3	175/175	137/137	606/606	124.3/124.3	150/150	129/129	591/591	136.1/136.1	175/175	143/143	611/611
			280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	586/586	166.4/156.4	175/175	153/172	606/606	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	-	-	130.9	175	137	665	142.7	175	150	685	135.7	175	142	670	147.5	175	156	690
			279A00	18.8/25.0	52.1/60.1	130.9/130.9	175/175	137/137	665/665	142.7/142.7	175/175	150/150	685/685	135.7/135.7	175/175	142/142	670/670	147.5/147.5	175/175	156/156	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	200/175	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			
50HC**28	460-3-60	STD	NONE	-	-	53.0	60	56	306	59.2	70	63	318	55.2	60	58	308	61.4	70	65	320
			282A00	25.0	30.1	53.0	60	56	306	59.2	70	63	318	55.2	60	58	308	61.4	70	65	320
			283A00	50.0	60.1	68.1	80	76	306	75.9	80	84	318	70.9	80	79	308	78.6	80	86	320
			284A00	75.0	90.2	98.2	100	111	306	106.0	125	118	318	101.0	110	114	308	108.7	125	121	320
			NONE	-	-	55.2	60	58	304	61.4	70	65	316	57.4	70	61	306	63.6	80	68	318
			282A00	25.0	30.1	55.2	60	58	304	61.4	70	65	316	57.4	70	61	306	63.6	80	68	318
			283A00	50.0	60.1	70.9	80	79	304	78.6	80	86	316	73.6	80	82	306	81.4	90	89	318
			284A00	75.0	90.2	101.0	110	114	304	108.7	125	121	316	103.7	125	116	306	111.5	125	123	318
			NONE	-	-	60.9	70	65	344	67.1	80	72	356	63.1	80	67	346	69.3	80	74	358
			282A00	25.0	30.1	60.9	70	65	344	67.1	80	72	356	63.1	80	67	346	69.3	80	74	358
283A00	50.0	60.1	78.0	90	86	344	85.7	90	93	356	80.7	90	88	346	88.5	100	95	358			
284A00	75.0	90.2	108.1	125	120	344	115.8	125	127	356	110.8	125	123	346	118.6	125	130	358			
575-3-60	STD	NONE	-	-	40.4	50	42	228	45.2	50	48	236	42.1	50	44	230	46.9	60	50	238	
		285A00	24.8	23.9	40.4	50	42	228	45.2	50	48	236	42.1	50	44	230	46.9	60	50	238	
		286A00	49.6	47.7	66.6	70	61	228	72.6	80	67	236	68.8	70	63	230	74.8	80	69	238	
		287A00	74.4	71.6	78.6	90	89	228	84.6	90	94	236	80.7	90	91	230	86.7	90	96	238	
		NONE	-	-	42.4	50	45	226	47.2	60	50	234	44.1	50	46	228	48.9	60	52	236	
		285A00	24.8	23.9	42.4	50	45	226	47.2	60	50	234	44.1	50	46	228	48.9	60	52	236	
		286A00	49.6	47.7	69.1	70	64	226	75.1	80	69	234	71.3	80	66	228	77.3	80	71	236	
		287A00	74.4	71.6	81.1	90	91	226	87.1	90	97	234	83.2	90	93	228	89.2	90	99	236	
		NONE	-	-	44.3	50	47	253	49.1	60	52	261	46.0	60	49	255	50.8	60	54	263	
		285A00	24.8	23.9	44.3	50	47	253	49.1	60	52	261	46.0	60	49	255	50.8	60	54	263	
286A00	49.6	47.7	71.5	80	66	253	77.5	80	71	261	73.6	80	68	255	79.6	80	73	263			
287A00	74.4	71.6	83.5	90	93	253	89.5	90	99	261	85.6	90	95	255	91.6	100	101	263			

# ELECTRICAL INFORMATION

**Table 35 – UNIT WIRE SIZING DATA WITH FACTORY INSTALLED HACR BREAKER WITH SINGLE SPEED INDOOR FAN MOTOR**

UNIT	NO M, V-P-HZ	ELEC. HTR				NO C.O. or UNPWR C.O.												w/ PWRD C.O.											
		IFM TYPE	CRHEATER***A00	Nom (kW)	FLA	NO PE.				w/ P.E. (pwrd fr/unit)				NO PE.				w/ P.E. (pwrd fr/unit)											
						MCA	HACR BRKR	FLA	DISC. SIZE	MCA	HACR BRKR	FLA	DISC. SIZE	MCA	HACR BRKR	FLA	DISC. SIZE	MCA	HACR BRKR	FLA	DISC. SIZE								
50HC**17	460-3-60	STD	NONE	-	-	-	72/72	409	81.0/81.0	100/100	88/86	429	74.0/74.0	90/90	78/78	414	85.8/85.8	100/100	91/81	434									
			279A00	18.8/25.0	52.1/60.1	85.5/85.5	72/79	409/409	100.3/100.3	110/110	86/92	429/429	91.5/91.5	100/100	78/84	414/414	106.3/106.3	110/110	91/88	434/434									
			280A00	37.6/50.0	104.2/120.3	140.8/140.8	129/148	409/409	155.5/155.5	175/175	143/161	429/429	146.8/146.8	150/150	135/153	414/414	161.5/161.5	175/175	149/167	434/434									
			281A00	56.3/75.0	156.4/180.4	190.8/190.8	190/217	409/409	205.5/205.5	225/225	203/231	429/429	196.8/196.8	200/225	195/223	414/414	211.5/211.5	225/225	209/236	434/434									
			NONE	-	-	71.4	75	423	83.2	100	88	443	76.2	100	80	428	88.0	100	94	448									
			279A00	18.8/25.0	52.1/60.1	88.4/88.4	75/81	423/423	103.1/103.1	110/110	88/95	443/443	94.4/94.4	100/100	80/87	428/428	109.1/109.1	110/110	94/100	448/448									
			280A00	37.6/50.0	104.2/120.3	143.5/143.5	132/151	423/423	158.3/158.3	175/175	146/164	443/443	149.5/149.5	150/150	138/156	428/428	164.3/164.3	175/175	151/170	448/448									
			281A00	56.3/75.0	156.4/180.4	193.7/193.7	192/220	423/423	208.4/208.4	225/225	206/233	443/443	199.7/199.7	200/225	198/225	428/428	214.4/214.4	225/225	211/239	448/448									
50HC**17	460-3-60	MED	NONE	-	-	78/77	425	86.2/86.2	100/100	92/91	445	79.2/79.2	100/100	84/83	430	91.0/91.0	100/100	97/86	450										
			279A00	18.8/25.0	52.1/60.1	91.0/91.0	78/84	425/425	105.8/105.8	110/110	92/97	445/445	97.0/97.0	100/100	84/89	430/430	111.8/111.8	125/125	97/103	450/450									
			280A00	37.6/50.0	104.2/120.3	147.3/147.3	135/153	425/425	162.0/162.0	175/175	149/167	445/445	153.3/153.3	175/175	141/158	430/430	168.0/168.0	175/175	155/172	450/450									
			281A00	56.3/75.0	156.4/180.4	196.3/196.3	196/222	425/425	211.0/211.0	225/225	209/236	445/445	202.3/202.3	225/225	201/228	430/430	217.0/217.0	225/250	215/241	450/450									
			NONE	-	-	35.7	37	242	41.9	50	45	254	37.9	50	40	244	44.1	50	47	256									
			282A00	25.0	30.1	42.9	39	242	50.6	60	47	254	45.6	60	42	244	53.4	60	49	256									
			283A00	50.0	60.1	65.4	74	242	73.1	80	81	254	68.1	80	76	244	75.9	80	84	256									
			284A00	75.0	90.2	95.5	109	242	103.2	110	116	254	98.2	110	100	244	106.0	110	118	256									
50HC**17	460-3-60	HIGH	NONE	-	-	39	249	43.0	50	46	261	39.0	50	41	251	45.2	50	48	263										
			282A00	25.0	30.1	44.3	41	249	52.0	60	48	261	47.0	60	43	251	54.8	60	50	263									
			283A00	50.0	60.1	66.7	75	249	74.5	80	82	261	69.5	80	78	251	77.2	80	85	263									
			284A00	75.0	90.2	96.8	110	249	104.6	110	117	261	99.6	110	112	251	107.3	110	119	263									
			NONE	-	-	37.9	40	250	44.1	50	47	262	40.1	50	42	252	46.3	50	50	264									
			282A00	25.0	30.1	45.6	42	250	53.4	60	49	262	48.4	60	45	252	56.1	60	52	264									
			283A00	50.0	60.1	68.1	76	250	75.9	80	84	262	70.9	80	79	252	78.6	80	86	264									
			284A00	75.0	90.2	98.2	111	250	106.0	110	118	262	101.0	110	114	252	108.7	110	121	264									
50HC**17	460-3-60	STD	NONE	-	-	27	184	31.0	40	33	192	27.9	40	35	186	32.7	40	35	194										
			285A00	24.8	23.9	33.4	31	184	39.4	40	36	192	35.5	40	33	186	41.5	45	38	194									
			286A00	49.6	47.7	63.1	58	184	69.1	70	64	192	65.3	70	60	186	71.3	80	66	194									
			287A00	74.4	71.6	75.1	86	184	81.1	90	91	192	77.2	80	88	186	83.2	90	93	194									
			NONE	-	-	26.2	30	184	31.0	40	33	192	27.9	40	35	186	32.7	40	35	194									
			285A00	24.8	23.9	33.4	31	184	39.4	40	36	192	35.5	40	33	186	41.5	45	38	194									
			286A00	49.6	47.7	63.1	58	184	69.1	70	64	192	65.3	70	60	186	71.3	80	66	194									
			287A00	74.4	71.6	75.1	86	184	81.1	90	91	192	77.2	80	88	186	83.2	90	93	194									
50HC**17	460-3-60	MED	NONE	-	-	31	198	33.8	40	36	206	30.7	40	33	200	35.5	45	38	208										
			285A00	24.8	23.9	36.9	34	198	42.9	45	39	206	39.0	40	36	200	45.0	50	41	208									
			286A00	49.6	47.7	66.6	61	198	72.6	80	67	206	68.8	70	63	200	74.8	80	69	208									
			287A00	74.4	71.6	78.6	89	198	84.6	90	94	206	80.7	80	91	200	86.7	90	96	208									
			NONE	-	-	29.0	35	198	33.8	40	36	206	30.7	40	33	200	35.5	45	38	208									
			285A00	24.8	23.9	36.9	34	198	42.9	45	39	206	39.0	40	36	200	45.0	50	41	208									
			286A00	49.6	47.7	66.6	61	198	72.6	80	67	206	68.8	70	63	200	74.8	80	69	208									
			287A00	74.4	71.6	78.6	89	198	84.6	90	94	206	80.7	80	91	200	86.7	90	96	208									

**ELECTRICAL INFORMATION**  
**Table 35 - UNIT WIRE SIZING DATA WITH FACTORY INSTALLED HACR BREAKER WITH SINGLE SPEED INDOOR FAN MOTOR (cont)**

