



Product Data

WeatherMaker® Single Package Heat Pump Rooftop

15 to 25 Nominal Tons



ecoblue™  technology



Puron
ADVANCE™

50FEQ*17, 24, 28

Single-Packaged Heat Pump with Accessory Electric
Heat and Puron Advance™ Refrigerant (R-454B)

Features/Benefits

Carrier's WeatherMaker® packaged heat pump rooftop units (RTUs) with Puron Advance™ and EcoBlue™ Fan Technology.

For over 70 years the WeatherMaker line has stood for cooling solutions that are innovative, high quality, and easy to use. Carrier's new 50FEQ rooftops continue our legacy of progress with Puron Advance™, our low global warming potential refrigerant. With competitive efficiencies, EcoBlue fan technology, locally available stock, and direct fit footprints, new installations and replacements are easier than ever.

New major design features include:

- Puron Advance (R-454B) refrigerant, which delivers a 75% reduction in global warming potential (GWP) compared to the original Puron (R-410A). Puron Advance's GWP of 466 easily exceeds the EPA (Environmental Protection Agency) requirement of <700 GWP.
- A patented, industry-first vane axial indoor fan system with an electronically commutated variable speed motor for simplicity and efficiency. When compared to traditional belt-driven forward curve fans, our reliable system has:
 - 75% fewer moving parts
 - Up to 40% greater efficiency

- No fan belts, pulleys, shaft, or shaft bearings
- Better sound and comfort due to slow ramp-up capability
- Internal protection from phase reversal and phase loss situations
- High external static capability
- Slide-out blower assembly design
- Reliable 2 stage cooling with tandem scroll compressors technology, fully active evaporator coil.
- Unit control board (UCB) with intuitive indoor fan adjustment that uses simple dial and switch configuration
- Reliable copper tube/aluminum fin condenser coil with 5/16 in. tubing to help reduce refrigerant charge and weight versus prior designs

WeatherMaker® 50FEQ units 15 to 25 tons are specifically designed for dedicated factory-supplied vertical air flow or horizontal air flow. No special field kits are required. Designed to fit on pre-installed curbs by other manufacturer, these units can also fit on some of Carrier's past installed roof curbs.

Two-speed staged air volume (SAV) Vane Axial indoor fan speed control helps deliver IEERs up to 14.0.

With "no-strip" screw collars, handled access panels, and more, the unit is easy to install, easy to maintain, and easy to use. Your new 15 to 25 ton Carrier WeatherMaker RTU provides

optimum comfort and control from a packaged rooftop.

Value-added features include:

- SystemVu™ intelligent controls option that provides:
 - Large full text, multi-line display
 - USB Flash Port for data transfer
 - Built in i-Vu®, CCN and BACnet®¹
 - Read refrigerant pressures from display — no gauges
 - Quick LED Status — Run, Alert, Fault
 - Conventional thermostat or sensor capabilities
 - Historical component runtime and starts
 - Supply air tempering
 - Navigator™ and Network Service Tool compatible
- Single point electrical connections
- All 15 to 25 ton models use TXV refrigerant metering devices
- Scroll compressors with internal line-break overload protection
- Units come with an easy access tool-less filter door. Filter track tilts out for filter removal and replacement. All filters are the same size in each unit

1. Third-party trademarks and logos are the property of their respective owners.

Table of contents

	Page
Features/Benefits	2
Model number nomenclature	5
Capacity ratings	6
Physical data	8
Options and accessories	9
Base unit dimensions	14
Accessory dimensions	24
Performance data	26
Fan data	35
Electrical data	45
Typical wiring diagrams	59
Sequence of operation	65
Application data	67
Guide specifications	68

Features/Benefits (cont)

Easy to install

Lighter units make for easy replacement and aid in the structural approval process. Units have simple, fast plug-in connections to the standard integrated unit control board (UCB). Clearly labeled connections points to reduce installation time. Also, a large control box provides room to work and room to mount Carrier accessory controls.

Easy to maintain

With the EcoBlue vane axial fan system and direct drive ECM motor, belts and pulleys are a thing of the past. This frees up maintenance, installation and commissioning time. Should an adjustment be necessary, it can easily be made via the UCB in the control box. For regular service activities, our easy-access handles provide a quick solution to all commonly accessed service panels, and our sloped, corrosion-resistant composite drain pan sheds water and will not rust. Service gauge connections are included on compressor suction/discharge lines and before and after the filter drier to monitor system operation during maintenance.

Easy to use

Carrier's re-designed unit control board puts all connections and troubleshooting points in one convenient place. Most low voltage connections use the same board and are easy to access. Setting up the fan is simple using an intuitive switch and rotary dial arrangement. Our rooftops have high and low pressure switches, a filter drier, and 2 in. filters standard.

Heat pump flexibility

50FEQ models offer onboard electro-mechanical heating standard. Our robust systems are rigorously tested to ensure reliable reverse cycle heating operation. The result is a clean, environmentally responsible heat source to keep occupants comfortable year-round. All 50FEQ models can be easily controlled with a standard thermostat and remove the need to burn fossil fuels to heat your building. Should you need supplemental heat, we offer a full line of single point powered electric heaters that can easily be installed at site.

Puron Advance™ features

In 2018, Carrier announced Puron Advance (R-454B) as our next generation refrigerant for light commercial rooftops. With a GWP of 466 and similar working pressure and performance to R-410A, Puron Advance easily exceeds the EPA's new, stringent <700 GWP refrigerant requirement while minimizing unit redesign. Like other next generation refrigerants (R-32, etc.), R-454B is classified as an "A2L" refrigerant by ASHRAE^{®1} (American Society of Heating, Refrigerating, and Air-Conditioning Engineers). This designation means that R-454B is "mildly flammable" under certain conditions. While this is a change from legacy "A1 — No Flame Propagation" refrigerants like Puron (R-410A), A2Ls are still very low on the flammability scale and quite safe for use. A2L refrigerants are difficult to ignite and have an extremely low flame speed — much less so than natural gas, propane, or even rubbing alcohol. At Carrier, we are committed to safety. As such, all of our Puron Advance rooftop

units include a factory-installed dissipation control board and leak sensor designed to last the lifetime of the unit. This system is certified to UL 60335-2-40 and designed to work right away, without any field configuration or wiring. In the event of a leak, these systems are designed to automatically identify and resolve the issue by dissipating the refrigerant to minimize risk to equipment, buildings, or occupants.

EcoBlue™ Technology

Our direct drive EcoBlue indoor fan system uses vane axial fan design and electronically commutated motor. The benefit is clear: when compared to legacy belt drive systems, this vane axial design has 75% fewer moving parts, uses up to 40% less energy, and has no belts, blower bearings, or shaft.

Streamlined control and integration

Carrier controllers make connecting WeatherMaker rooftop heat pump units to existing building automation systems easy. The units are compatible with conventional thermostat controls or SystemVu™ controls for greater comfort, diagnostics, and building network integration.

Operating efficiency and flexibility

The 50FEQ packaged rooftops meet DOE 2023 efficiency standards, as well as ASHRAE 90.1 and IECC^{®1} (International Energy Conservation Code) minimum IEER efficiency requirements.

1. Third-party trademarks and logos are the property of their respective owners.

Features/Benefits (cont)



Vane Axial Indoor Fan

- Direct drive ECM
- Slow ramp up
- Phase loss protection
- No belts or pulleys
- Slide out design

High Efficiency Outdoor Fan

- Quite operation
- Balanced blades
- Efficient airflow collar

Unit Controls

- E/M base unit controller
- Switch/dial fan setting
- Large terminal connections
- SystemVu™ control option

Compression

- Fully hermetic scroll
- Internally protected
- Multi stage design
- Safety switch protected

Air Management

- Factory - Field economizers
- Upgraded MERV-13 filters
- Tool-less Filter Access door

Efficient Coils

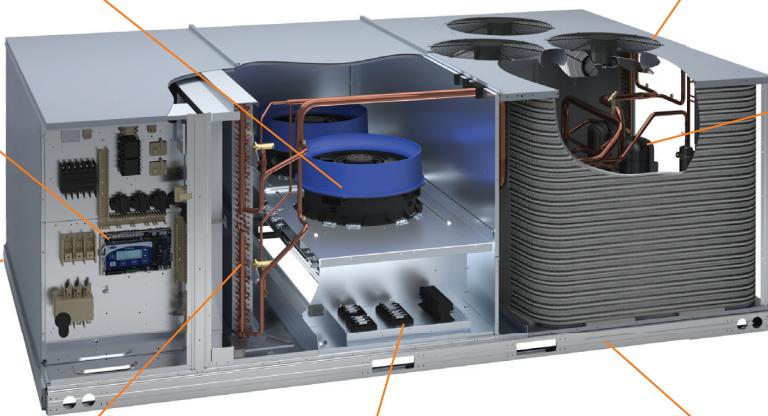
- Round tube/plate fin
- Copper/Aluminum
- Special coating available
- New 5/16 in. condenser tube
- TXV metering device

Heating

- Electric Heating
- Field installed accessory
- Intergal fusing
- Multiple kW sizes available
- Terminal block connections
- Single point power

Cabinet Design

- Heavy gauge base rails
- Large handled access panels
- Embossed strengthened base pan



Capacity ratings



50FEQ AHRI Ratings, Cooling Mode^{a,b,c}

UNIT	COOLING STAGES	NOMINAL CAPACITY (tons)	NET COOLING CAPACITY (Btuh)	TOTAL POWER (kW)	EER	IEER WITH 2-SPEED INDOOR FAN MOTOR	AHRI RATING CFM	AHRI PART LOAD CFM
50FEQM17	2	15	172,000	16.2	10.60	14.0	6,300	3,780
50FEQM24	2	20	240,000	24.0	10.00	14.0	8,000	4,800
50FEQM28	2	25	278,000	29.3	9.50	14.0	8,800	5,280

NOTE(S):

a. Rated in accordance with AHRI Standards 340/360.

b. Rating are based on:

Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.

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.

c. All 50FEQ units comply with ASHRAE 90.1-2019 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) and DOE-2023 (Department of Energy) Energy Standard for minimum IEER requirements.

LEGEND

AHRI — Air-Conditioning, Heating and Refrigeration Institute
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio



50FEQ AHRI Ratings, Heating Mode^{a,b,c}

UNIT	HEATING, LOW 17°F (-8°C) AMBIENT		HEATING, HIGH 47°F (8°C) AMBIENT		AHRI RATING CFM
	Net Capacity (Btuh)	COP	Net Capacity (Btuh)	COP	
50FEQM17	100,000	2.20	168,000	3.30	6,300
50FEQM24	136,000	2.20	234,000	3.30	8,000
50FEQM28	156,000	2.15	278,000	3.30	8,800

NOTE(S):

a. Rated in accordance with AHRI Standards 340/360.

b. Rating are based on:

Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.

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.

c. All 50FEQ units comply with ASHRAE 90.1-2019 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) and DOE-2023 (Department of Energy) Energy Standard for minimum IEER requirements.

LEGEND

AHRI — Air-Conditioning, Heating and Refrigeration Institute
COP — Coefficient of Performance



Capacity ratings (cont)



Sound Rating Table^a

UNIT	COOLING STAGES	OUTDOOR SOUND (dB) AT 60 Hz ^b								
		A-WEIGHTED ^c	63	125	250	500	1000	2000	4000	8000
50FEQM17	2	84.1	92.2	83.9	80.4	81.8	78.7	76.5	72.2	65.4
50FEQM17	2	85.9	97.1	88.3	84.4	83.3	80.7	77.4	73.4	67.3
50FEQM28	2	85.9	97.1	88.3	84.4	83.3	80.7	77.4	73.4	67.3

NOTE(S):

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

LEGEND

dB — Decibel

Minimum - Maximum Airflow Ratings (cfm) — Cooling Units and Accessory Electric Heat

UNIT	COOLING			ELECTRIC HEAT ^a	
	MINIMUM 2-SPEED AIRFLOW (LOW SPEED)	MINIMUM 2-SPEED AIRFLOW (HIGH SPEED)	MAXIMUM AIRFLOW CFM	MINIMUM AIRFLOW CFM	MAXIMUM AIRFLOW CFM
50FEQM17	2,700	4,500	7,500	4,500	7,500
50FEQM24	3,000	6,000	10,000	6,000	10,000
50FEQM28	3,750	7,500	12,500	7,500	12,500

NOTE(S):

- a. Electric heat modules and single point kits are available as field-installed accessories for 50FEQ units.

Physical data



50FEQ 17 to 28 Physical Data

50FEQ UNIT	50FEQM17	50FEQM24	50FEQM28
NOMINAL TONS	15	20	25
BASE UNIT OPERATING WT (lb)^a	1627	2057	2125
REFRIGERATION SYSTEM			
No. Circuits/No. Compressors/Type	1/2/Scroll	1/2/Scroll	1/2/Scroll
Puron Advance™ (R-454B) Charge (lb-oz)	29-6	31-10	39-8
Cooling Metering Device	TXV	TXV	TXV
Heating Metering Device	TXV	TXV	TXV
High-Pressure Trip/Reset (psig)	630/505	630/505	630/505
Loss of Charge Trip/Reset	27/44	27/44	27/44
EVAPORATOR COIL			
Material (Tube/Fin)	Cu/Al	Cu/Al	Cu/Al
Coil Type	3/8 in. RTPF	3/8 in. RTPF	3/8 in. RTPF
Rows/FPI	3/17	4/17	4/17
Total Face Area (ft ²)	19.6	26	26
Condensate Drain Connection Size	3/4 in.	3/4 in.	3/4 in.
CONDENSER COIL			
Material (Tube/Fin)	Cu/Al	Cu/Al	Cu/Al
Coil Type	5/16 in. RTPF	5/16 in. RTPF	5/16 in. RTPF
Rows/FPI	2/18	2/18	2/18
Total Face Area (ft ²)	41.6	59.2	59.2
EVAPORATOR FAN AND MOTOR			
Standard/Medium Static 3 Phase			
Motor Qty / Drive Type	2 / Direct	2 / Direct	2 / Direct
Max Cont bhp	2.4	2.4	3
Range (rpm)	250-2000	250-2000	250-2200
Fan Qty / Type	2 / Vane Axial	2 / Vane Axial	2 / Vane Axial
Fan Diameter (in.)	22	22	22
Vertical High Static 3 Phase			
Motor Qty / Drive Type	2 / Direct	2 / Direct	2 / Direct
Max Cont bhp	3	5	5
Range (rpm)	250-2200	250-2200	250-2200
Fan Qty / Type	2 / Vane Axial	2 / Vane Axial	2 / Vane Axial
Fan Diameter (in.)	22	22	22
Horizontal High Static 3 Phase			
Motor Qty / Drive Type	2 / Direct	2 / Direct	2 / Direct
Max Cont bhp	5	5	5
Range (rpm)	250-2200	250-2200	250-2200
Fan Qty / Type	2 / Vane Axial	2 / Vane Axial	2 / Vane Axial
Fan Diameter (in.)	22	22	22
CONDENSER FAN AND MOTOR			
Qty / Motor Drive Type	3 / Direct	4 / Direct	4 / Direct
Motor hp / rpm	1/4 / 1100	1/4 / 1100	1/4 / 1100
Fan Diameter (in.)	22	22	22
FILTERS			
RA Filter Qty / Size (in.)	6 / 25x25x2	9 / 16x25x2	9 / 16x25x2
OA Inlet Screen Qty / Size (in.)	4 / 16x25x1	4 / 16x25x1	4 / 16x25x1

NOTE(S):

- a. Base unit operating weight does not include weight of options.

LEGEND

bhp — Brake Horsepower
 FPI — Fins Per Inch
 OA — Outdoor Air
 RA — Return Air

Options and accessories



ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
ELECTRIC HEAT		
Electric Resistance Heaters		X
Single Point Kits		X
CABINET		
Hinged Access Panels	X	
MERV-13, 4 in. Filters	X	
MERV-13, 2 in. Filters		X
MERV-8, 2 in. Filters		X
4 in. Filter Rack (filters not included)		X
Condenser Coil Hail Guard	X	X
COIL OPTIONS		
Cu/Cu Indoor and/or Outdoor Coils ^a	X	
Pre-Coated Outdoor Coils	X	
Premium, E-Coated Indoor and/or Outdoor Coils	X	
CONTROLS		
Thermostats, Temperature Sensors, and Subbases		X
SystemVu™ DDC Communicating Controller	X	
Smoke Detector (supply and/or return air)	X	X
Horn Strobe Annunciator ^b		X
Time Guard II Compressor Delay Control Circuit		X
Phase Monitor	X	X
Condensate Overflow Switch	X	X
ECONOMIZERS AND OUTDOOR AIR DAMPERS		
EconomizerONE for Electromechanical Controls, complies with FDD (standard and ultra low leak damper models) ^c	X	X
Wi-Fi Stick for EconomizerONE (optional)		X
EconoMi\$er® 2 for DDC Controls (standard and ultra low leak damper models) ^d	X	X
Motorized Two-Position Outdoor-Air Damper		X
Manual Outdoor-Air Damper (25% and 50%)		X
Barometric Relief ^e	X	X
Power Exhaust — Centrifugal Design	X	X

ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
ECONOMIZER SENSORS AND IAQ DEVICES		
Single Dry Bulb Temperature Sensors ^f	X	X
Differential Dry Bulb Temperature Sensors ^f		X
Single Enthalpy Sensors ^f	X	X
Differential Enthalpy Sensors ^f		X
CO ₂ Sensor (wall, duct, or unit mounted) ^f	X	X
INDOOR MOTOR AND DRIVE		
Multiple Motor and Drive Packages	X	
LOW AMBIENT CONTROLS		
Winter Start Kit ^g		X
Low Ambient Controller to 0°F (-18°C) ^g		X
POWER OPTIONS		
Convenience Outlet (powered)	X	
Convenience Outlet (unpowered)	X	
Convenience Outlet, 20 amp (unpowered)		X
Non-Fused Disconnect ^h	X	
High SCCR Protection ⁱ	X	
ROOF CURBS		
Roof Curb 14 in. (356 mm)		X
Roof Curb 24 in. (610 mm)		X

NOTE(S):

- a. Cu/Cu coils are only available with louvered hail guards.
- b. Requires a field-supplied 24V transformer for each application. See price pages for details.
- c. FDD (Fault Detection and Diagnostic) capability per California Title 24 section 120.2.
- d. Models with SystemVu controls comply with California Title 24 Fault Detection and Diagnostic (FDD).
- e. Included with economizer.
- f. Sensors used to optimize economizer performance.
- g. See application data for assistance.
- h. Non-fused disconnect switch cannot be used when unit FLA electrical rating exceeds:
 - 200 amps, 208//230V-3-60
 - 100 amps, 460/575V-3-60
- i. High SCCR (Short Circuit Current Rating) is not available on the following: units with Low Ambient controls, Phase loss monitor, Non-fused disconnect, Powered convenience outlet, and 575-v models.

Options and accessories (cont)



Factory-installed options

Economizer (dry-bulb or enthalpy)

Economizers save money. They bring in fresh, outside air for ventilation; and provide cool, outside air to cool your building. This is the preferred method of low-ambient cooling. When coupled to CO₂ sensors, economizers can provide even more savings by coupling the ventilation air to only that amount required.

Economizers are available, installed and tested by the factory, with either enthalpy or dry-bulb temperature inputs. Additional sensors are available as accessories to optimize the economizers. Economizers include a powered exhaust system to help equalize building pressures.

Economizers can be factory-installed or easily field-installed.

Unit mounted CO₂ sensor

The CO₂ sensor works with the economizer to intake only the correct amount of outside air for ventilation. As occupants fill your building, the CO₂ sensor detects their presence through increasing CO₂ levels, and opens the economizer appropriately. When the occupants leave, the CO₂ levels decrease, and the sensor appropriately closes the economizer. This intelligent control of the ventilation air, called demand controlled ventilation (DCV), reduces the overall load on the rooftop, saving money. It is also available as a field-installed accessory.

Phase monitor protection

The Phase Monitor Control will monitor the sequence of 3-phase electrical system to provide a phase reversal protection; and monitor the 3-phase voltage inputs to provide a phase loss protection for the 3-phase device. It will work on either a Delta or Wye power connection.

Smoke detector (supply and/or return air)

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.

Thru-the-base connections

Thru-the-base connections, included as standard, are necessary to ensure proper connection and seal when routing wire and piping through the rooftop's basepan and curb. These couplings eliminate roof penetration and should be considered for gas lines, main power lines, as well as control power.

Hinged access panels

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

Cu/Cu (indoor and outdoor) coils

Copper fins and copper tubes are mechanically bonded to copper tubes and copper tube sheets. A polymer strip prevents coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan. Only available with louvered hail guards.

E-coated (outdoor and indoor) coils

A flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation of tubes, fins and headers.

Pre-coated outdoor coils

A durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments. The coating minimizes galvanic action between dissimilar metals. Coating is applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube.

Condenser coil hail guard

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, 115-v GFCI receptacle with "Wet in Use" cover. The "powered" option allows the installer to power the outlet from the line side of the disconnect or load side as required by code. The "unpowered" option is to be powered from a separate 115/120-v power source.

The unpowered convenience outlet is available as a 15 amp factory-installed option or a 20 amp field-installed accessory.

Non-fused disconnect

This OSHA-compliant, factory-installed, safety switch allows a service technician to locally secure power to the rooftop. When selecting a factory-installed non-fused disconnect, note they are sized for the unit as ordered from the factory. The sizing of these do not accommodate field-installed items such as power exhaust devices, etc. If field installing electric heat with factory-installed non-fused disconnect switch, a single point kit may or may not be required.

SystemVu™ controller

Carrier's SystemVu controller is an optional factory-installed and tested controller.

This controller takes on a whole new approach to provide an intuitive, intelligent controller that not only monitors and controls the unit, but also provides linkage to multiple building automation systems.

Each SystemVu controller makes it easy to set up, service, troubleshoot, gain historical data, generate reports and provide comfort only Carrier is noted for.

Key features include:

- Easy to read back lit 4 line text screen for superior visibility.
- Quick operational condition LEDs of: Run, Alert, and Fault.
- Simple navigation with large keypad buttons of: Navigation arrows, Test, Back, Enter and Menu.
- Capable of being controlled with a conventional thermostat, space sensor or build automation system.
- Service capabilities include:
 - Auto run test
 - Manual run test
 - Component run hours and starts
 - Commissioning reports
 - Data logging
- Full range of diagnosis:
 - Read refrigerant pressures without the need of gauges

Options and accessories (cont)

- Sensor faults
- Compressor reverse rotation
- Economizer diagnostics that meet California Title 24 requirements
- Quick data transfer via USB port:
 - Unit configuration uploading/downloading
 - Data logging
 - Software upgrades
- Built in capacity for:
 - i-Vu® open systems
 - BACnet systems
 - CCN systems
- Configuration and alarm point capability:
 - Contain over 100 alarm codes
 - Contain over 260 status, troubleshooting, diagnostic and maintenance points
 - Contain over 270 control configuration setpoints

Condensate overflow switch

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

- Indicator light — solid red (more than 10 seconds on water contact — compressors disabled), blinking red (sensor disconnected)

- 10-second delay to break — eliminates nuisance trips from splashing or waves in pan (sensor needs 10 seconds of constant water contact before tripping)
- Disables the compressors operation when condensate plug is detected, but still allows fans to run for economizer.

MERV-13 4 in. return air filters

This factory option upgrades the return air filters from standard unit filters to high efficiency MERV-13 filters. Non-woven MERV-13 filter media with high strength, moisture-resistant frame. Filter media is securely fastened inside the filter frame on all 4 sides.

High Short Circuit Current Rating (SCCR) protection

This factory-installed option provides high short circuit current protection to each compressor, plus all indoor and outdoor fan motors of 60 kA (for 208/230-3-60 units) and 65 kA (for 460-3-60 units) against high potential fault current situations.

Standard unit comes with 5 kA rating.

This option is not available with factory installed Non-Fused Disconnect, Low Ambient controls, Phase loss monitor/protection and 575 Volt models.

Filter maintenance indicator

When the optional factory-installed filter maintenance indicator is used, a factory-installed differential pressure switch measures pressure drop across the outside air filter and activates a field-supplied dry contact indicator when the pressure differential exceeds the adjustable switch setpoint.

Options and accessories (cont)



Field-installed accessories

Condenser coil hail guard

Sleek, louvered panels protect the condenser coil from hail damage, foreign objects, and incidental contact. This can be purchased as a factory-installed option or as a field-installed accessory.

Differential enthalpy sensor

The differential enthalpy sensor is comprised of an outdoor and return air enthalpy sensors to provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.

Wall or duct mounted CO₂ sensor

The IAQ sensor shall be available in duct or wall mount. The sensor provides demand ventilation indoor air quality (IAQ) control.

4 in. filter rack kit

The 4 in. filter rack accessory kit is designed to hold 4 in. MERV-8 or MERV-13 filters. Filters not included in kit.

MERV-13 2 in. return air filters

This kit includes MERV-13 2 in. filters to accommodate unit filter rack size. Kit available through RDC (Replacement Components Division).

MERV-8 2 in. return air filters

This kit includes MERV-8 2 in. filters to accommodate unit filter rack size. Kit available through RDC.

Phase monitor protection

The Phase Monitor Control will monitor the sequence of 3-phase electrical system to provide a phase reversal protection; and monitor the 3-phase voltage inputs to provide a phase loss protection for the 3-phase device. It will work on either a Delta or Wye power connection.

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.

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 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.

Roof curb (14 in./356 mm or 24 in./610 mm)

Full perimeter roof curb with exhaust capability provides separate air streams for energy recovery from the exhaust air without supply air contamination.

Filter status indicator accessory

Monitors static pressure across supply and exhaust filters and provides indication when filters become clogged.

Power exhaust

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

Manual OA damper

Manual outdoor air dampers are an economical way to bring in ventilation air. The dampers are available in 25% and 50% versions.

Motorized two-position damper

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

Electric heaters

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

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 SystemVu™ controller or authorized commercial thermostats.

Wi-Fi stick for EconomizerONE (optional)

The accessory Wi-Fi/WLAN stick can be connected to the EconomizerONE POL224 economizer controller via the USB host interface. The Wi-Fi stick enables a wireless connection to be made between a smartphone and the economizer controller via the Climatix™ mobile application for commissioning, troubleshooting, and maintenance operations. The Wi-Fi stick is required to utilize the mobile application.

Climatix™ mobile application

The Climatix™ mobile application offers a best-in-class user interface and a simple step-by-step commissioning workflow using a mobile device. The user interface walks users through the setup of the controller and allows users to view the operating mode and parameters. Users can adjust setpoints, initiate damper tests, and save the final configuration as a favorite to expedite setup in the future.

The application is available on Android™¹ and Apple iOS®¹ platforms. The Wi-Fi stick for the EconomizerONE is required to join the Siemens-WiFi-Stick network and setup the controller on a smartphone.

1. Third-party trademarks and logos are the property of their respective owners.

Options and accessories (cont)



Option and Accessory Weights^a

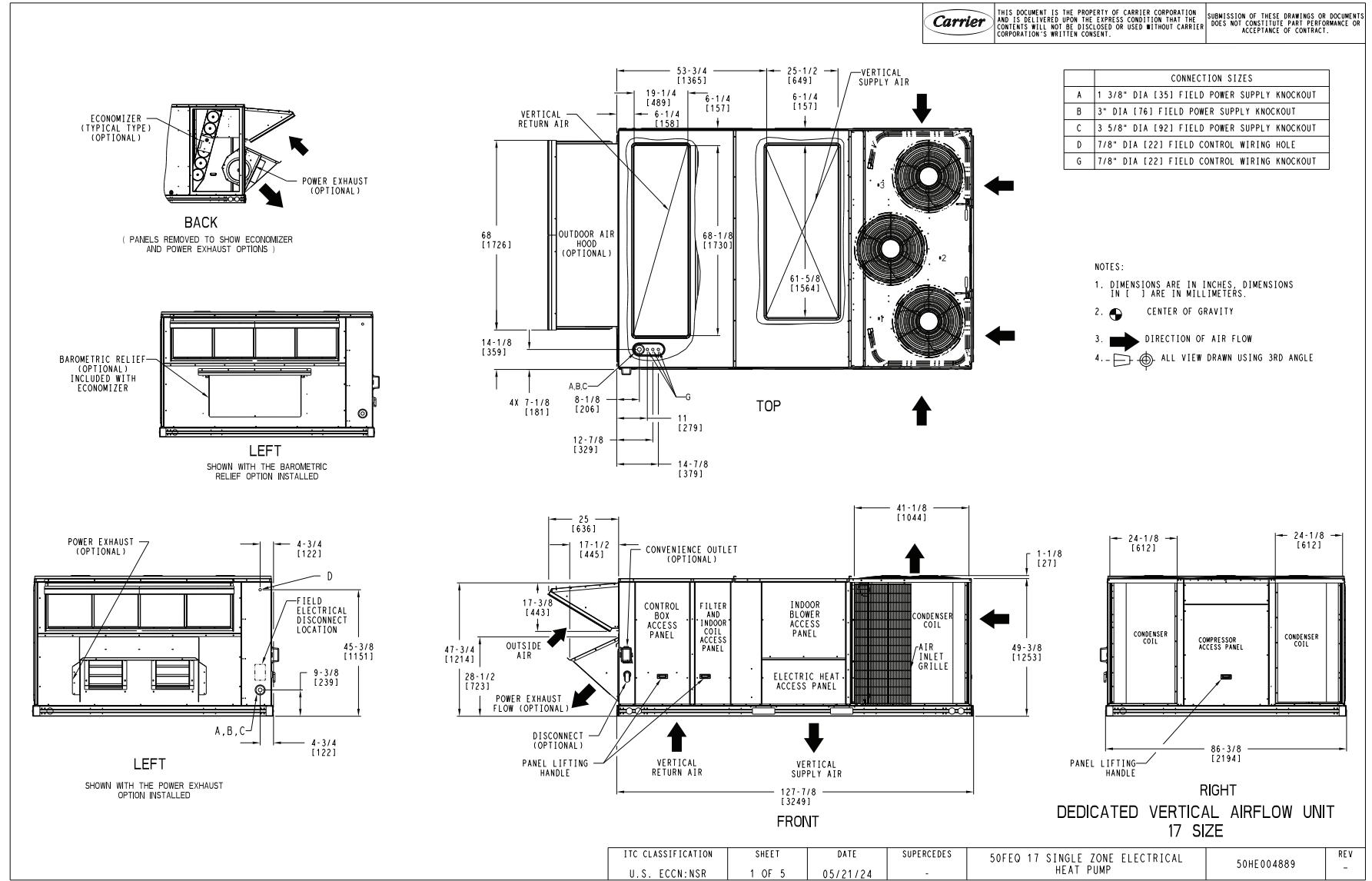
OPTION / ACCESSORY NAME	50FEQ UNIT WEIGHT					
	17		24		28	
	lb	kg	lb	kg	lb	kg
Power Exhaust	198	90	198	90	198	90
EconomizerONE and EconoMi\$er® 2	293	133	304	138	304	138
Two-Position Damper	50	23	50	23	50	23
Manual Damper	35	16	35	16	35	16
Electric Heater	85	39	85	39	85	39
Hail Guard (louvered)	90	41	90	41	100	46
Cu/Cu Condenser and Evaporator Coils	305	139	448	204	448	204
Roof Curb (14 in. curb)	240	109	255	116	255	116
Roof Curb (24 in. curb)	340	154	355	161	355	161
CO₂ Sensor	5	3	5	3	5	3
Optional Indoor Motor^b	30	14	30	14	0	0
Low Ambient Controller	9	4	9	4	9	4
Winter Start Kit	5	2	5	2	5	2
Return Air Smoke Detector	7	3	7	3	7	3
Supply Air Smoke Detector	7	3	7	3	7	3
Fan Filter Switch	2	1	2	1	2	1
Non-Fused Disconnect	15	7	15	7	15	7
Powered Convenience Outlet	36	16	36	16	36	16
Unpowered Convenience Outlet	4	2	4	2	4	2
Enthalpy Sensor	2	1	2	1	2	1
Differential Enthalpy Sensor	3	2	3	2	3	2
4 in. MERV 13 Filters	22	10	22	10	22	10

NOTE(S):

- a. Where multiple variations are available, the heaviest combination is listed.
- b. Add the Optional Indoor Motor weight to the weight of the base unit.

