



Product Data

WeatherMaker® Single Packaged Rooftop

7.5 to 15 Nominal Tons

ecoblue™  technology



Puron
ADVANCE™

48/50FE**08, 09, 12, 14, 16

48FE: Single-Package Gas Heating/Electric Cooling
Rooftop Units

50FE: Electric Cooling Rooftop Units with Optional
Electric Heat with Puron Advance™ Refrigerant
(R-454B) and EcoBlue™ Technology

Carrier's WeatherMaker® rooftop units (RTUs) with Puron Advance™ and EcoBlue™ Fan Technology offer an environmentally responsible solution for a brighter future.

For over 70 years the WeatherMaker line has stood for cooling solutions that are innovative, high quality, and easy to use. Carrier's new 48/50FE 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:

- Environmentally balanced Puron Advance (R-454B) refrigerant, which delivers a 75% reduction in global warming potential (GWP) compared to the original Puron. 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 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 and highly safety protected 2 stage cooling with tandem scroll compressors technology, fully active evaporator coil, and mixed air temperature protection on all models
- 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

Our WeatherMaker 48/50FE units up to 15 ton are specifically designed to fit on Carrier roof curbs installed as far back as 1989. That makes replacements fast and easy, eliminating the need for curb adapters, different utility connections, or supporting curb overhang situations.

Two-speed staged air volume (SAV) indoor fan speed control helps deliver IEERs up to 15.2. All models are field convertible and capable of either vertical or horizontal airflow. The 15 ton models require a field-installed supply air kit.

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 7.5 to 15 ton Carrier WeatherMaker RTU provides optimum comfort and control from a packaged rooftop.

Value-added features include:

- Optional Humidi-MiZer® adaptive dehumidification system for improved part load humidity performance
- SystemVu™ intuitive 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
 - Easy to read refrigerant pressures shown via the display — no checking gauges
 - Quick LED Status for Run, Alert, and Fault
 - Conventional thermostat or sensor capabilities
 - Historical component runtime and starts
 - Supply air tempering
 - Network Service Tool compatible
- Single point gas and electrical connections
- TXV refrigerant metering devices on 7.5 to 15 ton models
- Scroll compressors with internal line-break overload protection
- Easy-to-access tool-less filter door, filter tracks that tilt out for filter removal and replacement, and filter size consistency across units

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

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Easy to install

All 7.5 to 15 ton WeatherMaker units are field-convertible to horizontal airflow, which makes it easy to adjust to unexpected jobsite complications. The 15 ton models require a simple supply duct cover kit to field convert from factory vertical to horizontal. Our units are light, making them easy to replace and aiding in the structural approval process. Our standard integrated unit control board has simple, fast, clearly labeled plug-in connection points that reduce installation time. Should a job need additional features, our large control box provides room to work and mount Carrier accessories.

Easy to maintain

With the EcoBlue vane axial fan system and a 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 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 new

mixed air temperature switch, a filter drier, and 2 in. filters standard.

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 ASHRAE¹ (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 automatically identify and resolve the issue by safely dissipating the refrigerant to ensure there is no risk to equipment, buildings, or occupants.

EcoBlue™ Technology

Our direct drive EcoBlue indoor fan system uses vane axial fan 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. The full fan and motor assembly also slides out for easier maintenance and service.