UNIT	IFM TYPE	ELEC. HTR				NO C.O. or UNPWR C.O.								w/ PWRD C.O.							
		CR-HEATER**A00	Nom (kW)	FLA	NO PE.				w/ PE. (pwrd fr/unit)				NO PE.				w/ PE. (pwrd fr/unit)				
					MCA	HACR BRKR	FLA	DISC. SIZE	LRA	MCA	HACR BRKR	FLA	DISC. SIZE	LRA	MCA	HACR BRKR	FLA	DISC. SIZE	LRA		
50HC**20	STD	NONE	-	-	-	80	453	473	93	100	100	87.9	100	100	85	458	92.7	100	100	99	478
		279A00	18.8/25.0	52.1/60.1	88.4/88.4	100/100	80/81	453/453	473/473	90/95	110/110	103.1/103.1	103.1/103.1	110/110	89/87	458/458	109.1/109.1	110/110	110/110	99/100	478/478
		280A00	37.6/50.0	104.2/120.3	143.5/143.5	150/150	132/151	453/453	473/473	146/164	175/175	158.3/158.3	149.5/149.5	150/150	138/156	458/458	164.3/164.3	175/175	175/175	151/170	478/478
		281A00	56.3/75.0	156.4/180.4	193.7/193.7	200/225	192/220	453/453	473/473	206/233	225/225	208.4/208.4	199.7/199.7	200/225	198/225	458/458	214.4/214.4	225/225	215/241	211/239	478/478
	MED	NONE	-	-	-	83/82	455	475	97/96	100/100	90.9/90.9	94.4	100	100	89/88	460	95.7/95.7	110/110	110	102/101	480
		279A00	18.8/25.0	52.1/60.1	91.0/91.0	100/100	83/84	455/455	475/475	97/97	110/110	105.8/105.8	105.8/105.8	110/110	89/89	460/460	111.8/111.8	125/125	102/103	480/480	
		280A00	37.6/50.0	104.2/120.3	147.3/147.3	150/150	135/153	455/455	475/475	149/167	175/175	162.0/162.0	153.3/153.3	175/175	141/158	460/460	168.0/168.0	175/175	155/172	480/480	
		281A00	56.3/75.0	156.4/180.4	196.3/196.3	200/225	196/222	455/455	475/475	209/236	225/225	211.0/211.0	202.3/202.3	225/225	201/228	460/460	217.0/217.0	225/250	215/241	480/480	
460-3-60	STD	NONE	-	-	87	451	471	101	100	110	87.4	100	100	93	456	99.2	125	106	106	476	
		279A00	18.8/25.0	52.1/60.1	96.5/96.5	100/100	87/89	451/451	471/471	101/102	125/125	111.3/111.3	102.5/102.5	110/110	93/94	456/456	117.3/117.3	125/125	106/108	476/476	
		280A00	37.6/50.0	104.2/120.3	151.6/151.6	175/175	139/158	451/451	471/471	153/172	175/175	166.4/166.4	157.6/157.6	175/175	145/164	456/456	172.4/172.4	175/175	159/177	476/476	
		281A00	56.3/75.0	156.4/180.4	201.8/201.8	225/225	200/227	451/451	471/471	213/241	225/250	216.5/216.5	207.8/207.8	225/225	205/233	456/456	222.5/222.5	225/250	219/246	476/476	
	MED	NONE	-	-	39	251	263	46	50	60	43.3	50	50	42	253	45.5	50	49	50	265	
		282A00	25.0	30.1	44.3	45	41	251	263	48	52.0	52.0	60	43	253	54.8	60	50	50	265	
		283A00	50.0	60.1	66.7	80	75	251	263	82	74.5	74.5	80	78	253	77.2	80	85	85	265	
		284A00	75.0	90.2	96.8	100	110	251	263	117	104.6	104.6	110	112	253	107.3	125	125	119	265	
HIGH	NONE	-	-	40	252	264	47	50	60	44.4	50	50	43	254	46.6	50	50	50	266		
	282A00	25.0	30.1	45.6	50	42	252	264	49	53.4	53.4	60	45	254	56.1	60	52	52	266		
	283A00	50.0	60.1	68.1	80	76	252	264	84	75.9	75.9	80	79	254	78.6	80	86	86	266		
	284A00	75.0	90.2	98.2	100	111	252	264	118	106.0	106.0	125	114	254	108.7	125	121	121	266		
575-3-60	STD	NONE	-	-	43	250	262	50	50	46.6	50	50	45	252	48.8	60	52	52	264		
		282A00	25.0	30.1	48.4	50	45	250	262	52	56.1	56.1	60	47	252	58.9	60	54	54	264	
		283A00	50.0	60.1	70.9	80	79	250	262	86	78.6	78.6	80	82	252	81.4	90	89	89	264	
		284A00	75.0	90.2	101.0	110	114	250	262	121	108.7	108.7	125	116	252	111.5	125	123	123	264	
	MED	NONE	-	-	27	186	194	33	40	40	31.0	40	40	35	188	32.7	40	35	35	196	
		285A00	24.8	23.9	33.4	35	31	186	194	36	39.4	39.4	40	33	188	41.5	45	45	38	196	
		286A00	49.6	47.7	63.1	70	58	186	194	64	69.1	65.3	70	60	188	71.3	80	80	66	196	
		287A00	74.4	71.6	75.1	80	86	186	194	91	84.6	77.2	80	88	188	83.2	90	90	93	196	
HIGH	NONE	-	-	31	200	208	36	40	40	33.8	40	40	33	202	35.5	45	45	38	210		
	285A00	24.8	23.9	36.9	40	34	200	208	39	42.9	39.0	40	36	202	45.0	50	50	41	210		
	286A00	49.6	47.7	66.6	70	61	200	208	67	72.6	68.8	70	63	202	74.8	80	80	69	210		
	287A00	74.4	71.6	78.6	90	89	200	208	94	84.6	80.7	90	91	202	86.7	90	90	96	210		

**ELECTRICAL INFORMATION**  
**Table 35 - UNIT WIRE SIZING DATA WITH FACTORY INSTALLED HACR BREAKER WITH SINGLE SPEED INDOOR FAN MOTOR (cont)**

UNIT	NO M. V-PH-HZ	ELEC. HTR							NO C.O. or UNPWR C.O.																		
		CR-HEATER***A00	Nom (kW)	FLA	NO PE.			w/ PE. (pwrd fr/unit)				NO PE.			w/ PE. (pwrd fr/unit)				NO PE.			w/ PE. (pwrd fr/unit)					
					MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	FLA	LRA	MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	FLA	LRA	MCA	HACR BRKR	FLA	LRA	DISC. SIZE	FLA	LRA
							FLA	LRA							FLA	LRA											
50HC**24	460-3-60	HIGH	287A00	75.0	90.2	75.0	110	278	114	125	125	108.7	290	290	290	103.7	125	116	280	280	280	111.5	125	123	292		
			284A00	75.0	90.2	101.0	114	278	114	125	108.7	290	290	290	103.7	125	116	280	280	280	111.5	125	123	292			
			283A00	50.0	60.1	70.9	80	278	86	290	73.6	80	82	280	280	280	73.6	80	82	280	280	280	81.4	90	89	292	
			282A00	25.0	30.1	49.8	60	278	59	318	49.8	60	55	280	290	52.0	60	55	280	280	280	58.9	70	62	292		
			281A00	56.3/75.0	156.4/180.4	216.0/216.0	225/250	213/240	625/625	230.8/230.8	250/250	226/254	645/645	222.0/222.0	250/250	225/250	49.8	60	52	282	282	282	56.0	70	60	294	
			280A00	37.6/50.0	104.2/120.3	165.9/165.9	175/175	153/171	625/625	180.6/180.6	200/200	168/185	645/645	171.9/171.9	175/175	125/125	49.8	60	52	282	282	282	56.1	70	60	294	
	575-3-60	STD	287A00	75.0	90.2	98.2	100	280	111	125	118	292	106.0	292	292	101.0	110	114	282	282	282	108.7	125	121	294		
			284A00	75.0	90.2	98.2	100	280	111	125	118	292	106.0	292	292	101.0	110	114	282	282	282	108.7	125	121	294		
			283A00	50.0	60.1	68.1	80	280	76	280	75.9	80	84	292	292	70.9	80	79	282	282	282	78.6	80	86	294		
			282A00	25.0	30.1	47.6	60	280	50	280	53.8	60	57	292	292	49.8	60	52	282	282	282	56.1	70	60	294		
			281A00	56.3/75.0	156.4/180.4	216.0/216.0	225/250	213/240	625/625	230.8/230.8	250/250	226/254	645/645	222.0/222.0	250/250	49.8	60	52	282	282	282	56.0	70	60	294		
			280A00	37.6/50.0	104.2/120.3	165.9/165.9	175/175	153/171	625/625	180.6/180.6	200/200	168/185	645/645	171.9/171.9	175/175	125/125	49.8	60	52	282	282	282	56.1	70	60	294	
208/230-3-60	575-3-60	HIGH	287A00	75.0	90.2	98.2	100	280	111	125	118	292	106.0	292	292	101.0	110	114	282	282	282	108.7	125	121	294		
			284A00	75.0	90.2	98.2	100	280	111	125	118	292	106.0	292	292	101.0	110	114	282	282	282	108.7	125	121	294		
			283A00	50.0	60.1	68.1	80	280	76	280	75.9	80	84	292	292	70.9	80	79	282	282	282	78.6	80	86	294		
			282A00	25.0	30.1	47.6	60	280	50	280	53.8	60	57	292	292	49.8	60	52	282	282	282	56.1	70	60	294		
			281A00	56.3/75.0	156.4/180.4	216.0/216.0	225/250	213/240	625/625	230.8/230.8	250/250	226/254	645/645	222.0/222.0	250/250	49.8	60	52	282	282	282	56.0	70	60	294		
			280A00	37.6/50.0	104.2/120.3	165.9/165.9	175/175	153/171	625/625	180.6/180.6	200/200	168/185	645/645	171.9/171.9	175/175	125/125	49.8	60	52	282	282	282	56.1	70	60	294	
	575-3-60	MED	287A00	75.0	90.2	98.2	100	280	111	125	118	292	106.0	292	292	101.0	110	114	282	282	282	108.7	125	121	294		
			284A00	75.0	90.2	98.2	100	280	111	125	118	292	106.0	292	292	101.0	110	114	282	282	282	108.7	125	121	294		
			283A00	50.0	60.1	68.1	80	280	76	280	75.9	80	84	292	292	70.9	80	79	282	282	282	78.6	80	86	294		
			282A00	25.0	30.1	47.6	60	280	50	280	53.8	60	57	292	292	49.8	60	52	282	282	282	56.1	70	60	294		
			281A00	56.3/75.0	156.4/180.4	216.0/216.0	225/250	213/240	625/625	230.8/230.8	250/250	226/254	645/645	222.0/222.0	250/250	49.8	60	52	282	282	282	56.0	70	60	294		
			280A00	37.6/50.0	104.2/120.3	165.9/165.9	175/175	153/171	625/625	180.6/180.6	200/200	168/185	645/645	171.9/171.9	175/175	125/125	49.8	60	52	282	282	282	56.1	70	60	294	

**ELECTRICAL INFORMATION**  
**Table 35 - UNIT WIRE SIZING DATA WITH FACTORY INSTALLED HACR BREAKER WITH SINGLE SPEED INDOOR FAN MOTOR (cont)**