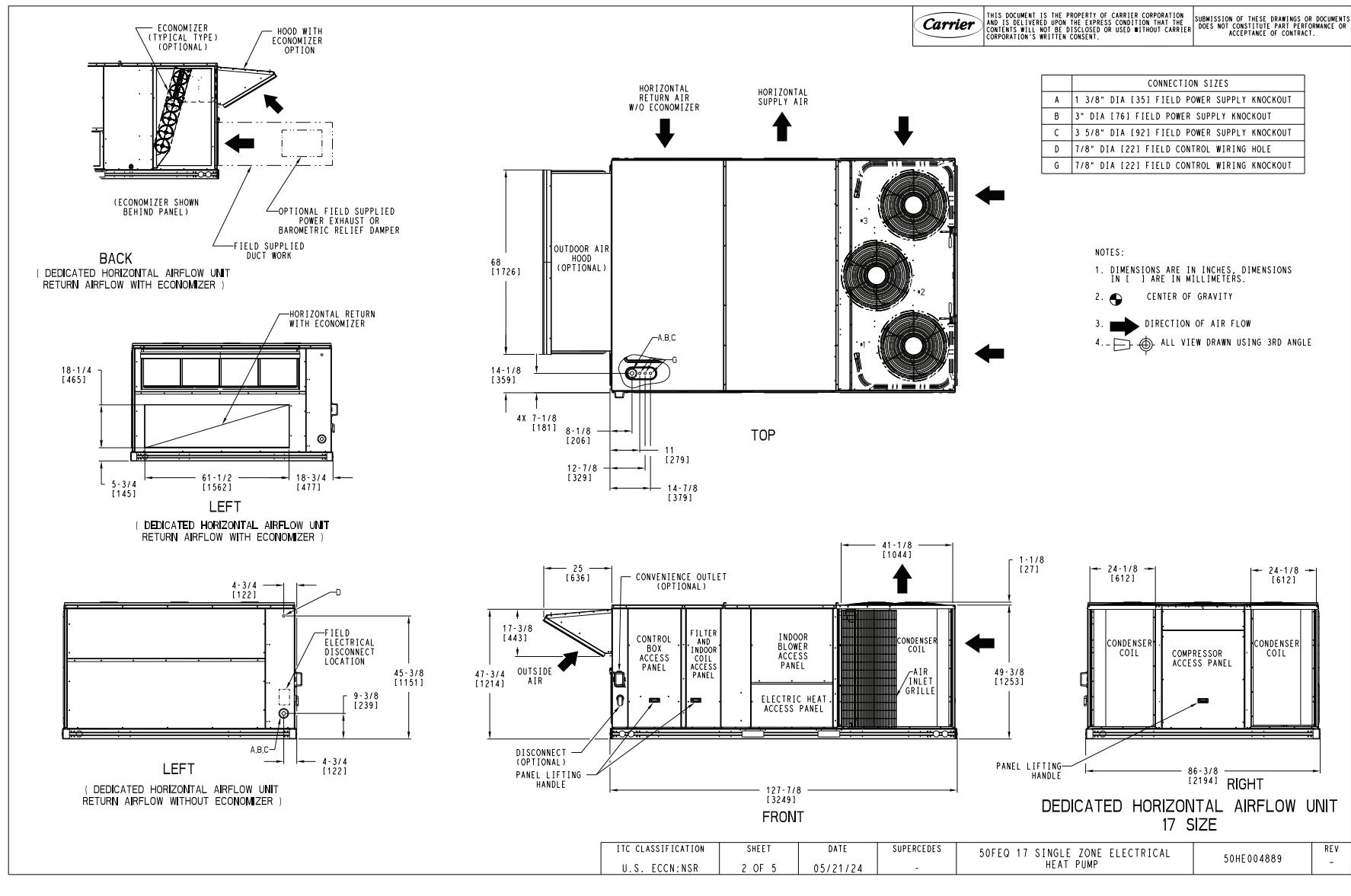
Base unit dimensions

50FEQ*17 Base Unit Dimensions



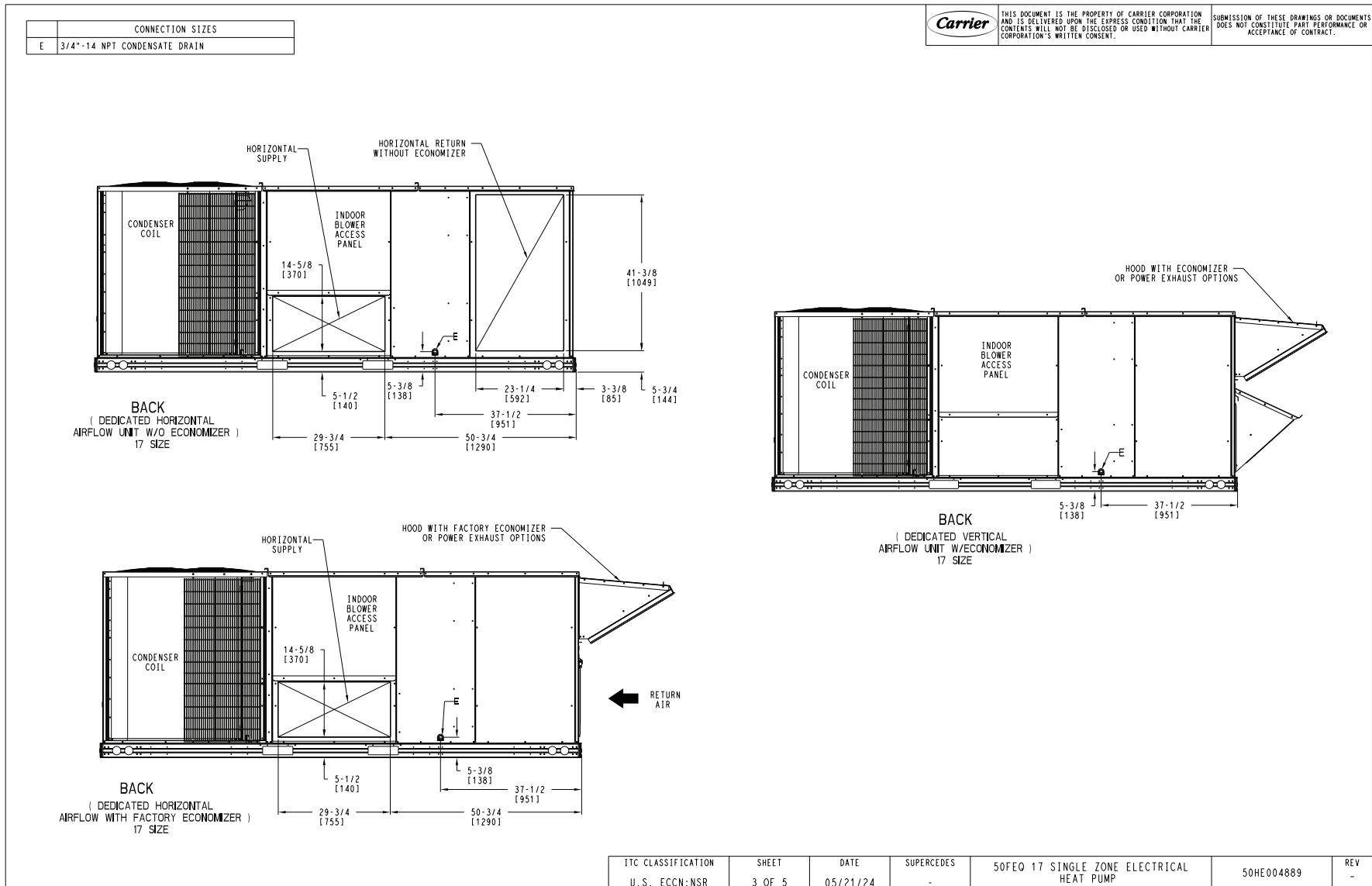
Base unit dimensions (cont)

50FEQ*17 Base Unit Dimensions (cont)



Base unit dimensions (cont)

50FEQ*17 Base Unit Dimensions (cont)



Base unit dimensions (cont)

50FEQ*17 Base Unit Dimensions (cont)

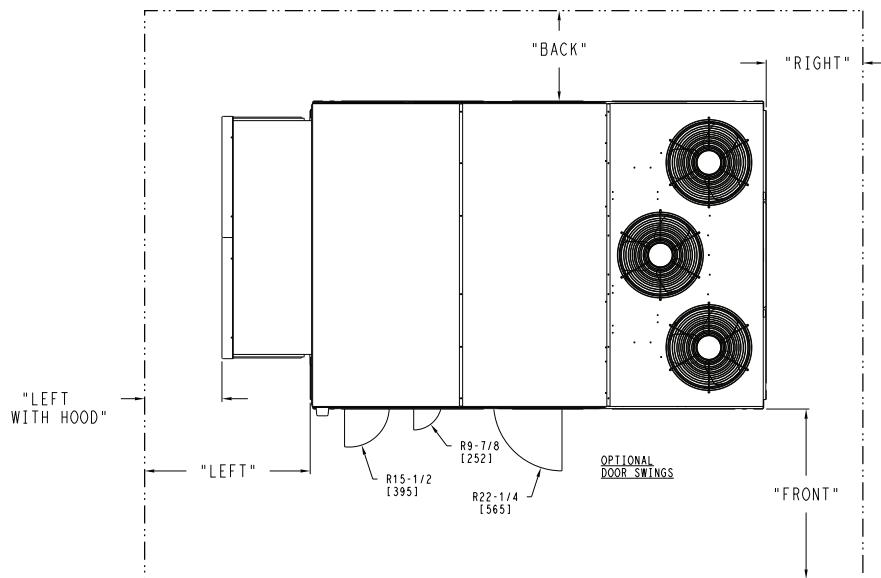
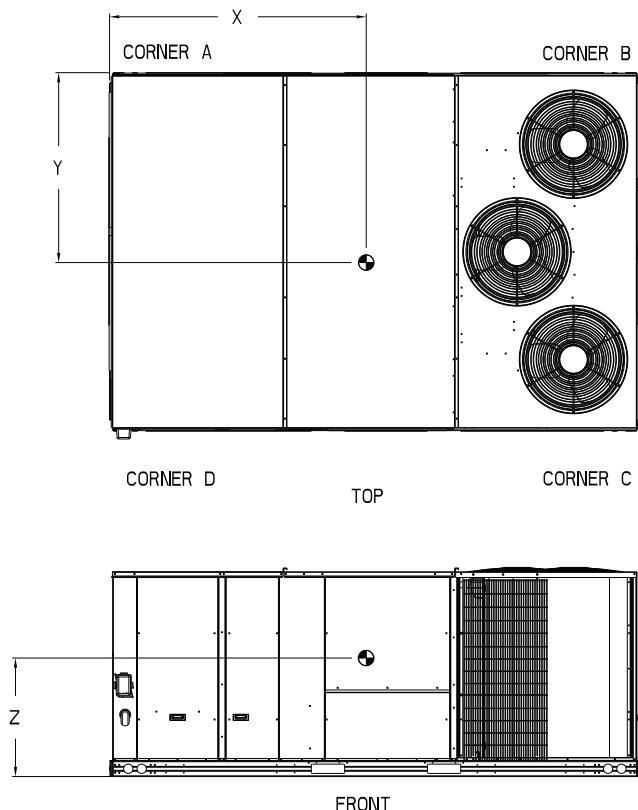
UNIT	STD UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
	LBS.	KG.	X	Y	Z								
50FEQ 17	1627	738	357	162	460	209	456	207	354	161	72 [1829]	43 [1092]	16 1/2 [419]



THIS DOCUMENT IS THE PROPERTY OF CARRIER CORPORATION
AND IS DELIVERED UPON THE EXPRESS CONDITION THAT THE
CONTENTS WILL NOT BE DISCLOSED OR USED WITHOUT CARRIER
CORPORATION'S WRITTEN CONSENT.

SUBMISSION OF THESE DRAWINGS OR DOCUMENTS
DOES NOT CONSTITUTE PART PERFORMANCE OR
ACCEPTANCE OF CONTRACT.

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



NOTES:

- CLEARANCE ABOVE THE UNIT TO BE 72"
- FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

CLEARANCE			
SERVICE WITH:	SERVICE WITH:	OPERATING	
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	42 [1067mm]	36 [914mm]	18 [457mm]
LEFT WITH HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

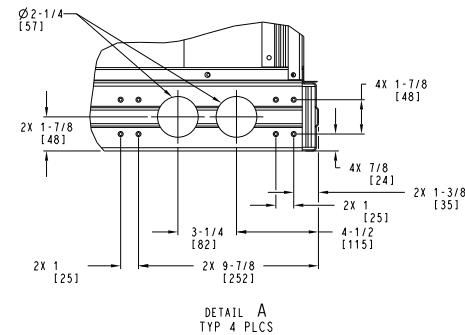
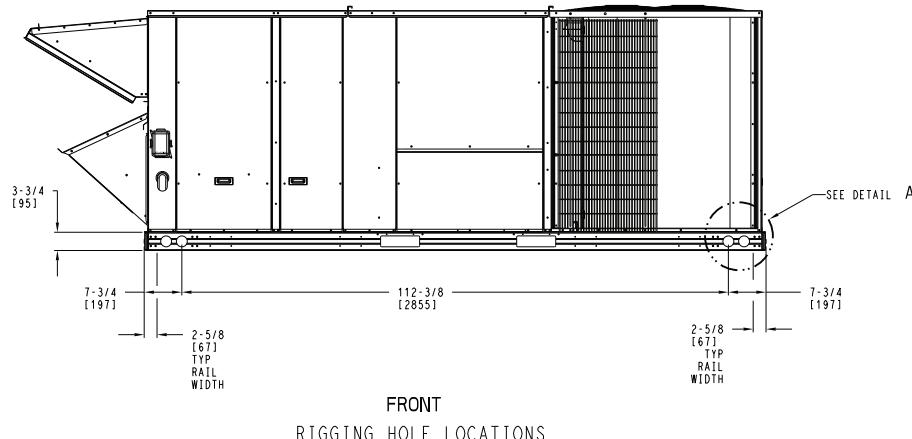
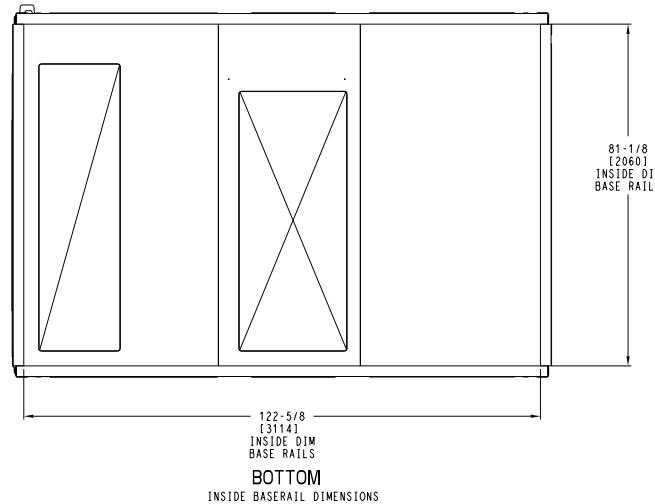
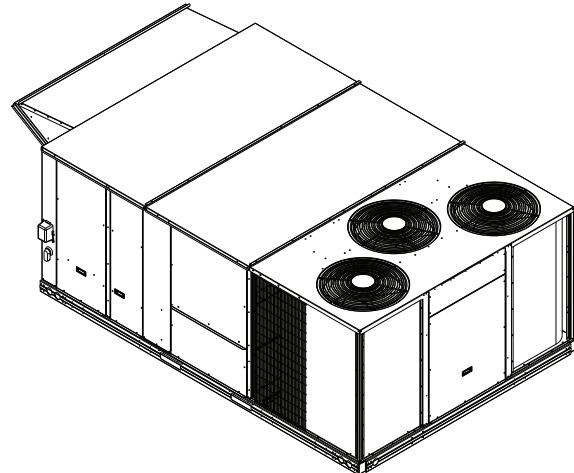
ITC CLASSIFICATION U.S. ECCN: NSR	SHEET 4 OF 5	DATE 05/21/24	SUPERCEDES -	50FEQ 17 SINGLE ZONE ELECTRICAL HEAT PUMP	REV -
--------------------------------------	-----------------	------------------	-----------------	--	----------



Base unit dimensions (cont)

50FEQ*17 Base Unit Dimensions (cont)

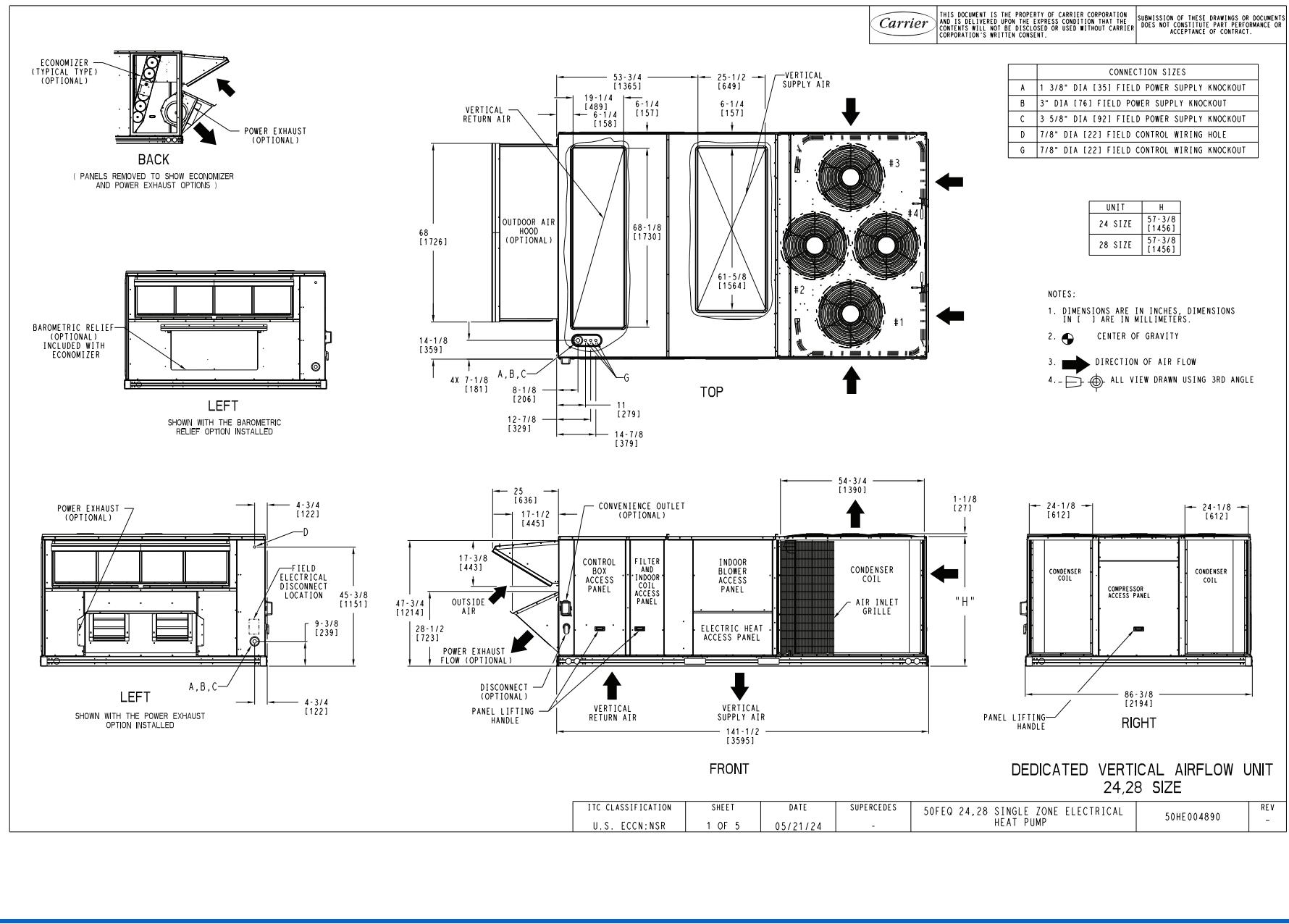
 THIS DOCUMENT IS THE PROPERTY OF CARRIER CORPORATION
AND IS DELIVERED UPON THE EXPRESS CONDITION THAT THE
CONTENTS WILL NOT BE DISCLOSED OR USED WITHOUT CARRIER
CORPORATION'S WRITTEN CONSENT.
SUBMISSION OF THESE DRAWINGS OR DOCUMENTS
DOES NOT CONSTITUTE PART PERFORMANCE OR
ACCEPTANCE OF CONTRACT.



ITC CLASSIFICATION U.S. ECCN: NSR	SHEET 5 OF 5	DATE 05/21/24	SUPERCEDES -	50FEQ 17 SINGLE ZONE ELECTRICAL HEAT PUMP	50HE004889	REV -
--------------------------------------	-----------------	------------------	-----------------	--	------------	----------



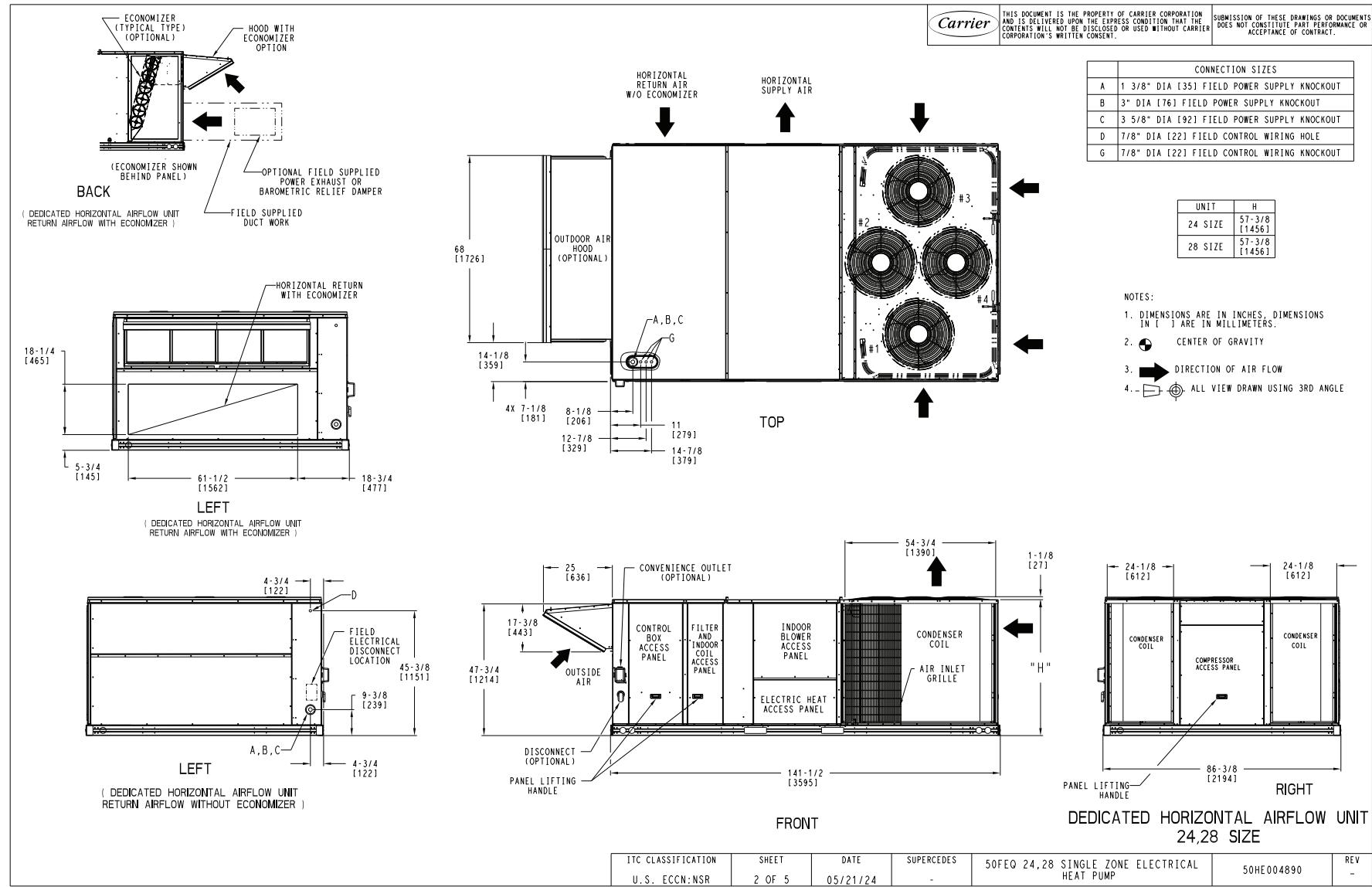
Base unit dimensions (cont)



Base unit dimensions (cont)

50FEQ*24-28 Base Unit Dimensions (cont)

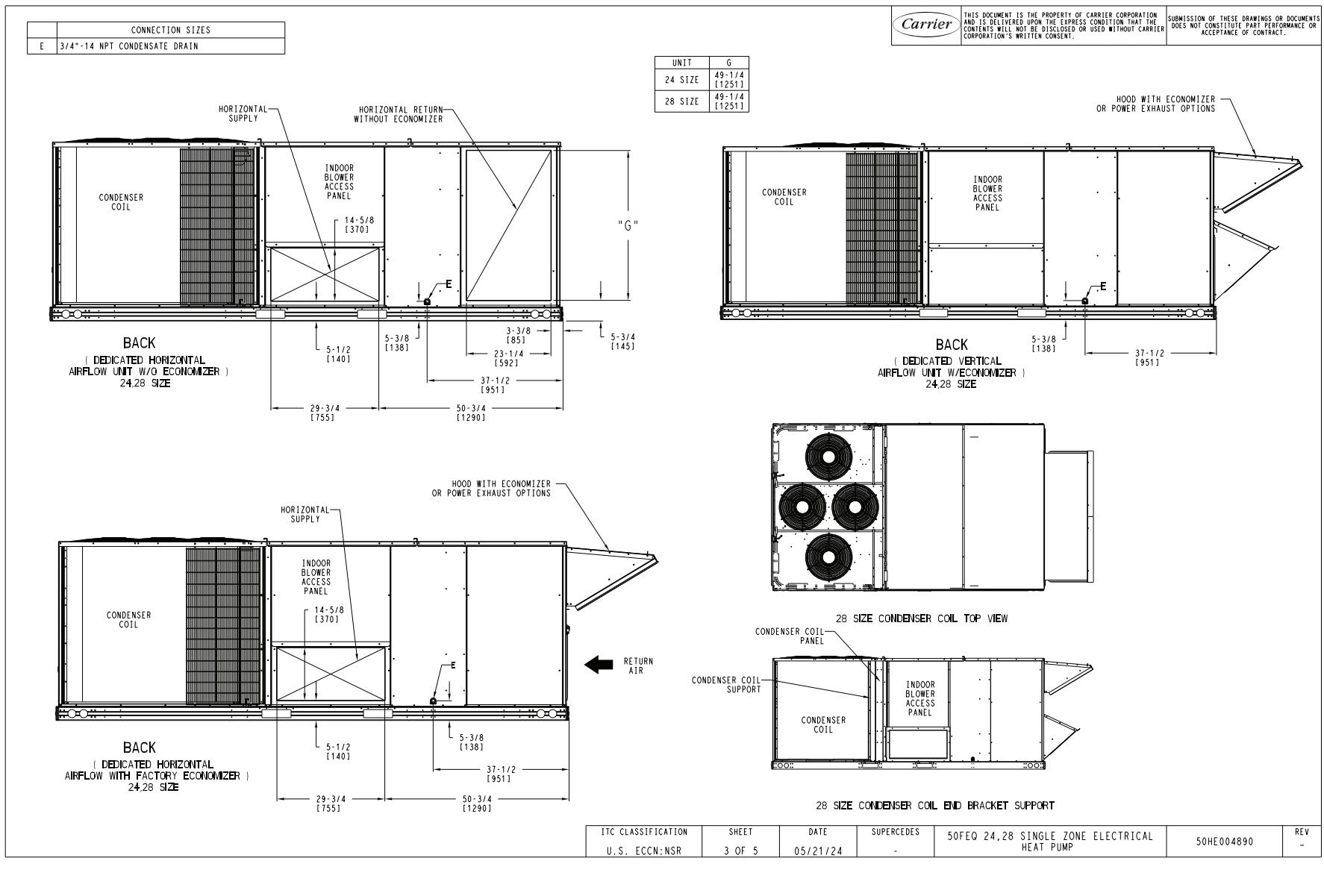
20



Base unit dimensions (cont)



50FEQ*24-28 Base Unit Dimensions (cont)



Base unit dimensions (cont)

50FEQ*24-28 Base Unit Dimensions (cont)

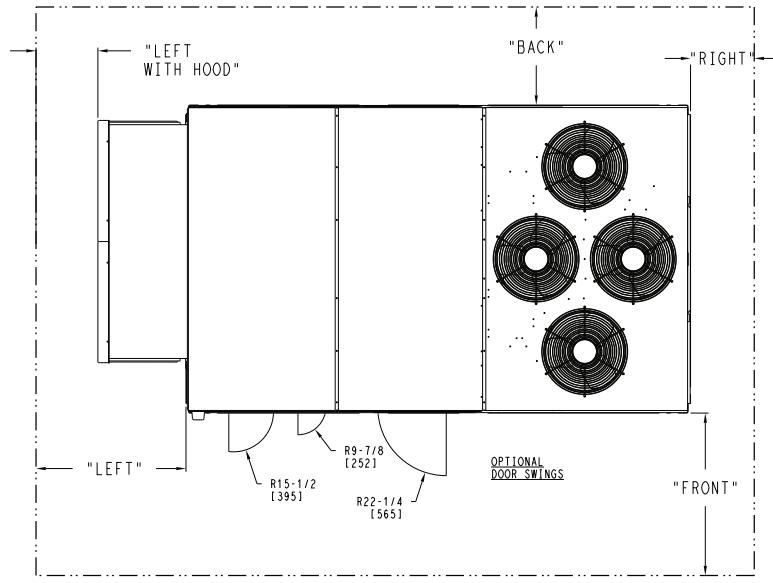
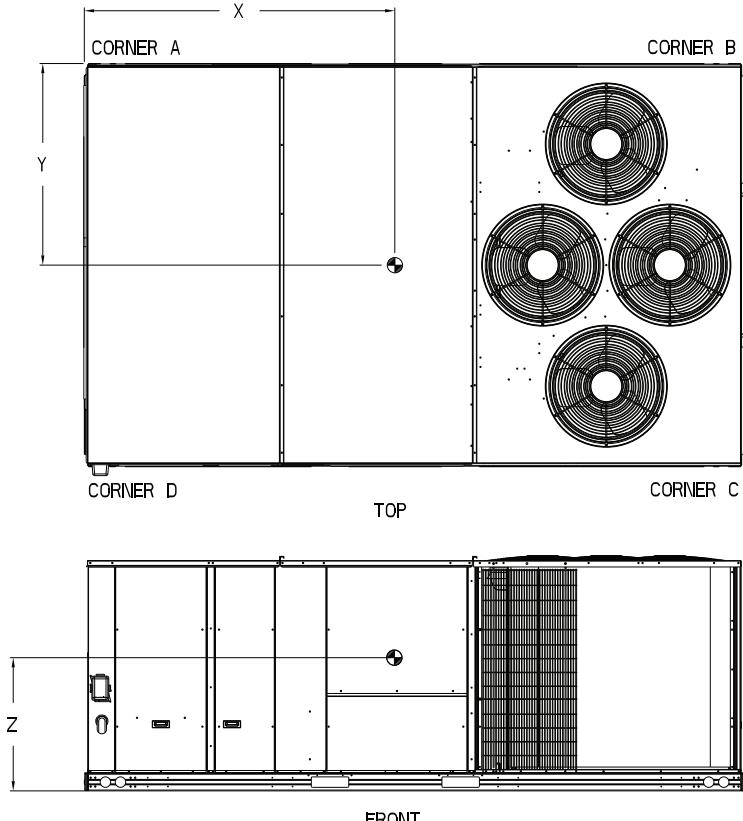
UNIT	STD. UNIT WEIGHT *	CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.			
		LBS. LBS.	KG. KG.	LBS. LBS.	KG. KG.	LBS. LBS.	KG. KG.	X	Y	Z			
50FEQ 24	2057	933	466	211	531	241	565	256	495	225	75 3/8 [1915]	44 1/2 [1130]	19 [483]
50FEQ 28	2125	964	465	211	556	252	601	273	503	228	77 7 [1956]	44 7/8 [1140]	19 [483]



THIS DOCUMENT IS THE PROPERTY OF CARRIER CORPORATION
AND IS DELIVERED UPON THE EXPRESS CONDITION THAT THE
CONTENTS WILL NOT BE DISCLOSED OR USED WITHOUT CARRIER
CORPORATION'S WRITTEN CONSENT.

SUBMISSION OF THESE DRAWINGS OR DOCUMENTS
DOES NOT CONSTITUTE PART PERFORMANCE OR
ACCEPTANCE OF CONTRACT.