Streamlined control and integration

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

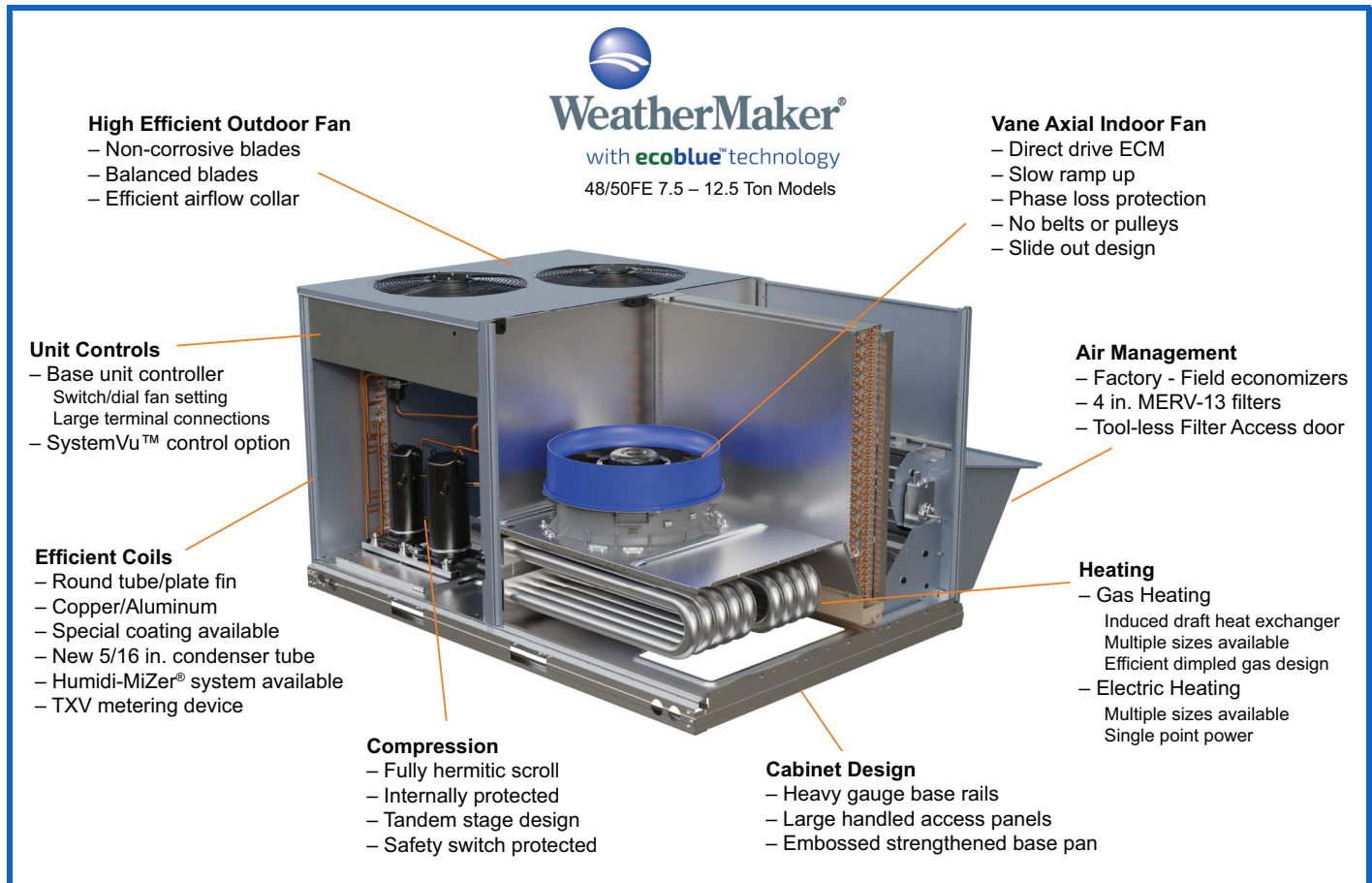
Operating efficiency and flexibility

The 48/50FE rooftops meet the DOE 2023 efficiency standard, as well as ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 90.1 and IECC¹ (International Energy Conservation Code) requirements.

Comfort control

Carrier's patented Humidi-MiZer[®] adaptive dehumidification system is an all-inclusive factory-installed option on gas heating/electric cooling and electric cooling/electric heat models. This system provides reliable, flexible operation to meet indoor part load sensible and latent requirements as well as multiple gas heat and electric heat sized to fit an array of applications.