UNIT	IFM TYPE	ELEC. HTR				NO C.O. or UNPWR C.O.														
		CR-HEATER**A00	Nom (kW)	FLA	NO PE.				w/ PE. (pwrd fr/unit)				NO PE.				w/ PE. (pwrd fr/unit)			
					MCA	HACR BRKR	FLA	DISC. SIZE	MCA	HACR BRKR	FLA	DISC. SIZE	MCA	HACR BRKR	FLA	DISC. SIZE	MCA	HACR BRKR	FLA	DISC. SIZE
50HC**28	STD	NONE	-	-	116.0/116.0	150/150	120/119	590	133/132	610	120.8/120.8	150/150	125/124	595	132.6/132.6	175/175	139/138	615		
		279A00	18.8/25.0	52.1/60.1	116.0/116.0	150/150	120/119	590/590	133/132	610/610	120.8/120.8	150/150	125/124	595/595	132.6/132.6	175/175	139/138	615/615		
		280A00	37.6/50.0	104.2/120.3	147.3/147.3	150/150	135/153	590/590	149/167	610/610	153.3/153.3	175/175	141/158	595/595	168.0/168.0	175/175	155/172	615/615		
		281A00	56.3/75.0	156.4/180.4	196.3/196.3	200/225	196/222	590/590	209/236	610/610	202.3/202.3	225/225	201/228	595/595	217.0/217.0	225/250	215/241	615/615		
		NONE	-	-	119.5	150	124	586	137	606	124.3	175	137	606	136.1	175	143	611		
		279A00	18.8/25.0	52.1/60.1	119.5/119.5	150/150	124/124	586/586	137/137	606/606	124.3/124.3	175/175	137/137	606/606	136.1/136.1	175/175	143/143	611/611		
	MED	280A00	37.6/50.0	104.2/120.3	151.6/151.6	175/175	139/158	586/586	153/172	606/606	157.6/157.6	175/175	145/164	591/591	172.4/172.4	175/175	159/177	611/611		
		281A00	56.3/75.0	156.4/180.4	201.8/201.8	225/225	200/227	586/586	213/241	606/606	207.8/207.8	225/225	205/233	591/591	222.5/222.5	225/250	219/246	611/611		
		NONE	-	-	130.9	175	137	665	150	685	135.7	175	142	670	147.5	175	156	690		
		279A00	18.8/25.0	52.1/60.1	130.9/130.9	175/175	137/137	665/665	150/150	685/685	135.7/135.7	175/175	142/142	670/670	147.5/147.5	175/175	156/156	690/690		
		280A00	37.6/50.0	104.2/120.3	165.9/165.9	175/175	153/171	665/665	169/185	685/685	171.9/171.9	175/175	159/177	670/670	186.6/186.6	200/200	172/190	690/690		
		281A00	56.3/75.0	156.4/180.4	216.0/216.0	225/250	213/240	665/665	226/254	685/685	222.0/222.0	225/250	218/246	670/670	236.8/236.8	250/250	232/259	690/690		
460-3-60	STD	NONE	-	-	53.0	60	56	306	63	318	59.2	70	63	318	55.2	80	65	320		
		282A00	25.0	30.1	53.0	60	56	306	63	318	59.2	70	63	318	55.2	80	65	320		
		283A00	50.0	60.1	68.1	80	76	306	84	318	75.9	80	84	318	70.9	80	86	320		
		284A00	75.0	90.2	98.2	100	111	306	118	318	106.0	125	118	318	101.0	125	123	320		
		NONE	-	-	55.2	60	58	304	65	316	61.4	70	65	316	57.4	80	68	318		
		282A00	25.0	30.1	55.2	60	58	304	65	316	61.4	70	65	316	57.4	80	68	318		
	MED	283A00	50.0	60.1	70.9	80	79	304	86	316	78.6	80	86	316	73.6	80	89	318		
		284A00	75.0	90.2	101.0	110	114	304	121	316	108.7	125	121	316	103.7	125	123	318		
		NONE	-	-	60.9	70	65	344	72	356	67.1	80	72	356	63.1	80	74	358		
		282A00	25.0	30.1	60.9	70	65	344	72	356	67.1	80	72	356	63.1	80	74	358		
		283A00	50.0	60.1	78.0	90	86	344	93	356	85.7	90	88	346	80.7	100	95	358		
		284A00	75.0	90.2	108.1	125	120	344	127	356	115.8	125	123	346	118.6	125	130	358		
575-3-60	STD	NONE	-	-	40.4	50	42	228	48	236	45.2	50	44	230	46.9	60	50	238		
		285A00	24.8	23.9	40.4	50	42	228	48	236	45.2	50	44	230	46.9	60	50	238		
		286A00	49.6	47.7	66.6	70	61	228	67	236	72.6	80	67	236	68.8	80	69	238		
		287A00	74.4	71.6	78.6	90	89	228	94	236	84.6	90	91	230	86.7	90	96	238		
		NONE	-	-	42.4	50	45	226	50	234	47.2	60	46	228	48.9	60	52	236		
		285A00	24.8	23.9	42.4	50	45	226	50	234	47.2	60	46	228	48.9	60	52	236		
	MED	286A00	49.6	47.7	69.1	70	64	226	69	234	75.1	80	66	228	77.3	80	71	236		
		287A00	74.4	71.6	81.1	90	91	226	97	234	87.1	90	93	228	89.2	90	99	236		
		NONE	-	-	44.3	50	47	253	52	261	49.1	60	49	255	50.8	60	54	263		
		285A00	24.8	23.9	44.3	50	47	253	52	261	49.1	60	49	255	50.8	60	54	263		
		286A00	49.6	47.7	71.5	80	66	253	71	261	73.6	80	68	255	79.6	80	73	263		
		287A00	74.4	71.6	83.5	90	93	253	99	261	89.5	100	95	255	91.6	100	101	263		

# ELECTRICAL INFORMATION

**Table 36 – UNIT WIRE 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.							
		IFM TYPE	CR-HEATER**A00	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	LRA	MCA	MAX FUSE or HACR BRKR	FLA	LRA	MCA	MAX FUSE or HACR BRKR	FLA	LRA	MCA	MAX FUSE or HACR BRKR	FLA	LRA
STD		NONE				69.4/66.6	90/90	73/72	390	86/85	410	74.2/73.4	100/100	86/85	395	86.0/85.2	100/100	92/91	415		
		279A00	18.8/25.0	52.1/60.1	75.9/84.9	90/90	73/78	390/390	390/390	86/92	410/410	81.9/90.9	100/100	86/92	395/395	96.6/105.6	100/110	92/97	415/415		
		280A00	37.6/50.0	104.2/120.3	141.0/130.1	150/150	130/147	390/390	390/390	143/161	410/410	147.0/136.1	150/150	143/161	395/395	161.8/150.8	175/175	149/166	415/415		
		281A00	56.3/75.0	156.4/180.4	167.2/190.2	200/200	190/216	390/390	390/390	203/230	410/410	173.2/196.2	200/225	203/230	395/395	187.9/210.9	200/225	209/236	415/415		
MED	208/230-3-60	NONE				71.6/70.6	90/90	75/74	414	89/88	434	76.4/75.4	100/100	89/88	419	88.2/87.2	100/100	94/93	439		
		279A00	18.8/25.0	52.1/60.1	78.6/87.4	90/90	75/80	414/414	414/414	89/94	434/434	84.6/83.4	100/100	89/94	419/419	99.4/108.1	100/110	94/99	439/439		
		280A00	37.6/50.0	104.2/120.3	143.8/132.6	150/150	132/150	414/414	414/414	146/163	434/434	149.8/138.6	150/150	146/163	419/419	164.5/153.3	175/175	151/169	439/439		
		281A00	56.3/75.0	156.4/180.4	169.9/192.7	200/225	192/219	414/414	414/414	206/232	434/434	175.9/198.7	200/225	206/232	419/419	190.7/213.4	200/225	211/238	439/439		
HIGH	208/230-3-60	NONE				74.4/73.5	90/90	78/77	425	92/91	445	79.2/78.3	100/100	92/91	430	91.0/90.1	100/100	97/96	450		
		279A00	18.8/25.0	52.1/60.1	82.1/91.0	90/100	78/84	425/425	425/425	92/97	445/445	88.1/97.0	100/110	92/97	430/430	102.9/111.8	110/125	97/103	450/450		
		280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	425/425	425/425	149/167	445/445	153.3/142.2	175/175	149/167	430/430	168.0/156.9	175/175	155/172	450/450		
		281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	425/425	425/425	209/236	445/445	179.4/202.3	200/225	209/236	430/430	194.2/217.0	200/250	215/241	450/450		
STD	460-3-60	NONE				35.3	45	37	233	44	245	37.5	50	44	235	43.7	50.00	47	247		
		282A00	25.0	30.1	42.4	45	39	233	233	46	245	45.1	60	46	235	52.9	60.00	49	247		
		283A00	50.0	60.1	64.9	70	73	233	233	81	245	67.6	80	81	235	75.4	80.00	83	247		
		284A00	75.0	90.2	95.0	100	108	233	233	115	245	97.7	110	115	235	105.5	110	118	247		
MED	460-3-60	NONE				36.4	45	38	245	50	257	38.6	50	45	247	44.8	50.00	48	259		
		282A00	25.0	30.1	43.8	45	40	245	245	47	257	46.5	60	47	247	54.3	60.00	50	259		
		283A00	50.0	60.1	66.2	80	75	245	245	82	257	69.0	80	82	247	76.7	80.00	84	259		
		284A00	75.0	90.2	96.3	100	109	245	245	116	257	99.1	110	116	247	106.8	110	119	259		
HIGH	460-3-60	NONE				37.9	50	40	250	44.1	262	40.1	50	47	252	46.3	50.00	50	264		
		282A00	25.0	30.1	45.6	50	42	250	250	49	262	48.4	60	49	252	56.1	60.00	52	264		
		283A00	50.0	60.1	68.1	80	76	250	250	84	262	70.9	80	84	252	78.6	80.00	86	264		
		284A00	75.0	90.2	98.2	100	111	250	250	118	262	101.0	125	118	252	108.7	125	121	264		
STD	575-3-60	NONE				27.9	35	29	184	32.7	192	29.6	40	35	186	34.4	40.00	37	194		
		285A00	24.8	23.9	35.5	40	33	184	184	38	192	37.6	45	38	186	43.6	45.00	40	194		
		286A00	49.6	47.7	65.3	70	60	184	184	66	192	67.4	80	66	186	73.4	80.00	68	194		
		287A00	74.4	71.6	77.2	90	88	184	184	93	192	79.4	90	89	186	85.4	90	95	194		
MED	575-3-60	NONE				27.9	35	29	184	32.7	192	29.6	40	35	186	34.4	40.00	37	194		
		285A00	24.8	23.9	35.5	40	33	184	184	38	192	37.6	45	38	186	43.6	45.00	40	194		
		286A00	49.6	47.7	65.3	70	60	184	184	66	192	67.4	80	66	186	73.4	80.00	68	194		
		287A00	74.4	71.6	77.2	90	88	184	184	93	192	79.4	90	89	186	85.4	90	95	194		
HIGH	575-3-60	NONE				29.6	35	31	198	34.4	206	31.3	40	33	200	36.1	45.00	39	208		
		285A00	24.8	23.9	37.6	40	35	198	198	40	206	39.8	45	37	200	45.8	50.00	42	208		
		286A00	49.6	47.7	67.4	70	62	198	198	68	206	69.5	80	64	200	75.5	80.00	69	208		
		287A00	74.4	71.6	79.4	90	89	198	198	95	206	81.5	90	91	200	87.5	90	97	208		