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



NOTES:

- CLEARANCE ABOVE THE UNIT TO BE 72"
- FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

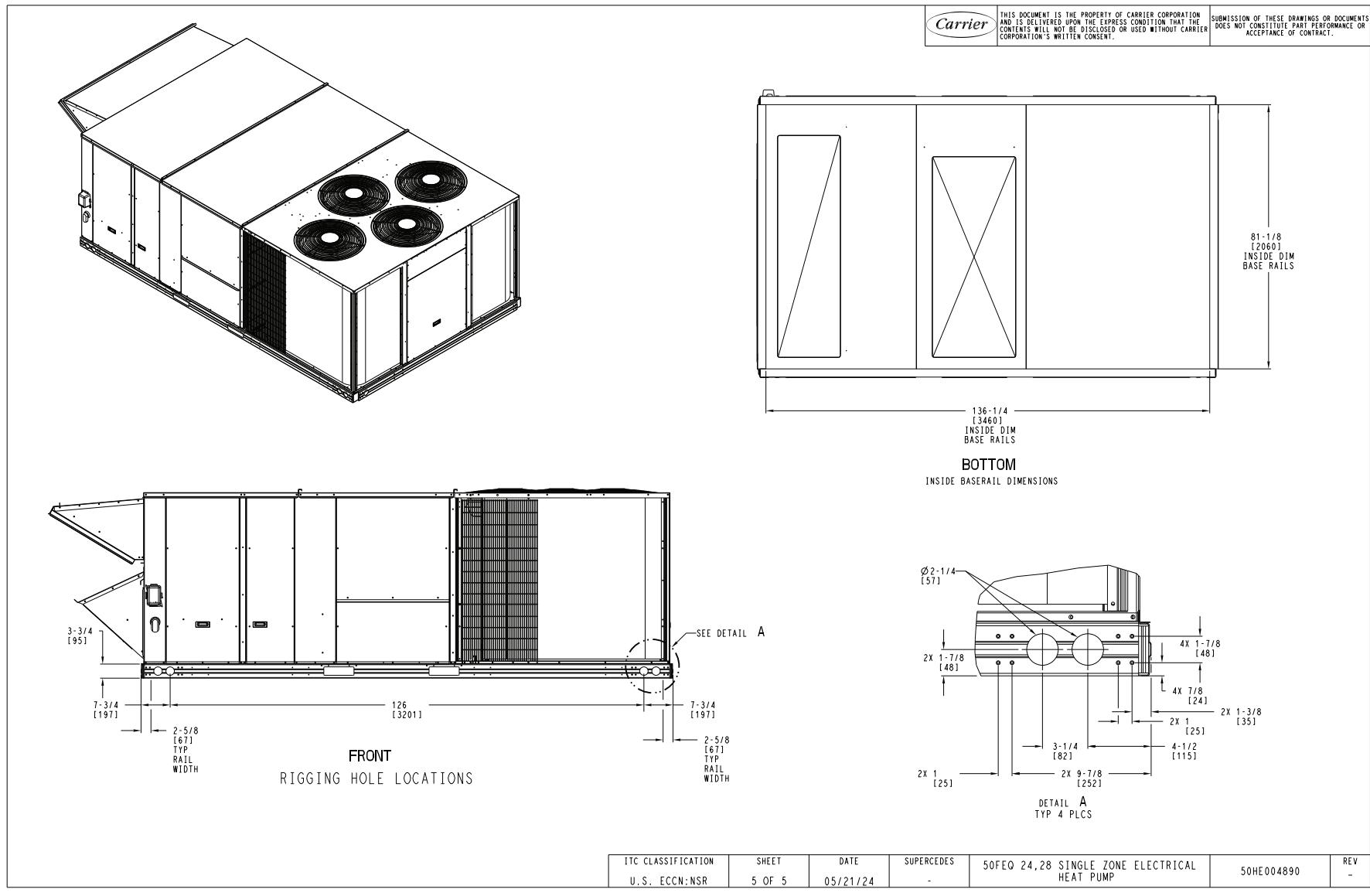
CLEARANCE			
SURFACE	SERVICE WITH: CONDUCTIVE BARRIER	SERVICE WITH: NONCONDUCTIVE BARRIER	OPERATING CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	42 [1067mm]	36 [914mm]	18 [457mm]
LEFT WITH HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

ITC CLASSIFICATION U.S. ECCN: NSR	SHEET 4 OF 5	DATE 05/21/24	SUPERCEDES -	50FEQ 24,28 SINGLE ZONE ELECTRICAL HEAT PUMP	REV -
--------------------------------------	-----------------	------------------	-----------------	---	----------



Base unit dimensions (cont)

50FEQ*24-28 Base Unit Dimensions (cont)

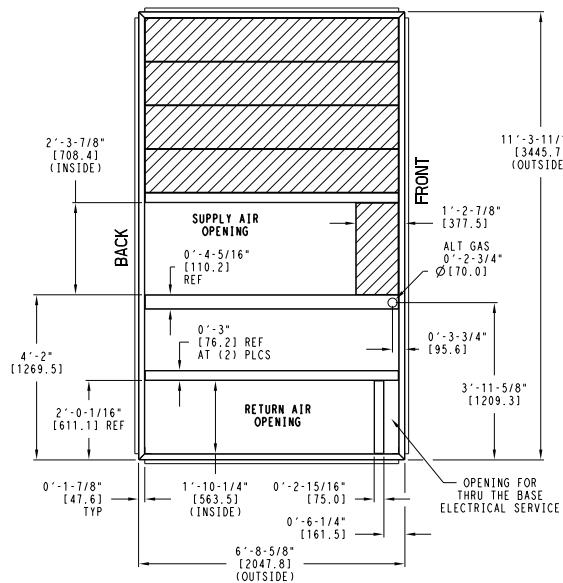


Accessory dimensions



Roof Curb Dimensions — 50FEQ*17

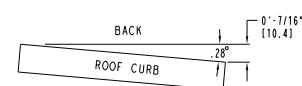
"A"	ROOF CURB ACCESSORY
1'-2" [356.0]	CRRCURB047A00
2'-0" [610.0]	CRRCURB048A00



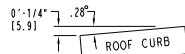
NOTES:

- 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

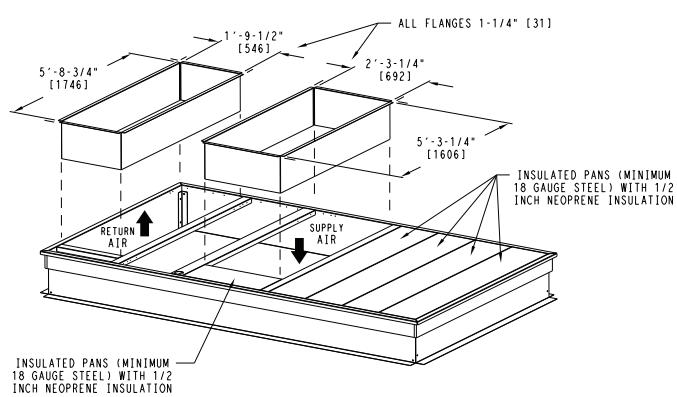
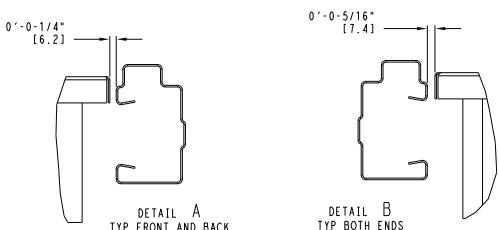
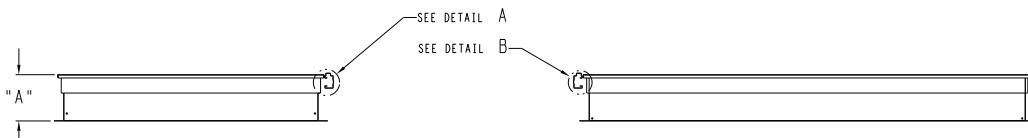
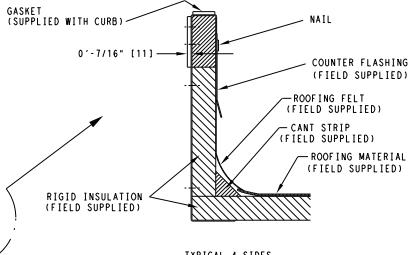
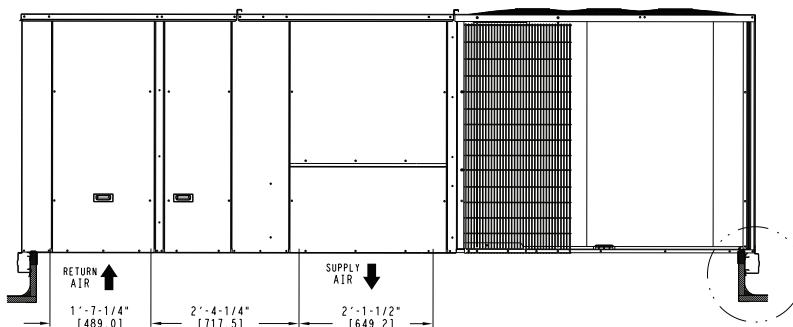
► DIRECTION OF AIR FLOW



RETURN END



MAX CURB LEVELING TOLERANCES

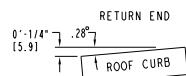
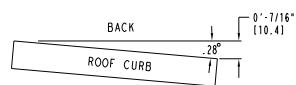
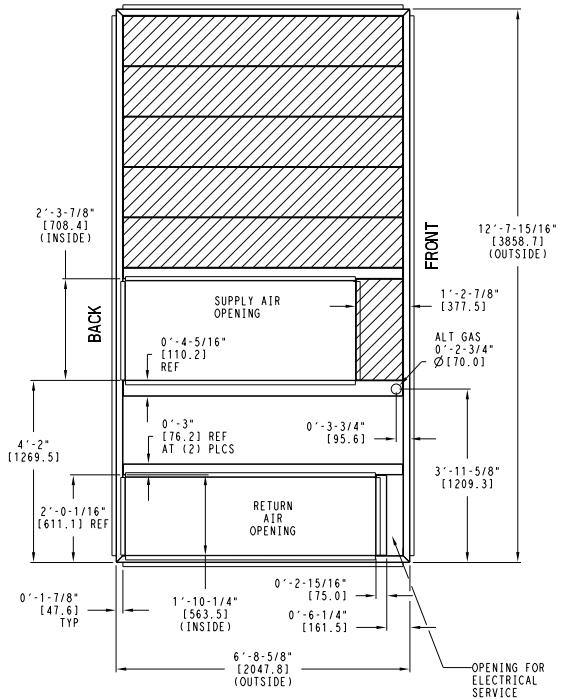


Accessory dimensions (cont)

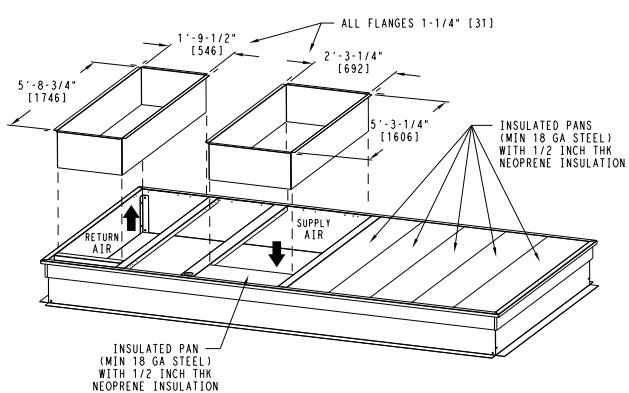
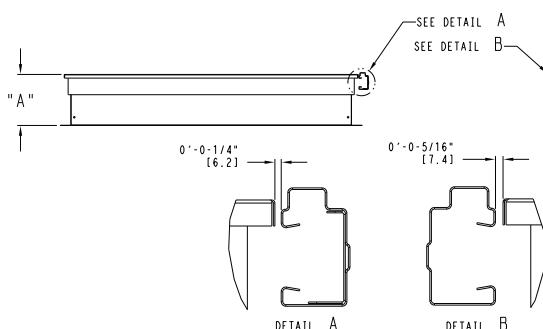
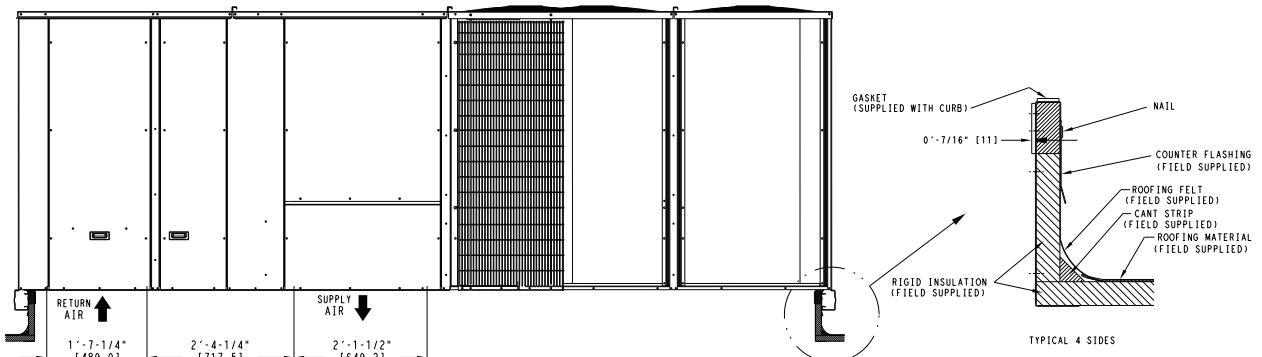


Roof Curb Dimensions — 50FEQ*24-28

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



MAX CURB LEVELING TOLERANCES



Performance data



50FEQM17 Two Stage Cooling Capacities

50FEQM17			AMBIENT TEMPERATURE (°F)															
			85			95			105			115			125			
			EAT (db)			EAT (db)			EAT (db)			EAT (db)			EAT (db)			
4500 cfm	EAT (wb)	58	TC	148.1	148.1	168.5	139.8	139.8	159.6	131.0	131.0	150.1	121.7	121.7	140.0	112.0	112.0	129.5
		SHC	127.6	148.1	168.5	120.0	139.8	159.6	111.9	131.0	150.1	103.4	121.7	140.0	94.5	112.0	129.5	
		62	TC	158.8	158.8	158.8	148.8	148.8	151.3	138.2	138.2	144.3	127.1	127.1	137.2	—	—	—
		SHC	114.0	135.9	157.8	107.5	129.4	151.3	100.7	122.5	144.3	93.7	115.4	137.2	—	—	—	
		67	TC	176.6	176.6	176.6	166.0	166.0	166.0	154.8	154.8	154.8	143.0	143.0	143.0	—	—	—
		SHC	93.3	115.3	137.3	86.8	108.8	130.8	80.1	102.1	124.1	73.2	95.2	117.1	—	—	—	
		72	TC	196.0	196.0	196.0	184.7	184.7	184.7	172.8	172.8	172.8	160.3	160.3	160.3	—	—	—
		SHC	72.2	94.4	116.7	65.7	88.0	110.2	59.0	81.2	103.5	52.2	74.4	96.5	—	—	—	
		76	TC	—	212.5	212.5	—	200.7	200.7	—	188.2	188.2	—	175.1	175.1	—	—	—
		SHC	—	77.6	101.6	—	71.1	94.8	—	64.4	87.9	—	57.6	80.8	—	—	—	—
5250 cfm	EAT (wb)	58	TC	157.3	157.3	178.8	148.5	148.5	169.3	139.3	139.3	159.3	129.6	129.6	148.7	—	—	—
		SHC	135.8	157.3	178.8	127.8	148.5	169.3	119.3	139.3	159.3	110.4	129.6	148.7	—	—	—	
		62	TC	164.6	164.6	173.6	154.2	154.2	166.7	143.4	143.4	159.4	132.0	132.0	151.5	—	—	—
		SHC	123.7	148.6	173.6	116.9	141.8	166.7	109.9	134.6	159.4	102.5	127.0	151.5	—	—	—	
		67	TC	182.6	182.6	182.6	171.5	171.5	171.5	159.8	159.8	159.8	147.5	147.5	147.5	—	—	—
		SHC	99.9	125.2	150.4	93.3	118.5	143.7	86.5	111.7	136.9	79.5	104.7	129.9	—	—	—	
		72	TC	202.3	202.3	202.3	190.5	190.5	190.5	178.1	178.1	178.1	165.1	165.1	165.1	—	—	—
		SHC	75.6	101.0	126.5	69.0	94.4	119.9	62.2	87.6	113.0	55.2	80.6	106.0	—	—	—	
		76	TC	—	219.1	219.1	—	206.7	206.7	—	193.7	193.7	—	180.0	180.0	—	—	—
		SHC	—	81.6	108.3	—	75.0	101.6	—	68.2	94.6	—	61.2	87.5	—	—	—	—
6000 cfm	EAT (wb)	58	TC	165.1	165.1	187.5	156.0	156.0	177.6	146.3	146.3	167.1	136.1	136.1	156.0	—	—	—
		SHC	142.7	165.1	187.5	134.3	156.0	177.6	125.5	146.3	167.1	116.2	136.1	156.0	—	—	—	
		62	TC	169.3	169.3	187.8	158.8	158.8	180.3	148.4	148.4	169.8	138.2	138.2	155.3	—	—	—
		SHC	132.3	160.1	187.8	125.3	152.8	180.3	116.7	143.3	169.8	106.0	130.7	155.3	—	—	—	
		67	TC	187.2	187.2	187.2	175.7	175.7	175.7	163.7	163.7	163.7	151.0	151.0	151.0	—	—	—
		SHC	106.1	134.4	162.7	99.4	127.6	155.9	92.5	120.7	149.0	85.4	113.6	141.9	—	—	—	
		72	TC	207.1	207.1	207.1	194.9	194.9	194.9	182.1	182.1	182.1	168.8	168.8	168.8	—	—	—
		SHC	78.5	107.1	135.6	71.9	100.4	128.9	65.0	93.5	121.9	58.0	86.4	114.8	—	—	—	
		76	TC	—	224.1	224.1	—	211.3	211.3	—	197.9	197.9	—	183.9	183.9	—	—	—
		SHC	—	85.1	114.7	—	78.4	107.9	—	71.6	100.9	—	64.5	93.8	—	—	—	—
6750 cfm	EAT (wb)	58	TC	171.7	171.7	194.8	162.3	162.3	184.6	152.2	152.2	173.7	141.7	141.7	162.2	—	—	—
		SHC	148.6	171.7	194.8	139.9	162.3	184.6	130.8	152.2	173.7	121.1	141.7	162.2	—	—	—	
		62	TC	175.3	175.3	192.2	164.9	164.9	182.9	155.0	155.0	169.8	144.3	144.3	158.4	—	—	—
		SHC	136.2	164.2	192.2	128.2	155.5	182.9	118.3	144.1	169.8	109.1	133.7	158.4	—	—	—	
		67	TC	190.9	190.9	190.9	179.1	179.1	179.1	166.7	166.7	166.7	153.8	153.8	153.8	—	—	—
		SHC	111.8	143.1	174.4	105.0	136.3	167.6	98.1	129.3	160.5	90.9	122.1	153.3	—	—	—	
		72	TC	211.0	211.0	211.0	198.5	198.5	198.5	185.4	185.4	185.4	171.7	171.7	171.7	—	—	—
		SHC	81.2	112.8	144.3	74.5	106.0	137.5	67.6	99.0	130.5	60.5	91.9	123.3	—	—	—	
		76	TC	—	228.1	228.1	—	215.0	215.0	—	201.3	201.3	—	186.9	186.9	—	—	—
		SHC	—	88.3	120.9	—	81.6	114.0	—	74.7	107.0	—	67.6	99.8	—	—	—	—
7500 cfm	EAT (wb)	58	TC	177.4	177.4	201.2	167.7	167.7	190.6	157.3	157.3	179.4	146.4	146.4	167.5	—	—	—
		SHC	153.7	177.4	201.2	144.7	167.7	190.6	135.3	157.3	179.4	125.3	146.4	167.5	—	—	—	
		62	TC	180.6	180.6	195.6	170.6	170.6	185.2	157.5	157.5	186.9	146.5	146.5	174.7	—	—	—
		SHC	139.3	167.5	195.6	130.8	158.0	185.2	128.0	157.5	186.9	118.4	146.5	174.7	—	—	—	
		67	TC	193.9	193.9	193.9	181.9	181.9	181.9	169.2	169.2	171.6	156.0	156.0	164.1	—	—	—
		SHC	117.2	151.4	185.7	110.4	144.6	178.8	103.3	137.4	171.6	96.0	130.1	164.1	—	—	—	
		72	TC	214.2	214.2	214.2	201.5	201.5	201.5	188.0	188.0	188.0	174.1	174.1	174.1	—	—	—
		SHC	83.7	118.2	152.6	76.9	111.3	145.7	69.9	104.3	138.7	62.8	97.1	131.4	—	—	—	
		76	TC	—	231.4	231.4	—	218.0	218.0	—	204.1	204.1	—	189.4	189.4	—	—	—
		SHC	—	91.4	126.8	—	84.6	119.9	—	77.6	112.8	—	70.4	105.5	—	—	—	—

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EAT (db)	Entering Air Temperature (dry bulb)
EAT (wb)	Entering Air Temperature (wet bulb)
SHC	Sensible Heat Capacity (1000 Btuh) Gross
TC	Total Capacity (1000 Btuh) Gross

NOTE: See minimum-maximum airflow ratings on page 7.

Performance data (cont)



50FEQM17 Single Stage Cooling Capacities

50FEQM17			AMBIENT TEMPERATURE (°F)															
			85			95			105			115			125			
			EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)	
			75	80	85	75	80	85	75	80	85	75	80	85	75	80	85	
2700 cfm	EAT (wb)	58	TC	92.5	92.5	106.0	86.1	86.1	99.1	79.5	79.5	92.2	72.7	72.7	84.8	65.6	65.6	77.1
		SHC	79.0	92.5	106.0	73.0	86.1	99.1	66.9	79.5	92.2	60.6	72.7	84.8	54.0	65.6	77.1	
		62	TC	101.3	101.3	101.3	93.7	93.7	93.7	86.0	86.0	86.3	77.8	77.8	85.6	69.0	69.0	80.1
		SHC	69.5	83.2	97.0	64.2	77.9	91.7	58.8	72.6	86.3	57.0	71.3	85.6	51.5	65.8	80.1	
		67	TC	114.0	114.0	114.0	106.0	106.0	106.0	97.8	97.8	97.8	89.2	89.2	89.2	80.1	80.1	80.1
		SHC	56.9	70.7	84.5	51.6	65.4	79.2	46.1	59.9	73.7	40.6	54.4	68.2	34.9	48.7	62.5	
		72	TC	127.7	127.7	127.7	119.3	119.3	119.3	110.6	110.6	110.6	101.6	101.6	101.6	92.1	92.1	92.1
		SHC	44.1	58.1	72.1	38.8	52.7	66.7	33.3	47.3	61.2	27.8	41.7	55.6	22.1	36.0	49.9	
3150 cfm	EAT (wb)	76	TC	—	139.7	139.7	—	130.7	130.7	—	121.6	121.6	—	112.3	112.3	—	102.5	102.5
		SHC	—	47.9	62.8	—	42.5	57.3	—	37.1	51.8	—	31.6	46.1	—	25.9	40.3	
		58	TC	99.3	99.3	113.5	92.6	92.6	106.4	85.8	85.8	99.1	78.6	78.6	91.3	71.0	71.0	83.2
		SHC	85.1	99.3	113.5	78.9	92.6	106.4	72.5	85.8	99.1	65.8	78.6	91.3	58.8	71.0	83.2	
		62	TC	105.7	105.7	107.9	97.8	97.8	102.5	89.8	89.8	96.8	81.3	81.3	91.0	72.6	72.6	84.9
		SHC	76.3	92.1	107.9	70.9	86.7	102.5	65.3	81.1	96.8	59.6	75.3	91.0	53.8	69.4	84.9	
		67	TC	118.6	118.6	118.6	110.3	110.3	110.3	101.7	101.7	101.7	92.7	92.7	92.7	83.3	83.3	83.3
		SHC	61.6	77.5	93.4	56.1	72.0	87.9	50.6	66.5	82.4	45.0	60.9	76.7	39.2	55.1	70.9	
3600 cfm	EAT (wb)	72	TC	132.5	132.5	132.5	123.7	123.7	123.7	114.7	114.7	114.7	105.3	105.3	105.3	95.5	95.5	95.5
		SHC	46.6	62.7	78.7	41.2	57.2	73.2	35.6	51.7	67.7	30.0	46.0	62.0	24.2	40.2	56.2	
		76	TC	—	144.6	144.6	—	135.4	135.4	—	126.0	126.0	—	116.2	116.2	—	105.9	105.9
		SHC	—	50.8	67.6	—	45.4	62.1	—	39.8	56.4	—	34.1	50.7	—	28.3	44.8	
		58	TC	105.2	105.2	120.0	98.2	98.2	112.6	91.0	91.0	104.9	83.5	83.5	96.7	75.5	75.5	88.2
		SHC	90.3	105.2	120.0	83.8	98.2	112.6	77.2	91.0	104.9	70.2	83.5	96.7	62.9	75.5	88.2	
		62	TC	109.2	109.2	118.1	101.2	101.2	112.4	92.9	92.9	106.4	84.4	84.4	100.1	75.8	75.8	92.3
		SHC	82.5	100.3	118.1	77.0	94.7	112.4	71.3	88.8	106.4	65.3	82.7	100.1	58.6	75.5	92.3	
4050 cfm	EAT (wb)	67	TC	122.2	122.2	122.2	113.6	113.6	113.6	104.7	104.7	104.7	95.4	95.4	95.4	85.7	85.7	85.7
		SHC	65.9	83.9	101.8	60.4	78.3	96.3	54.8	72.7	90.6	49.1	67.0	84.9	43.2	61.1	79.0	
		72	TC	136.5	136.5	136.5	127.2	127.2	127.2	117.9	117.9	117.9	108.2	108.2	108.2	98.1	98.1	98.1
		SHC	48.9	67.0	85.1	43.3	61.4	79.5	37.7	55.8	73.8	32.0	50.0	68.1	26.2	44.2	62.2	
		76	TC	—	148.6	148.6	—	139.1	139.1	—	129.3	129.3	—	119.3	119.3	—	108.7	108.7
		SHC	—	53.4	72.2	—	47.9	66.5	—	42.2	60.8	—	36.5	55.0	—	30.6	49.0	
		58	TC	110.2	110.2	125.6	102.9	102.9	117.8	95.5	95.5	109.8	87.6	87.6	101.4	79.4	79.4	92.5
		SHC	94.8	110.2	125.6	88.1	102.9	117.8	81.2	95.5	109.8	73.9	87.6	101.4	66.3	79.4	92.5	
4500 cfm	EAT (wb)	62	TC	112.3	112.3	127.3	104.2	104.2	121.1	95.8	95.8	115.0	87.8	87.8	106.1	79.6	79.6	97.1
		SHC	88.3	107.8	127.3	82.4	101.8	121.1	76.6	95.8	115.0	69.4	87.8	106.1	62.1	79.6	97.1	
		67	TC	125.1	125.1	125.1	116.2	116.2	116.2	107.1	107.1	107.1	97.6	97.6	97.6	87.6	87.6	87.6
		SHC	70.0	89.9	109.9	64.4	84.3	104.2	58.7	78.6	98.6	53.0	72.9	92.8	47.0	66.9	86.8	
		72	TC	139.6	139.6	139.6	130.0	130.0	130.0	120.4	120.4	120.4	110.6	110.6	110.6	100.2	100.2	100.2
		SHC	50.9	71.0	91.1	45.2	65.3	85.4	39.6	59.6	79.7	33.8	53.9	73.9	27.9	47.9	67.9	
		76	TC	—	151.8	151.8	—	142.1	142.1	—	132.0	132.0	—	121.7	121.7	—	110.8	110.8
		SHC	—	55.8	76.5	—	50.2	70.7	—	44.5	65.0	—	38.7	59.1	—	32.7	53.1	
4500 cfm	EAT (wb)	58	TC	114.6	114.6	130.4	107.1	107.1	122.4	99.4	99.4	114.1	91.3	91.3	105.4	82.8	82.8	96.3
		SHC	98.7	114.6	130.4	91.7	107.1	122.4	84.6	99.4	114.1	77.1	91.3	105.4	69.4	82.8	96.3	
		62	TC	115.0	115.0	136.2	107.2	107.2	127.7	99.5	99.5	119.2	91.4	91.4	110.3	82.9	82.9	100.9
		SHC	93.7	115.0	136.2	86.7	107.2	127.7	79.8	99.5	119.2	72.5	91.4	110.3	64.9	82.9	100.9	
		67	TC	127.4	127.4	127.4	118.3	118.3	118.3	109.0	109.0	109.0	99.3	99.3	100.3	89.2	89.2	94.2
		SHC	73.8	95.7	117.6	68.2	90.1	112.0	62.4	84.3	106.2	56.6	78.5	100.3	50.7	72.4	94.2	
		72	TC	142.1	142.1	142.1	132.2	132.2	132.2	122.5	122.5	122.5	112.4	112.4	112.4	101.8	101.8	101.8
		SHC	52.8	74.8	96.9	47.0	69.1	91.1	41.3	63.3	85.3	35.5	57.5	79.5	29.6	51.5	73.5	
		76	TC	—	154.5	154.5	—	144.5	144.5	—	134.2	134.2	—	123.7	123.7	—	112.6	112.6
		SHC	—	58.0	80.6	—	52.3	74.8	—	46.6	69.0	—	40.7	63.1	—	34.7	57.0	

LEGEND

- Do Not Operate
- cfm Cubic Feet Per Minute (Supply Air)
- EAT (db) Entering Air Temperature (dry bulb)
- EAT (wb) Entering Air Temperature (wet bulb)
- SHC Sensible Heat Capacity (1000 Btuuh) Gross
- TC Total Capacity (1000 Btuuh) Gross

NOTE: See minimum-maximum airflow ratings on page 7.