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Model number nomenclature



48FE Model Number Nomenclature

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

Unit Heat Type

48 = Gas Heat Packaged Rooftop

Model Series - WeatherMaker®

FE = Entry Tier Puron Advance™

Heat Size

D = Low Heat
E = Medium Heat
F = High Heat
S = Low Heat with Stainless Steel Exchanger
R = Medium Heat with Stainless Steel Exchanger
T = High Heat with Stainless Steel Exchanger

Refrig. Systems Options

M = Two-Stage Cooling, Single Circuit Models
N = Two-Stage Cooling, Single Circuit Models with Humidi-MiZer® System^a

Cooling Tons

08 = 7.5 tons
09 = 8.5 tons
12 = 10 tons
14 = 12.5 tons
16 = 15 tons

Sensor Options

A = None
B = Return Air Smoke Detector (RA)^b
C = Supply Air Smoke Detector (SA)
D = RA + SA Smoke Detector^b
J = Condensate Overflow Switch (COFS)
K = Condensate Overflow Switch + RA Smoke Detectors^b
L = Condensate Overflow Switch + RA and SA Smoke Detectors^b
M = Condensate Overflow Switch + SA Smoke Detector

Fan Options

2 = Standard/Medium Static – EcoBlue™ Vane Axial Fan
3 = High Static – EcoBlue Vane Axial Fan
5 = Standard/Medium Static – EcoBlue Vane Axial Fan and Filter Status Switch
6 = High Static – EcoBlue Vane Axial Fan and Filter Status Switch

RTPF Coil Options (Outdoor – Indoor – Hail Guard)

A = Al/Cu – Al/Cu
B = Precoat Al/Cu – Al/Cu
C = E-coat Al/Cu – Al/Cu
D = E-coat Al/Cu – E-coat Al/Cu
M = Al/Cu – Al/Cu — Louvered Hail Guard
N = Precoat Al/Cu – Al/Cu — Louvered Hail Guard
P = E-coat Al/Cu – Al/Cu — Louvered Hail Guard
Q = E-coat Al/Cu – E-coat Al/Cu — Louvered Hail Guard
R = Cu/Cu – Al/Cu — Louvered Hail Guard
S = Cu/Cu – Cu/Cu — Louvered Hail Guard

Packaging & Seismic Compliance

0 = Standard

Electrical Options

A = None
C = Non-Fused Disconnect (NFDC)
D = Thru-The-Base Connections (TTB)
F = NFDC + TTB
N = Phase Monitor Protection (PMR)
Q = PMR + NFDC
R = PMR + TTB
T = PMR + NFDC + TTB
1 = HSCCR^c (High Short Circuit Current Rating)
2 = HSCCR^c + TTB

Service Options

0 = None
1 = Unpowered Convenience Outlet (NPCO)
2 = Powered Convenience Outlet (PCO)
3 = Hinged Panels
4 = Hinged Panels + NPCO
5 = Hinged Panels + PCO
6 = 4 in. MERV-13 Filters
7 = NPCO + MERV-13 Filters
8 = PCO + MERV-13 Filters
9 = Hinged Panels + MERV-13 Filters
A = Hinged Panels + NPCO + MERV-13 Filters
B = Hinged Panels + PCO + MERV-13 Filters

Intake / Exhaust Options

A = None
B = Standard Leak Economizer with Barometric Relief^d
F = Standard Leak Enthalpy Economizer with Barometric Relief^d
L = ULL (Ultra Low Leak) Temperature Economizer with Barometric Relief and CO₂ Sensor
M = ULL Enthalpy Economizer with Barometric Relief and CO₂ Sensor
U = ULL Temperature Economizer with Barometric Relief
W = ULL Enthalpy Economizer with Barometric Relief

Base Unit Controls

0 = Standard Electromechanical Controls (can be used with field installed economizers and dampers)
3 = SystemVu™ Controller
8 = Electromechanical Controls with POL224 (includes FDD^e)

Design Revision

- = Factory Design Revision

Voltage

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

NOTE (S):

- ^a Units with Humidi-MiZer System include Low Ambient controller.
- ^b Vertical units only.
- ^c Not available on the following models/options: 575V, Humidi-MiZer, Low Ambient Controls, Phase Loss Monitor, Non-Fused Disconnect, Powered Convenience Outlet, or size 14 units.
- ^d Not available with SystemVu controller.
- ^e Fault Detection and Diagnostic