**ELECTRICAL INFORMATION**  
**Table 36 - UNIT WIRE SIZING DATA WITH FACTORY INSTALLED 2 SPEED INDOOR FAN OPTION (cont)**

UNIT	NO M. V-PH-HZ	IFM TYPE	ELEC. HTR			NO C.O. or UNPWR C.O.												w/ PWRD C.O.											
			CRHEATER**A00	Nom (kW)	FLA	NO P.E.			w/ P.E. (pwrd fr/unit)			NO P.E.			w/ P.E. (pwrd fr/unit)			NO P.E.			w/ P.E. (pwrd 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	MCA	MAX FUSE or BRKR	DISC. SIZE FLA	LRA				
50HC**24	208/230-3-60	STD	NONE	-	-	87.3/86.4	100/100	92/91	550	550	98.1/98.2	125/125	105/104	570	92.1/91.2	100/100	97/96	555	103.9/103.0	125/125	111/110	575	111/110	125/125	575/575				
			279A00	18.8/25.0	52.1/60.1	87.3/91.0	100/100	92/91	550/550	570/570	98.1/105.8	125/125	105/104	570/570	570/570	92.1/97.0	100/100	97/96	555/555	103.9/111.8	125/125	111/110	575/575	111/110	125/125	575/575			
			280A00	37.6/50.0	104.2/120.3	147.3/136.2	150/150	135/153	550/550	570/570	162.0/150.9	175/175	149/167	570/570	570/570	153.3/142.2	175/175	141/158	555/555	168.0/156.9	175/175	155/172	575/575	155/172	175/175	575/575			
		MED	281A00	56.3/75.0	156.4/180.4	173.4/196.3	200/225	196/222	550/550	570/570	188.2/211.0	200/225	209/236	570/570	570/570	179.4/202.3	200/225	201/228	555/555	194.5/217.0	200/250	215/241	575/575	215/241	200/250	575/575			
			NONE	-	-	90.8	100	96	546	109	102.6	125	109	566	566	95.6	125.00	101	551	107.4	125.00	115	571	115	125.00	571			
			279A00	18.8/25.0	52.1/60.1	90.8/96.5	100/100	96/96	546/546	109/109	102.6/111.3	125/125	109/109	566/566	566/566	95.6/102.5	125/125	101/101	551/551	107.4/117.3	125/125	115/115	571/571	115/115	125/125	571/571			
	HIGH	280A00	37.6/50.0	104.2/120.3	151.6/141.7	175/175	139/158	546/546	153/172	166.4/156.4	175/175	153/172	566/566	566/566	157.6/147.7	175/175	145/164	551/551	172.4/162.4	175/175	159/177	571/571	159/177	175/175	571/571				
		281A00	56.3/75.0	156.4/180.4	177.8/201.8	200/225	200/227	546/546	213/241	192.5/216.5	200/250	213/241	566/566	566/566	183.8/207.8	200/225	205/233	551/551	198.5/222.5	200/250	219/246	571/571	219/246	200/250	571/571				
		NONE	-	-	102.2	125	109	625	122	114.0	125	122	645	645	107.0	125.00	114	630	118.8	150.00	128	650	128	150.00	650				
	460-3-60	STD	282A00	25.0	30.1	47.6	60	50	280	280	53.8	60	57	292	292	49.8	60.00	52	282	56.0	70.00	60	284	60	70.00	284			
			283A00	50.0	60.1	68.1	80	76	280	280	75.9	80	84	292	292	70.9	80.00	79	282	78.6	80.00	86	294	86	80.00	294			
			284A00	75.0	90.2	98.2	100	111	280	280	106.0	125	118	292	292	101.0	110	114	282	108.7	125	123	292	123	125	292			
			NONE	-	-	49.8	60	52	278	60	56.0	70	60	290	290	52.0	60.00	55	280	58.2	70.00	62	292	62	70.00	292			
282A00			25.0	30.1	49.8	60	52	278	60	56.1	70	60	290	290	52.0	60.00	55	280	58.9	70.00	62	292	62	70.00	292				
283A00			50.0	60.1	70.9	80	79	278	86	78.6	80	86	290	290	73.6	80.00	82	280	81.4	90.00	89	292	89	90.00	292				
MED		284A00	75.0	90.2	101.0	110	114	278	121	108.7	125	125	290	290	103.7	125	116	280	111.5	125	123	292	123	125	292				
		NONE	-	-	55.5	60	59	318	66	61.7	70	66	330	330	57.7	70.00	62	320	63.9	80.00	69	332	69	80.00	332				
		282A00	25.0	30.1	55.5	60	59	318	66	63.3	70	66	330	330	58.3	70.00	62	320	66.0	80.00	69	332	69	80.00	332				
		283A00	50.0	60.1	78.0	90	86	318	93	85.7	90	93	330	330	80.7	90.00	88	320	88.5	100.00	95	332	95	100.00	332				
		284A00	75.0	90.2	108.1	125	120	318	127	115.8	125	127	330	330	110.8	125	123	320	118.6	125	130	332	130	125	332				
		NONE	-	-	36.1	45	38	204	43	40.9	50	43	212	212	37.8	45.00	40	206	42.6	50.00	45	214	45	50.00	214				
575-3-60	STD	285A00	24.8	23.9	37.6	45	38	204	43.6	50	43	212	212	39.8	45.00	40	206	45.8	50.00	45	214	45	50.00	214					
		286A00	49.6	47.7	67.4	70	62	204	73.4	80	68	212	212	69.5	70.00	64	206	75.5	80.00	69	214	69	80.00	214					
		287A00	74.4	71.6	79.4	90	89	204	85.4	90	85.4	90	95	212	81.5	90	91	87.5	90	97	214	97	90	214					
	MED	NONE	-	-	37.5	45	40	202	42.3	50	45	210	210	39.2	50.00	42	204	44.0	50.00	47	212	47	50.00	212					
		285A00	24.8	23.9	39.4	45	40	202	45.4	50	45	210	210	41.5	50.00	42	204	47.5	50.00	47	212	47	50.00	212					
		286A00	49.6	47.7	69.1	70	64	202	75.1	80	69	210	210	71.3	80.00	66	204	77.3	80.00	71	212	71	80.00	212					
HIGH	287A00	74.4	71.6	81.1	90	91	202	87.1	90	90	97	210	83.2	90	93	204	89.2	90	99	212	99	90	99	212					
	NONE	-	-	39.4	50	42	229	44.2	50	47	237	237	41.1	50.00	44	231	45.9	50.00	49	239	49	50.00	239						
	285A00	24.8	23.9	41.8	50	42	229	47.8	50	47	237	237	43.9	50.00	44	231	49.9	50.00	49	239	49	50.00	239						
		286A00	49.6	47.7	71.5	80	66	77.5	80	71	237	237	73.6	80.00	68	231	79.6	80.00	73	239	73	80.00	239						
		287A00	74.4	71.6	83.5	90	93	89.5	90	93	237	237	85.6	90	95	231	91.6	100	101	239	101	100	239						

**ELECTRICAL INFORMATION**  
**Table 36 - UNIT WIRE 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.													
		CORHEATER***A00	Nom (kW)	FLA	NO PE.				w/ PE. (pwrd fr/unit)				NO PE.				w/ PE. (pwrd 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	MCA	MAX FUSE or BRKR	DISC. SIZE FLA LRA								
50HC**28	460-3-60	NONE	-	-	53.0	60	56	306	59.2	70	63	318	55.2	60.00	58	308	61.4	70.00	65	320	65	320	65	320			
					59.0	60	56	306	59.2	70	63	318	55.2	60.00	58	308	61.4	70.00	65	320	65	320	65	320			
					68.1	80	76	306	75.9	80	84	318	70.9	80.00	79	308	78.6	80.00	86	308	78.6	80.00	86	320	86	320	
					98.2	100	111	306	106.0	125	118	318	101.0	110	114	308	108.7	125	116	306	108.7	125	121	121	121	121	320
					55.2	60	58	304	61.4	70	65	316	57.4	70.00	65	316	57.4	70.00	61	306	63.6	80.00	68	318	68	318	
					55.2	60	58	304	61.4	70	65	316	57.4	70.00	65	316	57.4	70.00	61	306	63.6	80.00	68	318	68	318	
					70.9	80	79	304	78.6	80	86	316	73.6	80.00	82	306	73.6	80.00	82	306	81.4	90.00	89	318	89	318	
					101.0	110	114	304	108.7	125	121	316	103.7	125	121	316	103.7	125	116	306	111.5	125	123	123	123	318	
					60.9	70	65	344	67.1	80	72	356	63.1	80.00	67	346	63.1	80.00	67	346	69.3	80.00	74	358	74	358	
					60.9	70	65	344	67.1	80	72	356	63.1	80.00	67	346	63.1	80.00	67	346	69.3	80.00	74	358	74	358	
					78.0	90	86	344	85.7	90	93	356	80.7	90.00	88	346	80.7	90.00	88	346	88.5	100.00	95	358	95	358	
					108.1	125	120	344	115.8	125	127	356	110.8	125	127	356	110.8	125	123	346	118.6	125	130	358	130	358	
					NONE	NONE	41.0	50	43	228	45.8	236	42.7	50.00	45	230	42.7	50.00	45	230	47.5	60.00	50	238	50	238	
					285A00	24.8	41.0	50	43	228	45.8	236	42.7	50.00	45	230	42.7	50.00	45	230	47.5	60.00	50	238	50	238	
286A00	49.6	67.4	70	62	228	73.4	236	69.5	70.00	64	230	69.5	70.00	64	230	75.5	80.00	69	238	69	238						
287A00	74.4	71.6	90	89	228	85.4	236	81.5	90	91	230	81.5	90	91	230	87.5	90	97	238	97	238						
NONE	NONE	42.4	50	45	226	47.2	234	44.1	50.00	46	228	44.1	50.00	46	228	48.9	60.00	52	236	52	236						
285A00	24.8	42.4	50	45	226	47.2	234	44.1	50.00	46	228	44.1	50.00	46	228	48.9	60.00	52	236	52	236						
286A00	49.6	69.1	70	64	226	75.1	234	71.3	80.00	66	228	71.3	80.00	66	228	77.3	90	99	236	99	236						
287A00	74.4	71.6	90	91	226	87.1	234	83.2	90	93	228	83.2	90	93	228	89.2	90	99	236	99	236						
NONE	NONE	44.3	50	47	253	49.1	261	46.0	60.00	49	255	46.0	60.00	49	255	50.8	70.00	54	263	54	263						
285A00	24.8	44.3	50	47	253	49.1	261	46.0	60.00	49	255	46.0	60.00	49	255	50.8	70.00	54	263	54	263						
286A00	49.6	71.5	80	66	253	77.5	261	73.6	80.00	68	255	73.6	80.00	68	255	79.6	90.00	73	263	73	263						
287A00	74.4	71.6	90	93	253	89.5	261	85.6	90	95	255	85.6	90	95	255	91.6	100	101	263	101	263						