Performance data (cont)



50FEQM24 Two Stage Cooling Capacities

50FEQM24			AMBIENT TEMPERATURE (°F)															
			85			95			105			115			125			
			EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)	
6000 cfm	EAT (wb)	58	TC	210.3	210.3	240.7	196.6	196.6	226.0	182.3	182.3	210.7	167.4	167.4	194.8	151.7	151.7	177.7
		SHC	180.0	210.3	240.7	167.2	196.6	226.0	153.9	182.3	210.7	140.0	167.4	194.8	125.6	151.7	177.7	
		62	TC	227.1	227.1	227.1	210.6	210.6	213.5	193.5	193.5	202.6	175.5	175.5	190.3	156.8	156.8	178.2
		SHC	160.7	193.0	225.4	148.8	181.1	213.5	137.9	170.3	202.6	125.6	158.0	190.3	113.5	145.9	178.2	
		67	TC	255.3	255.3	255.3	237.8	237.8	237.8	219.7	219.7	219.7	200.7	200.7	180.8	180.8	180.8	180.8
		SHC	131	163.4	195.7	119.9	152.2	184.6	108.2	140.6	172.9	96.1	128.5	160.8	85.2	117.5	149.9	
		72	TC	285.8	285.8	285.8	267.3	267.3	267.3	248.2	248.2	248.2	228.0	228.0	228.0	206.8	206.8	206.8
		SHC	102.0	134.3	166.7	90.6	123.0	155.3	79.4	111.7	144.0	68.0	100.3	132.7	56.6	88.9	121.3	
		76	TC	—	311.8	311.8	—	292.5	292.5	—	272.4	272.4	—	251.1	251.1	—	—	—
		SHC	—	112.3	143.6	—	99.4	130.8	—	87.2	118.5	—	75.3	107.0	—	—	—	
7000 cfm	EAT (wb)	58	TC	226.4	226.4	258.4	211.8	211.8	243.0	196.6	196.6	226.6	180.6	180.6	209.1	164.2	164.2	191.5
		SHC	194.5	226.4	258.4	180.6	211.8	243.0	166.6	196.6	226.6	152.1	180.6	209.1	136.9	164.2	191.5	
		62	TC	236.9	236.9	250.5	219.6	219.6	239.4	201.7	201.7	226.9	183.2	183.2	215.1	167.0	167.0	195.3
		SHC	175.8	213.2	250.5	164.7	202.0	239.4	152.2	189.6	226.9	140.4	177.7	215.1	125.2	160.3	195.3	
		67	TC	265.2	265.2	265.2	247.0	247.0	247.0	228.0	228.0	228.0	208.3	208.3	208.3	187.6	187.6	187.6
		SHC	143.0	180.3	217.7	130.6	168.0	205.3	120.0	157.3	194.7	106.4	143.7	181.1	95.8	133.2	170.5	
		72	TC	296.1	296.1	296.1	277.0	277.0	277.0	256.9	256.9	256.9	235.8	235.8	235.8	213.7	213.7	213.7
		SHC	107.8	145.1	182.5	95.6	133.0	170.3	83.4	120.7	158.1	73.5	110.8	148.2	61.0	98.3	135.7	
		76	TC	—	322.6	322.6	—	302.3	302.3	—	281.1	281.1	—	259.0	259.0	—	—	—
		SHC	—	116.1	152.7	—	105.8	142.4	—	92.8	129.3	—	80.3	116.9	—	—	—	
8000 cfm	EAT (wb)	58	TC	239.9	239.9	273.3	224.5	224.5	257.1	208.6	208.6	239.8	192.0	192.0	221.9	174.6	174.6	203.2
		SHC	206.5	239.9	273.3	192.0	224.5	257.1	177.4	208.6	239.8	162.1	192.0	221.9	146.0	174.6	203.2	
		62	TC	244.6	244.6	277.0	227.0	227.0	264.7	213.2	213.2	241.7	192.3	192.3	232.4	174.9	174.9	213.2
		SHC	192.5	234.8	277.0	180.2	222.4	264.7	163.4	202.6	241.7	152.3	192.3	232.4	136.6	174.9	213.2	
		67	TC	272.8	272.8	272.8	254.0	254.0	254.0	234.5	234.5	234.5	214.1	214.1	214.1	192.7	192.7	192.7
		SHC	151.0	193.7	236.4	140.2	182.9	225.6	128.5	171.2	213.8	115.7	158.4	201.1	103.8	146.5	189.2	
		72	TC	304.2	304.2	304.2	284.3	284.3	284.3	263.4	263.4	263.4	241.5	241.5	241.5	218.8	218.8	218.8
		SHC	112.5	155.2	197.8	99.5	142.1	184.8	89.0	131.7	174.4	75.7	118.3	161.0	64.6	107.2	149.9	
		76	TC	—	330.6	330.6	—	309.7	309.7	—	287.8	287.8	—	265.0	265.0	—	—	—
		SHC	—	122.3	164.1	—	111.5	153.3	—	97.9	139.7	—	84.8	126.6	—	—	—	
9000 cfm	EAT (wb)	58	TC	251.4	251.4	286.0	235.4	235.4	269.1	218.8	218.8	251.0	201.5	201.5	232.7	183.4	183.4	212.6
		SHC	216.7	251.4	286.0	201.8	235.4	269.1	186.6	218.8	251.0	170.3	201.5	232.7	154.2	183.4	212.6	
		62	TC	258.8	258.8	279.6	240.4	240.4	270.0	219.2	219.2	262.2	201.8	201.8	243.4	183.4	183.4	222.5
		SHC	196.5	238.1	279.6	186.8	228.4	270.0	176.1	219.2	262.2	160.3	201.8	243.4	144.3	183.4	222.5	
		67	TC	278.9	278.9	278.9	259.6	259.6	259.6	239.6	239.6	239.6	218.7	218.7	220.3	196.9	196.9	209.0
		SHC	161.7	209.2	256.7	149.8	197.3	244.8	137.0	184.5	232.0	125.3	172.8	220.3	113.9	161.5	209.0	
		72	TC	310.0	310.0	310.0	289.7	289.7	289.7	268.4	268.4	268.4	246.2	246.2	246.2	223.0	223.0	223.0
		SHC	116.8	164.3	211.8	103.1	150.7	198.2	92.1	139.6	187.1	80.5	128.0	175.5	66.2	113.7	161.2	
		76	TC	—	336.8	336.8	—	315.4	315.4	—	293.0	293.0	—	269.6	269.6	—	—	—
		SHC	—	124.6	171.1	—	113.5	160.1	—	102.5	149.1	—	89.0	135.5	—	—	—	
10000 cfm	EAT (wb)	58	TC	261.2	261.2	297.0	244.7	244.7	279.4	227.6	227.6	261.2	209.6	209.6	241.5	190.8	190.8	221.0
		SHC	225.5	261.2	297.0	210.1	244.7	279.4	194.1	227.6	261.2	177.7	209.6	241.5	160.5	190.8	221.0	
		62	TC	267.5	267.5	294.9	245.1	245.1	291.3	227.9	227.9	272.5	210.0	210.0	252.3	191.2	191.2	231.3
		SHC	208.0	251.4	294.9	198.9	245.1	291.3	183.4	227.9	272.5	167.6	210.0	252.3	151.0	191.2	231.3	
		67	TC	283.9	283.9	283.9	264.2	264.2	264.2	243.8	243.8	252.1	222.5	222.5	239.2	200.3	200.3	226.5
		SHC	172.0	224.3	276.5	159.1	211.4	263.6	147.6	199.9	252.1	134.7	186.9	239.2	122.0	174.2	226.5	
		72	TC	315.2	315.2	315.2	294.4	294.4	294.4	272.7	272.7	272.7	250.0	250.0	250.0	220.0	220.0	220.0
		SHC	121.1	173.4	225.6	106.7	159.0	211.2	95.0	147.2	199.5	82.7	135.0	187.2	—	—	—	
		76	TC	—	341.9	341.9	—	320.0	320.0	—	297.2	297.2	—	273.3	273.3	—	—	—
		SHC	—	123.2	172.1	—	114.0	163.0	—	104.5	153.5	—	94.8	143.8	—	—	—	

LEGEND

- Do Not Operate
- cfm Cubic Feet Per Minute (Supply Air)
- EAT (db) Entering Air Temperature (dry bulb)
- EAT (wb) Entering Air Temperature (wet bulb)
- SHC Sensible Heat Capacity (1000 Btuuh) Gross
- TC Total Capacity (1000 Btuuh) Gross

NOTE: See minimum-maximum airflow ratings on page 7.

Performance data (cont)



50FEQM24 Single Stage Cooling Capacities

50FEQM24			AMBIENT TEMPERATURE (°F)															
			85			95			105			115			125			
			EAT (db)			EAT (db)			EAT (db)			EAT (db)			EAT (db)			
			75	80	85	75	80	85	75	80	85	75	80	85	75	80	85	
3600 cfm	EAT (wb)	58	TC	122.7	122.7	140.3	114.5	114.5	131.5	107.5	107.5	123.7	97.2	97.2	113.0	88.0	88.0	103.0
		SHC	105.1	122.7	140.3	97.5	114.5	131.5	91.3	107.5	123.7	81.4	97.2	113.0	72.9	88.0	103.0	
		62	TC	130.5	130.5	133.2	120.8	120.8	127.1	110.8	110.8	120.4	100.3	100.3	112.9	89.3	89.3	106.0
		SHC	94.0	113.6	133.2	87.9	107.5	127.1	81.2	100.8	120.4	73.7	93.3	112.9	67.2	86.6	106.0	
		67	TC	147.0	147.0	147.0	136.8	136.8	136.8	126.1	126.1	126.1	115.0	115.0	115.0	103.2	103.2	103.2
		SHC	77.4	97.0	116.6	70.7	90.3	109.9	63.6	83.2	102.8	57.4	77.0	96.6	49.6	69.2	88.8	
		72	TC	164.9	164.9	164.9	154.1	154.1	154.1	142.9	142.9	142.9	131.2	131.2	131.2	118.7	118.7	118.7
		SHC	59.5	79.1	98.7	52.8	72.4	92.0	46.1	65.8	85.4	39.4	59.0	78.6	32.6	52.2	71.8	
		76	TC	—	180.4	180.4	—	169.2	169.2	—	157.6	157.6	—	145.1	145.1	—	132.2	132.2
		SHC	—	64.9	84.1	—	59.2	78.4	—	52.0	71.2	—	45.0	64.4	—	38.3	57.7	
4200 cfm	EAT (wb)	58	TC	131.9	131.9	150.6	123.3	123.3	141.3	114.3	114.3	131.7	105.0	105.0	121.6	95.2	95.2	111.1
		SHC	113.2	131.9	150.6	105.2	123.3	141.3	97.0	114.3	131.7	88.3	105.0	105.0	121.6	79.2	95.2	111.1
		62	TC	136.0	136.0	149.1	126.0	126.0	142.3	115.6	115.6	135.9	105.1	105.1	127.3	95.3	95.3	116.6
		SHC	103.8	126.5	149.1	97.0	119.7	142.3	90.6	113.3	135.9	82.9	105.1	105.1	127.3	74.1	95.3	116.6
		67	TC	152.6	152.6	152.6	141.9	141.9	141.9	130.8	130.8	130.8	119.2	119.2	119.2	107.0	107.0	107.0
		SHC	84.2	106.8	129.4	76.7	99.3	122.0	70.2	92.9	115.5	63.2	85.8	108.5	56.5	79.2	101.8	
		72	TC	170.6	170.6	170.6	159.4	159.4	159.4	147.8	147.8	147.8	135.5	135.5	135.5	122.7	122.7	122.7
		SHC	62.7	85.3	108.0	57.1	79.7	102.4	49.8	72.4	95.1	42.4	65.0	87.7	35.0	57.7	80.3	
		76	TC	—	186.5	186.5	—	174.9	174.9	—	162.7	162.7	—	149.9	149.9	—	136.3	136.3
		SHC	—	69.0	91.4	—	62.9	85.4	—	55.3	77.7	—	48.0	70.4	—	40.9	63.3	
4800 cfm	EAT (wb)	58	TC	139.7	139.7	159.2	130.7	130.7	149.4	121.3	121.3	139.5	111.5	111.5	128.9	101.2	101.2	117.8
		SHC	120.1	139.7	159.2	111.9	130.7	149.4	103.1	121.3	139.5	94.0	111.5	128.9	84.5	101.2	117.8	
		62	TC	140.7	140.7	164.9	130.9	130.9	155.9	121.3	121.3	145.5	111.7	111.7	134.9	101.3	101.3	123.5
		SHC	113.7	139.3	164.9	105.8	130.9	155.9	97.0	121.3	145.5	88.4	111.7	134.9	79.2	101.3	123.5	
		67	TC	156.8	156.8	156.8	145.8	145.8	145.8	134.4	134.4	134.4	122.5	122.5	122.5	109.9	109.9	113.8
		SHC	90.2	116.1	141.9	83.5	109.4	135.2	76.3	102.1	128	68.4	94.3	120.2	62.1	87.9	113.8	
		72	TC	175.1	175.1	175.1	163.6	163.6	163.6	151.6	151.6	151.6	139.0	139.0	139.0	125.7	125.7	125.7
		SHC	65.2	91.1	116.9	59.2	85.1	110.9	52.9	78.8	104.7	45.0	70.9	96.8	38.2	64.1	90.0	
		76	TC	—	191.2	191.2	—	179.1	179.1	—	166.6	166.6	—	153.4	153.4	—	139.4	139.4
		SHC	—	72.6	98.3	—	66.3	91.9	—	58.3	83.9	—	52.1	77.7	—	44.6	70.2	
5400 cfm	EAT (wb)	58	TC	146.3	146.3	166.5	136.9	136.9	156.5	127.2	127.2	145.9	117.0	117.0	134.8	106.3	106.3	123.2
		SHC	126.1	146.3	166.5	117.3	136.9	156.5	108.4	127.2	145.9	99.2	117.0	134.8	89.3	106.3	123.2	
		62	TC	146.5	146.5	173.5	137.3	137.3	163.4	127.2	127.2	152.1	117.1	117.1	141.2	106.4	106.4	129.3
		SHC	119.5	146.5	173.5	111.2	137.3	163.4	102.3	127.2	152.1	93.1	117.1	141.2	83.6	106.4	129.3	
		67	TC	160.2	160.2	160.2	149.0	149.0	149.0	137.3	137.3	140	125.1	125.1	132.6	112.2	112.2	125.3
		SHC	95.8	124.9	154.1	88.6	117.7	146.8	82.4	111.2	140	75.0	103.8	132.6	67.7	96.5	125.3	
		72	TC	178.6	178.6	178.6	166.8	166.8	166.8	154.5	154.5	154.5	141.5	141.5	141.5	128.0	128.0	128.0
		SHC	69.1	98.2	127.3	61.0	90.1	119.2	54.3	83.4	112.5	47.3	76.4	105.5	40.0	69.1	98.2	
		76	TC	—	194.8	194.8	—	182.5	182.5	—	169.6	169.6	—	156.1	156.1	—	141.8	141.8
		SHC	—	76.0	104.8	—	69.3	98.1	—	61.1	89.9	—	54.6	83.4	—	46.8	75.6	
6000 cfm	EAT (wb)	58	TC	151.9	151.9	172.7	142.3	142.3	162.4	132.2	132.2	151.7	121.6	121.6	140.1	110.6	110.6	128.1
		SHC	131.1	151.9	172.7	122.2	142.3	162.4	112.8	132.2	151.7	103.2	121.6	140.1	93.1	110.6	128.1	
		62	TC	152.2	152.2	180.2	142.5	142.5	169.5	132.4	132.4	158.2	121.9	121.9	146.6	110.8	110.8	134.2
		SHC	124.1	152.2	180.2	115.4	142.5	169.5	106.7	132.4	158.2	97.1	121.9	146.6	87.3	110.8	134.2	
		67	TC	163.0	163.0	165.6	151.5	151.5	157.8	139.6	139.6	150.7	127.2	127.2	143.9	114.1	114.1	135.9
		SHC	101.6	133.6	165.6	93.7	125.7	157.8	86.6	118.6	150.7	79.9	111.9	143.9	71.9	103.9	135.9	
		72	TC	181.4	181.4	181.4	169.4	169.4	169.4	156.8	156.8	156.8	143.8	143.8	143.8	129.9	129.9	129.9
		SHC	71.4	103.4	135.4	64.5	96.6	128.6	57.4	89.4	121.4	49.9	81.9	113.9	42.0	74.0	106.1	
		76	TC	—	197.7	197.7	—	185.1	185.1	—	172.0	172.0	—	158.3	158.3	—	143.8	143.8
		SHC	—	79.1	110.8	—	72.2	103.9	—	63.7	95.7	—	57.0	89.0	—	50.3	82.3	

LEGEND

- Do Not Operate
- cfm Cubic Feet Per Minute (Supply Air)
- EAT (db) Entering Air Temperature (dry bulb)
- EAT (wb) Entering Air Temperature (wet bulb)
- SHC Sensible Heat Capacity (1000 Btuuh) Gross
- TC Total Capacity (1000 Btuuh) Gross

NOTE: See minimum-maximum airflow ratings on page 7.

Performance data (cont)



50FEQM28 Two Stage Cooling Capacities

50FEQM28			AMBIENT TEMPERATURE (°F)															
			85			95			105			115			125			
			EAT (db)			EAT (db)			EAT (db)			EAT (db)			EAT (db)			
7500 cfm	EAT (wb)	58	TC	262.8	262.8	297.0	250.5	250.5	283.5	237.0	237.0	268.4	222.2	222.2	251.9	—	—	
		SHC	228.5	262.8	297.0	217.5	250.5	283.5	205.7	237.0	268.4	192.5	222.2	251.9	—	—	—	
		62	TC	274.7	274.7	283.3	259.6	259.6	275.0	242.9	242.9	266.7	224.7	224.7	256.4	—	—	—
		SHC	205.8	244.5	283.3	197.5	236.3	275.0	190.0	228.3	266.7	179.6	218.0	256.4	—	—	—	
		67	TC	300.4	300.4	300.4	284.7	284.7	284.7	267.2	267.2	267.2	247.9	247.9	247.9	—	—	—
		SHC	168.5	207.3	246.1	160.5	199.3	238.1	153.6	192.4	231.1	144.7	183.5	222.3	—	—	—	
		72	TC	328.7	328.7	328.7	312.1	312.1	312.1	293.5	293.5	293.5	273.4	273.4	273.4	—	—	—
		SHC	129.3	167.6	206.0	120.8	159.2	197.5	113.8	152.6	191.4	106.1	144.9	183.7	—	—	—	
		76	TC	—	352.6	352.6	—	335.0	335.0	—	315.6	315.6	—	294.8	294.8	—	—	—
		SHC	—	134.0	170.7	—	127.3	164.4	—	119.9	157.5	—	112.0	149.6	—	—	—	
8750 cfm	EAT (wb)	58	TC	275.8	275.8	311.9	263.0	263.0	297.7	248.7	248.7	281.4	233.3	233.3	264.6	—	—	—
		SHC	239.7	275.8	311.9	228.4	263.0	297.7	216.0	248.7	281.4	202.0	233.3	264.6	—	—	—	
		62	TC	281.5	281.5	308.9	266.2	266.2	302.5	253.7	253.7	271.9	237.4	237.4	257.8	—	—	—
		SHC	220.3	264.6	308.9	214.0	258.2	302.5	194.9	233.4	271.9	183.7	220.8	257.8	—	—	—	
		67	TC	307.4	307.4	307.4	291.0	291.0	291.0	272.8	272.8	272.8	252.9	252.9	252.9	—	—	—
		SHC	176.5	221.3	266.1	170.6	215.3	260.1	162.6	207.3	252.1	152.5	197.3	242.0	—	—	—	
		72	TC	335.7	335.7	335.7	318.3	318.3	318.3	299.1	299.1	299.1	278.4	278.4	278.4	—	—	—
		SHC	133.7	177.9	222.2	124.4	168.7	213.0	117.2	161.5	205.8	108.8	153.1	197.4	—	—	—	
		76	TC	—	359.7	359.7	—	341.4	341.4	—	321.3	321.3	—	299.8	299.8	—	—	—
		SHC	—	140.3	183.1	—	133.2	176.5	—	125.3	168.6	—	116.9	160.3	—	—	—	
10000 cfm	EAT (wb)	58	TC	286.0	286.0	323.4	272.7	272.7	308.5	258.1	258.1	292.2	241.7	241.7	274.2	—	—	—
		SHC	248.6	286.0	323.4	237.0	272.7	308.5	224.0	258.1	292.2	209.3	241.7	274.2	—	—	—	
		62	TC	288.7	288.7	327.9	275.0	275.0	315.7	258.2	258.2	303.8	242.0	242.0	284.9	—	—	—
		SHC	232.2	280.1	327.9	223.3	269.5	315.7	212.5	258.2	303.8	199.1	242.0	284.9	—	—	—	
		67	TC	312.3	312.3	312.3	295.4	295.4	295.4	276.6	276.6	276.6	256.4	256.4	262.8	—	—	—
		SHC	186.7	237.3	287.9	176.9	227.5	278.1	170.7	221.3	271.9	162.7	212.8	262.8	—	—	—	
		72	TC	340.6	340.6	340.6	322.7	322.7	322.7	302.8	302.8	302.8	281.5	281.5	281.5	—	—	—
		SHC	133.9	183.9	234.0	127.4	177.5	227.5	119.5	169.5	219.6	110.4	160.5	210.5	—	—	—	
		76	TC	—	364.7	364.7	—	345.9	345.9	—	325.1	325.1	—	303.2	303.2	—	—	—
		SHC	—	142.2	191.2	—	134.9	183.8	—	126.8	175.7	—	121.3	170.8	—	—	—	
11250 cfm	EAT (wb)	58	TC	294.4	294.4	332.8	280.8	280.8	317.9	265.4	265.4	300.6	248.5	248.5	281.9	—	—	—
		SHC	256.1	294.4	332.8	243.7	280.8	317.9	230.1	265.4	300.6	215.1	248.5	281.9	—	—	—	
		62	TC	298.9	298.9	323.8	286.0	286.0	303.0	265.6	265.6	312.6	248.7	248.7	293.3	—	—	—
		SHC	232.2	278.0	323.8	217.6	260.3	303.0	218.5	265.6	312.6	204.2	248.7	293.3	—	—	—	
		67	TC	315.7	315.7	315.7	298.4	298.4	298.4	279.4	279.4	290.4	258.7	258.7	280.8	—	—	—
		SHC	193.7	249.4	305.1	186.0	241.7	297.4	179.0	234.7	290.4	169.4	225.1	280.8	—	—	—	
		72	TC	343.7	343.7	343.7	325.5	325.5	325.5	305.3	305.3	305.3	283.7	283.7	283.7	—	—	—
		SHC	136.8	192.5	248.2	129.8	185.5	241.2	121.4	177.1	232.8	114.6	170.2	225.9	—	—	—	
		76	TC	—	368.2	368.2	—	348.9	348.9	—	327.6	327.6	—	305.3	305.3	—	—	—
		SHC	—	147.3	201.7	—	139.5	194.0	—	131.1	186.1	—	122.1	177.2	—	—	—	
12500 cfm	EAT (wb)	58	TC	301.3	301.3	341.2	287.2	287.2	325.0	271.2	271.2	307.7	253.9	253.9	288.2	—	—	—
		SHC	261.4	301.3	341.2	249.4	287.2	325.0	234.8	271.2	307.7	219.5	253.9	288.2	—	—	—	
		62	TC	306.3	306.3	324.1	287.4	287.4	338.3	271.4	271.4	319.5	253.9	253.9	299.3	—	—	—
		SHC	233.4	278.7	324.1	236.5	287.4	338.3	223.3	271.4	319.5	208.6	253.9	299.3	—	—	—	
		67	TC	318.0	318.0	325.1	300.4	300.4	316.5	281.1	281.1	308.6	260.4	260.4	298.1	—	—	—
		SHC	202.7	263.9	325.1	194.1	255.3	316.5	186.2	247.4	308.6	175.8	237.0	298.1	—	—	—	
		72	TC	346.1	346.1	346.1	327.4	327.4	327.4	306.9	306.9	306.9	285.0	285.0	285.0	—	—	—
		SHC	139.5	200.7	261.9	132.0	193.2	254.4	122.9	184.1	245.3	115.5	176.7	237.9	—	—	—	
		76	TC	—	370.5	370.5	—	350.8	350.8	—	329.2	329.2	—	—	—	—	—	—
		SHC	—	148.2	208.0	—	140.3	200.8	—	135.0	195.5	—	—	—	—	—	—	

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EAT (db)	Entering Air Temperature (dry bulb)
EAT (wb)	Entering Air Temperature (wet bulb)
SHC	Sensible Heat Capacity (1000 Btuh) Gross
TC	Total Capacity (1000 Btuh) Gross

NOTE: See minimum-maximum airflow ratings on page 7.

Performance data (cont)



50FEQM28 Single Stage Cooling Capacities

50FEQM28			AMBIENT TEMPERATURE (°F)															
			85			95			105			115			125			
			EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)		EAT (db)	
4500 cfm	EAT (wb)	58	TC	160.9	160.9	182.2	153.9	153.9	174.5	146.3	146.3	166.1	137.9	137.9	156.7	128.6	128.6	146.4
		SHC	139.6	160.9	182.2	133.4	153.9	174.5	126.5	146.3	166.1	119.1	137.9	156.7	110.8	128.6	146.4	
		62	TC	168.3	168.3	173.5	159.8	159.8	169.2	150.5	150.5	163.7	140.3	140.3	158.4	131.3	131.3	145.0
		SHC	126.0	149.8	173.5	121.7	145.4	169.2	116.2	140.0	163.7	110.9	134.7	158.4	101.9	123.4	145.0	
		67	TC	184.9	184.9	184.9	175.8	175.8	175.8	165.9	165.9	165.9	155.0	155.0	155.0	142.9	142.9	142.9
		SHC	103.6	127.6	151.6	99.1	123.1	147.1	93.8	117.8	141.8	87.8	111.6	135.4	82.0	105.8	129.5	
		72	TC	203.3	203.3	203.3	193.5	193.5	193.5	182.8	182.8	182.8	171.2	171.2	171.2	158.3	158.3	158.3
		SHC	79.9	103.7	127.4	74.9	98.7	122.4	69.5	93.2	117.0	65.3	89.0	112.8	58.6	82.3	106.1	
		76	TC	—	219.1	219.1	—	208.6	208.6	—	197.3	197.3	—	185.0	185.0	—	171.6	171.6
		SHC	—	83.2	106.3	—	79.3	102.5	—	75.0	98.2	—	68.5	91.7	—	63.5	87.0	
5250 cfm	EAT (wb)	58	TC	170.0	170.0	192.3	162.6	162.6	184.2	154.5	154.5	175.3	145.6	145.6	165.2	135.7	135.7	154.5
		SHC	147.8	170.0	192.3	140.9	162.6	184.2	133.7	154.5	175.3	126.0	145.6	165.2	116.9	135.7	154.5	
		62	TC	173.6	173.6	192.3	164.8	164.8	187.3	156.3	156.3	177.9	149.0	149.0	161.9	135.9	135.9	160.7
		SHC	137.5	164.9	192.3	132.5	159.9	187.3	125.3	151.6	177.9	115.1	138.5	161.9	111.0	135.9	160.7	
		67	TC	190.3	190.3	190.3	180.7	180.7	180.7	170.4	170.4	170.4	159.0	159.0	159.0	146.6	146.6	146.6
		SHC	109.3	137.0	164.8	104.2	131.9	159.7	100.1	127.8	155.5	94.7	122.5	150.2	88.1	115.8	143.5	
		72	TC	208.7	208.7	208.7	198.3	198.3	198.3	187.3	187.3	187.3	175.2	175.2	175.2	162.0	162.0	162.0
		SHC	82.9	110.6	138.3	77.4	105.1	132.8	73.4	101.1	128.9	66.9	94.6	122.3	61.4	89.1	116.8	
		76	TC	—	224.7	224.7	—	213.8	213.8	—	202.0	202.0	—	189.3	189.3	—	175.4	175.4
		SHC	—	87.6	114.5	—	83.4	110.2	—	78.8	105.9	—	71.9	99.1	—	66.6	93.8	
6000 cfm	EAT (wb)	58	TC	177.4	177.4	200.5	169.8	169.8	192.2	161.3	161.3	182.7	151.9	151.9	172.4	141.6	141.6	161.1
		SHC	154.3	177.4	200.5	147.3	169.8	192.2	139.8	161.3	182.7	131.4	151.9	172.4	122.1	141.6	161.1	
		62	TC	179.1	179.1	205.5	170.0	170.0	200.0	161.4	161.4	190.1	152.1	152.1	179.5	141.8	141.8	167.5
		SHC	145.5	175.5	205.5	139.9	170.0	200.0	132.7	161.4	190.1	124.7	152.1	179.5	116.0	141.8	167.5	
		67	TC	194.4	194.4	194.4	184.5	184.5	184.5	173.8	173.8	173.8	162.1	162.1	164.3	149.3	149.3	158.3
		SHC	116.4	147.7	179.1	110.7	142.0	173.4	106.0	137.3	168.7	101.6	132.9	164.3	95.6	126.9	158.3	
		72	TC	212.8	212.8	212.8	202.1	202.1	202.1	190.8	190.8	190.8	178.3	178.3	178.3	164.7	164.7	164.7
		SHC	85.7	117.0	148.4	79.8	111.2	142.5	75.5	106.8	138.2	70.3	101.6	133.0	64.2	95.5	126.9	
		76	TC	—	229.1	229.1	—	217.6	217.6	—	205.6	205.6	—	192.4	192.4	—	178.1	178.1
		SHC	—	91.6	122.3	—	84.9	115.6	—	80.2	110.9	—	75.0	105.7	—	69.5	100.5	
6750 cfm	EAT (wb)	58	TC	183.8	183.8	207.5	175.8	175.8	198.9	167.0	167.0	189.2	157.3	157.3	178.5	146.5	146.5	166.5
		SHC	160.0	183.8	207.5	152.8	175.8	198.9	144.7	167.0	189.2	136.1	157.3	178.5	126.4	146.5	166.5	
		62	TC	184.2	184.2	216.1	176.0	176.0	206.8	167.1	167.1	196.8	157.4	157.4	185.6	146.6	146.6	173.3
		SHC	152.3	184.2	216.1	145.2	176.0	206.8	137.4	167.1	196.8	129.2	157.4	185.6	119.9	146.6	173.3	
		67	TC	197.6	197.6	197.6	187.5	187.5	187.5	176.5	176.5	183.2	164.6	164.6	176.4	151.5	151.5	171.3
		SHC	123.2	158.1	193.0	116.9	151.8	186.7	113.4	148.3	183.2	106.6	141.5	176.4	101.5	136.4	171.3	
		72	TC	216.4	216.4	216.4	205.3	205.3	205.3	193.4	193.4	193.4	180.7	180.7	180.7	166.8	166.8	166.8
		SHC	88.4	123.3	158.2	82.1	117.0	151.9	77.3	112.2	147.1	71.7	106.6	141.5	66.8	101.7	136.6	
		76	TC	—	232.4	232.4	—	220.7	220.7	—	208.3	208.3	—	194.9	194.9	—	180.3	180.3
		SHC	—	93.0	127.1	—	88.3	122.8	—	83.3	117.9	—	77.9	112.5	—	72.1	106.7	
7500 cfm	EAT (wb)	58	TC	189.5	189.5	214.2	181.0	181.0	205.0	171.9	171.9	194.6	161.8	161.8	183.3	150.6	150.6	170.8
		SHC	164.7	189.5	214.2	157.1	181.0	205.0	149.2	171.9	194.6	140.4	161.8	183.3	130.4	150.6	170.8	
		62	TC	189.6	189.6	222.6	181.2	181.2	212.9	172.1	172.1	202.6	161.9	161.9	190.8	150.7	150.7	178.0
		SHC	156.6	189.6	222.6	149.4	181.2	212.9	141.5	172.1	202.6	133.1	161.9	190.8	123.5	150.7	178.0	
		67	TC	200.3	200.3	204.6	189.9	189.9	199.7	178.7	178.7	195.6	166.6	166.6	189.9	153.4	153.4	182.1
		SHC	127.9	166.3	204.6	123.0	161.4	199.7	118.9	157.3	195.6	113.2	151.6	189.9	106.2	144.2	182.1	
		72	TC	218.8	218.8	218.8	207.5	207.5	207.5	195.6	195.6	195.6	182.6	182.6	182.6	168.5	168.5	168.5
		SHC	90.3	129.1	167.9	83.7	122.4	161.2	80.5	119.3	158.1	74.9	113.2	151.6	69.5	107.8	146.2	
		76	TC	—	235.1	235.1	—	223.2	223.2	—	210.4	210.4	—	196.8	196.8	—	182.0	182.0
		SHC	—	96.4	134.3	—	91.5	129.5	—	86.3	124.2	—	80.7	118.6	—	76.4	114.4	

LEGEND

- Do Not Operate
- cfm Cubic Feet Per Minute (Supply Air)
- EAT (db) Entering Air Temperature (dry bulb)
- EAT (wb) Entering Air Temperature (wet bulb)
- SHC Sensible Heat Capacity (1000 Btuuh) Gross
- TC Total Capacity (1000 Btuuh) Gross

NOTE: See minimum-maximum airflow ratings on page 7.