Model number nomenclature (cont)



50FE Model Number Nomenclature

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	5	0	F	E	-	M	0	8	A	2	A	5	-	0	A	0	A	0

Unit Type

50 – Cooling with Electric Heat

Model Series - WeatherMaker®

FE = Entry Tier Puron Advance™

Heat Size

- = No Heat

Refrig. Systems Options

M = Two-Stage Cooling, Single Circuit Models
N = Two-Stage Cooling, Single Circuit Models with Humidi-MiZer® System^a

Cooling Tons

08 = 7.5 tons
09 = 8.5 tons
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14 = 12.5 tons
16 = 15 tons

Sensor Options

A = None
B = Return Air Smoke Detector (RA)^b
C = Supply Air Smoke Detector (SA)
D = RA + SA Smoke Detector^b
J = Condensate Overflow Switch (COFS)
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L = Condensate Overflow Switch + RA and SA Smoke Detectors^b
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C = E-coat Al/Cu – Al/Cu
D = E-coat Al/Cu – E-coat Al/Cu
M = Al/Cu – Al/Cu — Louvered Hail Guard
N = Precoat Al/Cu – Al/Cu — Louvered Hail Guard
P = E-coat Al/Cu – Al/Cu — Louvered Hail Guard
Q = E-coat Al/Cu – E-coat Al/Cu — Louvered Hail Guard
R = Cu/Cu – Al/Cu — Louvered Hail Guard
S = Cu/Cu – Cu/Cu — Louvered Hail Guard

Voltage

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

Packaging

0 = Standard

Electrical Options

A = None
C = Non-Fused Disconnect (NFDC)
D = Thru-The-Base Connections (TTB)
F = NFDC + TTB
N = Phase Monitor Protection (PMR)
Q = PMR + NFDC
R = PMR + TTB
T = PMR + NFDC + TTB
1 = HSCCR^c (High Short Circuit Current Rating)
2 = HSCCR^c + TTB

Service Options

0 = None
1 = Unpowered Convenience Outlet (NPCO)
2 = Powered Convenience Outlet (PCO)
3 = Hinged Panels
4 = Hinged Panels + NPCO
5 = Hinged Panels + PCO
6 = 4 in. MERV-13 Filters
7 = NPCO + MERV-13 Filters
8 = PCO + MERV-13 Filters
9 = Hinged Panels + MERV-13 Filters
A = Hinged Panels + NPCO + MERV-13 Filters
B = Hinged Panels + PCO + MERV-13 Filters

Intake / Exhaust Options

A = None
B = Standard Leak Economizer with Barometric Relief^d
F = Standard Leak Enthalpy Economizer with Barometric Relief^d
L = ULL (Ultra Low Leak) Temperature Economizer with Barometric Relief and CO₂ Sensor
M = ULL Enthalpy Economizer with Barometric Relief and CO₂ Sensor
U = ULL Temperature Economizer with Barometric Relief
W = ULL Enthalpy Economizer with Barometric Relief

Base Unit Controls

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Design Revision

- = Factory Design Revision

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- ^c Not available on the following models/options: 575V, Humidi-MiZer, Low Ambient Controls, Phase Loss Monitor, Non-Fused Disconnect, Powered Convenience Outlet, or size 14 units.
- ^d Not available with SystemVu™ Controller.
- ^e Fault Detection and Diagnostic.

48FE AHRI Ratings^{a,b,c,d}

48FE UNIT	COOLING STAGES	NOMINAL CAPACITY (tons)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	EER	IEER WITH 2-SPEED INDOOR FAN MOTOR	AHRI RATING CFM	AHRI PART LOAD CFM
48FE*M08	2	7.5	86	7.7	11.2	15.0	2650	1575
48FE*M09	2	8.5	98	8.8	11.2	15.0	3400	1700
48FE*M12	2	10.0	118	10.7	11.0	15.0	3500	2100
48FE*M14	2	12.5	136	12.6	10.8	15.0	3750	2250
48FE*M16	2	15.0	174	16.1	10.8	14.5	5250	3500

NOTE(S):

- Rated in accordance with AHRI Standards 340/360.
- 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.
- All 48FE 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.
- 48FE units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes.