# ELECTRICAL INFORMATION

**Table 37 – 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.						NO P.E.						w/ PWRD C.O.					
		CRHEATER**A00	Nom (kW)	FLA	MCA	HACR BRKR	DISC. SIZE FLA	DISC. SIZE LRA	MCA	HACR BRKR	DISC. SIZE FLA	DISC. SIZE LRA	MCA	HACR BRKR	DISC. SIZE FLA	DISC. SIZE LRA	MCA	HACR BRKR	DISC. SIZE FLA	DISC. SIZE LRA		
50HC**17	208/230-3-60	NONE	-	-	69.4/68.4	90/90	73/72	390	81.2/81.2	100/100	86/85	410	74.2/74.2	90/90	78/77	395	86.0/86.0	100/100	92/91	415		
		279A00	18.8/25.0	52.1/60.1	84.9/84.9	90/90	73/78	390/390	99.6/99.6	100/100	86/92	410/410	410/410	90.9/90.9	100/100	78/84	395/395	105.6/105.6	110/110	92/97	415/415	
		280A00	37.6/50.0	104.2/120.3	141.0/141.0	150/150	130/147	390/390	155.8/155.8	175/175	143/161	410/410	410/410	147.0/147.0	150/150	135/153	395/395	161.8/161.8	175/175	149/166	415/415	
		281A00	56.3/75.0	156.4/180.4	190.2/190.2	200/200	190/216	390/390	204.9/204.9	225/225	203/230	410/410	410/410	196.2/196.2	200/225	195/222	395/395	210.9/210.9	225/225	209/236	415/415	
		NONE	-	-	71.6/71.6	90/90	75/74	414	83.4/83.4	100/100	89/88	434	434	76.4/76.4	100/100	81/79	419	88.2/88.2	100/100	94/93	439	
		279A00	18.8/25.0	52.1/60.1	87.4/87.4	90/90	75/80	414/414	102.1/102.1	110/110	89/94	434/434	434/434	93.4/93.4	100/100	81/86	419/419	108.1/108.1	110/110	94/99	439/439	
	460-3-60	460-3-60	280A00	37.6/50.0	104.2/120.3	143.8/143.8	150/150	132/150	414/414	158.5/158.5	175/175	146/163	434/434	434/434	149.8/149.8	150/150	138/155	419/419	164.5/164.5	175/175	151/169	439/439
			281A00	56.3/75.0	156.4/180.4	192.7/192.7	200/225	192/219	414/414	207.4/207.4	225/225	208/232	434/434	434/434	198.7/198.7	200/225	198/224	419/419	213.4/213.4	225/225	211/238	439/439
			NONE	-	-	74.4/74.4	90/90	78/77	425	86.2/86.2	100/100	92/91	445	445	79.2/79.2	100/100	84/83	430	91.0/91.0	100/100	97/96	450
			279A00	18.8/25.0	52.1/60.1	91.0/91.0	100/100	78/84	425/425	105.8/105.8	110/110	92/97	445/445	445/445	97.0/97.0	100/100	84/89	430/430	111.8/111.8	125/125	97/103	450/450
			280A00	37.6/50.0	104.2/120.3	147.3/147.3	150/150	135/153	425/425	162.0/162.0	175/175	149/167	445/445	445/445	153.3/153.3	175/175	141/158	430/430	168.0/168.0	175/175	155/172	450/450
			281A00	56.3/75.0	156.4/180.4	196.3/196.3	200/225	196/222	425/425	211.0/211.0	225/225	209/236	445/445	445/445	202.3/202.3	225/225	201/228	430/430	217.0/217.0	225/250	215/241	450/450
575-3-60	575-3-60	NONE	-	-	35.3	45	37	233	41.5	50	44	245	245	37.5	50	39	43.7	50	47	247		
		282A00	25.0	30.1	42.4	45	39	233	50.1	60	46	245	245	45.1	50	42	52.9	60	49	247		
		283A00	50.0	60.1	64.9	70	73	233	72.6	80	81	245	245	67.6	80	76	75.4	80	83	247		
		284A00	75.0	90.2	95.0	100	108	233	102.7	110	115	245	245	97.7	100	111	105.5	110	118	247		
		NONE	-	-	36.4	45	38	245	42.6	50	45	257	257	38.6	50	41	44.8	50	48	259		
		282A00	25.0	30.1	43.8	45	40	245	51.5	60	47	257	257	46.5	50	43	54.3	60	50	259		
575-3-60	575-3-60	283A00	50.0	60.1	66.2	80	75	245	74.0	80	82	257	257	69.0	80	77	76.7	80	84	259		
		284A00	75.0	90.2	96.3	100	109	245	104.1	110	116	257	257	99.1	100	112	106.8	110	119	259		
		NONE	-	-	37.9	50	40	250	44.1	50	47	262	262	40.1	50	42	46.3	50	50	264		
		282A00	25.0	30.1	45.6	50	42	250	53.4	60	49	262	262	48.4	50	45	56.1	60	52	264		
		283A00	50.0	60.1	68.1	80	76	250	75.9	80	84	262	262	70.9	80	79	78.6	80	86	264		
		284A00	75.0	90.2	98.2	100	111	250	106.0	125	118	262	262	101.0	110	114	108.7	125	121	264		
575-3-60	575-3-60	NONE	-	-	27.9	35	29	184	32.7	40	35	192	192	29.6	35	31	34.4	40	37	194		
		285A00	24.8	23.9	35.5	40	33	184	41.5	45	38	192	192	37.6	40	35	43.6	45	40	194		
		286A00	49.6	47.7	65.3	70	60	184	71.3	80	66	192	192	67.4	70	62	73.4	80	68	194		
		287A00	74.4	71.6	77.2	90	88	184	83.2	90	93	192	192	79.4	90	89	85.4	90	95	194		
		NONE	-	-	27.9	35	29	184	32.7	40	35	192	192	29.6	35	31	34.4	40	37	194		
		285A00	24.8	23.9	35.5	40	33	184	41.5	45	38	192	192	37.6	40	35	43.6	45	40	194		
575-3-60	575-3-60	286A00	49.6	47.7	65.3	70	60	184	71.3	80	66	192	192	67.4	70	62	73.4	80	68	194		
		287A00	74.4	71.6	77.2	90	88	184	83.2	90	93	192	192	79.4	90	89	85.4	90	95	194		
		NONE	-	-	29.6	35	31	198	34.4	40	37	206	206	31.3	40	33	36.1	45	39	208		
		285A00	24.8	23.9	37.6	40	35	198	43.6	45	40	206	206	39.8	40	37	45.8	50	42	208		
		286A00	49.6	47.7	67.4	70	62	198	73.4	80	68	206	206	69.5	70	64	75.5	80	69	208		
		287A00	74.4	71.6	79.4	90	89	198	85.4	90	95	206	206	81.5	90	91	87.5	90	97	208		

# ELECTRICAL INFORMATION

**Table 37 - 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**A00	Nom (kW)	FLA	MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	MCA	DISC. SIZE		MCA	HACR BRKR	FLA	LRA					
								FLA	LRA				FLA	LRA									
50HC**20		STD	NONE	-	-	76.3/76.3	100/100	80/79	444	88.1/88.1	100/100	99/92	464	81.1/81.1	100/100	85/84	449	92.9/92.9	100/100	99/98	469		
			279A00	18.8/25.0	52.1/60.1	87.4/87.4	80/80	444/444	102.1/102.1	110/110	93/94	83.4/83.4	100/100	85/86	449/449	108.1/108.1	110/110	85/86	449/449	108.1/108.1	110/110	99/99	489/489
			280A00	37.6/50.0	104.2/120.3	143.8/143.8	132/150	444/444	158.5/158.5	175/175	148/163	149.8/149.8	150/150	138/155	449/449	164.5/164.5	175/175	138/155	449/449	164.5/164.5	175/175	151/169	489/489
		MED	281A00	56.3/75.0	156.4/180.4	192.7/192.7	200/225	444/444	207.4/207.4	225/225	208/232	198.7/198.7	200/225	198/224	449/449	213.4/213.4	225/225	198/224	449/449	213.4/213.4	225/225	211/238	489/489
			NONE	-	-	79.1/79.1	100/100	83/82	455	90.9/90.9	100/100	97/96	475	83.9/83.9	460	95.7/95.7	110/110	89/88	460	95.7/95.7	110/110	102/101	480
			279A00	18.8/25.0	52.1/60.1	91.0/91.0	100/100	83/84	455/455	105.8/105.8	110/110	97/97	475/475	97.0/97.0	460/460	111.8/111.8	125/125	89/89	460/460	111.8/111.8	125/125	102/103	480/480
		HIGH	280A00	37.6/50.0	104.2/120.3	147.3/147.3	150/150	455/455	162.0/162.0	175/175	149/167	153.3/153.3	175/175	141/158	460/460	168.0/168.0	175/175	141/158	460/460	168.0/168.0	175/175	155/172	480/480
			281A00	56.3/75.0	156.4/180.4	196.3/196.3	200/225	455/455	211.0/211.0	225/225	209/236	202.3/202.3	225/225	201/228	460/460	217.0/217.0	225/250	201/228	460/460	217.0/217.0	225/250	215/241	480/480
			NONE	-	-	82.6	100	87	451	94.4	110	101	471	87.4	456	99.2	125	93	456	99.2	125	106	476
		STD	279A00	18.8/25.0	52.1/60.1	96.5/96.5	100/100	87/89	451/451	111.3/111.3	125/125	101/102	471/471	102.5/102.5	456/456	117.3/117.3	125/125	83/94	456/456	117.3/117.3	125/125	106/108	476/476
			280A00	37.6/50.0	104.2/120.3	151.6/151.6	175/175	139/158	451/451	166.4/166.4	175/175	153/172	471/471	157.6/157.6	456/456	172.4/172.4	175/175	145/164	456/456	172.4/172.4	175/175	159/177	476/476
281A00	56.3/75.0		156.4/180.4	201.8/201.8	225/225	200/227	451/451	216.5/216.5	225/250	213/241	471/471	207.8/207.8	456/456	222.5/222.5	225/250	205/233	456/456	222.5/222.5	225/250	219/246	476/476		
NONE	-		-	36.7	45	39	247	42.9	50	46	259	38.9	249	45.1	50	41	249	45.1	50	48	261		
MED	282A00	25.0	30.1	43.8	45	40	247	51.5	60	47	259	46.5	249	54.3	60	43	249	54.3	60	50	261		
	283A00	50.0	60.1	66.2	80	75	247	74.0	80	82	259	69.0	249	76.7	80	77	249	76.7	80	84	261		
	284A00	75.0	90.2	96.3	100	109	247	104.1	110	116	259	99.1	249	106.8	110	112	249	106.8	110	119	261		
	NONE	-	-	38.2	50	40	252	44.4	50	47	264	40.4	254	46.6	50	43	254	46.6	50	50	266		
HIGH	282A00	25.0	30.1	45.6	50	42	252	53.4	60	49	264	48.4	254	56.1	60	45	254	56.1	60	52	266		
	283A00	50.0	60.1	68.1	80	76	252	75.9	80	84	264	70.9	254	78.6	80	79	254	78.6	80	86	266		
	284A00	75.0	90.2	98.2	100	111	252	106.0	125	118	264	101.0	254	108.7	110	114	254	108.7	125	121	266		
	NONE	-	-	40.4	50	43	250	46.6	50	50	262	42.6	252	48.8	60	45	252	48.8	60	52	264		
STD	285A00	24.8	23.9	35.5	40	33	186	41.5	45	38	194	37.6	188	43.6	40	35	188	43.6	40	40	196		
	286A00	49.6	47.7	65.3	70	60	186	71.3	80	66	194	67.4	188	73.4	70	62	188	73.4	80	68	196		
	287A00	74.4	71.6	77.2	90	88	186	83.2	90	93	194	79.4	188	85.4	90	89	188	85.4	90	95	196		
	NONE	-	-	27.9	35	29	186	32.7	40	35	194	29.6	188	34.4	40	31	188	34.4	40	37	196		
MED	285A00	24.8	23.9	37.6	40	35	200	34.4	40	37	208	31.3	202	36.1	40	33	202	36.1	40	39	210		
	286A00	49.6	47.7	67.4	70	62	200	73.4	80	68	208	69.5	202	75.5	80	64	202	75.5	80	69	210		
	287A00	74.4	71.6	79.4	90	89	200	85.4	90	95	208	81.5	202	87.5	90	91	202	87.5	90	97	210		
	NONE	-	-	31.0	40	33	198	35.8	45	38	206	32.7	200	37.5	40	35	200	37.5	40	40	208		
HIGH	285A00	24.8	23.9	39.4	40	36	198	45.4	50	42	206	41.5	200	47.5	40	38	200	47.5	40	44	208		
	286A00	49.6	47.7	69.1	70	64	198	75.1	80	69	206	71.3	200	77.3	80	66	200	77.3	80	71	208		
	287A00	74.4	71.6	81.1	90	91	198	87.1	90	97	206	83.2	200	89.2	90	93	200	89.2	90	99	208		