Performance data (cont)



50FEQM17 Heating Capacities

50FEQM17 (15 Tons)

Return Air ("F db)	CFM (Standard Air)	Temperature Air Entering Outdoor Coil ("F db at 70% rh)									
		-10	0	10	17	30	40	47	50	60	
55	4500	Capacity	56.2	74.0	93.7	107.0	133.3	156.4	172.6	177.9	202.3
		Int. Cap.	52.0	68.1	86.0	97.6	116.8	156.4	172.6	177.9	202.3
	6000	Capacity	57.2	75.2	95.3	109.0	136.4	160.5	177.6	183.2	209.4
		Int. Cap.	52.9	69.2	87.5	99.4	119.5	160.5	177.6	183.2	209.4
70	7500	Capacity	58.4	76.6	96.8	110.7	138.8	163.4	181.2	187.0	214.2
		Int. Cap.	54.0	70.4	88.8	100.9	121.6	163.4	181.2	187.0	214.2
	4500	Capacity	54.2	71.1	94.0	102.9	127.7	150.2	165.5	170.6	193.4
		Int. Cap.	50.2	65.5	86.3	93.8	111.9	150.2	165.5	170.6	193.4
75	6000	Capacity	55.2	72.3	91.8	104.8	130.8	154.1	170.5	175.8	200.5
		Int. Cap.	51.1	66.6	84.3	95.6	114.6	154.1	170.5	175.8	200.5
	7500	Capacity	56.5	73.7	93.3	106.5	133.1	157.0	174.0	179.6	205.4
		Int. Cap.	52.2	67.8	85.6	97.1	116.7	157.0	174.0	179.6	205.4
80	4500	Capacity	53.1	69.3	88.2	100.3	124.0	146.1	160.8	165.8	187.6
		Int. Cap.	49.1	63.8	81.0	91.4	108.7	146.1	160.8	165.8	187.6
	6000	Capacity	54.0	70.5	90.0	102.1	127.1	149.9	165.7	170.9	194.5
		Int. Cap.	50.0	64.9	82.6	93.1	111.3	149.9	165.7	170.9	194.5
85	7500	Capacity	55.3	71.9	91.7	103.8	129.4	152.8	169.1	174.6	199.4
		Int. Cap.	51.1	66.1	84.1	94.6	113.4	152.8	169.1	174.6	199.4

LEGEND

— Do Not Operate
Capacity — Instantaneous Capacity (1000 Btuh) — includes indoor fan motor heat at AHRI static conditions
Int. Cap. — Integrated Capacity = instantaneous capacity minus the effects of frost on the OD coil and the heat required to defrost it
rh — Relative Humidity
db — Dry Bulb

50FEQM24 Heating Capacities

50FEQM24 (20 Tons)

Return Air ("F db)	CFM (Standard Air)	Temperature Air Entering Outdoor Coil ("F db at 70% rh)									
		-10	0	10	17	30	40	47	50	60	
55	6000	Capacity	84.2	106.7	133.3	151.0	186.2	219.4	240.0	249.7	284.0
		Int. Cap.	77.9	98.2	122.3	137.7	163.2	219.4	240.0	249.7	284.0
	8000	Capacity	87.2	108.9	135.7	153.8	190.5	224.6	246.3	256.3	292.9
		Int. Cap.	80.6	100.2	124.6	140.2	166.9	224.6	246.3	256.3	292.9
60	10000	Capacity	—	111.2	138.1	156.6	193.9	228.5	250.9	261.2	299.1
		Int. Cap.	—	102.3	126.8	142.8	169.9	228.5	250.9	261.2	299.1
	6000	Capacity	83.5	103.4	129.7	146.8	180.3	212.9	232.4	241.4	273.7
		Int. Cap.	77.3	95.2	119.0	133.8	158.0	212.9	232.4	241.4	273.7
65	8000	Capacity	84.1	105.3	131.9	149.3	184.3	217.8	238.4	248.2	282.9
		Int. Cap.	77.8	96.9	121.0	136.1	161.5	217.8	238.4	248.2	282.9
	10000	Capacity	86.9	107.4	134.1	151.9	187.7	221.8	243.1	253.0	289.3
		Int. Cap.	80.4	98.8	123.1	138.5	164.4	221.8	243.1	253.0	289.3
70	6000	Capacity	82.6	101.9	129.1	144.5	176.8	208.9	227.5	236.2	266.9
		Int. Cap.	76.4	93.8	118.5	131.8	154.9	208.9	227.5	236.2	266.9
	8000	Capacity	83.7	104.0	130.0	147.0	180.6	213.4	233.6	242.8	276.0
		Int. Cap.	77.4	95.7	119.4	134.0	158.3	213.4	233.6	242.8	276.0
75	10000	Capacity	83.6	106.0	132.1	149.5	184.0	217.5	238.1	247.8	282.6
		Int. Cap.	77.4	97.6	121.2	136.3	161.2	217.5	238.1	247.8	282.6

LEGEND

— Do Not Operate
Capacity — Instantaneous Capacity (1000 Btuh) — includes indoor fan motor heat at AHRI static conditions
Int. Cap. — Integrated Capacity = instantaneous capacity minus the effects of frost on the OD coil and the heat required to defrost it
rh — Relative Humidity
db — Dry Bulb

Performance data (cont)



50FEQM28 Heating Capacities

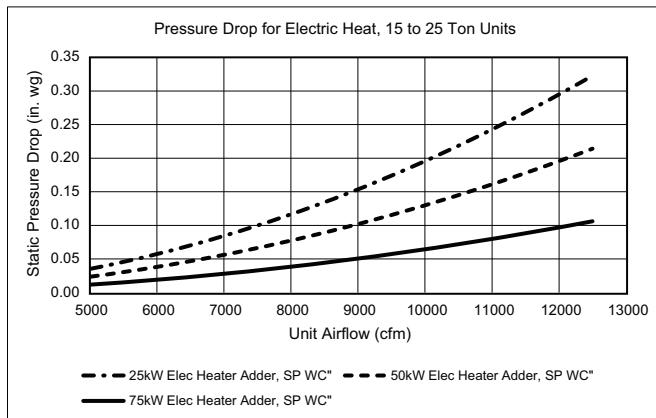
50FEQM28 (25 Tons)

Return Air (°F db)	CFM (Standard Air)	Temperature Air Entering Outdoor Coil (°F db at 70% rh)									
		-10	0	10	17	30	40	47	50	60	
55	7500	Capacity	88.0	113.0	155.8	177.1	216.1	252.2	279.1	291.0	330.5
		Int. Cap.	81.3	104.0	143.0	161.4	189.4	252.2	279.1	291.0	330.5
	10000	Capacity	—	117.1	159.3	180.4	219.2	256.1	283.9	296.0	337.2
		Int. Cap.	—	107.8	146.2	164.5	192.1	256.1	283.9	296.0	337.2
70	12500	Capacity	—	121.3	163.1	184.0	222.8	260.0	288.2	300.3	342.5
		Int. Cap.	—	111.6	149.7	167.8	195.2	260.0	288.2	300.3	342.5
	7500	Capacity	77.9	103.1	148.1	168.6	208.7	246.1	272.3	284.3	321.9
		Int. Cap.	72.0	94.8	135.9	153.7	182.9	246.1	272.3	284.3	321.9
80	10000	Capacity	82.4	107.7	152.4	172.9	212.3	251.0	278.2	290.3	329.8
		Int. Cap.	76.2	99.1	139.8	157.6	186.0	251.0	278.2	290.3	329.8
	12500	Capacity	87.1	112.4	157.0	177.4	216.7	255.8	283.2	295.5	336.1
		Int. Cap.	80.5	103.5	144.1	161.7	189.9	255.8	283.2	295.5	336.1

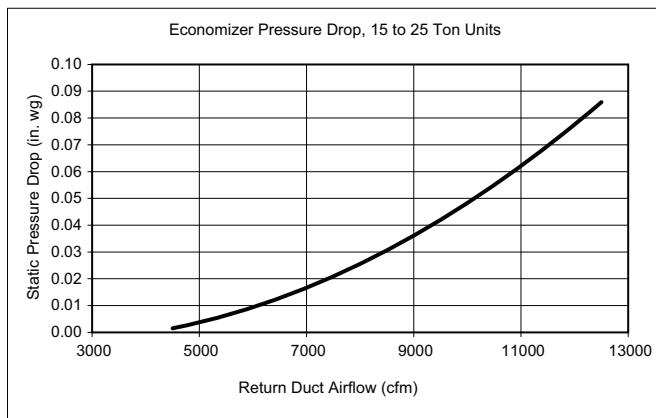
LEGEND

- Do Not Operate
- Capacity — Instantaneous Capacity (1000 Btuh) — includes indoor fan motor heat at AHRI static conditions
- Int. Cap. — Integrated Capacity = instantaneous capacity minus the effects of frost on the OD coil and the heat required to defrost it
- rh — Relative Humidity
- db — Dry Bulb

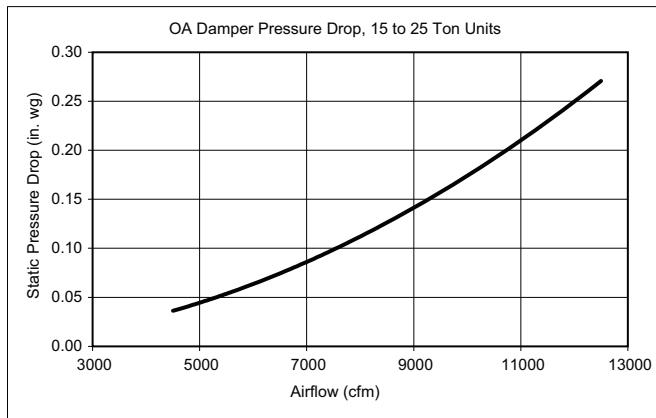
Pressure Drop for Electric Heating Units 15 to 25 Ton Units



Static Pressure Drop — Accessory Economizer 15 to 25 Ton Units



Outside Air Damper Leakage 15 to 25 Ton Units



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 FLOPs or accessories.
3. Tabular data accounts for pressure loss due to clean filters, unit casing, and wet coils.
4. Factory options and accessories may effect static pressure losses. Selection software is available, through your salesperson, to help you select the best motor/drive combination for your application.
5. The fan performance tables offer motor/drive recommendations. In cases when 2 motor/drive combinations would work, the lower horsepower option is recommended.
6. For information on the electrical properties of the fan motors, please see the Electrical information section of this book.
7. For more information on the performance limits of the fan motors, see the application data section of this book.
8. The EPACT (Energy Policy Act of 1992) regulates energy requirements for specific types of indoor fan motors. Motors regulated by EPACT include any general purpose, T-frame (3-digit, 143 and larger), single-speed, foot mounted, polyphase, squirrel cage induction motors of NEMA (National Electrical Manufacturers Association) design A and B, manufactured for use in the United States. Ranging from 1 to 200 Hp, these continuous-duty motors operate on 230 and 460 volt, 60 Hz power. If a motor does not fit into these specifications, the motor does not have to be replaced by an EPACT compliant energy-efficient motor. Variable-speed motors are exempt from EPACT compliance requirements.

Fan data (cont)



50FEQM17 — 15 Ton Vertical Supply (rpm - bhp)

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	936	0.61	1065	0.90	1180	1.23	1285	1.59	1380	1.97
4875	991	0.73	1112	1.03	1224	1.37	1325	1.74	1418	2.14
5250	1048	0.86	1161	1.18	1268	1.53	1366	1.91	1457	2.32
5625	1106	1.02	1211	1.34	1314	1.71	1410	2.11	1498	2.53
6000	1166	1.19	1263	1.52	1362	1.90	1454	2.31	1540	2.75
6375	1226	1.38	1317	1.72	1410	2.11	1499	2.53	1584	2.99
6750	1287	1.59	1371	1.93	1460	2.33	1546	2.76	1628	3.23
7125	1349	1.82	1428	2.16	1511	2.56	1594	3.01	1674	3.48
7500	1412	2.07	1485	2.40	1563	2.80	1643	3.26	1721	3.74

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	1470	2.38	1554	2.81	1634	3.27	1710	3.74	1782	4.24
4875	1505	2.55	1588	3.00	1666	3.46	1741	3.95	1812	4.46
5250	1542	2.75	1623	3.21	1700	3.69	1773	4.18	1844	4.71
5625	1581	2.97	1660	3.44	1735	3.93	1807	4.44	1876	4.97
6000	1622	3.21	1699	3.69	1772	4.19	1843	4.71	1911	5.25
6375	1663	3.46	1739	3.95	1811	4.46	1880	4.99	1946	5.54
6750	1706	3.71	1780	4.22	1850	4.74	1918	5.28	1983	5.83
7125	1750	3.98	1822	4.49	1891	5.02	1958	5.57	2022	6.14
7500	1794	4.24	1866	4.77	1933	5.30	1999	5.86	—	—

Std/Med Static 936-2000 rpm, 4.8 Max bhp (2.4 Max bhp per fan motor)

High Static 936-2200 rpm, 6.0 Max bhp (3.0 Max bhp per fan motor)

50FEQM17 — Standard/Medium Static — 15 Ton Vertical Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
4500	936	4.5	1065	5.2	1180	5.8	1285	6.3	1380	6.8
4875	991	4.8	1112	5.4	1224	6.0	1325	6.5	1418	7.0
5250	1048	5.1	1161	5.7	1268	6.2	1366	6.7	1457	7.2
5625	1106	5.4	1211	5.9	1314	6.5	1410	7.0	1498	7.4
6000	1166	5.7	1263	6.2	1362	6.7	1454	7.2	1540	7.6
6375	1226	6.0	1317	6.5	1410	7.0	1499	7.4	1584	7.9
6750	1287	6.3	1371	6.8	1460	7.2	1546	7.7	1628	8.1
7125	1349	6.7	1428	7.1	1511	7.5	1594	7.9	1674	8.3
7500	1412	7.0	1485	7.4	1563	7.8	1643	8.2	1721	8.6

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
4500	1470	7.3	1554	7.7	1634	8.1	1710	8.5	1782	8.9
4875	1505	7.5	1588	7.9	1666	8.3	1741	8.7	1812	9.0
5250	1542	7.6	1623	8.1	1700	8.5	1773	8.8	1844	9.2
5625	1581	7.8	1660	8.3	1735	8.6	1807	9.0	1876	9.4
6000	1622	8.1	1699	8.5	1772	8.8	1843	9.2	—	—
6375	1663	8.3	1739	8.7	1811	9.0	1880	9.4	—	—
6750	1706	8.5	1780	8.9	1850	9.2	—	—	—	—
7125	1750	8.7	1822	9.1	1891	9.4	—	—	—	—
7500	1794	8.9	1866	9.3	—	—	—	—	—	—

Std/Med Static 936-2000 rpm

Fan data (cont)



50FEQM17 — High Static — 15 Ton Vertical Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
4500	936	4.2	1065	4.8	1180	5.3	1285	5.8	1380	6.2
4875	991	4.4	1112	5.0	1224	5.5	1325	6.0	1418	6.4
5250	1048	4.7	1161	5.2	1268	5.7	1366	6.2	1457	6.6
5625	1106	5.0	1211	5.4	1314	5.9	1410	6.4	1498	6.8
6000	1166	5.2	1263	5.7	1362	6.1	1454	6.6	1540	7.0
6375	1226	5.5	1317	5.9	1410	6.4	1499	6.8	1584	7.2
6750	1287	5.8	1371	6.2	1460	6.6	1546	7.0	1628	7.4
7125	1349	6.1	1428	6.4	1511	6.8	1594	7.2	1674	7.6
7500	1412	6.4	1485	6.7	1563	7.1	1643	7.4	1721	7.8

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
4500	1470	6.6	1554	7.0	1634	7.4	1710	7.7	1782	8.1
4875	1505	6.8	1588	7.2	1666	7.5	1741	7.9	1812	8.2
5250	1542	7.0	1623	7.3	1700	7.7	1773	8.0	1844	8.4
5625	1581	7.1	1660	7.5	1735	7.9	1807	8.2	1876	8.5
6000	1622	7.3	1699	7.7	1772	8.0	1843	8.4	1911	8.7
6375	1663	7.5	1739	7.9	1811	8.2	1880	8.5	1946	8.8
6750	1706	7.7	1780	8.1	1850	8.4	1918	8.7	1983	9.0
7125	1750	7.9	1822	8.3	1891	8.6	1958	8.9	2022	9.2
7500	1794	8.1	1866	8.5	1933	8.8	1999	9.1	—	—

High Static 936-2200 rpm

Fan data (cont)



50FEQM24 — 20 Ton Vertical Supply (rpm - bhp)

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
6,000	1038	0.84	1148	1.14	1251	1.47	1351	1.86	1448	2.28
6,500	1103	1.01	1207	1.32	1304	1.66	1398	2.05	1490	2.48
7,000	1169	1.19	1269	1.52	1360	1.87	1448	2.26	1535	2.69
7,500	1234	1.38	1332	1.74	1418	2.09	1501	2.48	1583	2.91
8,000	1299	1.58	1395	1.95	1478	2.32	1557	2.72	1634	3.14
8,500	1364	1.78	1459	2.18	1540	2.56	1615	2.95	1689	3.37
9,000	1427	1.97	1524	2.40	1602	2.79	1674	3.18	1745	3.60
9,500	1491	2.17	1589	2.62	1665	3.02	1735	3.41	1802	3.83
10,000	1553	2.36	1653	2.84	1729	3.25	1797	3.65	1862	4.06

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
6,000	1539	2.74	1624	3.22	1703	3.72	1777	4.22	1847	4.74
6,500	1578	2.95	1662	3.44	1741	3.96	1816	4.49	1887	5.04
7,000	1619	3.16	1701	3.66	1779	4.19	1854	4.74	1924	5.30
7,500	1663	3.38	1742	3.88	1818	4.41	1892	4.97	1962	5.55
8,000	1711	3.60	1786	4.10	1859	4.62	1931	5.18	2000	5.76
8,500	1761	3.83	1832	4.31	1903	4.83	1972	5.37	2039	5.94
9,000	1813	4.04	1882	4.52	1949	5.02	2015	5.55	2081	6.11
9,500	1868	4.26	1933	4.72	1998	5.21	2061	5.72	2124	6.27
10,000	1925	4.49	1987	4.94	2049	5.41	2110	5.91	2170	6.43

Std/Med Static 1038-2000 rpm, 4.8 Max bhp (2.4 Max bhp per fan motor)

High Static 1038-2200 rpm, 10.0 Max bhp (5.0 Max bhp per fan motor)

50FEQM24 — Standard/Medium Static — 20 Ton Vertical Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
6,000	1038	5.1	1148	5.6	1251	6.1	1351	6.7	1448	7.2
6,500	1103	5.4	1207	5.9	1304	6.4	1398	6.9	1490	7.4
7,000	1169	5.7	1269	6.2	1360	6.7	1448	7.2	1535	7.6
7,500	1234	6.1	1332	6.6	1418	7.0	1501	7.4	1583	7.9
8,000	1299	6.4	1395	6.9	1478	7.3	1557	7.7	1634	8.1
8,500	1364	6.7	1459	7.2	1540	7.6	1615	8.0	1689	8.4
9,000	1427	7.1	1524	7.6	1602	8.0	1674	8.3	1745	8.7
9,500	1491	7.4	1589	7.9	1665	8.3	1735	8.6	1802	9.0
10,000	1553	7.7	1653	8.2	1729	8.6	1797	9.0	1862	9.3

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
6,000	1539	7.6	1624	8.1	1703	8.5	1777	8.9	1847	9.2
6,500	1578	7.8	1662	8.3	1741	8.7	1816	9.1	1887	9.4
7,000	1619	8.0	1701	8.5	1779	8.9	1854	9.2	—	—
7,500	1663	8.3	1742	8.7	1818	9.1	1892	9.4	—	—
8,000	1711	8.5	1786	8.9	1859	9.3	—	—	—	—
8,500	1761	8.8	1832	9.1	1903	9.5	—	—	—	—
9,000	1813	9.0	1882	9.4	1949	9.7	—	—	—	—
9,500	1868	9.3	1933	9.7	—	—	—	—	—	—
10,000	1925	9.6	1987	9.9	—	—	—	—	—	—

Std/Med Static 1038-2000 rpm

Fan data (cont)



50FEQM24 — High Static — 20 Ton Vertical Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
6,000	1038	4.6	1148	5.1	1251	5.6	1351	6.1	1448	6.5
6,500	1103	4.9	1207	5.4	1304	5.9	1398	6.3	1490	6.7
7,000	1169	5.2	1269	5.7	1360	6.1	1448	6.5	1535	6.9
7,500	1234	5.5	1332	6.0	1418	6.4	1501	6.8	1583	7.2
8,000	1299	5.8	1395	6.3	1478	6.7	1557	7.0	1634	7.4
8,500	1364	6.1	1459	6.6	1540	7.0	1615	7.3	1689	7.6
9,000	1427	6.4	1524	6.9	1602	7.2	1674	7.6	1745	7.9
9,500	1491	6.7	1589	7.2	1665	7.5	1735	7.9	1802	8.2
10,000	1553	7.0	1653	7.5	1729	7.8	1797	8.1	1862	8.4

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
6,000	1539	6.9	1624	7.3	1703	7.7	1777	8.0	1847	8.4
6,500	1578	7.1	1662	7.5	1741	7.9	1816	8.2	1887	8.6
7,000	1619	7.3	1701	7.7	1779	8.1	1854	8.4	1924	8.7
7,500	1663	7.5	1742	7.9	1818	8.2	1892	8.6	1962	8.9
8,000	1711	7.7	1786	8.1	1859	8.4	1931	8.8	2000	9.1
8,500	1761	8.0	1832	8.3	1903	8.6	1972	8.9	2039	9.3
9,000	1813	8.2	1882	8.5	1949	8.8	2015	9.1	2081	9.5
9,500	1868	8.5	1933	8.8	1998	9.1	2061	9.4	2124	9.6
10,000	1925	8.7	1987	9.0	2049	9.3	2110	9.6	2170	9.9

High Static 1038-2200 rpm

Fan data (cont)



50FEQM28 — 25 Ton Vertical Supply (rpm - bhp)

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
7,500	1099	1.27	1174	1.55	1256	1.90	1343	2.32	1433	2.82
8,125	1177	1.58	1246	1.87	1319	2.22	1397	2.64	1479	3.13
8,750	1256	1.92	1319	2.23	1385	2.58	1456	3.00	1530	3.48
9,375	1337	2.32	1394	2.63	1455	2.99	1519	3.40	1586	3.87
10,000	1417	2.74	1471	3.06	1526	3.42	1585	3.83	1646	4.29
10,625	1498	3.18	1548	3.51	1600	3.88	1654	4.28	1710	4.73
11,250	1579	3.65	1626	3.98	1675	4.36	1725	4.76	1777	5.20
11,875	1661	4.17	1705	4.51	1751	4.88	1798	5.29	1846	5.72
12,500	1743	4.78	1785	5.14	1828	5.52	1872	5.93	1917	6.37

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
7,500	1521	3.38	1604	3.96	1683	4.58	1757	5.21	1828	5.86
8,125	1561	3.68	1642	4.28	1720	4.92	1794	5.58	1864	6.26
8,750	1606	4.02	1683	4.63	1758	5.28	1830	5.95	1900	6.66
9,375	1655	4.40	1727	5.00	1798	5.64	1869	6.33	1937	7.05
10,000	1710	4.81	1776	5.39	1843	6.02	1910	6.70	1976	7.42
10,625	1769	5.24	1829	5.79	1891	6.40	1954	7.06	2018	7.78
11,250	1831	5.69	1887	6.23	1944	6.81	2003	7.45	2063	8.14
11,875	1896	6.20	1948	6.72	2001	7.29	2056	7.90	2111	8.56
12,500	1964	6.85	2012	7.36	2061	7.91	2112	8.51	2164	9.16

Std/Med Static 1099-2200 rpm, 6.0 Max bhp (3.0 Max bhp per fan motor)

High Static 1099-2200 rpm, 10.0 Max bhp (5.0 Max bhp per fan motor)

50FEQM28 — Standard/Medium Static — 25 Ton Vertical Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
7,500	1099	4.9	1174	5.3	1256	5.6	1343	6.0	1433	6.5
8,125	1177	5.3	1246	5.6	1319	5.9	1397	6.3	1479	6.7
8,750	1256	5.6	1319	5.9	1385	6.2	1456	6.6	1530	6.9
9,375	1337	6.0	1394	6.3	1455	6.6	1519	6.9	1586	7.2
10,000	1417	6.4	1471	6.6	1526	6.9	1585	7.2	1646	7.4
10,625	1498	6.8	1548	7.0	1600	7.2	1654	7.5	1710	7.7
11,250	1579	7.1	1626	7.4	1675	7.6	1725	7.8	1777	8.0
11,875	1661	7.5	1705	7.7	1751	7.9	1798	8.1	1846	8.4
12,500	1743	7.9	1785	8.1	1828	8.3	1872	8.5	1917	8.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
7,500	1521	6.9	1604	7.2	1683	7.6	1757	8.0	1828	8.3
8,125	1561	7.1	1642	7.4	1720	7.8	1794	8.1	1864	8.4
8,750	1606	7.3	1683	7.6	1758	8.0	1830	8.3	—	—
9,375	1655	7.5	1727	7.8	1798	8.1	1869	8.5	—	—
10,000	1710	7.7	1776	8.0	1843	8.4	—	—	—	—
10,625	1769	8.0	1829	8.3	1891	8.6	—	—	—	—
11,250	1831	8.3	1887	8.6	—	—	—	—	—	—
11,875	1896	8.6	—	—	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1099-2200 rpm

Fan data (cont)



50FEQM28 — High Static — 25 Ton Vertical Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
7,500	1099	4.9	1174	5.3	1256	5.6	1343	6.0	1433	6.5
8,125	1177	5.3	1246	5.6	1319	5.9	1397	6.3	1479	6.7
8,750	1256	5.6	1319	5.9	1385	6.2	1456	6.6	1530	6.9
9,375	1337	6.0	1394	6.3	1455	6.6	1519	6.9	1586	7.2
10,000	1417	6.4	1471	6.6	1526	6.9	1585	7.2	1646	7.4
10,625	1498	6.8	1548	7.0	1600	7.2	1654	7.5	1710	7.7
11,250	1579	7.1	1626	7.4	1675	7.6	1725	7.8	1777	8.0
11,875	1661	7.5	1705	7.7	1751	7.9	1798	8.1	1846	8.4
12,500	1743	7.9	1785	8.1	1828	8.3	1872	8.5	1917	8.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
7,500	1521	6.9	1604	7.2	1683	7.6	1757	8.0	1828	8.3
8,125	1561	7.1	1642	7.4	1720	7.8	1794	8.1	1864	8.4
8,750	1606	7.3	1683	7.6	1758	8.0	1830	8.3	1900	8.6
9,375	1655	7.5	1727	7.8	1798	8.1	1869	8.5	1937	8.8
10,000	1710	7.7	1776	8.0	1843	8.4	1910	8.7	1976	9.0
10,625	1769	8.0	1829	8.3	1891	8.6	1954	8.9	2018	9.2
11,250	1831	8.3	1887	8.6	1944	8.8	2003	9.1	2063	9.4
11,875	1896	8.6	1948	8.8	2001	9.1	2056	9.3	2111	9.6
12,500	1964	8.9	2012	9.1	2061	9.4	2112	9.6	2164	9.8

High Static 1099-2200 rpm

Fan data (cont)



50FEQM17 — 15 Ton Horizontal Supply (rpm - bhp)

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	1055	0.71	1171	0.97	1279	1.26	1379	1.58	1472	1.92
4875	1122	0.85	1231	1.12	1334	1.43	1430	1.76	1520	2.11
5250	1190	1.01	1293	1.30	1390	1.61	1482	1.95	1569	2.32
5625	1259	1.19	1356	1.49	1448	1.81	1536	2.16	1621	2.54
6000	1329	1.39	1420	1.69	1508	2.03	1592	2.39	1674	2.78
6375	1399	1.60	1486	1.92	1570	2.26	1650	2.63	1728	3.02
6750	1470	1.83	1553	2.16	1632	2.51	1710	2.89	1785	3.28
7125	1541	2.08	1620	2.42	1696	2.77	1770	3.15	1842	3.56
7500	1612	2.34	1688	2.69	1761	3.06	1832	3.44	1902	3.85

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	1560	2.29	1642	2.67	1721	3.29	1796	3.74	1870	4.22
4875	1605	2.49	1685	2.88	1762	3.29	1835	3.99	1906	4.47
5250	1652	2.70	1730	3.10	1805	3.53	1877	4.27	1946	4.75
5625	1701	2.94	1777	3.35	1850	3.78	1920	4.57	1988	5.07
6000	1751	3.18	1826	3.60	1897	4.04	1966	4.90	2032	5.41
6375	1803	3.43	1876	3.86	1945	4.31	2013	5.26	2078	5.79
6750	1857	3.70	1927	4.13	1995	4.59	2061	5.65	2125	6.19
7125	1913	3.98	1981	4.42	2047	4.88	2111	6.07	2173	6.62
7500	1969	4.27	2035	4.72	2099	5.18	2162	6.52	—	—

High Static 1055-2200 rpm, 10.0 Max bhp (5.0 Max bhp per fan motor)

50FEQM17 — High Static — 15 Ton Horizontal Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
4500	1055	4.7	1171	5.3	1279	5.7	1379	6.2	1472	6.6
4875	1122	5.0	1231	5.5	1334	6.0	1430	6.4	1520	6.9
5250	1190	5.3	1293	5.8	1390	6.3	1482	6.7	1569	7.1
5625	1259	5.7	1356	6.1	1448	6.5	1536	6.9	1621	7.3
6000	1329	6.0	1420	6.4	1508	6.8	1592	7.2	1674	7.6
6375	1399	6.3	1486	6.7	1570	7.1	1650	7.5	1728	7.8
6750	1470	6.6	1553	7.0	1632	7.4	1710	7.7	1785	8.1
7125	1541	7.0	1620	7.3	1696	7.7	1770	8.0	1842	8.3
7500	1612	7.3	1688	7.6	1761	8.0	1832	8.3	1902	8.6

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
4500	1560	7.0	1642	7.4	1721	7.8	1796	8.1	1870	8.5
4875	1605	7.3	1685	7.6	1762	8.0	1835	8.3	1906	8.6
5250	1652	7.5	1730	7.8	1805	8.2	1877	8.5	1946	8.8
5625	1701	7.7	1777	8.0	1850	8.4	1920	8.7	1988	9.0
6000	1751	7.9	1826	8.3	1897	8.6	1966	8.9	2032	9.2
6375	1803	8.2	1876	8.5	1945	8.8	2013	9.1	2078	9.4
6750	1857	8.4	1927	8.7	1995	9.1	2061	9.4	2125	9.7
7125	1913	8.7	1981	9.0	2047	9.3	2111	9.6	2173	9.9
7500	1969	8.9	2035	9.2	2099	9.5	2162	9.8	—	—

High Static 1055-2200 rpm

Fan data (cont)



50FEQM24 — 20 Ton Horizontal Supply (rpm - bhp)

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
6,000	1267	1.20	1361	1.49	1451	1.81	1538	2.15	1621	2.52
6,500	1356	1.45	1443	1.75	1527	2.07	1609	2.43	1688	2.80
7,000	1446	1.73	1527	2.04	1606	2.37	1683	2.73	1758	3.11
7,500	1537	2.03	1612	2.35	1687	2.69	1760	3.05	1831	3.44
8,000	1628	2.36	1699	2.68	1769	3.03	1838	3.40	1906	3.79
8,500	1719	2.71	1786	3.04	1853	3.40	1918	3.77	1983	4.16
9,000	1811	3.09	1875	3.43	1938	3.79	2000	4.17	2061	4.56
9,500	1904	3.50	1964	3.85	2024	4.21	2083	4.59	2142	4.99
10,000	1997	3.94	2054	4.29	2111	4.66	2167	5.04	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
6,000	1700	2.90	1777	3.32	1850	3.74	1921	4.19	1989	4.65
6,500	1764	3.20	1838	3.62	1909	4.05	1977	4.50	2043	4.97
7,000	1831	3.51	1901	3.93	1970	4.37	2036	4.83	2100	5.30
7,500	1900	3.84	1968	4.27	2033	4.71	2098	5.17	2160	5.64
8,000	1972	4.20	2037	4.63	2100	5.07	2162	5.53	—	—
8,500	2046	4.57	2108	5.00	2169	5.45	—	—	—	—
9,000	2122	4.97	2181	5.40	—	—	—	—	—	—
9,500	2199	5.40	—	—	—	—	—	—	—	—
10,000	—	—	—	—	—	—	—	—	—	—

High Static 1267-2200 rpm, 10.0 Max bhp (5.0 Max bhp per fan motor)

50FEQM24 — High Static — 20 Ton Horizontal Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
6,000	1267	5.7	1361	6.1	1451	6.5	1538	6.9	1621	7.3
6,500	1356	6.1	1443	6.5	1527	6.9	1609	7.3	1688	7.6
7,000	1446	6.5	1527	6.9	1606	7.3	1683	7.6	1758	8.0
7,500	1537	6.9	1612	7.3	1687	7.6	1760	8.0	1831	8.3
8,000	1628	7.4	1699	7.7	1769	8.0	1838	8.3	1906	8.6
8,500	1719	7.8	1786	8.1	1853	8.4	1918	8.7	1983	9.0
9,000	1811	8.2	1875	8.5	1938	8.8	2000	9.1	2061	9.4
9,500	1904	8.6	1964	8.9	2024	9.2	2083	9.5	2142	9.7
10,000	1997	9.1	2054	9.3	2111	9.6	2167	9.8	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
6,000	1700	7.7	1777	8.0	1850	8.4	1921	8.7	1989	9.0
6,500	1764	8.0	1838	8.3	1909	8.7	1977	9.0	2043	9.3
7,000	1831	8.3	1901	8.6	1970	8.9	2036	9.2	2100	9.5
7,500	1900	8.6	1968	8.9	2033	9.2	2098	9.5	2160	9.8
8,000	1972	8.9	2037	9.2	2100	9.5	2162	9.8	—	—
8,500	2046	9.3	2108	9.6	2169	9.9	—	—	—	—
9,000	2122	9.6	2181	9.9	—	—	—	—	—	—
9,500	2199	10.0	—	—	—	—	—	—	—	—
10,000	—	—	—	—	—	—	—	—	—	—

High Static 1267-2200 rpm

Fan data (cont)



50FEQM28 — 25 Ton Horizontal Supply (rpm - bhp)

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
7,500	1406	2.11	1483	2.47	1559	2.87	1636	3.32	1711	3.80
8,125	1509	2.60	1580	2.98	1651	3.40	1722	3.86	1792	4.35
8,750	1614	3.16	1679	3.56	1744	3.98	1810	4.45	1876	4.96
9,375	1719	3.78	1779	4.19	1840	4.63	1902	5.11	1963	5.62
10,000	1824	4.44	1880	4.87	1938	5.33	1995	5.81	2053	6.34
10,625	1930	5.16	1983	5.60	2036	6.06	2091	6.56	2145	7.09
11,250	2036	5.91	2086	6.35	2137	6.83	2187	7.32	—	—
11,875	2143	6.67	2190	7.12	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—

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
7,500	1783	4.30	1853	4.82	1921	5.37	1986	5.94	2048	6.51
8,125	1861	4.87	1928	5.42	1993	5.98	2055	6.56	2116	7.16
8,750	1941	5.49	2005	6.05	2067	6.63	2128	7.24	2187	7.86
9,375	2024	6.16	2085	6.74	2144	7.33	—	—	—	—
10,000	2111	6.89	2168	7.46	—	—	—	—	—	—
10,625	2199	7.63	—	—	—	—	—	—	—	—
11,250	—	—	—	—	—	—	—	—	—	—
11,875	—	—	—	—	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—

High Static 1406-2200 rpm, 10.0 Max bhp (5.0 Max bhp per fan motor)

50FEQM28 — High Static — 25 Ton Horizontal Supply (rpm - vdc)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
7,500	1406	6.3	1483	6.7	1559	7.0	1636	7.4	1711	7.7
8,125	1509	6.8	1580	7.1	1651	7.5	1722	7.8	1792	8.1
8,750	1614	7.3	1679	7.6	1744	7.9	1810	8.2	1876	8.5
9,375	1719	7.8	1779	8.1	1840	8.3	1902	8.6	1963	8.9
10,000	1824	8.3	1880	8.5	1938	8.8	1995	9.1	2053	9.3
10,625	1930	8.8	1983	9.0	2036	9.2	2091	9.5	2145	9.7
11,250	2036	9.2	2086	9.5	2137	9.7	2187	9.9	—	—
11,875	2143	9.7	2190	10.0	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc	rpm	vdc
7,500	1783	8.1	1853	8.4	1921	8.7	1986	9.0	2048	9.3
8,125	1861	8.4	1928	8.7	1993	9.0	2055	9.3	2116	9.6
8,750	1941	8.8	2005	9.1	2067	9.4	2128	9.7	2187	9.9
9,375	2024	9.2	2085	9.5	2144	9.7	—	—	—	—
10,000	2111	9.6	2168	9.9	—	—	—	—	—	—
10,625	2199	10.0	—	—	—	—	—	—	—	—
11,250	—	—	—	—	—	—	—	—	—	—
11,875	—	—	—	—	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—

High Static 1406-2200 rpm

Electrical data



Legend and Notes

Applicable for Electrical Data Tables on pages 46 to 58

LEGEND

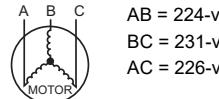
BRKR	— Circuit Breaker
C.O.	— Convenience Outlet
FLA	— Full Load Amps
IFM	— Indoor Fan Motor
LRA	— Locked Rotor Amps
MCA	— Minimum Circuit Amps
P.E.	— Power Exhaust
PWRD C.O.	— Powered Convenience Outlet
RLA	— Rated Load Amps
SCCR	— Short Circuit Current Rating
UNPWR C.O.	— Unpowered Convenience Outlet

NOTES:

1. In compliance with NEC requirements for multi-motor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. For 208/230 v units, where one value is show it is the same for either 208 or 230 volts.
3. **Unbalanced 3-Phase Supply Voltage:** Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

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

Example: Supply voltage is 230-3-60



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

Determine maximum deviation from average voltage.

$$(AB) 227-224 = 3-v$$

$$(BC) 231-227 = 4-v$$

$$(AC) 227-226 = 1-v$$

Maximum deviation is 4-v.