LEGEND

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

50FE AHRI Ratings^{a,b,c,d}

50FE UNIT	COOLING STAGES	NOMINAL CAPACITY (tons)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	EER	IEER WITH 2-SPEED INDOOR FAN MOTOR	AHRI RATING CFM	AHRI PART LOAD CFM
50FE-M08	2	7.5	86	7.5	11.4	15.2	2650	1575
50FE-M09	2	8.5	98	8.6	11.4	15.2	3400	1700
50FE-M12	2	10.0	118	10.5	11.2	15.2	3500	2100
50FE-M14	2	12.5	136	12.1	11.0	15.2	3750	2250
50FE-M16	2	15.0	174	15.8	11.0	14.7	5250	3500

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IEER Standard: A measure that expresses cooling part-load EER efficiency for commercial unitary air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities.
- All 50FE 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.
- 50FE units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes.

LEGEND

- AHRI** — Air-Conditioning, Heating and Refrigeration Institute
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio
MBH — Btuh in thousands



Sound Ratings Table^{a,b}

48/50FE UNIT	COOLING STAGES	OUTDOOR SOUND (dB) at 60 Hz								
		A-Weighted ^c	63	125	250	500	1000	2000	4000	8000
M08	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M09	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M12	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M14	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M16	2	87	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9

NOTE(S):

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

LEGEND

dB — Decibel

Minimum - Maximum Airflow Ratings (cfm) — Natural Gas And Propane

48FE UNITS	HEAT LEVEL	COOLING			HEATING ^a	
		Minimum 2-Speed Airflow (Low Speed)	Minimum 2-Speed Airflow (High Speed)	Maximum Airflow cfm	Minimum Airflow cfm	Maximum Airflow cfm
48FE**08	LOW	1350	2250	3750	1730	3800
	MED				2100	3900
	HIGH				2240	4200
48FE**09	LOW	1275	2550	4250	1730	4750
	MED				2100	4560
	HIGH				2240	4800
48FE**12	LOW	1800	3000	5000	2100	5470
	MED				2580	5600
	HIGH				2710	5420
48FE**14	LOW	2250	3750	6250	2100	6830
	MED				2580	6720
	HIGH				2710	6330
48FE**16	LOW	2970	4500	7500	2450	9000
	MED				3000	9000
	HIGH				4040	7500

NOTE(S):

- Heating rating values are identical for aluminum heat exchangers and stainless steel heat exchangers.

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

50FE UNITS	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
50FE-*08	1350	2250	3750	2250	3750
50FE-*09	1275	2550	4250	2550	4250
50FE-*12	1800	3000	5000	3000	5000
50FE-*14	2250	3750	6250	3750	6250
50FE-*16	2970	4500	7500	4500	7500

NOTE(S):

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

Heat Rating Table — Natural Gas And Propane

48FE UNITS	GAS HEAT	AL/SS HEAT EXCHANGER		TEMPERATURE RISE (°F)	THERMAL EFFICIENCY (%)
		Input/Output Stage 1 (MBH)	Input/Output Stage 2 (MBH)		
48FE**08	LOW	—/—	125/103	25-55	82
	MED	120/98	180/148	35-65	82
	HIGH	180/146	224/181	40-75	81
48FE**09	LOW	—/—	125/103	20-55	82
	MED	120/98	180/148	30-65	82
	HIGH	180/146	224/181	35-75	81
48FE**12	LOW	120/98	180/148	25-65	82
	MED	180/146	224/181	30-65	81
	HIGH	200/164	250/205	35-70	82
48FE**14	LOW	120/98	180/148	20-65	82
	MED	180/146	224/181	25-65	81
	HIGH	200/160	250/205	30-70	82
48FE**16	LOW	144/118	180/146	15-55	81
	MED	192/156	240/195	20-60	81
	HIGH	280/224	350/284	35-65	81