**ELECTRICAL INFORMATION**  
**Table 37 - 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.							
		CR-HEATER**A00	Nom (kW)	FLA	NO P.E.				w/ P.E. (pwrd fr/unit)				NO P.E.				w/ P.E. (pwrd fr/unit)			
					MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	DISC. SIZE	
							FLA	LRA			FLA	LRA			FLA	LRA			FLA	LRA
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	99.1/99.1	125/125	105/104	570	92.1/92.1	100/100	97/96	555	103.9/103.9	125/125	111/110	575
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	102.6	125	109	566	95.6	100/100	101	551	107.4	125	115	571
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	110.8	125	109	625	111.3	100/100	101	630	118.8	125	128	650
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	118.8	125	109	625	125.5	100/100	101	630	131.5	125	128	650
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	180.6	200	168	645	180.6	200/200	159	630	186.6	200	200	650
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	230.8	250	226	645	230.8	250/250	218	630	236.8	250	250	650
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	53.8	60	57	292	53.8	60	52	282	56.0	70	60	294
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	56.0	70	60	290	56.0	70	55	280	58.2	80	62	292
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	61.7	70	66	330	61.7	70	62	320	63.9	80	69	332
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	83.3	90	86	330	83.3	90	88	320	86.0	100	95	332
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	85.7	125	127	330	85.7	125	123	320	88.5	125	130	332
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	115.8	125	127	330	115.8	125	123	320	118.6	125	130	332
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	40.9	50	43	212	40.9	50	40	206	42.6	50	45	214
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	43.6	50	43	212	43.6	50	40	206	45.8	50	45	214
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	73.4	80	68	212	73.4	80	64	206	75.5	80	69	214
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	85.4	90	95	212	85.4	90	91	206	87.5	90	97	214
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	42.3	50	45	210	42.3	50	42	204	44.0	50	47	212
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	45.4	50	45	210	45.4	50	42	204	47.5	50	47	212
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	75.1	80	69	210	75.1	80	66	204	77.3	80	71	212
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	87.1	90	97	210	87.1	90	93	204	89.2	90	99	212
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	44.2	50	44	237	44.2	50	44	231	45.9	50	49	239
50HC**24	460-3-60	NONE	-	-	-	100	92/91	550	47.8	50	47	237	47.8	50	44	231	49.9	50	49	239

# ELECTRICAL INFORMATION

**Table 37 - UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA WITH FACTORY INSTALLED 2 SPEED INDOOR FAN OPTION (cont)**

UNIT	ELEC. HTR				NO C.O. or UNPWR C.O.												w/ PWRD C.O.											
	IFM TYPE	ORHEATER**A00	Nom (kW)	FLA	NO P.E.				w/ P.E. (pwrld fr/unit)				NO P.E.				w/ P.E. (pwrld fr/unit)											
					MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	DISC. SIZE		MCA	HACR BRKR	DISC. SIZE									
							FLA	LRA			FLA	LRA			FLA	LRA			FLA	LRA								
50HC**28	STD	NONE	-	-	116.0/116.0	150/150	120/119	590	133/132	610	120.8/120.8	150/150	125/124	595	132.6/132.6	175/175	139/138	615										
		279A00	18.8/25.0	52.1/60.1	116.0/116.0	150/150	120/119	590/590	133/132	610/610	120.8/120.8	150/150	125/124	595/595	132.6/132.6	175/175	139/138	615/615										
		280A00	37.6/50.0	104.2/120.3	147.3/147.3	150/150	135/153	590/590	149/167	610/610	153.3/153.3	175/175	141/158	595/595	168.0/168.0	175/175	155/172	615/615										
		281A00	56.3/75.0	156.4/180.4	196.3/196.3	200/225	196/222	590/590	209/236	610/610	202.3/202.3	225/225	201/228	595/595	217.0/217.0	225/250	215/241	615/615										
208/230-3-60	MED	NONE	-	-	119.5	150	124	586	137	606	124.3	150	129	591	136.1	175	143	611										
		279A00	18.8/25.0	52.1/60.1	119.5/119.5	150/150	124/124	586/586	137/137	606/606	124.3/124.3	150/150	129/129	591/591	136.1/136.1	175/175	143/143	611/611										
		280A00	37.6/50.0	104.2/120.3	151.6/151.6	175/175	139/158	586/586	153/172	606/606	157.6/157.6	175/175	145/164	591/591	172.4/172.4	175/175	159/177	611/611										
		281A00	56.3/75.0	156.4/180.4	201.8/201.8	225/225	200/227	586/586	213/241	606/606	207.8/207.8	225/225	205/233	591/591	222.5/222.5	225/250	219/246	611/611										
460-3-60	HIGH	NONE	-	-	130.9	175	137	665	142.7	685	135.7	175	142	670	147.5	175	156	690										
		279A00	18.8/25.0	52.1/60.1	130.9/130.9	175/175	137/137	665/665	142.7/142.7	175/175	135.7/135.7	175/175	142/142	670/670	147.5/147.5	156/156	690/690											
		280A00	37.6/50.0	104.2/120.3	165.9/165.9	175/175	153/171	665/665	169/185	685/685	171.9/171.9	175/175	158/177	670/670	186.6/186.6	200/200	172/190	690/690										
		281A00	56.3/75.0	156.4/180.4	216.0/216.0	225/250	213/240	665/665	228/254	685/685	222.0/222.0	225/250	218/246	670/670	236.8/236.8	250/250	232/259	690/690										
50HC**28	STD	NONE	-	-	53.0	60	56	306	59.2	318	55.2	60	58	308	61.4	70	65	320										
		282A00	25.0	30.1	53.0	60	56	306	59.2	318	55.2	60	58	308	61.4	70	65	320										
		283A00	50.0	60.1	68.1	80	76	306	75.9	318	84	70.9	80	79	308	78.6	80	86	320									
		284A00	75.0	90.2	98.2	100	111	306	106.0	318	118	101.0	110	114	308	108.7	125	121	320									
460-3-60	MED	NONE	-	-	55.2	60	56	304	61.4	316	57.4	70	61	306	63.6	80	68	318										
		282A00	25.0	30.1	55.2	60	56	304	61.4	316	57.4	70	61	306	63.6	80	68	318										
		283A00	50.0	60.1	70.9	80	79	304	78.6	316	86	73.6	80	82	306	81.4	90	89	318									
		284A00	75.0	90.2	101.0	110	114	304	108.7	316	121	103.7	125	116	306	111.5	125	123	318									
50HC**28	HIGH	NONE	-	-	60.9	70	65	344	67.1	356	63.1	80	67	346	69.3	80	74	358										
		282A00	25.0	30.1	60.9	70	65	344	67.1	356	63.1	80	67	346	69.3	80	74	358										
		283A00	50.0	60.1	78.0	90	86	344	85.7	356	80.7	90	88	346	88.5	100	95	358										
		284A00	75.0	90.2	108.1	125	120	344	115.8	356	110.8	125	123	346	118.6	125	130	358										
575-3-60	STD	NONE	-	-	41.0	50	43	228	45.8	236	42.7	50	45	230	47.5	60	50	238										
		285A00	24.8	23.9	41.0	50	43	228	45.8	236	42.7	50	45	230	47.5	60	50	238										
		286A00	49.6	47.7	67.4	70	62	228	73.4	236	69.5	70	64	230	75.5	80	69	238										
		287A00	74.4	71.6	79.4	90	89	228	85.4	236	81.5	90	91	230	87.5	90	97	238										
575-3-60	MED	NONE	-	-	42.4	50	45	226	47.2	234	44.1	50	46	228	48.9	60	52	236										
		285A00	24.8	23.9	42.4	50	45	226	47.2	234	44.1	50	46	228	48.9	60	52	236										
		286A00	49.6	47.7	69.1	70	64	226	75.1	234	71.3	80	66	228	77.3	80	71	236										
		287A00	74.4	71.6	81.1	90	91	226	87.1	234	83.2	90	93	228	89.2	90	99	236										
575-3-60	HIGH	NONE	-	-	44.3	50	47	253	49.1	261	46.0	60	49	255	50.8	60	54	263										
		285A00	24.8	23.9	44.3	50	47	253	49.1	261	46.0	60	49	255	50.8	60	54	263										
		286A00	49.6	47.7	71.5	80	66	253	77.5	261	73.6	80	68	255	79.6	80	73	263										
		287A00	74.4	71.6	83.5	90	93	253	89.5	261	85.6	90	95	255	91.6	100	101	263										

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

#### **Heating —**

**NOTE:** The 50HC is sold as cooling only. If electric heaters are required, use only factory-approved electric heaters. They will operate as described below.

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

### Electro-mechanical units with an economizer

#### **Cooling —**

When free cooling is not available, the compressors will be controlled by the zone thermostat. When free cooling is available, the outdoor-air damper is modulated by the 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 CO<sub>2</sub> sensors are connected to the EconoMi\$er IV and X control, a demand controlled ventilation strategy will begin to operate. As the CO<sub>2</sub> level in the zone increases above the CO<sub>2</sub> setpoint, the minimum position of the damper will be increased proportionally. As the CO<sub>2</sub> level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed. For 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 2/3rd of the total cfm established.



## SEQUENCE OF OPERATION (cont.)

### Heating —

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

Refer to Service and Maintenance Manual for further details.

### Optional Humidi-MiZer Dehumidification System

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

The Humidi-MiZer system provides three sub-modes of operation: Cool, Reheat1, and Reheat2.