Determine percent of voltage imbalance.

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

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

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

Electrical data (cont)



50FEQM17-28 Cooling Electrical Data

50FEQ UNIT SIZE	V-Ph-Hz	UNIT VOLTAGE		STD SCCR kA	HIGH SCCR kA ^a	COMP 1		COMP 2		OFM (EA)		IFM				
		RANGE				RLA	LRA	RLA	LRA	WATTS	FLA	TYPE	EFFCY AT FULL LOAD	FLA		
		MIN	MAX													
50FEQM17 Vertical	208-3-60	187	253	5	60	31.8	255	23.6	157	350	1.5	STD/MED	90.0%	6.4		
	230-3-60	187	253	5	60	31.8	255	23.6	157	350	1.5	STD/MED	90.0%	6.4		
	460-3-60	414	506	5	65	15.0	123	10.1	75	277	0.9	STD/MED	90.0%	3.0		
	575-3-60	518	633	5	—	11.9	94	8.6	48	397	0.6	STD/MED	90.0%	2.5		
												HIGH	90.0%	3.0		
50FEQM17 Horizontal	208-3-60	187	253	5	60	31.8	255	23.6	157	350	1.5	HIGH	90.0%	12.6		
	230-3-60	187	253	5	60	31.8	255	23.6	157	350	1.5	HIGH	90.0%	12.6		
	460-3-60	414	506	5	65	15.0	123	10.1	75	277	0.9	HIGH	90.0%	5.6		
	575-3-60	518	633	5	—	11.9	94	8.6	48	397	0.6	HIGH	90.0%	4.6		
50FEQM24 Vertical	208-3-60	187	253	5	60	37.1	255	37.1	255	397	1.9	STD/MED	90.0%	6.4		
	230-3-60	187	253	5	60	37.1	255	37.1	255	397	1.9	STD/MED	90.0%	6.4		
	460-3-60	414	506	5	65	17.1	140	17.1	140	397	0.9	STD/MED	90.0%	3.0		
	575-3-60	518	633	5	—	14.4	108	14.4	108	397	0.7	STD/MED	90.0%	2.5		
												HIGH	90.0%	4.6		
50FEQM24 Horizontal	208-3-60	187	253	5	60	37.1	255	37.1	255	397	1.9	HIGH	90.0%	12.6		
	230-3-60	187	253	5	60	37.1	255	37.1	255	397	1.9	HIGH	90.0%	12.6		
	460-3-60	414	506	5	65	17.1	140	17.1	140	397	0.9	HIGH	90.0%	5.6		
	575-3-60	518	633	5	—	14.4	108	14.4	108	397	0.7	HIGH	90.0%	4.6		
50FEQM28 Vertical	208-3-60	187	253	5	60	51.3	300	45.4	270	397	1.9	STD/MED	90.0%	7.5		
	230-3-60	187	253	5	60	51.3	300	45.4	270	397	1.9	STD/MED	90.0%	7.5		
	460-3-60	414	506	5	65	22.4	150	21.6	147	397	0.9	STD/MED	90.0%	3.5		
	575-3-60	518	633	5	—	19.9	109	15.3	109	397	0.7	STD/MED	90.0%	3.0		
												HIGH	90.0%	4.6		
50FEQM28 Horizontal	208-3-60	187	253	5	60	51.3	300	45.4	270	397	1.9	HIGH	90.0%	12.6		
	230-3-60	187	253	5	60	51.3	300	45.4	270	397	1.9	HIGH	90.0%	12.6		
	460-3-60	414	506	5	65	22.4	150	21.6	147	397	0.9	HIGH	90.0%	5.6		
	575-3-60	518	633	5	—	19.9	109	15.3	109	397	0.7	HIGH	90.0%	4.6		

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on the following: units with Low Ambient controls, Phase loss monitor, Non-fused disconnect, Powered convenience outlet, and 575-v models.

Electrical data (cont)



50FEQM17 MCA MOCP Electrical Data

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	HIGH SCCR kA ^a	ELECTRIC HEATER			NO CONVENIENCE OUTLET OR UNPOWERED CONVENIENCE OUTLET									
					STD SCCR CRHEATER ****00	HIGH SCCR CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				w/POWER EXHAUST (powered from unit)				
									MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		
									FLA	LRA				FLA	LRA		
50FEQM17 Vertical	208/230-3-60	STD/MED	5	60	—	—	—	—	81	100	84	439	92	110	97	459	
					454A	454A	18.8/25.0	52.1/60.1	146/156	150/175	144/153	491/499	158/168	175/175	157/166	511/519	
		HIGH	5		455A	455A	37.6/50.0	104.2/120.3	211/201	225/225	203/222	543/559	223/213	225/225	217/236	563/579	
					456A	456A	56.3/75.0	156.4/180.4	237/261	250/300	263/291	595/619	249/273	300/300	277/305	615/639	
					—	—	—	—	83	100	86	443	95	125	100	463	
		STD/MED	5	60	454A	454A	18.8/25.0	52.1/60.1	148/158	150/175	146/155	495/503	160/170	175/175	160/169	515/523	
					455A	455A	37.6/50.0	104.2/120.3	213/203	225/225	206/224	547/563	225/215	225/225	220/238	567/583	
		HIGH	5		456A	456A	56.3/75.0	156.4/180.4	239/263	250/300	266/294	599/623	251/275	300/300	280/307	619/643	
					—	—	—	—	38	50	39	212	44	50	46	224	
					457A	457A	25.0	30.1	75	80	73	242	81	90	81	254	
50FEQM17 Horizontal	460-3-60	STD/MED	5	65	458A	458A	50.0	60.1	98	110	108	272	104	110	115	284	
					459A	459A	75.0	90.2	128	150	143	302	134	150	150	314	
		HIGH	5		—	—	—	—	39	50	40	214	45	50	47	226	
					457A	457A	25.0	30.1	76	80	75	244	82	90	82	256	
					458A	458A	50.0	60.1	99	110	109	274	105	110	116	286	
		STD/MED	5	—	459A	459A	75.0	90.2	129	150	144	304	135	150	151	316	
					—	—	—	—	30	40	31	156	35	45	37	164	
		HIGH	5		460A	—	24.8	23.9	60	70	59	180	65	70	64	188	
					461A	—	49.6	47.7	90	90	86	204	95	100	92	212	
					462A	—	74.4	71.6	102	110	114	228	107	110	119	236	
575-3-60	575-3-60	STD/MED	5	—	—	—	—	—	31	40	33	156	36	45	38	164	
					460A	—	24.8	23.9	61	70	60	180	66	70	66	188	
		HIGH	5		461A	—	49.6	47.7	91	100	87	204	96	100	93	212	
					462A	—	74.4	71.6	103	110	115	228	108	125	120	236	
		HIGH	5	60	—	—	—	—	93	110	98	457	105	125	111	477	
					463A	463A	18.8/25.0	52.1/60.1	158/168	175/175	158/167	509/517	170/180	175/200	171/181	529/537	
		HIGH	5		464A	464A	37.6/50.0	104.2/120.3	223/213	225/225	218/236	561/577	235/225	250/250	231/250	581/597	
					465A	465A	56.3/75.0	156.4/180.4	250/274	300/300	278/305	613/637	261/285	300/300	291/319	633/657	
					—	—	—	—	43	50	45	220	49	60	52	232	
575-3-60	460-3-60	HIGH	5	65	466A	466A	25.0	30.1	80	90	79	250	87	90	87	262	
					467A	467A	50.0	60.1	103	110	114	280	109	125	121	292	
					468A	468A	75.0	90.2	133	150	149	310	139	150	156	322	
		HIGH	5		—	—	—	—	34	45	36	160	39	50	42	168	
					469A	—	24.8	23.9	64	70	64	184	69	70	69	192	
		HIGH	5		470A	—	49.6	47.7	94	100	91	208	99	100	97	216	
					471A	—	74.4	71.6	106	110	119	232	111	125	124	240	

NOTE(S):

a. High SCCR (Short Circuit Current Rating) is not available on the following: units with Low Ambient controls, Phase loss monitor, Non-fused disconnect, and 575-v models.

Electrical data (cont)



50FEQM17 MCA MOCP Electrical Data (cont)

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	ELECTRIC HEATER			W/POWERED CONVENIENCE OUTLET							
				STD SCCR CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				w/POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	FLA	LRA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE
50FEQM17 Vertical	208/230-3-60	STD/MED	5	—	—	—	86	100	89	444	97	125	103	464
				454A	18.8/25.0	52.1/60.1	151/161	175/175	149/158	496/504	162/172	175/175	163/172	516/524
				455A	37.6/50.0	104.2/120.3	216/206	225/225	209/227	548/564	228/218	250/250	223/241	568/584
				456A	56.3/75.0	156.4/180.4	242/266	250/300	269/297	600/624	254/278	300/300	283/310	620/644
	HIGH	5	5	—	—	—	88	100	92	448	100	125	105	468
				454A	18.8/25.0	52.1/60.1	153/163	175/175	152/161	500/508	165/175	175/175	165/174	520/528
				455A	37.6/50.0	104.2/120.3	218/208	225/225	211/230	552/568	230/220	250/250	225/244	572/588
				456A	56.3/75.0	156.4/180.4	244/268	300/300	272/299	604/628	256/280	300/300	285/313	624/648
	460-3-60	STD/MED	5	—	—	—	40	50	41	214	46	60	49	226
				457A	25.0	30.1	77	80	76	244	84	90	83	256
				458A	50.0	60.1	100	110	111	274	106	110	118	286
				459A	75.0	90.2	130	150	145	304	136	150	152	316
	HIGH	5	5	—	—	—	41	50	43	216	47	60	50	228
				457A	25.0	30.1	78	80	77	246	85	90	84	258
				458A	50.0	60.1	101	110	112	276	107	125	119	288
				459A	75.0	90.2	131	150	146	306	137	150	153	318
	575-3-60	STD/MED	5	—	—	—	32	40	33	158	37	45	39	166
				460A	24.8	23.9	62	70	61	182	67	70	66	190
				461A	49.6	47.7	92	100	88	206	96	100	94	214
				462A	74.4	71.6	104	110	116	230	108	125	121	238
	HIGH	5	5	—	—	—	33	40	35	158	38	45	40	166
				460A	24.8	23.9	63	70	62	182	68	70	68	190
				461A	49.6	47.7	93	100	89	206	97	100	95	214
				462A	74.4	71.6	105	110	117	230	109	125	122	238
50FEQM17 Horizontal	208/230-3-60	HIGH	5	—	—	—	98	125	103	462	110	125	117	482
				463A	18.8/25.0	52.1/60.1	163/173	175/175	163/173	514/522	175/185	175/200	177/186	534/542
				464A	37.6/50.0	104.2/120.3	228/218	250/250	223/242	566/582	240/230	250/250	237/255	586/602
				465A	56.3/75.0	156.4/180.4	254/278	300/300	283/311	618/642	266/290	300/300	297/324	638/662
	460-3-60	HIGH	5	—	—	—	45	50	47	222	51	60	55	234
				466A	25.0	30.1	83	90	82	252	89	90	89	264
				467A	50.0	60.1	105	110	116	282	111	125	124	294
				468A	75.0	90.2	135	150	151	312	141	150	158	324
	475-3-60	HIGH	5	—	—	—	36	45	38	162	41	50	44	170
				469A	24.8	23.9	66	70	66	186	71	80	71	194
				470A	49.6	47.7	96	100	93	210	101	110	99	218
				471A	74.4	71.6	108	125	121	234	113	125	126	242

Electrical data (cont)



50FEQM24 MCA MOCP Electrical Data

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	HIGH SCCR kA ^a	ELECTRIC HEATER			NO CONVENIENCE OUTLET OR UNPOWERED CONVENIENCE OUTLET								
					STD SCCR CRHEATER ****00	HIGH SCCR CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				w/POWER EXHAUST (powered from unit)			
									MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
									FLA	LRA				FLA	LRA	
50FEQM24 Vertical	208/230-3-60	STD/MED	5	60	—	—	—	—	104	125	109	540	116	150	122	560
					454A	454A	18.8/25.0	52.1/60.1	169/179	175/200	169/178	592/600	181/191	200/200	182/191	612/620
					455A	455A	37.6/50.0	104.2/120.3	234/224	250/250	229/247	644/660	246/236	250/250	242/261	664/680
					456A	456A	56.3/75.0	156.4/180.4	260/284	300/300	289/316	696/720	272/296	300/350	302/330	716/740
		HIGH	5	60	—	—	—	—	116	150	123	558	128	150	137	578
					454A	454A	18.8/25.0	52.1/60.1	181/191	200/200	183/192	610/618	193/203	200/225	197/206	630/638
					455A	455A	37.6/50.0	104.2/120.3	246/237	250/250	243/261	662/678	258/248	300/300	256/275	682/698
					456A	456A	56.3/75.0	156.4/180.4	273/297	300/350	303/331	714/738	284/308	300/350	316/344	734/758
	460-3-60	STD/MED	5	65	—	—	—	—	48	60	50	296	54	60	58	308
					457A	457A	25.0	30.1	86	90	85	326	92	100	92	338
					458A	458A	50.0	60.1	108	125	119	356	114	125	127	368
					459A	459A	75.0	90.2	138	150	154	386	144	150	161	398
		HIGH	5	65	—	—	—	—	53	60	56	304	60	70	63	316
					457A	457A	25.0	30.1	91	100	91	334	97	100	98	346
					458A	458A	50.0	60.1	113	125	125	364	120	125	133	376
					459A	459A	75.0	90.2	144	150	160	394	150	175	167	406
50FEQM24 Horizontal	575-3-60	STD/MED	5	—	—	—	—	—	40	50	42	232	45	50	48	240
					460A	—	24.8	23.9	70	80	70	256	75	80	75	264
					461A	—	49.6	47.7	100	100	97	280	105	110	102	288
					462A	—	74.4	71.6	112	125	124	304	117	125	130	312
		HIGH	5	—	—	—	—	—	44	50	47	236	49	60	52	244
					460A	—	24.8	23.9	74	80	74	260	79	80	80	268
					461A	—	49.6	47.7	104	110	102	284	109	110	107	292
					462A	—	74.4	71.6	116	125	129	308	121	125	135	316
	460-3-60	HIGH	5	60	—	—	—	—	116	150	123	558	128	150	137	578
					463A	463A	18.8/25.0	52.1/60.1	181/191	200/200	183/192	610/618	193/203	200/225	197/206	630/638
					464A	464A	37.6/50.0	104.2/120.3	246/237	250/250	243/261	662/678	258/248	300/300	256/275	682/698
					465A	465A	56.3/75.0	156.4/180.4	273/297	300/350	303/331	714/738	284/308	300/350	316/344	734/758
		HIGH	5	65	—	—	—	—	53	60	56	304	60	70	63	316
					466A	466A	25.0	30.1	91	100	91	334	97	100	98	346
					467A	467A	50.0	60.1	113	125	125	364	120	125	133	376
					468A	468A	75.0	90.2	144	150	160	394	150	175	167	406
	575-3-60	HIGH	5	—	—	—	—	—	44	50	47	236	49	60	52	244
					469A	—	24.8	23.9	74	80	74	260	79	80	80	268
					470A	—	49.6	47.7	104	110	102	284	109	110	107	292
					471A	—	74.4	71.6	116	125	129	308	121	125	135	316

NOTE(S):

a. High SCCR (Short Circuit Current Rating) is not available on the following: units with Low Ambient controls, Phase loss monitor, Non-fused disconnect, and 575-v models.

Electrical data (cont)



50FEQM24 MCA MOCP Electrical Data (cont)

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	ELECTRIC HEATER			W/POWERED CONVENIENCE OUTLET							
				STD SCCR CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				w/POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	FLA	LRA
50FEQM24 Vertical	208/230-3-60	STD/MED	5	—	—	—	109	125	114	545	120	150	128	565
				454A	18.8/25.0	52.1/60.1	174/184	175/200	174/183	597/605	186/196	200/200	188/197	617/625
				455A	37.6/50.0	104.2/120.3	239/229	250/250	234/253	649/665	251/241	300/300	248/266	669/685
				456A	56.3/75.0	156.4/180.4	265/289	300/300	294/322	701/725	277/301	300/350	308/335	721/745
		HIGH	5	—	—	—	121	150	129	563	133	150	142	583
				454A	18.8/25.0	52.1/60.1	186/196	200/200	188/198	615/623	198/208	200/225	202/211	635/643
				455A	37.6/50.0	104.2/120.3	251/241	300/300	248/267	667/683	263/253	300/300	262/280	687/703
				456A	56.3/75.0	156.4/180.4	278/302	300/350	308/336	719/743	289/313	300/350	322/350	739/763
	460-3-60	STD/MED	5	—	—	—	50	60	53	298	56	70	60	310
				457A	25.0	30.1	88	90	88	328	94	100	95	340
				458A	50.0	60.1	110	125	122	358	117	125	129	370
				459A	75.0	90.2	140	150	157	388	147	175	164	400
		HIGH	5	—	—	—	56	60	59	306	62	70	66	318
				457A	25.0	30.1	93	100	93	336	99	100	101	348
				458A	50.0	60.1	116	125	128	366	122	150	135	378
				459A	75.0	90.2	146	150	163	396	152	175	170	408
	575-3-60	STD/MED	5	—	—	—	42	50	44	234	47	60	50	242
				460A	24.8	23.9	72	80	72	258	77	80	77	266
				461A	49.6	47.7	102	110	99	282	106	110	104	290
				462A	74.4	71.6	114	125	126	306	118	125	132	314
		HIGH	5	—	—	—	46	60	49	238	51	60	54	246
				460A	24.8	23.9	76	80	76	262	81	90	82	270
				461A	49.6	47.7	106	110	104	286	110	125	109	294
				462A	74.4	71.6	118	125	131	310	122	150	137	318
50FEQM24 Horizontal	208/230-3-60	HIGH	5	—	—	—	121	150	129	563	133	150	142	583
				463A	18.8/25.0	52.1/60.1	186/196	200/200	188/198	615/623	198/208	200/225	202/211	635/643
				464A	37.6/50.0	104.2/120.3	251/241	300/300	248/267	667/683	263/253	300/300	262/280	687/703
				465A	56.3/75.0	156.4/180.4	278/302	300/350	308/336	719/743	289/313	300/350	322/350	739/763
		HIGH	5	—	—	—	56	60	59	306	62	70	66	318
				466A	25.0	30.1	93	100	93	336	99	100	101	348
				467A	50.0	60.1	116	125	128	366	122	150	135	378
				468A	75.0	90.2	146	150	163	396	152	175	170	408
	475-3-60	HIGH	5	—	—	—	46	60	49	238	51	60	54	246
				469A	24.8	23.9	76	80	76	262	81	90	82	270
				470A	49.6	47.7	106	110	104	286	110	125	109	294
				471A	74.4	71.6	118	125	131	310	122	150	137	318

Electrical data (cont)



50FEQM28 MCA MOCP Electrical Data

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	HIGH SCCR kA ^a	ELECTRIC HEATER			NO CONVENIENCE OUTLET OR UNPOWERED CONVENIENCE OUTLET								
					STD SCCR CRHEATER ****00	HIGH SCCR CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST			w/POWER EXHAUST (powered from unit)				
									MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		
50FEQM28 Vertical	208/230-3-60	STD/MED	5	60	—	—	—	—	132	175	137	604	144	175	151	624
					454A	454A	18.8/25.0	52.1/60.1	197/207	225/225	197/206	656/664	209/219	225/250	211/220	676/684
					455A	455A	37.6/50.0	104.2/120.3	262/252	300/300	257/276	708/724	274/264	300/300	271/289	728/744
					456A	456A	56.3/75.0	156.4/180.4	288/312	350/350	317/345	760/784	300/324	350/350	331/358	780/804
		HIGH	5	60	—	—	—	—	142	175	149	618	154	200	162	638
					454A	454A	18.8/25.0	52.1/60.1	208/218	225/250	209/218	670/678	219/229	250/250	222/232	690/698
					455A	455A	37.6/50.0	104.2/120.3	273/263	300/300	269/287	722/738	284/274	300/300	282/301	742/758
					456A	456A	56.3/75.0	156.4/180.4	299/323	350/350	329/356	774/798	310/334	350/350	342/370	794/818
	460-3-60	STD/MED	5	65	—	—	—	—	60	80	63	315	66	80	70	327
					457A	457A	25.0	30.1	98	100	97	345	104	110	105	357
					458A	458A	50.0	60.1	120	150	132	375	126	150	139	387
					459A	459A	75.0	90.2	150	175	167	405	157	175	174	417
		HIGH	5	65	—	—	—	—	64	80	68	321	71	90	75	333
					457A	457A	25.0	30.1	102	110	102	351	108	110	109	363
					458A	458A	50.0	60.1	124	150	137	381	131	150	144	393
					459A	459A	75.0	90.2	155	175	171	411	161	175	178	423
50FEQM28 Horizontal	575-3-60	STD/MED	5	—	—	—	—	—	49	60	51	234	54	60	56	242
					460A	—	24.8	23.9	79	90	78	258	84	90	84	266
					461A	—	49.6	47.7	109	110	105	282	113	125	111	290
					462A	—	74.4	71.6	121	150	133	306	125	150	138	314
		HIGH	5	—	—	—	—	—	52	60	54	238	57	70	60	246
					460A	—	24.8	23.9	82	90	82	262	87	100	87	270
					461A	—	49.6	47.7	112	125	109	286	117	125	115	294
					462A	—	74.4	71.6	124	150	137	310	129	150	142	318
	208/230-3-60	HIGH	5	65	—	—	—	—	142	175	149	618	154	200	162	638
					463A	463A	18.8/25.0	52.1/60.1	208/218	225/250	209/218	670/678	219/229	250/250	222/232	690/698
					464A	464A	37.6/50.0	104.2/120.3	273/263	300/300	269/287	722/738	284/274	300/300	282/301	742/758
					465A	465A	56.3/75.0	156.4/180.4	299/323	350/350	329/356	774/798	310/334	350/350	342/370	794/818
		HIGH	5	65	—	—	—	—	64	80	68	321	71	90	75	333
					466A	466A	25.0	30.1	102	110	102	351	108	110	109	363
					467A	467A	50.0	60.1	124	150	137	381	131	150	144	393
					468A	468A	75.0	90.2	155	175	171	411	161	175	178	423
575-3-60	460-3-60	HIGH	5	—	—	—	—	—	52	60	54	238	57	70	60	246
					469A	—	24.8	23.9	82	90	82	262	87	100	87	270
					470A	—	49.6	47.7	112	125	109	286	117	125	115	294
					471A	—	74.4	71.6	124	150	137	310	129	150	142	318

NOTE(S):

a. High SCCR (Short Circuit Current Rating) is not available on the following: units with Low Ambient controls, Phase loss monitor, Non-fused disconnect, and 575-v models.

Electrical data (cont)



50FEQM28 MCA MOCP Electrical Data (cont)

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	ELECTRIC HEATER			W/POWERED CONVENIENCE OUTLET							
				STD SCCR CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				w/POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	FLA	LRA
50FEQM28 Vertical	208/230-3-60	STD/MED	5	—	—	—	137	175	143	609	149	200	156	629
				454A	18.8/25.0	52.1/60.1	202/212	225/225	203/212	661/669	214/224	250/250	216/225	681/689
				455A	37.6/50.0	104.2/120.3	267/257	300/300	263/281	713/729	279/269	300/300	276/295	733/749
				456A	56.3/75.0	156.4/180.4	293/317	350/350	323/350	765/789	305/329	350/350	336/364	785/809
		HIGH	5	—	—	—	147	175	154	623	159	200	168	643
				454A	18.8/25.0	52.1/60.1	212/222	250/250	214/224	675/683	224/234	250/250	228/237	695/703
				455A	37.6/50.0	104.2/120.3	277/267	300/300	274/293	727/743	289/279	300/300	288/306	747/763
				456A	56.3/75.0	156.4/180.4	304/328	350/350	334/362	779/803	315/339	350/400	348/375	799/823
	460-3-60	STD/MED	5	—	—	—	62	80	65	317	69	90	72	329
				457A	25.0	30.1	100	110	100	347	106	110	107	359
				458A	50.0	60.1	122	150	134	377	129	150	142	389
				459A	75.0	90.2	153	175	169	407	159	175	176	419
		HIGH	5	—	—	—	67	80	70	323	73	90	77	335
				457A	25.0	30.1	104	110	105	353	110	125	112	365
				458A	50.0	60.1	127	150	139	383	133	150	146	395
				459A	75.0	90.2	157	175	174	413	163	175	181	425
	575-3-60	STD/MED	5	—	—	—	51	60	53	236	56	70	58	244
				460A	24.8	23.9	81	90	80	260	85	90	86	268
				461A	49.6	47.7	110	125	107	284	115	125	113	292
				462A	74.4	71.6	122	150	135	308	127	150	140	316
		HIGH	5	—	—	—	54	60	56	240	59	70	62	248
				460A	24.8	23.9	84	90	84	264	89	100	89	272
				461A	49.6	47.7	114	125	111	288	118	125	117	296
				462A	74.4	71.6	126	150	139	312	130	150	144	320
50FEQM28 Horizontal	208/230-3-60	HIGH	5	—	—	—	147	175	154	623	159	200	168	643
				463A	18.8/25.0	52.1/60.1	212/222	250/250	214/224	675/683	224/234	250/250	228/237	695/703
				464A	37.6/50.0	104.2/120.3	277/267	300/300	274/293	727/743	289/279	300/300	288/306	747/763
				465A	56.3/75.0	156.4/180.4	304/328	350/350	334/362	779/803	315/339	350/400	348/375	799/823
		HIGH	5	—	—	—	67	80	70	323	73	90	77	335
				466A	25.0	30.1	104	110	105	353	110	125	112	365
				467A	50.0	60.1	127	150	139	383	133	150	146	395
				468A	75.0	90.2	157	175	174	413	163	175	181	425
	475-3-60	HIGH	5	—	—	—	54	60	56	240	59	70	62	248
				469A	24.8	23.9	84	90	84	264	89	100	89	272
				470A	49.6	47.7	114	125	111	288	118	125	117	296
				471A	74.4	71.6	126	150	139	312	130	150	144	320

Electrical data (cont)



50FEQM17 Electric Heat Data — Standard SCCR Unit

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	STD ELECTRIC HEATER PART NUMBER	NOMINAL (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	STD SCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXA00			
								NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
								NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E.	w/P.E. (pwrd fr/unit)
50FEQM17 Vertical	208/230-3-60	STD/MED	5	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH	5	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD/MED	5	CRHEATER457A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER458A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER459A00	75.0	68.9	235.0	057	057	057	057
		HIGH	5	CRHEATER457A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER458A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER459A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD/MED	5	CRHEATER460A00	24.8	22.8	77.7	—	—	—	—
				CRHEATER461A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER462A00	74.4	68.3	233.1	057	057	057	057
		HIGH	5	CRHEATER460A00	24.8	22.8	77.7	—	—	—	—
				CRHEATER461A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER462A00	74.4	68.3	233.1	057	057	057	057
50FEQM17 Horizontal	208/230-3-60	HIGH	5	CRHEATER463A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER464A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER465A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	HIGH	5	CRHEATER466A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER467A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER468A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	HIGH	5	CRHEATER469A00	24.8	22.8	77.7	—	—	—	057
				CRHEATER470A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER471A00	74.4	68.3	233.1	057	057	057	057

Electrical data (cont)



50FEQM17 Electric Heat Data — High SCCR Unit

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	HIGH SCCR kA	HIGH SCCR ELECTRIC HEATER PART NUMBER	NOMINAL (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HIGH SCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXA00	
								NO C.O. OR UNPOWERED C.O.	
								NO P.E.	w/P.E. (pwrd fr/unit)
50FEQM17 Vertical	208/230-3-60	STD/MED	60	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	058	058
		HIGH	60	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	058	058
	460-3-60	STD/MED	65	CRHEATER457A00	25.0	23.0	78.3	059	059
				CRHEATER458A00	50.0	45.9	156.7	059	059
				CRHEATER459A00	75.0	68.9	235.0	059	059
		HIGH	65	CRHEATER457A00	25.0	23.0	78.3	059	059
				CRHEATER458A00	50.0	45.9	156.7	059	059
				CRHEATER459A00	75.0	68.9	235.0	059	059
	575-3-60	STD/MED	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—
		HIGH	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—
50FEQM17 Horizontal	208/230-3-60	HIGH	60	CRHEATER463A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER464A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER465A00	75.0	56.3/68.9	192.2/235.0	058	058
	460-3-60	HIGH	65	CRHEATER466A00	25.0	23.0	78.3	059	059
				CRHEATER467A00	50.0	45.9	156.7	059	059
				CRHEATER468A00	75.0	68.9	235.0	059	059
	575-3-60	HIGH	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—