LEGEND

MBH — Btuh in thousands

48/50FE 7.5 to 8.5 Ton Physical Data

48/50FE UNIT	48/50FE*M08	48/50FE*N08	48/50FE*M09	48/50FE*N09
NOMINAL TONS	7.5	7.5	8.5	8.5
BASE UNIT OPERATING WT (lb) 48/50FE^a	787/743	787/743	868/805	868/805
REFRIGERATION SYSTEM				
No. Circuits/No. Compressors/Type	1 / 2 / Scroll	1 / 2 / Scroll	1 / 2 / Scroll	1 / 2 / Scroll
Puron Advance™ (R-454B) Charge (lb-oz)	10-3	—	10-12	—
Humidi-MiZer® Puron Advance (R-454B) Charge (lb-oz)	—	13-4	—	17-14
Metering Device	TXV	—	TXV	—
Humidi-MiZer Metering Device	—	TXV	—	TXV
High-Pressure Trip/Reset (psig)	630/505	630/505	630/505	630/505
Low-Pressure Trip/Reset (psig)	54/117	54/117	54/117	54/117
EVAPORATOR COIL				
Material (Tube/Fin)	Cu/Al	Cu/Al	Cu/Al	Cu/Al
Coil Type	3/8 in. RTPF	3/8 in. RTPF	3/8 in. RTPF	3/8 in. RTPF
Rows/FPI	3/15	3/15	4/15	4/15
Total Face Area (ft²)	8.9	8.9	11.1	11.1
Condensate Drain Connection Size	3/4 in.	3/4 in.	3/4 in.	3/4 in.
CONDENSER COIL				
Material	Cu/Al	Cu/Al	Cu/Al	Cu/Al
Coil Type	5/16 in. RTPF	5/16 in. RTPF	5/16 in. RTPF	5/16 in. RTPF
Rows/FPI	2/18	2/18	2/18	2/18
Total Face Area (ft²)	20.5	20.5	21.4	21.4
HUMIDI-MIZER COIL				
Material	—	Cu/Al	—	Cu/Al
Coil Type	—	5/16 in. RTPF	—	5/16 in. RTPF
Rows/FPI	—	2/18	—	2/18
Total Face Area (ft²)	—	6.0	—	8.0
EVAPORATOR FAN AND MOTOR				
Standard/Medium Static				
Motor Qty / Drive Type	1 / Direct	1 / Direct	1 / Direct	1 / Direct
Maximum Cont bhp	2.4	2.4	2.4	2.4
Range (rpm)	250-2000	250-2000	250-2000	250-2000
Fan Qty/Type	1/Vane Axial	1/Vane Axial	1/Vane Axial	1/Vane Axial
Fan Diameter (in.)	22	22	22	22
High Static				
Motor Qty / Drive Type	1 / Direct	1 / Direct	1 / Direct	1 / Direct
Maximum Cont bhp	3	3	3	3
Range (rpm)	250-2200	250-2200	250-2200	250-2200
Fan Qty/Type	1/Vane Axial	1/Vane Axial	1/Vane Axial	1/Vane Axial
Fan Diameter (in.)	22	22	22	22
CONDENSER FAN AND MOTOR				
Qty / Motor Drive Type	2 / Direct	2 / Direct	2 / Direct	2 / Direct
Motor hp/rpm	1/4 / 1100	1 / 160-1100	1/4 / 1100	1/4 / 160-1100
Fan Diameter (in.)	22	22	22	22
FILTERS				
RA Filter Qty / Size (in.)	4 / 16 x 20 x 2	4 / 16 x 20 x 2	4 / 20 x 20 x 2	4 / 20 x 20 x 2
OA Inlet Screen Qty / Size (in.)	1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 20 x 24 x 1