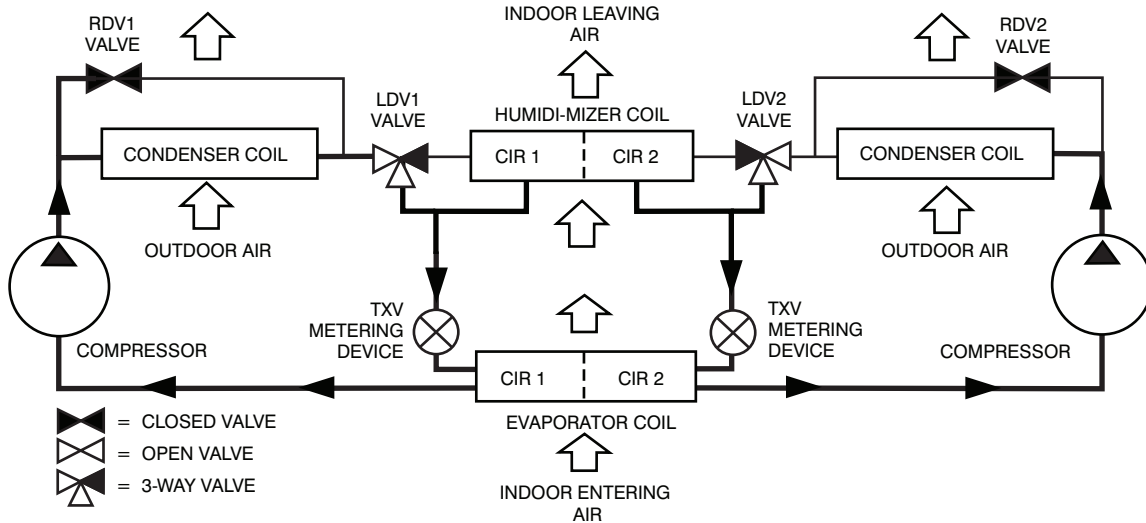
**Cool mode** - provides a normal ratio of Sensible and Latent Cooling effect from the evaporator coil.

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

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

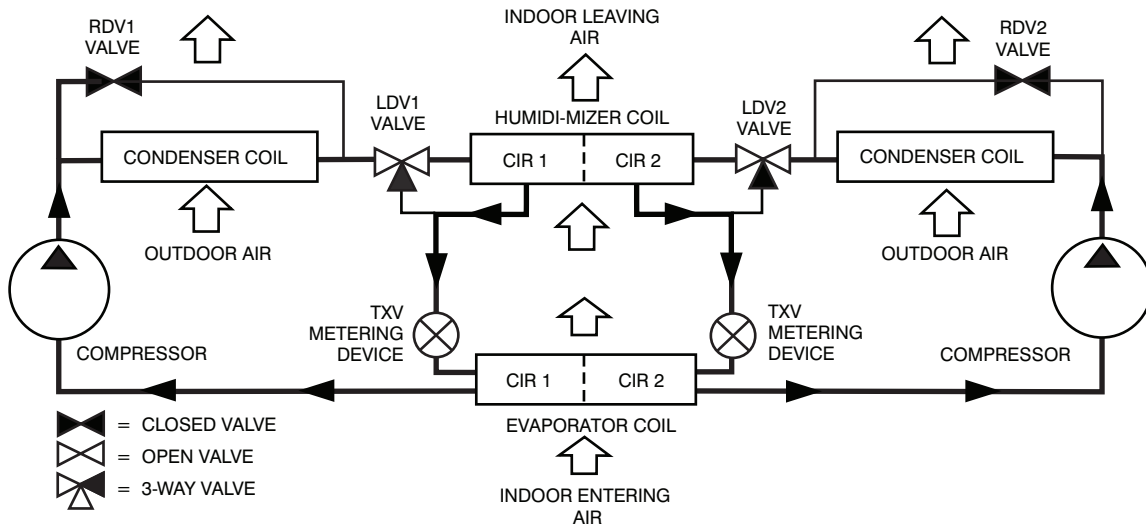
The Reheat1 and Reheat2 modes are available when the unit is not in a Heating mode and when the Low Ambient Lockout switch is closed.

## SEQUENCE OF OPERATION (cont.)



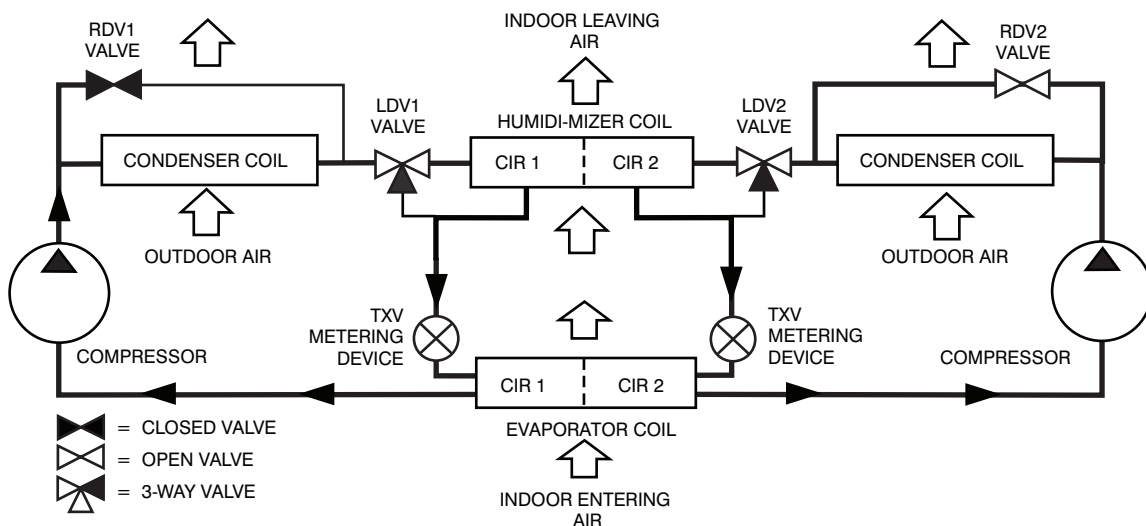
C12705

### Normal Cooling Mode - Humidi-MiZer System



C12706

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



C12707

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

# GUIDE SPECIFICATIONS - 50HC\*\*17-28

Note about this specification:

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

## Cooling Only/Electric Heat Packaged Rooftop

### HVAC Guide Specifications

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



<u>Section</u>	<u>Description</u>
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<b>23 06 80</b>	<b>Schedules for Decentralized HVAC Equipment</b>
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23 06 80.13	Decentralized Unitary HVAC Equipment Schedule
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23 06 80.13.A.	Rooftop unit schedule
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1. Schedule is per the project specification requirements.

<b>23 07 16</b>	<b>HVAC Equipment Insulation</b>
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23 07 16.13	Decentralized, Rooftop Units:
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23 07 16.13.A.	Evaporator fan compartment:
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1. Interior cabinet surfaces shall be insulated with a minimum 1/2-in. thick, minimum 1 1/2 lb density, flexible fiberglass insulation bonded with a phenolic binder, neoprene coated on the air side.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

23 07 16.13.B.	Electric heat compartment:
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1. Aluminum foil-faced fiberglass insulation shall be used.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

<b>23 09 13</b>	<b>Instrumentation and Control Devices for HVAC</b>
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23 09 13.23	Sensors and Transmitters
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23 09 13.23.A.	Thermostats
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1. Thermostat must
  - a. energize both “W” and “G” when calling for heat.
  - b. have capability to energize 2 different stages of cooling, and 2 different stages of heating.
  - c. include capability for occupancy scheduling.

<b>23 09 23</b>	<b>Direct-digital Control system for HVAC</b>
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23 09 23.13	Decentralized, Rooftop Units:
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23 09 23.13.A.	PremierLink controller
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1. Shall be ASHRAE 62-2001 compliant.
2. Shall accept 18-32VAC input power.
3. Shall have an operating temperature range from -40°F (-40°C) to 158°F (70°C), 10% - 95% RH (non-condensing).
4. Shall include an integrated economizer controller to support an economizer with 4 to 20 mA actuator input and no microprocessor controller.
5. Controller shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air quality, indoor relative humidity, compressor lock-out, fire shutdown, enthalpy, fan status, remote time clock/door switch.
6. Shall accept a CO<sub>2</sub> sensor in the conditioned space, and be Demand Control Ventilation (DCV) ready.
7. Shall provide the following outputs: Economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, heat stage 3/ exhaust/ reversing valve/ dehumidify/ occupied.
8. Unit shall provide surge protection for the controller through a circuit breaker.
9. Shall be Internet capable, and communicate at a Baud rate of 38.4K or faster

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

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

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

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

23 09 33.13 Decentralized, Rooftop Units:

23 09 33.13.A. General:

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

23 09 33.23.B. Safeties:

1. Compressor over-temperature, over current.
2. Low-pressure switch.
  - a. Units shall have different sized connectors for the circuit 1 and circuit 2 low and high pressure switches. They shall physically prevent the cross-wiring of the safety switches between circuits 1 and 2.

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

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

- 23 09 93.13 Decentralized, Rooftop Units:
- 23 09 93.13 INSERT SEQUENCE OF OPERATION

**23 40 13 Panel Air Filters**

- 23 40 13.13 Decentralized, Rooftop Units:
- 23 40 13.13.A. Standard filter section
  - 1. Shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
  - 2. Unit shall use only one filter size. Multiple sizes are not acceptable.
  - 3. Filters shall be accessible through a dedicated, weather tight panel.
  - 4. 4-in filter capabilities shall be capable with pre engineered and approved Carrier filter track field installed accessory. This kit requires field furnished filters.

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

- 23 81 19.13 Medium-Capacity Self-Contained Air Conditioners (50HC\*D17-28)
- 23 81 19.13.A. General
  - 1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing a(n) hermetic scroll compressor(s) for cooling duty and gas combustion for heating duty.
  - 2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
  - 3. Unit shall use environmentally safe, Puron refrigerant.
  - 4. Unit shall be installed in accordance with the manufacturer's instructions.
  - 5. Unit must be selected and installed in compliance with local, state, and federal codes.
- 23 81 19.13.B. Quality Assurance
  - 1. Unit meets ASHRAE 90.1 minimum efficiency requirements.
  - 2. 3 phase units are Energy Star qualified where sizes are required.
  - 3. Unit shall be rated in accordance with AHRI Standard 340/360.
  - 4. Unit shall be designed to conform to ASHRAE 15.
  - 5. 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.
  - 6. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
  - 7. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
  - 8. Unit shall be designed and manufactured in accordance with ISO 9001.
  - 9. Roof curb shall be designed to conform to NRCA Standards.
  - 10. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.
  - 11. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain.
  - 12. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.
  - 13. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.
  - 14. High Efficient Motors listed shall meet section 313 of the Energy Independence and Security Act of 2007 (EISA 2007)
- 23 81 19.13.C. Delivery, Storage, and Handling
  - 1. Unit shall be stored and handled per manufacturer's recommendations.
  - 2. Lifted by crane requires either shipping top panel or spreader bars.
  - 3. Unit shall only be stored or positioned in the upright position.

23 81 19.13.D. Project Conditions

1. As specified in the contract.

23 81 19.13.E. Project Conditions

1. As specified in the contract.

23 81 19.13.F. Operating Characteristics

1. Unit shall be capable of starting and running at 125°F (52°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 35°F (2°C) , ambient outdoor temperatures. Accessory kits are necessary if mechanically cooling at ambient temperatures below 35°F (2°C).
3. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
4. Unit shall be factory configured and ordered for vertical supply & return configurations.
5. Unit shall be factory furnished for either vertical or horizontal configuration without the use of special conversion kits. No field kits conversion is possible.
6. Unit shall be capable of mixed operation: vertical supply with horizontal return or horizontal supply with vertical return.