Electrical data (cont)



50FEQM24 Electric Heat Data — Standard SCCR Unit

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	STD ELECTRIC HEATER PART NUMBER	NOMINAL (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	STD SCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXA00			
								NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
								NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E.	w/P.E. (pwrd fr/unit)
50FEQM24 Vertical	208/230-3-60	STD/MED	5	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH	5	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD/MED	5	CRHEATER457A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER458A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER459A00	75.0	68.9	235.0	057	057	057	057
		HIGH	5	CRHEATER457A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER458A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER459A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD/MED	5	CRHEATER460A00	24.8	22.8	77.7	057	057	057	057
				CRHEATER461A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER462A00	74.4	68.3	233.1	057	057	057	057
		HIGH	5	CRHEATER460A00	24.8	22.8	77.7	057	057	057	057
				CRHEATER461A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER462A00	74.4	68.3	233.1	057	057	057	057
50FEQM24 Horizontal	208/230-3-60	HIGH	5	CRHEATER463A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER464A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER465A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	HIGH	5	CRHEATER466A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER467A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER468A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	HIGH	5	CRHEATER469A00	24.8	22.8	77.7	057	057	057	057
				CRHEATER470A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER471A00	74.4	68.3	233.1	057	057	057	057

Electrical data (cont)



50FEQM24 Electric Heat Data — High SCCR Unit

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	HIGH SCCR kA	HIGH SCCR ELECTRIC HEATER PART NUMBER	NOMINAL (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HIGH SCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXA00	
								NO C.O. OR UNPOWERED C.O.	
								NO P.E.	w/P.E. (pwrd fr/unit)
50FEQM24 Vertical	208/230-3-60	STD/MED	60	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	058	058
		HIGH	60	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	058	058
	460-3-60	STD/MED	65	CRHEATER457A00	25.0	23.0	78.3	059	059
				CRHEATER458A00	50.0	45.9	156.7	059	059
				CRHEATER459A00	75.0	68.9	235.0	059	059
		HIGH	55	CRHEATER457A00	25.0	23.0	78.3	059	059
				CRHEATER458A00	50.0	45.9	156.7	059	059
				CRHEATER459A00	75.0	68.9	235.0	059	059
	575-3-60	STD/MED	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—
		HIGH	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—
50FEQM24 Horizontal	208/230-3-60	HIGH	60	CRHEATER463A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER464A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER465A00	75.0	56.3/68.9	192.2/235.0	058	058
	460-3-60	HIGH	65	CRHEATER466A00	25.0	23.0	78.3	059	059
				CRHEATER467A00	50.0	45.9	156.7	059	059
				CRHEATER468A00	75.0	68.9	235.0	059	059
	575-3-60	HIGH	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—

Electrical data (cont)



50FEQM28 Electric Heat Data — Standard SCCR Unit

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	STD ELECTRIC HEATER PART NUMBER	NOMINAL (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	STD SCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXA00			
								NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
								NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E.	w/P.E. (pwrd fr/unit)
50FEQM28 Vertical	208/230-3-60	STD/MED	5	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
		HIGH	5	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	STD/MED	5	CRHEATER457A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER458A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER459A00	75.0	68.9	235.0	057	057	057	057
		HIGH	5	CRHEATER457A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER458A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER459A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	STD/MED	5	CRHEATER460A00	24.8	22.8	77.7	057	057	057	057
				CRHEATER461A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER462A00	74.4	68.3	233.1	057	057	057	057
		HIGH	5	CRHEATER460A00	24.8	22.8	77.7	057	057	057	057
				CRHEATER461A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER462A00	74.4	68.3	233.1	057	057	057	057
50FEQM28 Horizontal	208/230-3-60	HIGH	5	CRHEATER463A00	25.0	18.8/23.0	64.1/78.3	056	056	056	056
				CRHEATER464A00	50.0	37.6/45.9	128.1/156.7	056	056	056	056
				CRHEATER465A00	75.0	56.3/68.9	192.2/235.0	056	056	056	056
	460-3-60	HIGH	5	CRHEATER466A00	25.0	23.0	78.3	057	057	057	057
				CRHEATER467A00	50.0	45.9	156.7	057	057	057	057
				CRHEATER468A00	75.0	68.9	235.0	057	057	057	057
	575-3-60	HIGH	5	CRHEATER469A00	24.8	22.8	77.7	057	057	057	057
				CRHEATER470A00	49.6	45.6	155.4	057	057	057	057
				CRHEATER471A00	74.4	68.3	233.1	057	057	057	057

Electrical data (cont)



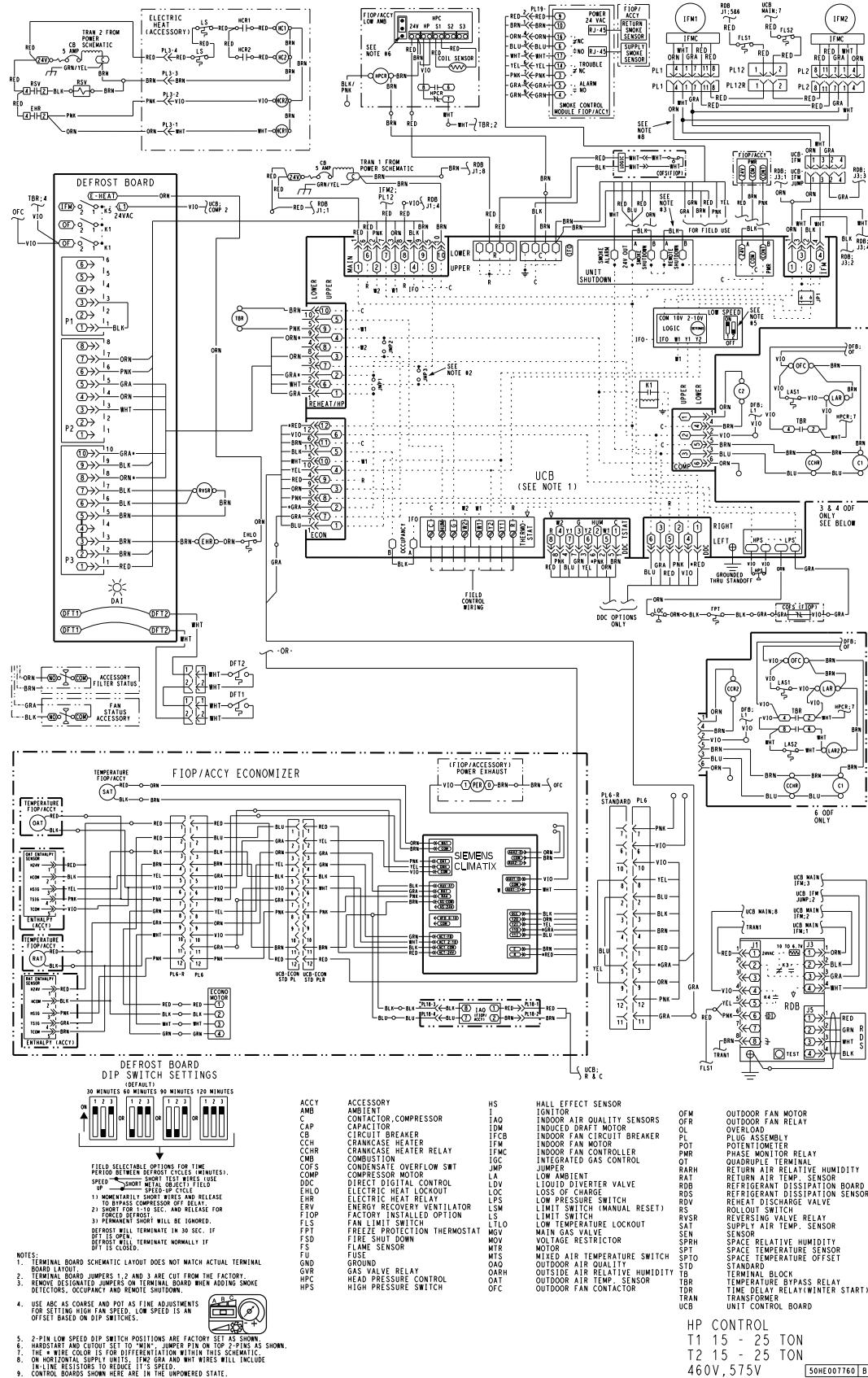
50FEQM28 Electric Heat Data — High SCCR Unit

50FEQ UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	HIGH SCCR kA	HIGH SCCR ELECTRIC HEATER PART NUMBER	NOMINAL (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HIGH SCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00	
								NO C.O. OR UNPOWERED C.O.	
								NO P.E.	w/P.E. (pwrd fr/unit)
50FEQM28 Vertical	208/230-3-60	STD/MED	60	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	058	058
		HIGH	60	CRHEATER454A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER455A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER456A00	75.0	56.3/68.9	192.2/235.0	058	058
	460-3-60	STD/MED	65	CRHEATER457A00	25.0	23.0	78.3	059	059
				CRHEATER458A00	50.0	45.9	156.7	059	059
				CRHEATER459A00	75.0	68.9	235.0	059	059
		HIGH	65	CRHEATER457A00	25.0	23.0	78.3	059	059
				CRHEATER458A00	50.0	45.9	156.7	059	059
				CRHEATER459A00	75.0	68.9	235.0	059	059
	575-3-60	STD/MED	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—
		HIGH	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—
50FEQM28 Horizontal	208/230-3-60	HIGH	60	CRHEATER463A00	25.0	18.8/23.0	64.1/78.3	058	058
				CRHEATER464A00	50.0	37.6/45.9	128.1/156.7	058	058
				CRHEATER465A00	75.0	56.3/68.9	192.2/235.0	058	058
	460-3-60	HIGH	65	CRHEATER466A00	25.0	23.0	78.3	059	059
				CRHEATER467A00	50.0	45.9	156.7	059	059
				CRHEATER468A00	75.0	68.9	235.0	059	059
	575-3-60	HIGH	—	—	24.8	22.8	77.7	—	—
				—	49.6	45.6	155.4	—	—
				—	74.4	68.3	233.1	—	—

Typical wiring diagrams



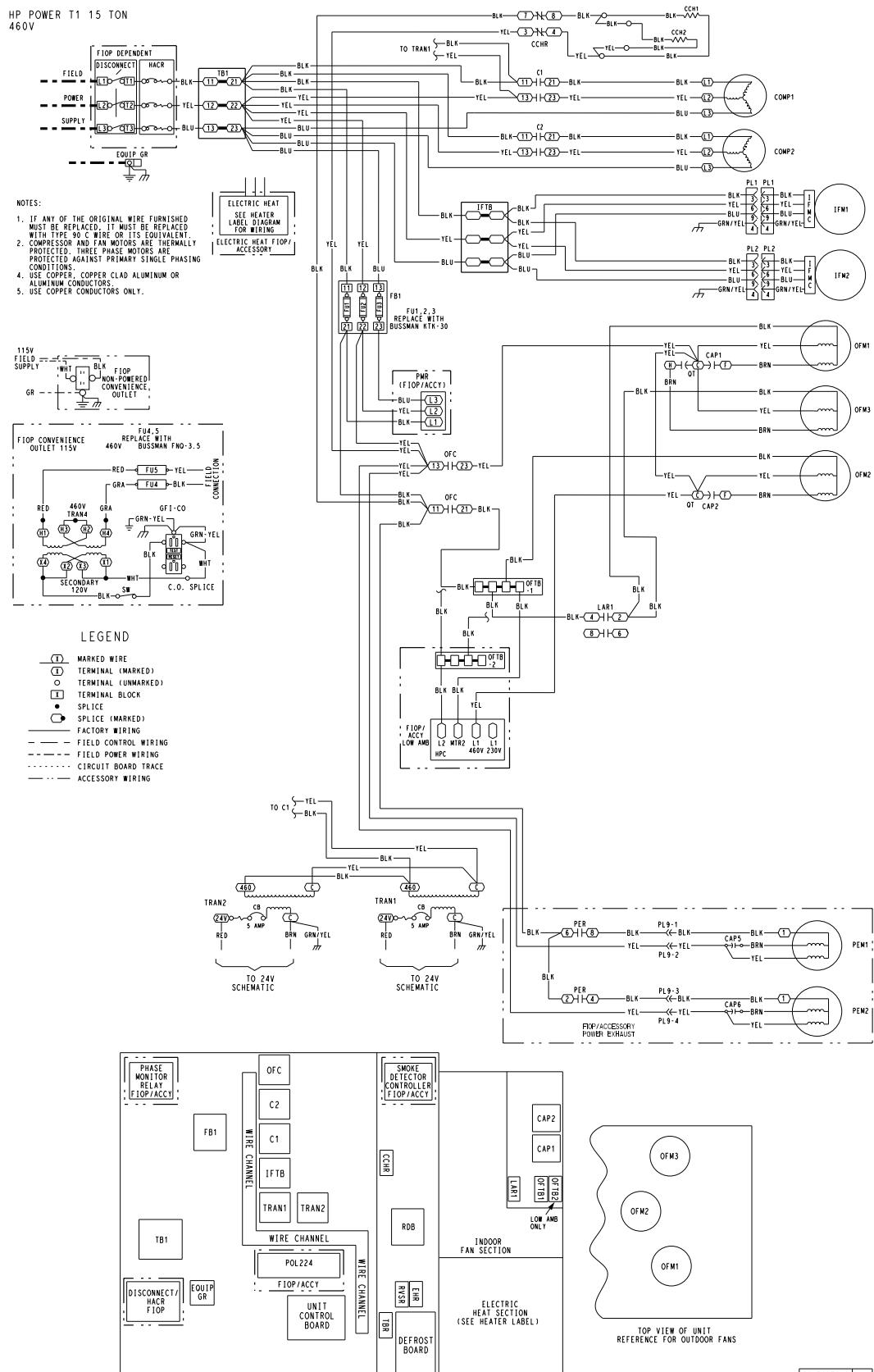
Typical 50FEQ*17-28 Control Wiring Diagram, Electromechanical with POL224 Controller, 460/575-3-60 Unit Shown



Typical wiring diagrams (cont)



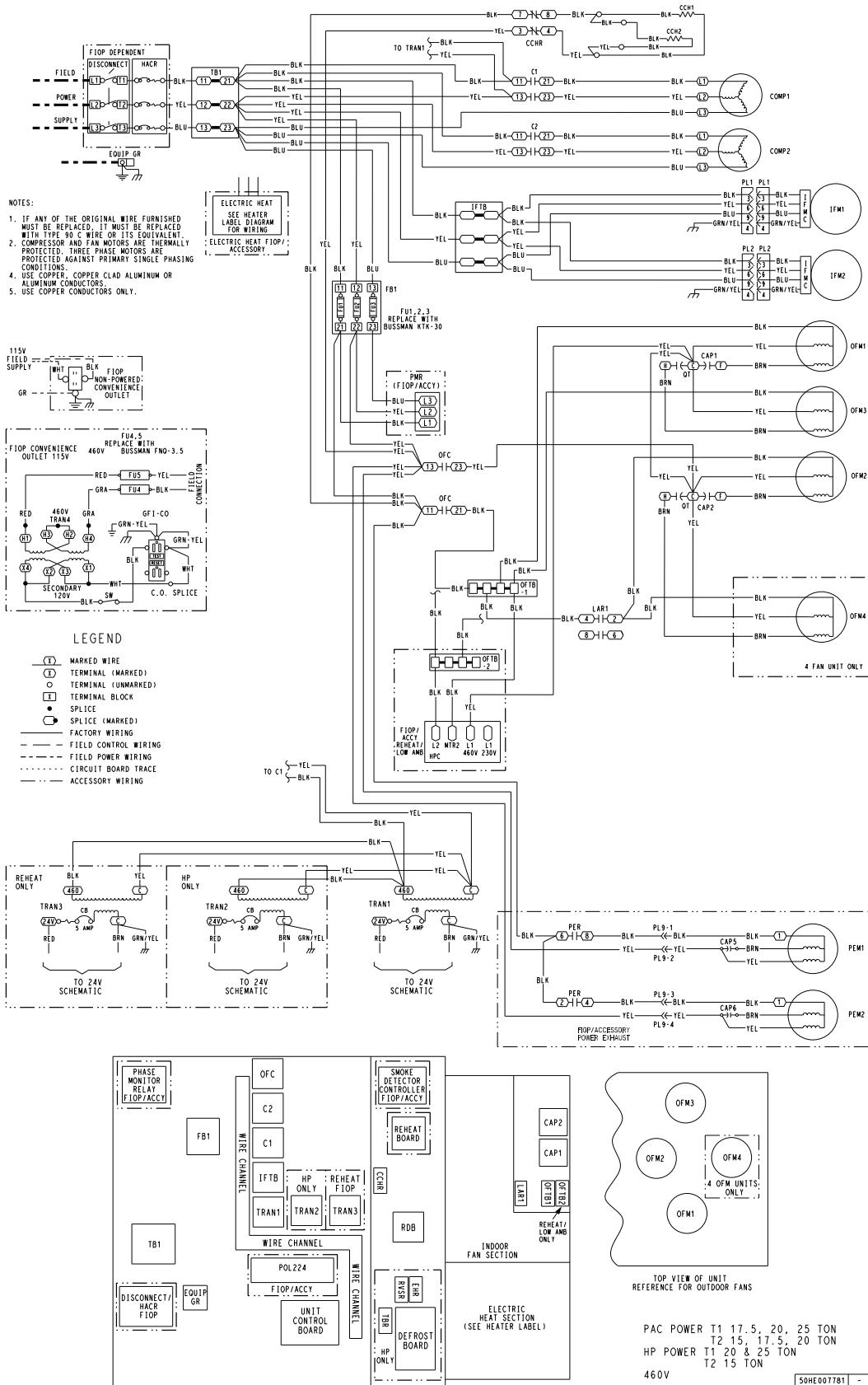
**Typical 50FEQ*17 Power Wiring Diagram, Electromechanical Controller,
15 Ton 460-3-60 Unit Shown**



Typical wiring diagrams (cont)



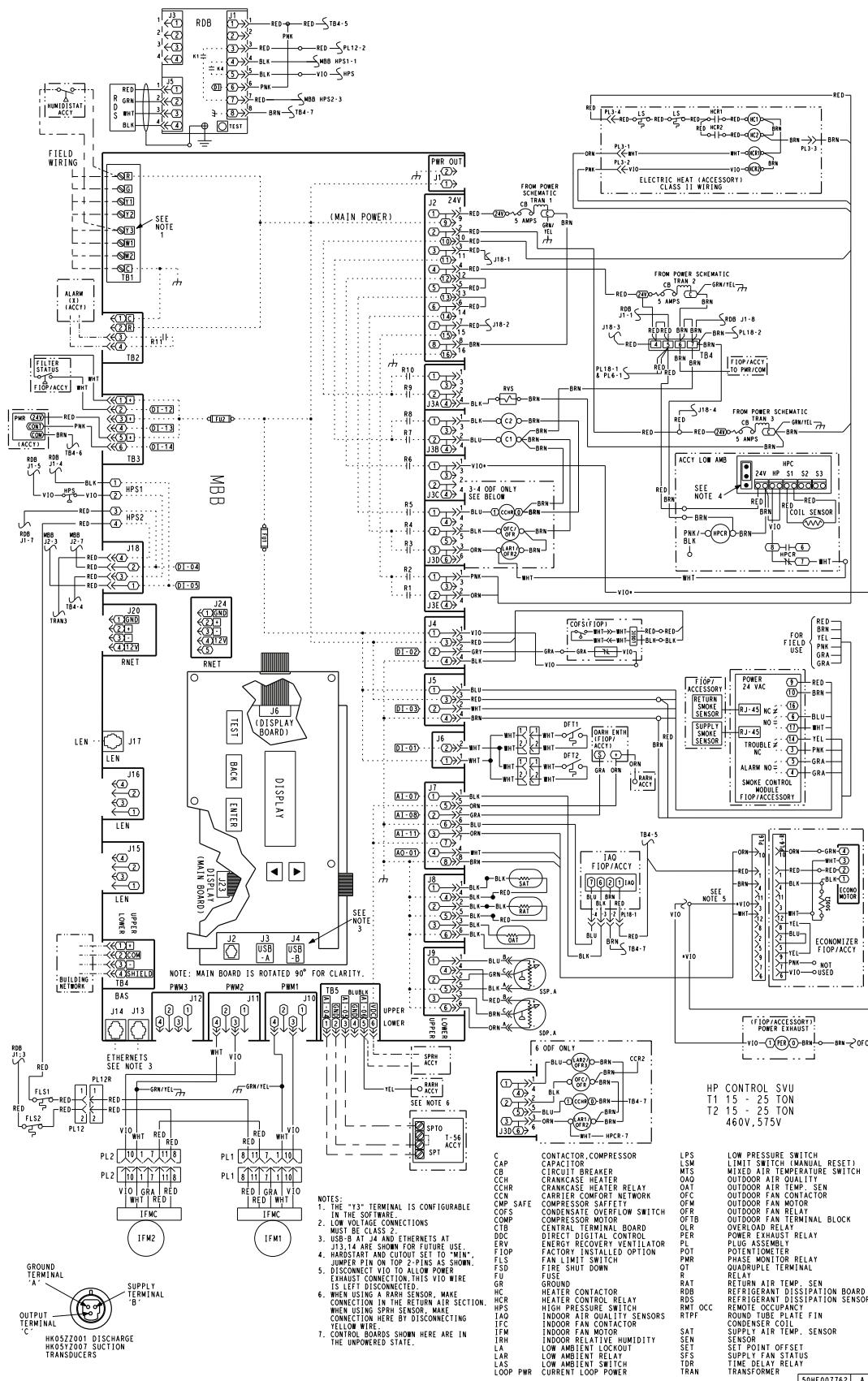
Typical 50FEQ*24-28 Power Wiring Diagram, Electromechanical Controller, 460-3-60 Unit Shown



Typical wiring diagrams (cont)



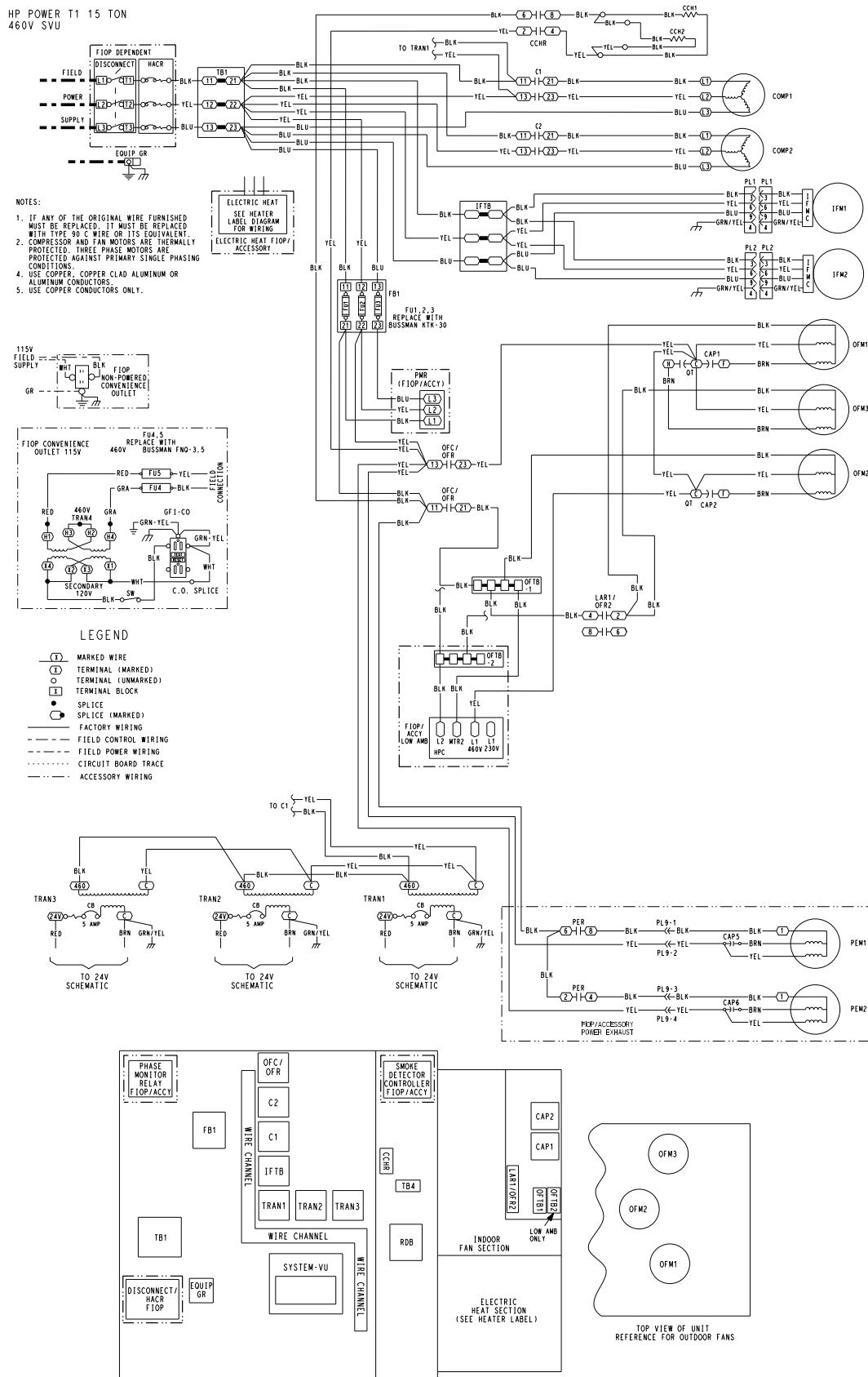
Typical 50FEQ*17-28 Control Wiring Diagram, SystemVu™ Controller, 460-3-60 Unit Shown



Typical wiring diagrams (cont)



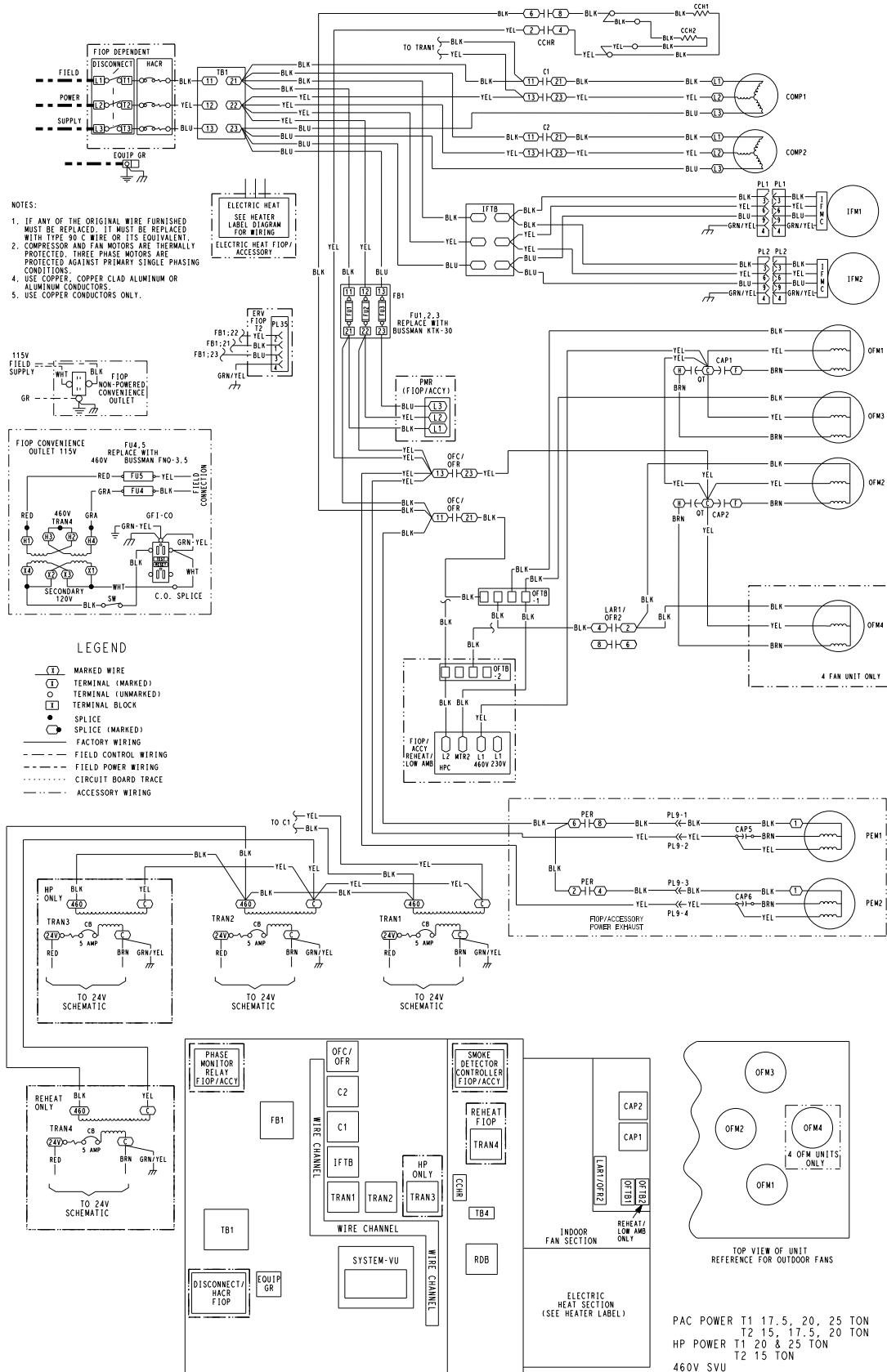
Typical 50FEQ*17 Power Wiring Diagram, SystemVu™ Controller, 15 Ton 460-3-60 Unit Shown



Typical wiring diagrams (cont)



Typical 50FEQ*24-28 Power Wiring Diagram, SystemVu™ Controller, 460-3-60 Unit Shown



Sequence of operation



General

The sequence below describes the sequence of operation for an electromechanical unit with and without a factory-installed EconomizerONE (POL224 controller). For information regarding a direct digital controller, see the start-up, operations, and troubleshooting manual for the applicable controller.

Electromechanical units without economizer

Cooling

When the thermostat calls for cooling, terminals G and Y1 are energized. The indoor fan will run at the low fan speed and the C1 compressor contactor (CC) is energized causing the compressor and outdoor fan to run. The low indoor fan speed is 60% or 66% of the user set fan speed depending on unit size.

If additional cooling is needed, the thermostat will add the call for Y2. This will increase the indoor fan speed to the user set fan speed and energize the C2 contactor and second compressor for full compressor capacity. The outdoor fan is the same speed for Y1 and Y2.

When the thermostat removes the call for Y2 but leaves the Y1, the indoor fan will slow to the reduced percentage of the user set fan speed, the C2 contactor will de-energize, the second compressor will turn off, and the outdoor fan will remain on. When the thermostat removes the call for Y1 the compressor contactor will de-energize shutting down the compressor and the outdoor fan. When the thermostat removes the call for G, the indoor fan will turn off after the specific unit fan off delay.

NOTE: Per ASHRAE 90.1-2019 and IECC-2018 standards, during the first stage cooling operation the Unit Control Board (UCB) will adjust the fan motor speed to provide 60% or 66% of the total cfm established for the unit.

Defrost

When the temperature of the outdoor coil drops below 28°F (-2°C) as sensed by the defrost thermostat (DFT2) and the defrost timer is at the end of a timed period (adjustable at 30, 60, 90 or 120 minutes), the reversing valve solenoid (RVS) is energized and the OFC is de-energized. This switches the position of the reversing valve and shuts off the outdoor fan. The electric heaters (if installed) will be energized.

Heating, unit with economizer

Upon a request for heating from the space thermostat terminal, W1 will be energized with 24V. The indoor fan will run at high speed, and outdoor fan contactor (OFC), C1 and C2 will be energized in heating. The indoor fan, outdoor fans, and both stages of the compressor are energized. The reversing valve is de-energized and switch positions. The economizer is set to minimum position (ventilation position). If the space temperature continues to fall with W1 energized, W2 will bring on all electric heat (HC).

As the space temperature rises the W2 will de-energize and the compressors will continue to operate, until the thermostat set point is achieved de-energizing W1. If the thermostat is set to Auto, the indoor fan will de-energize and the economizer will close. If the indoor fan is set to On, the indoor fan will continue to operate and the economizer will remain at minimum position (vent position).

On units equipped for 2 stages of heat, when additional heat is needed, heater contactor no. 2 is energized through W2. The economizer damper moves to the minimum position. When the thermostat is satisfied, the damper moves to the fully closed position.