23 81 19.13.G. Electrical Requirements

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

23 81 19.13.H. 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): 60, Hardness: H-2H Pencil hardness.
3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 1/2-in. thick, 1 lb density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the heat compartment.
4. Base of unit shall have a minimum of four locations for factory thru-the-base electrical connections. Connections shall be internal to the cabinet to protect from environmental issues.
5. Base Rail
  - a. Unit shall have base rails on a minimum of 2 sides.
  - b. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
  - c. Holes shall be provided in the base rail for moving the rooftop by fork truck.
  - d. Base rail shall be a minimum of 16 gauge thickness.
6. Condensate pan and connections:
  - a. Shall be a sloped condensate drain pan made of a non-corrosive material.
  - b. Shall comply with ASHRAE Standard 62.
  - c. Shall use a 3/4-in -14 NPT drain connection at the end of the drain pan. Connection shall be made per manufacturer's recommendations.
7. Top panel:
  - a. Shall be a multi-piece top panel linked with water tight flanges and interlocking systems.
8. Electrical Connections
  - a. All unit power wiring shall enter unit cabinet at a single, factory-prepared, knockout location.
  - b. Thru-the-base capability
    - (1.) Thru-the-base provisions/connections are available as standard with every unit. When bottom connections are required, field furnished couplings are required.
    - (2.) No basepan penetration, other than those authorized by the manufacturer, is permitted.
9. Component access panels (standard)
  - a. Cabinet panels shall be easily removable for servicing.
  - b. Unit shall have one factory installed, tool-less, removable, filter access panel.
  - c. Panels covering control box and filters shall have molded composite handles while the blower access door shall have an integrated flange for easy removal.
  - d. Handles shall be UV modified, composite. permanently attached, and recessed into the panel.
  - e. Screws on the vertical portion of all removable access panel shall engage into heat resistant, molded composite collars.

f. Collars shall be removable and easily replaceable using manufacturer recommended parts.

23 81 19.13.I. N/A

23 81 19.13.J. Coils

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

1. Refrigerant circuit shall include the following control, safety, and maintenance features:
  - a. Thermostatic Expansion Valve (TXV) shall help provide optimum performance across the entire operating range. Shall contain removable power element to allow change out of power element and bulb without removing the valve body.
  - b. Refrigerant filter drier.
  - c. Service gauge connections on suction and discharge lines.
  - d. Pressure gauge access through a specially designed screen on the side of the unit.
2. Compressors
  - a. Unit shall use one fully hermetic, scroll compressor for each independent refrigeration circuit.
  - b. Models shall be available with 2 compressor/2-stage cooling.

- c. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
- d. Compressors shall be internally protected from high discharge temperature conditions.
- e. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.
- f. Compressor shall be factory mounted on rubber grommets.
- g. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.
- h. Crankcase heaters shall not be required for normal operating range, unless provided by the factory.

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

- 1. Evaporator fan motor:
  - a. Shall have inherent automatic-reset thermal overload protection or circuit breaker.
  - b. Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating shall be required.
- 2. Belt-driven Evaporator Fan:
  - a. Belt drive shall include an adjustable-pitch motor pulley and belt break protection system..
  - b. Shall use rigid pillow block bearing system with lubricate fittings at are accessible or lubrication line.
  - c. Blower fan shall be double-inlet type with forward-curved blades.
  - d. Shall be constructed from steel with a corrosion resistant finish and dynamically balanced.
  - e. Standard on all 17-28 size models with Humidi-MiZer.

23 81 19.13.N. Condenser Fans and Motors

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

23 81 19.13.O. Special Features, Options and Accessories

- 1. Staged Air Volume System (SAV) for 2-stage cooling models only:
  - a. Evaporator fan motor:
    - (1.) Shall have permanently lubricated bearings.
    - (2.) Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating.
    - (3.) Shall be Variable Frequency duty and 2-speed control.
    - (4.) Shall contain motor shaft grounding ring to prevent electrical bearing fluting damage by safely diverting harmful shaft voltages and bearing currents to ground.
- 2. Variable Frequency Drive (VFD). Only available on 2-speed indoor fan motor option (SAV):
  - a. Shall be installed inside the unit cabinet, mounted, wired and tested.
  - b. Shall contain Electromagnetic Interference (EMI) frequency protection.
  - c. Insulated Gate Bi-Polar Transistors (IGBT) used to produce the output pulse width modulated (PWM) waveform, allowing for quiet motor operation.
  - d. Self diagnostics with fault and power code LED indicator. Field accessory Display Kit available for further diagnostics and special setup applications.
  - e. RS485 capability standard.
  - f. Electronic thermal overload protection.



- g. 5% swinging chokes for harmonic reduction and improved power factor.
  - h. All printed circuit boards shall be conformal coated.
3. Integrated EconoMiSer IV, EconoMiSer2, 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. Modules for vertical or horizontal return configuration shall be available.
  - c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
  - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
  - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
  - f. Standard leak rate shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.
  - g. Economizer controller on 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 shall be 4-20mA design and controlled by the PremierLink controller. PremierLink does not comply with California Title 24 Fault Detection & Diagnostic (FDD) requirements.
  - j. Economizer controller on EconoMiSer 2 models with RTU Open models shall be a 4-20mA design controlled directly by the RTU Open controller. RTU Open meets California Title 24 Fault Detection & Diagnostic (FDD) requirements.
  - k. Economizer controller on EconoMiSer 2 models with ComfortLink models shall be controlled directly by the ComfortLink controller. ComfortLink meets California Title 24 Fault Detection & Diagnostic (FDD) requirements.
    - l. Shall be capable of introducing up to 100% outdoor air.
  - m. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.
  - n. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
  - o. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory installed only. Outdoor air sensor setpoint shall be adjustable and shall range from 40 to 100\_F / 4 to 38\_C. Additional sensor options shall be available as accessories.
  - p. 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%.
  - q. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
  - r. Dampers shall be completely closed when the unit is in the unoccupied mode.
  - s. 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.
  - t. 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 (2C) and closes at 50 F (10 C)
  - u. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.

- v. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
4. Integrated EconoMiSer2, and EconoMiSer 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. Modules for vertical or horizontal return configuration shall be available.
    - c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
    - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
    - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
    - f. Ultra Low Leak design meets California Title 24 section 140.4 and ASHRAE 90.1 requirements of 4 cfm per sq. ft. on the outside air dampers and 10 cfm per sq. ft. on the return dampers.
    - g. 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
    - h. Economizer controller on EconoMiSer 2 models with RTU Open models shall be a 4-20mA design controlled directly by the RTU Open controller. RTU Open meets California Title 24 Fault Detection & Diagnostic (FDD) requirements
    - i. Economizer controller on EconoMiSer 2 models with ComfortLink models shall be controlled directly by the ComfortLink controller. ComfortLink meets California Title 24 Fault Detection & Diagnostic (FDD) requirements.
    - j. Shall be capable of introducing up to 100% outdoor air.
    - k. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.
    - l. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
    - m. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory installed only. Outdoor air sensor setpoint shall be adjustable and shall range from 40 to 100\_F / 4 to 38\_C. Additional sensor options shall be available as accessories.
    - n. 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%.
    - o. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
    - p. Dampers shall be completely closed when the unit is in the unoccupied mode.
    - q. 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.
    - r. 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 (2C) and closes at 50 F (10 C)
    - s. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
    - t. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
  5. Two-Position Damper (Factory installed on 3 Phase Models Only. Field installed on all 3 and 1 Phase Models)
    - a. Damper shall be a 2-position damper. Damper travel shall be from the full closed position to the field adjustable %-open setpoint.
    - b. Damper shall include adjustable damper travel from 25% to 100% (full open).
    - c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
    - d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
    - e. Damper will admit up to 100% outdoor air for applicable rooftop units.
    - f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.

- g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
- h. Outside air hood shall include aluminum water entrainment filter
- 6. Manual damper
  - a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25% outdoor air for year round ventilation.
- 7. Humidi-MiZer Adaptive Dehumidification System (3 Phase Models Only).
  - a. The Humidi-MiZer Adaptive Dehumidification System shall be factory-installed in two stage 50HC17-28 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
  - 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 at outdoor ambient temperatures down to -20°F (-29°C).
- 9. Condenser Coil Hail Guard Assembly
  - a. Shall protect against damage from hail.
  - b. Shall be louvered style design.
- 10. Unit-Mounted, Non-Fused Disconnect Switch:
  - a. Switch shall be factory-installed, internally mounted.
  - b. National Electric Code (NEC) and ETL approved non-fused switch shall provide unit power shutoff.
  - c. Shall be accessible from outside the unit
  - d. Shall provide local shutdown and lockout capability.
- 11. HACR Breaker
  - a. These manual reset devices provide overload and short circuit protection for the unit. Factory wired and mounted with the units, with access cover to help provide environmental protection. On 575V applications, HACR breaker can only be used with WYE power distribution systems. Use on Delta power distribution systems is prohibited.
- 12. Convenience Outlet:
  - a. Powered convenience outlet.
    - (1.) Outlet shall be powered from main line power to the rooftop unit.
    - (2.) Outlet shall be powered from line side of disconnect by installing contractor, as required by code. If outlet is powered from load side of disconnect, unit electrical ratings shall be ETL certified and rated for additional outlet amperage.
    - (3.) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
    - (4.) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
    - (5.) Voltage required to operate convenience outlet shall be provided by a factory-installed step-down transformer.
    - (6.) Outlet shall be accessible from outside the unit.
    - (7.) Outlet shall include a field-installed "Wet in Use" cover.
  - b. Non-Powered convenience outlet.
    - (1.) Outlet shall be powered from a separate 115/120v power source.
    - (2.) A transformer shall not be included.
    - (3.) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
    - (4.) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
    - (5.) Outlet shall be accessible from outside the unit.
    - (6.) Outlet shall include a field-installed "Wet in Use" cover.

13. 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.
14. Centrifugal Power Exhaust:
  - a. Power exhaust shall be used in conjunction with an integrated economizer.
  - b. Independent modules for vertical or horizontal return configurations shall be available.
  - c. Horizontal power exhaust is shall be mounted in return ductwork.
  - d. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0-100% adjustable setpoint on the economizer control.
15. 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.
16. 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 50HC17-28 models to past Carrier design curb models: DP,DR,HJ,TM, and TJ. Check with Carrier sales expert of further details and information.
17. 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.
18. 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.
19. 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.
20. Indoor Air Quality (CO<sub>2</sub>) Sensor:
  - a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
  - b. The IAQ sensor shall be available in duct mount, wall mount, or wall mount with LED display. The set-point shall have adjustment capability.
21. 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.
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. Barometric Hood (Horizontal Economizer Applications)
  - a. Shall be required when a horizontal economizer and barometric relief are required. Barometric relief damper must be installed in the return air (horizontal) duct work. This hood provides weather protection.
- 26. Hinged Access Panels
  - a. Shall provide easy access through integrated quarter turn latches.
  - b. Shall be on major panels of – filter, control box, fan motor and compressor
- 27. 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.
- 28. Foil faced insulation
  - a. Throughout unit cabinet air stream, non-fibrous and cleanable foil faced insulation is used.