Heating, unit without economizer

Upon a request for heating from the space thermostat, terminal W1 will be energized with 24V. The IFC, outdoor fan contactor (OFC), C1, and C2 will be energized. The indoor fan, outdoor fans, and compressor no. 1, and compressor no. 2 are energized and reversing valves are de-energized and switch position.

If the space temperature continues to fall while W1 is energized, W2 will be energized with 24V, and the heater contactor(s) (HC) will be energized, which will energize the electric heater(s).

When the space thermostat is satisfied, W2 will be de-energized first, and the electric heater(s) will be de-energized. Upon a further rise in space temperature, W1 will be de-energized.

IMPORTANT: The thermostat must be configured for Electric Heat so it will energize G with the W1 call.

Electromechanical units with factory-installed EconomizerONE

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 EconomizerONE control to provide a 50°F (10°C) to 55°F (13°C) mixed-air temperature into the zone. As the mixed air temperature fluctuates above 55°F (13°C) or below 50°F (10°C) dampers will be modulated (open or close) to bring the mixed-air temperature back within control. If mechanical cooling is utilized with free cooling, the outdoor-air damper will maintain its current position at the time the compressor is started. If the increase in cooling capacity causes the mixed-air temperature to drop below 45°F (7°C), then the outdoor-air damper position will be decreased to the minimum position. If the mixed-air temperature continues to fall, the outdoor-air damper will close. Control returns to normal once the mixed-air temperature rises above 48°F (9°C). The power exhaust fans will be energized and de-energized, if installed, as the outdoor-air damper opens and closes.

If field-installed accessory CO₂ sensors are connected to the EconomizerONE control, a demand controlled ventilation strategy will begin to operate. As the CO₂ level in the zone increases above the CO₂ set-point (on the EconomizerONE controller), the minimum position of the damper will be increased proportionally until the Maximum Ventilation setting is reached. As the CO₂ level decreases because of the increase in fresh air, the outdoor-air damper will follow the higher demand condition from either the DCV mode or from the free cooling mode. For EconomizerONE 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 EconomizerONE 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

Sequence of operation (cont)

on, then the control will open the EconomizerONE damper to the minimum position.

On the initial power to the EconomizerONE 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 90 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 (dry bulb, outdoor enthalpy, differential dry bulb, or differential enthalpy), then the control will modulate the dampers open and closed to maintain the mixed-air temperature set-point 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 EconomizerONE damper will be open at maximum position.

NOTE: On 2-speed units, the EconomizerONE controller will adjust the damper position as the Indoor Fan Speed changes, per its configured values.

Heating

The sequence of operation for the heating is the same as an electromechanical unit without 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.

SystemVu™ controller (factory option)

For details on operating 50FEQ units equipped with the factory-installed SystemVu controller option, refer to FEQ/GEQ Series Single Package Rooftop Units with SystemVu Controller Controls, Start-Up, Operation and Troubleshooting manual.

Application data



Minimum operating ambient temperature (cooling)

In mechanical cooling mode, your Carrier rooftop unit can safely operate down to an outdoor ambient temperature of 40°F (4°C). It is possible to provide cooling at lower outdoor ambient temperatures by using less outside air, economizers, and/or accessory low ambient kits.

Maximum operating ambient temperature (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.

Multiple motor and drive packages

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 are available, factory installed, to handle nearly any application.

Minimum and maximum airflow (heating and cooling)

To maintain safe and reliable operation of your rooftop, operate within the heating airflow limits during heating mode and cooling airflow limits during cooling mode. Operating above the maximum may cause blow-off, undesired airflow noise, or airflow related problems with the rooftop unit. Operating below the minimum may cause problems with coil freeze-up and unsafe heating operation. Heating and cooling limitations differ when evaluating operating CFM; minimum value is the HIGHER of the cooling and heating minimum CFM values published on page 7 and the maximum value is the LOWER of the cooling and heating minimum values published on page 7.

Heating-to-cooling changeover

Your unit will automatically change from heating to cooling mode when using a thermostat with an auto-changeover feature.

Airflow

All units are draw-through in cooling mode and blow-through in heating 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, brake horsepower (bhp)

Due to internal design of Carrier units, the air path, and specially designed motors, the full horsepower (maximum continuous bhp) band, as listed in the Fan Performance tables, can be used with the utmost confidence. There is no need for extra safety factors, as Carrier 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 is not necessarily better. While an air conditioner needs to have enough capacity to meet the design loads, it does not need excess capacity. In fact, excess capacity typically results in very poor part load performance and humidity control.

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

Rather than oversizing an air conditioner, engineers should "right-size" or even slightly "under-size" air conditioners. Correctly sizing an air conditioner controls humidity better; promotes efficiency; reduces utility bills; extends equipment life, and maintains even, comfortable temperatures. Please contact your local Carrier representative for assistance.

Low ambient applications

The optional Carrier economizer can adequately cool your space by bringing in fresh, cool outside air. In fact, when so equipped, accessory low-ambient kit may not be necessary. In low ambient conditions, unless the outdoor air is excessively humid or contaminated, economizer-based "free cooling" is the preferred less costly and energy conscious method. In low ambient applications where outside air might not be desired (such as contaminated or excessively humid outdoor environments), your Carrier rooftop can operate to ambient temperatures down to -0°F (-18°C) using the recommended accessory low ambient controller.

Guide specifications



Note about this specification:

This specification is in the "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 Heat Pump

HVAC Guide Specifications

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

Carrier Model Number: **50FEQ*17-28**

Part 1 — (23 06 80) Schedules for Decentralized HVAC Equipment

1.01 (23 06 80.13) Decentralized Unitary HVAC Equipment Schedule:

- A. (23 06 80.13.A.) Rooftop Unit (RTU) Schedule:
 - 1. Schedule is per the project specification requirements.

Part 2 — (23 07 16) HVAC Equipment Insulation

2.01 (23 07 16.13) Decentralized, Rooftop Units:

- A. (23 07 16.13.A.) Evaporator Fan Compartment:
 - 1. Interior cabinet surfaces shall be insulated with a minimum 1/2 in. thick, minimum 1-1/2 lb density, flexible fiberglass insulation bonded with a phenolic binder, neoprene coated on the air side.
 - 2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
- B. (23 07 16.13.B.) Electric Heat Compartment:
 - 1. Aluminum foil-faced fiberglass insulation shall be used.
 - 2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

Part 3 — (23 09 13) Instrumentation and Control Devices for HVAC

3.01 (23 09 13.23) Sensors and Transmitters:

- A. (23 09 13.23.A.) Thermostats:

Thermostat must:

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

Part 4 — (23 09 23) Direct Digital Control system for HVAC

4.01 (23 09 23.13) Decentralized, Rooftop Units:

- A. (23 09 23.13.A.) SystemVu™ intelligent integrated Direct Digital Control (DDC) shall provide:
 - 1. Integrated unit operation for comfort cooling, heating ventilation as well as all monitoring, recording and reporting capabilities. Controller shall also provide diagnostics and alarms of abnormal unit operation through the controller. Controller shall have an intuitive user display and be able to be used in a standalone operation or via building automation system (BAS).
 - 2. Quick Unit Status LEDs of: RUN — meaning all systems are go, ALERT — that indicates there is currently a non-critical issue with the unit, like filters need to be replaced and FAULT — that indicates the unit has a critical issue and will possibly shut down.
 - 3. Six large navigation keys for easy access. Navigation keys shall consist of: TEST, BACK, ENTER, and MENU along with UP and DOWN arrows.
 - 4. Full back lit user display with 4 line by 30 character text capabilities. Display menu shall be designed to provide guided major menus and sub menus main menus provided below:
 - a. Shutdown Unit
 - b. Run Status
 - c. Settings
 - d. Alerts/Faults
 - e. Service
 - f. Inputs
 - g. Outputs
 - h. USB
 - 5. The capability for standalone operation with conventional thermostat/sensor or use with building automation systems (BAS) of Carrier i-Vu®, BACnet¹ MS/TP and Carrier Comfort Network[®] (CCN) systems. No special modules or boards are required for these capabilities. Has the capability to work with Equipment Touch[™] and System Touch[™] devices and ZS Sensors.
 - 6. The ability to read refrigerant pressures at display or via BAS network of Discharge Pressure and Suction Pressure. The need for traditional refrigerant gauges is not required.
 - 7. USB Data Port for flash drive interaction. This will allow the transfer of data for uploads, downloads, perform software upgrades, back-up and restore data and file transfer data such as component number of starts and run hours.
 - 8. Reverse Rotation Protection of compressors if field 3-phase wiring is misapplied.

1. Third-party trademarks and logos are the property of their respective owners.

Guide specifications (cont)



9. Provide Service Capabilities of:
 - a. Auto run test
 - b. Manual run test
 - c. Component run hours and starts
 - d. Commissioning reports
 - e. Data logging
 - f. Alarm history
10. Economizer control and diagnostics. Set up economizer operation, receive feedback from actuator. Also meets the most recent California Title 24, ASHRAE 90.1 and IECC®¹ Fault Detection and Diagnostic (FDD) requirements.
11. Unit cooling operation down to 40°F (4°C).
12. Controller shall have easy access connections around the controller perimeter area and consist of Mate-N-Lok®¹, terminal block and RJ style modular jack connections.
13. 365 day real time clock, 20 holiday schedules along with occupied and unoccupied scheduling.
14. Auto-Recognition for easy installation and commissioning of devices like economizers, space sensors, etc.
15. A 5°F temperature difference between cooling and heating set points to meet the latest ASHRAE 90.1 Energy Standard.
16. Contains return air sensor, supply air sensor and outdoor air sensor to help monitor and provide data for the unit comfort operation, diagnostic and alarms.
17. Use of Carrier's field accessory Equipment Touch and System Touch devices.
18. Supply Air Tempering control operates the electric heat to maintain a minimum supply air temperature during conditions where very cold outdoor air causes the supply air temperature to fall below the configured Supply Air Tempering Setpoint. This occurs during periods where DCV is active and increasing the amount of outdoor air or in cases where the system is operating at very low airflow and the calculated economizer position has increased to maintain a constant ventilation rate.
19. Demand limiting in units with SystemVu™ controller is achieved through set point expansion. The systems heating and cooling set points are expanded in steps or levels. The degree to which the set points may be expanded is defined by the 6 demand level offsets and the 2 commanded demand limit levels.
20. 3-year limited part warranty.

1. Third-party trademarks and logos are the property of their respective owners.

Part 5 — (23 09 33) Electric and Electronic Control System for HVAC

5.01 (23 09 33.13) Decentralized, Rooftop Units:

A. (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 75 VA capability.
2. Shall utilize color-coded wiring.
3. Shall include a Unit Control 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. Controller shall also provide an intuitive means to adjust the indoor fan speed through a simple switch and pot adjustment design.
4. Unit shall include a minimum of one 8-pin screw terminal connection board for connection of control wiring.
5. Shall include integrated defrost system to prevent excessive frost accumulation during heating duty, and shall be controlled as follows:
 - a. Defrost shall be initiated on the basis of time and coil temperature.
 - b. A 30, 60, 90, 120 minute timer shall activate the defrost cycle only if the coil temperature is low enough to indicate a heavy frost condition.
 - c. Defrost cycle shall terminate when defrost thermostat is satisfied and shall have a positive termination time of 10 minutes.
6. Defrost system shall also include:
 - a. Defrost Cycle Indicator LED.
 - b. DIP switch selectable defrost time between 30, 60, 90 and 120 minutes. Factory set at 30 minutes.
 - c. Molded plug connection to ensure proper connection.

B. (23 09 33.13.B.) Safeties:

1. Compressor over-temperature, over-current. High internal pressure differential.
2. Low Pressure Switch.
 - a. 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. 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.

Guide specifications (cont)



4. Heating section shall be provided with the following minimum protections:
 - a. High temperature limit switches.
5. A2L Refrigerant Leak Dissipation System (Electromechanical)
 - a. Leak dissipation system shall consist of control board and A2L sensor certified to UL 60335-2-40.
 - b. System shall be designed for the life of the unit.
 - c. Dissipation system shall be automatic, ship pre-wired, and require no additional field connections to thermostat to function.
 - d. Refrigerant leak sensor shall be installed in UL certified location and orientation. Sensor shall be self-correcting and resettable. Single use refrigerant leak sensor shall not be permitted.
 - e. Factory installed dissipation controller shall use onboard microprocessor and include:
 - 1) Automatic reset after a dissipation event has occurred.
 - 2) Onboard LED with flash code to indicate current unit status and hardware failures.
 - 3) Depressible “Test” button to allow for a system test and recall/reset of leak detection history.
 - 4) 24V dry contact alarm terminal to allow for external notification of leak detection.
 - f. Dissipation control board shall be accessible via normal maintenance locations and LED shall be visible.
 - g. Dissipation system shall “Fail Safe” per UL requirements.
 - h. Dissipation shall allow smoke and building fire systems to override in case of event.
6. A2L Refrigerant Leak Dissipation System (SystemVu)
 - a. Leak dissipation system shall consist of control board and A2L sensor certified to UL 60335-2-40, integrated with SystemVu controller.
 - b. System shall be designed for the life of the unit.
 - c. Dissipation system shall be automatic, ship pre-wired, and require no additional field connections to function.
 - d. Refrigerant leak sensor shall be installed in UL certified location and orientation. Sensor shall be self-correcting and resettable. Single use refrigerant leak sensor shall not be permitted.
 - e. Factory installed dissipation system shall use onboard microprocessor and include:
 - 1) Automatic leak detection and dissipation algorithm.
- 2) Automatic reset after a dissipation event has occurred.
- 3) Onboard LED with flash code to indicate current unit status and hardware failures.
- 4) Depressible “Test” button to allow for a system test and recall/reset of leak detection history.
- 5) 24V dry contact alarm terminal on dissipation control board to allow for external notification of leak detection.
- 6) Ability to notify BAS system of dissipation event via readable alarm point through SystemVu.
- 7) Recalable dissipation alarm history on SystemVu controller.
- f. Dissipation control board shall be accessible via normal maintenance locations and LED shall be visible.
- g. Dissipation system shall “Fail Safe” per UL requirements.
- h. Dissipation shall allow smoke and building fire systems to override in case of event.

Part 6 — (23 09 93) Sequence of Operation for HVAC Controls

6.01 (23 09 93.13) Decentralized, Rooftop Units:

- A. (23 09 93.13.A.) INSERT SEQUENCE OF OPERATION

Part 7 — (23 40 13) Panel Air Filters

7.01 (23 40 13.13) Decentralized, Rooftop Units:

- A. (23 40 13.13.A.) Standard Filter Section:

1. Shall consist of factory installed, low velocity, disposable 2 in. thick fiberglass filters of commercially available sizes.
2. Unit shall use only one filter size, Multiple sizes are not acceptable.
3. Filters shall be accessible through an access panel with “no-tool” removal as described in the unit cabinet section of this specification (23 81 19.13.G).

Part 8 — (23 81 19) Self-Contained Air Conditioners

8.01 (23 81 19.13) Small-Capacity Self-Contained Air Conditioners:

- A. (23 81 19.13.A.) General:

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing fully hermetic scroll compressors for cooling duty and heat pump heating duty.
2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
3. Unit shall use Puron Advance™ (R-454) refrigerant.
4. Unit shall be installed in accordance with the manufacturer’s instructions.

Guide specifications (cont)



5. Unit must be selected and installed in compliance with local, state, and federal codes.
- B. (23 81 19.13.B.) Quality Assurance:
 1. Unit meets ASHRAE 90.1 minimum efficiency requirements.
 2. Unit shall be rated in accordance with AHRI Standards 340/360.
 3. Unit shall be designed to conform to ASHRAE 15.
 4. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.
 5. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
 6. Unit casing shall be capable of withstanding 500 hour salt spray exposure per ASTM B117 (scribed specimen).
 7. Unit shall be designed in accordance with ISO 9001, and shall be manufactured in a facility registered by ISO 9001:2015.
 8. Roof curb shall be designed to conform to NRCA Standards.
 9. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.
 10. Unit shall be designed in accordance with UL Standard 60335-2-40, including testing to withstand rain. Unit shall be IPX4 rated.
 11. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.
 12. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.
- C. (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.
- D. (23 81 19.13.D.) Project Conditions:
 1. As specified in the contract.
- E. (23 81 19.13.E.) 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 down to 40°F (4°C) ambient outdoor temperatures in cooling mode.
3. Compressor with standard controls shall be capable of operation down to -10°F (-23°C) ambient outdoor temperatures or lower in heat pump heating mode.
4. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
5. Unit shall be factory configured for either vertical or horizontal supply and return configurations. Unit shall not require field conversion.
- F. (23 81 19.13.F.) Electrical Requirements:
 1. Main power supply voltage, phase, and frequency must match those required by the manufacturer.
- G. (23 81 19.13.G.) Unit Cabinet:
 1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
 2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003 in. minimum, gloss (per ASTM D523, 60°F/16°C): 60, Hardness: H-2H Pencil hardness.
 3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 1/2 in. thick, 1 lb density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the heat compartment.
 4. Base of unit shall have a minimum of 4 locations for thru-the-base gas and electrical connections (factory-installed or field-installed), standard.
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 corrosion resistant material.
 - b. Shall comply with ASHRAE Standard 62.
 - c. Shall use a 3/4 in. 14 NPT drain connection, through the side of the drain pan. Connection shall be made per manufacturer's recommendations.
7. Top Panel:
 - a. Shall be a multi-top panel with watertight flanges and locking systems.

Guide specifications (cont)



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, indoor fan, indoor fan motor, gas components (where applicable), and compressors shall have molded composite handles.
 - d. Handles shall be UV modified, composite. They shall be permanently attached, and recessed into the panel.
 - e. Screws on the vertical portion of all removable access panel shall engage into heat resistant, molded composite collars.
 - f. Collars shall be removable and easily replaceable using manufacturer recommended parts.
- H. (23 81 19.13.H.) Coils:
 1. Standard Aluminum Fin-Copper Tube Coils:
 - a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
 - b. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 60335-2-40 burst test at 1775 psig.
 - c. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 60335-2-40 burst test at 1980 psig.
 2. Optional Pre-Coated Aluminum-Fin Condenser Coils:
 - a. Shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments.
 - b. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube.
 - c. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.
- d. Corrosion durability of fin stock shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117.
- e. Corrosion durability of fin stock shall be confirmed through testing to have no visible corrosion after 48 hour immersion in a room temperature solution of 5% salt, 1% acetic acid.
- f. Fin stock coating shall pass 2000 hours of the following: one week exposure in the prohesion chamber followed by one week of accelerated ultraviolet light testing. Prohesion chamber: the solution shall contain 3.5% sodium chloride and 0.35% ammonium sulfate. The exposure cycle is one hour of salt fog application at ambient followed by one hour drying at 95°F (35°C).
3. Optional Copper-Fin Evaporator and Condenser Coils:
 - a. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets.
 - b. Galvanized steel tube sheets shall not be acceptable.
 - c. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.
4. Optional E-Coated Aluminum-Fin Evaporator and Condenser Coils:
 - a. Shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins.
 - b. Coating process shall ensure complete coil encapsulation of tubes, fins and headers.
 - c. Color shall be high gloss black with gloss per ASTM D523.
 - 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 and cross-hatch adhesion of 4B-5B per ASTM D3359.
 - f. Impact resistance shall be up to 160 in.-lb (ASTM D2794).
 - g. Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247 and ASTM D870).
 - h. Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117.
- I. (23 81 19.13.I.) 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

Guide specifications (cont)



- removable power element to allow change out of power element and bulb without removing the valve body.
- b. Refrigerant filter drier — Solid core design with pre and post filter service gauge connections for filter diagnostics and maintenance.
 - c. Service gauge connections on suction and discharge lines.
 - d. Pressure gauge access through a specially designed access port in the unit.
2. There shall be gauge line access port in the skin of the rooftop, covered by a black, removable plug.
- a. The plug shall be easy to remove and replace.
 - b. When the plug is removed, the gauge access port shall enable maintenance personnel to route their pressure gauge lines.
 - c. This gauge access port shall facilitate correct and accurate condenser pressure readings by enabling the reading with the compressor access panel on.
 - d. The plug shall be made of a leak proof, UV resistant, composite material.
3. Compressors:
- a. Unit shall use tandem scroll compressor assembly on single independent refrigeration circuit with two stages of cooling for efficient comfort cooling operation.
 - b. Evaporator coils shall be a full active design to help better control latent removal and minimize unconditioned bypass air.
 - 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 required by the manufacturer due to refrigerant charge limits.
- J. (23 81 19.13.J.) Filter Section:
- 1. Filters access is specified in the unit cabinet section of this specification.
 - 2. Filters shall be held in place by a pivoting 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.
- K. (23 81 19.13.K.) Evaporator Fan and Motor with EcoBlue™ Technology:
- 1. Direct Drive Evaporator Fan Motor:
 - a. Shall be a ECM motor design.
 - b. Shall be direct drive design for all static options.
 - c. Shall have permanently lubricated bearings.
 - d. Shall have inherent automatic-reset thermal overload protection.
 - e. Shall have slow ramp up to speed capabilities.
 - f. Shall require no fan/motor belts for operation, adjustments and or initial fan speed set up.
 - g. Fan DC voltage set up on Unit Control Board can eliminate the need of removal of blower access door, required on conventional belt drive systems.
 - h. Shall be internally protected from electrical phase reversal and loss.
 - 2. Evaporator Fan:
 - a. Speed shall be easily set with dedicated selection switch and adjustment pot on unit control board or through SystemVu™ controller.
 - b. Shall provide 2 stage cooling capacity control, the indoor fan speed is automatically controlled to meet the code-compliant low fan speed and 100% at full fan speed operation.
 - c. Blower fan shall be a Vane Axial fan design with fan assembly secured directly to ECM motor. Additional shafts, belts, pulleys/sheaves, and bearing blocks to drive fan shall not be permitted or necessary.
 - d. Additional variable frequency drive to control fan motor speed shall not be permitted or necessary. All speed control electronics must be onboard fan motor assembly.
 - e. Shall be constructed of a cast aluminum stator or high impact composite material on stator rotor and air inlet casing.
 - f. Shall be a patented design with a corrosion resistant material and dynamically balanced.
 - g. Fan assembly design shall be integrated to fan deck, dynamically balanced, and require no additional vibration isolation for normal operation.
 - h. Shall have slow ramp up to speed capabilities to help reduce sound and comfort issues typically associated with single speed belt drive systems.
 - i. Units shall contain 2 separate vane axial fan assemblies.
 - j. Shall be a slide out design with removal of a few support brackets.

Guide specifications (cont)



3. Shall include an easily accessible Unit Control 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, high and mixed air temperature switches. Controller shall also provide an intuitive means to adjust the indoor fan speed through a simple switch and pot adjustment design.

L. (23 81 19.13.L.) Condenser Fans and Motors:

1. Condenser Fan Motors:

- a. Shall be a totally enclosed motor.
- b. Shall use permanently lubricated bearings.
- c. Shall have inherent thermal overload protection with an automatic reset feature.
- d. Shall use a shaft-down design on all sizes.

2. Condenser Fans:

- a. Shall be a direct-driven propeller type fan.
- b. Shall have galvalum blades riveted to steel spider that have corrosion-resistant properties and shall be dynamically balanced.

M. (23 81 19.13.M.) Special Features Options and Accessories:

1. Integrated EconomizerONE and EconoMi\$er® 2 Low Leak Rate Models.
 - a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
 - b. Independent modules for vertical or horizontal return configuration shall be available. Vertical return modules shall be available as a factory installed option.
 - c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
 - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below set points.
 - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
 - f. Low leak rate shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.
 - g. Economizer controller on EconomizerONE models shall be Siemens POL224 that provides:
 - 1) Combined minimum and DCV maximum damper position potentiometers with compressor staging relay.
 - 2) Optional configuration via WLAN stick and Siemens Climatix™¹ smartphone app for easy setup.

- 3) Functions with solid-state analog enthalpy or dry bulb changeover control sensing.
 - 4) LED indicators for free cooling, sensor, and damper operation.
 - 5) One-line LCD interface screen for setup, configuration and troubleshooting.
 - 6) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24, ASHRAE 90.1 and IECC^{®1}.
 - 7) Sensor failure loss of communication identification.
 - 8) Capabilities for use with multiple-speed or single speed indoor fan systems.
 - 9) Digital sensors: Dry bulb and Enthalpy.
- h. Economizer controller on EconoMi\$er 2 models with SystemVu™ controls shall be a 4-20 mA design controlled directly by the controller. SystemVu controllers meet California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.
- i. Shall be capable of introducing up to 100% outdoor air.
 - j. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.
 - k. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
 - l. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory installed only. Outdoor air sensor setpoint shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C). Additional sensor options shall be available as accessories.
 - m. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.
 - n. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
 - o. Dampers shall be completely closed when the unit is in the unoccupied mode.

1. Third-party trademarks and logos are the property of their respective owners.

Guide specifications (cont)



- p. Economizer controller shall accept a 0 to 10 vdc CO₂ sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.
- q. Compressor lockout temperature on POL224 control is adjustable from -45°F to 80°F (-43°C to 26°C), set at a factory default of 32°F (0°C).
- r. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
- s. Shall contain LED indication for free cooling, sensor, and damper operation.
- 2. Integrated EconomizerONE and EconoMi\$er® 2 Ultra Low Leak Rate Models.
 - a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
 - b. Independent modules for vertical or horizontal return configuration shall be available. Vertical return modules shall be available as a factory-installed option.
 - c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
 - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below set points.
 - 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 for 4 cfm per sq ft on the outside air dampers and 10 cfm per sq ft on the return dampers.
 - g. Economizer controller on EconomizerONE models shall be the Siemens POL224 that provides:
 - 1) One-line LCD interface screen for setup, configuration and troubleshooting.
 - 2) Optional configuration via WLAN stick and Siemens Climatix™ smartphone app for easy setup.
 - 3) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24, ASHRAE 90.1 and IECC.
 - 4) Sensor failure loss of communication identification.
 - 5) Capabilities for use with multiple-speed indoor fan systems.
 - 6) Digital sensors: Dry bulb and Enthalpy.
- h. Economizer controller on EconoMi\$er 2 models with SystemVu™ controls shall be a 4-20mA design controlled directly by the controller. SystemVu controller meets California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.
- i. Shall be capable of introducing up to 100% outdoor air.
- j. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.
- k. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
- l. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory installed only. Outdoor air sensor setpoint shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C). Additional sensor options shall be available as accessories.
- m. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.
- n. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
- o. Dampers shall be completely closed when the unit is in the unoccupied mode.
- p. Economizer controller shall accept a 0 to 10 vdc CO₂ sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.
- q. Compressor lockout temperature on POL224 control is adjustable from -45°F to 80°F (-43°C to 26°C), set at a factory default of 32°F (0°C).
- r. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
- s. Shall contain LED indication for free cooling, sensor, and damper operation.
- 3. Wi-Fi/WLAN stick for EconomizerONE POL224 (field-installed):
This item allows use of the Siemens Climatix™ mobile application.
- 4. Two-Position Damper (field-installed only):
 - a. Damper shall be a Two-Position Damper. Damper travel shall be from the full closed position to the field adjustable %-open set point.

Guide specifications (cont)



- 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.
5. Manual Damper (field-installed only):
- Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25% or 50% outdoor air for year round ventilation.
6. Low Ambient 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 between 90°F (32°C) and 110°F (43°C) at outdoor ambient temperatures down to -20°F (-29°C). For full low ambient control range, winter start kit is required.
7. Condenser Coil Hail Guard Assembly (factory or field installed):
- a. Shall protect against damage from hail.
 - b. Shall be louvered type.
8. Unit-Mounted, Non-Fused Disconnect Switch:
- a. Available on 15 to 25 ton units with FLA of 100 amps or less (460/575V) or 200 amps or less (208/230V).
 - b. Switch shall be factory installed, internally mounted.
 - c. National Electric Code (NEC) and UL approved non-fused switch shall provide unit power shutoff.
 - d. Shall be accessible from outside the unit.
 - e. Shall provide local shutdown and lockout capability.
 - f. Sized only for the unit as ordered from the factory. Does not accommodate field-installed devices.
9. Convenience Outlet:
- a. Factory Installed Powered Convenience Outlet.
 - 1) Outlet shall be powered from main line power to the rooftop unit.
 - 2) Outlet shall be powered from line side or load side of disconnect by installing contractor, as required by code. If outlet is powered from load side of disconnect, unit electrical ratings shall be UL 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. Factory-Installed Non-Powered Convenience Outlet.
 - 1) Outlet shall be powered from a separate 115/120-v 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.
 - c. Field-Installed Non-Powered Convenience Outlet.
 - 1) Outlet shall be powered from a separate 115/120-v power source.
 - 2) A transformer shall not be included.
 - 3) Outlet shall be field-installed and internally mounted with easily accessible 115-v female receptacle.
 - 4) Outlet shall include 20 amp GFI receptacles. This kit provides a flexible installation method which allows code compliance for height requirements of the GFCI outlet from the finished roof surface as well as the capability to relocate the outlet to a more convenient location.
 - 5) Outlet shall be accessible from outside the unit.

Guide specifications (cont)



- 6) Outlet shall include a field installed "Wet in Use" cover.
10. Thru-the-Base Connectors:
 - a. Kits shall provide connectors to permit gas and electrical connections to be brought to the unit through the unit basepan.
 - b. Minimum of 4 connections locations per unit.
11. Centrifugal Fan 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 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 to 100% adjustable setpoint on the economizer control.
12. 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.
13. Outdoor Air Enthalpy Sensor:

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.
14. Return Air Enthalpy Sensor:

The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.
15. Indoor Air Quality (CO₂) Sensor:
 - a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
 - b. The IAQ sensor shall be available in duct mount, wall mount, or wall mount with LED display. The setpoint shall have adjustment capability.
16. Smoke Detectors:
 - a. Shall be a 4-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 2 individual detector modules.
 - 5) Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.
17. 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 40°F (4°C).
 - c. Shall not be required to operate on an economizer for cooling when below an outdoor ambient of 40°F (4°C).
 - d. Is not compatible with SystemVu controls.
18. 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.
19. 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.
20. Condensate Overflow Switch:

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

 - a. Indicator light — solid red (more than 10 seconds of water contact — compressors disabled), blinking red (sensor disconnected).
 - b. 10 second delay to break — eliminates nuisance trips from splashing or waves in pan (sensor needs 10 seconds of constant water contact before tripping).

Guide specifications (cont)

- c. Disables the compressor(s) operation when condensate plug is detected, but still allows fans to run for economizer.
 - 21. 4 MERV-13 – 4 in. Return Air Filters (factory installed only):
 - a. Factory option to upgrade standard unit filters to 4 in. MERV-13 filters.
 - b. Upgraded option shall include factory installed 4 in. filter rack.
 - 22. 4 in. Return Air Filter Rack (field installed only):
 - a. Accessory kit designed to hold 4 in. MERV-8 or MERV-13 filters. Filters not included in kit.
 - 23. 2 in. MERV-13 Return Air Filters:
 - a. Accessory kit to field upgrade standard unit filters to 2 in. MERV-13 filters.
 - b. Correct size and quantity of filters shall ship in a single box
 - 24. 2 in. MERV-8 Return Air Filters:
 - a. Accessory kit to field upgrade standard unit filters to 2 in. MERV-8 filters.
 - b. Correct size and quantity of filters shall ship in a single box.
 - 25. Phase Monitor Control:
 - a. Shall monitor the sequence of 3-phase electrical system to provide a phase reversal protection.
 - b. Shall monitor the 3-phase voltage inputs to provide a phase loss protection for the 3-phase device.
 - c. Will work on either a Delta or Wye power connection.
 - 26. Horn/Strobe Annunciator:
 - a. Provides an audible/visual signaling device for use with factory-installed option or field installed accessory smoke detectors.
 - b. Requires installation of a field-supplied 24-v transformer suitable for 4.2 VA (AC) or 3.0 VA (DC) per horn/strobe accessory.
 - c. Requires field-supplied electrical box, North American 1-gang box, 2 in. x 4 in. (51 mm x 102 mm).
 - d. Shall have a clear colored lens.
27. 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. Auto re-set 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.
28. High Short Circuit Current Rating (SCCR) Protection:
- a. Factory-installed option shall provide high short circuit current protection to compressor and all indoor and outdoor fan motors of 60 kA (208/230V) or 65 kA (460V) against high potential fault current situations. (Standard unit comes with 5 kA rating.)
 - b. This option is not available with factory installed Powered Convenience Outlet, Non-Fused Disconnect, Low Ambient controls, Phase loss monitor/protection, or 575 Volt models.