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

48/50FE 10 to 12.5 Ton Physical Data

48/50FE UNIT	48/50FE*M12	48/50FE*N12	48/50FE*M14	48/50FE*N14
NOMINAL TONS	10.0	10.0	12.5	12.5
BASE UNIT OPERATING WT (lb) 48FE/50FE ^a	878/815	878/815	1041/978	1041/978
REFRIGERATION SYSTEM				
No. Circuits/No. Compressors/Type	1 / 2 / Scroll	1 / 2 / Scroll	1 / 2 / Scroll	1 / 2 / Scroll
Puron Advance™ (R-454B) Charge (lb-oz)	14-6	—	19-8	—
Humidi-MiZer® Puron Advance™ (R-454B) Charge (lb-oz)	—	21-12	—	28-4
Metering Device	TXV	—	TXV	—
Humidi-MiZer Metering Device	—	TXV	—	TXV
High-Pressure Trip/Reset (psig)	630/505	630/505	630/505	630/505
Low-Pressure Trip/Reset (psig)	54/117	54/117	54/117	54/117
EVAPORATOR COIL				
Material (Tube/Fin)	Cu/Al	Cu/Al	Cu/Al	Cu/Al
Coil Type	3/8 in. RTPF	3/8 in. RTPF	3/8 in. RTPF	3/8 in. RTPF
Rows/FPI	4/15	4/15	4/15	4/15
Total Face Area (ft²)	11.1	11.1	11.1	11.1
Condensate Drain Connection Size	3/4 in.	3/4 in.	3/4 in.	3/4 in.
CONDENSER COIL				
Material	Cu/Al	Cu/Al	Cu/Al	Cu/Al
Coil Type	5/16 in. RTPF	5/16 in. RTPF	5/16 in. RTPF	5/16 in. RTPF
Rows/FPI	2/18	2/18	3/18	3/18
Total Face Area (ft²)	25.1	25.1	25.1	25.1
HUMIDI-MIZER COIL				
Material	—	Cu/Al	—	Cu/Al
Coil Type	—	5/16 in. RTPF	—	5/16 in. RTPF
Rows/FPI	—	2/18	—	2/18
Total Face Area (ft²)	—	8.0	—	8.0
EVAPORATOR FAN AND MOTOR				
Standard/Medium Static				
Motor Qty / Drive Type	1 / Direct	1 / Direct	1 / Direct	1 / Direct
Maximum Cont bhp	2.4	2.4	3	3
Range (rpm)	250-2000	250-2000	250-2200	250-2200
Fan Qty / Type	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial
Fan Diameter (in.)	22	22	22	22
High Static				
Motor Qty / Drive Type	1 / Direct	1 / Direct	1 / Direct	1 / Direct
Maximum Cont bhp	5	5	5	5
Range (rpm)	250-2200	250-2200	250-2200	250-2200
Fan Qty / Type	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial
Fan Diameter (in.)	22	22	22	22
CONDENSER FAN AND MOTOR				
Qty / Motor Drive Type	2 / Direct	2 / Direct	1 / Direct	1 / Direct
Motor hp / rpm	1/4 / 1100	1/4 / 160-1100	1 / Multiple Speeds ^b	1 / Multiple Speeds ^b
Fan Diameter (in.)	22	22	22	22
FILTERS				
RA Filter Qty / Size (in.)	4 / 20 x 20 x 2	4 / 20 x 20 x 2	4 / 20 x 20 x 2	4 / 20 x 20 x 2
OA Inlet Screen Qty / Size (in.)	1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 20 x 24 x 1

NOTE(S):

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

b. 1050/770/450/350/265 rpm

LEGEND

bhp — brake horsepower
FPI — Fins Per Inch
OA — Outdoor Air
RA — Return Air

48/50FE 15 Ton Physical Data

48/50FE UNIT	48/50FE*M16	48/50FE*N16
NOMINAL TONS	15.0	15.0
BASE UNIT OPERATING WT (lb) 48FE/50FE ^a	1408/1325	1408/1325
REFRIGERATION SYSTEM		
No. Circuits/No. Compressors/Type	1 / 2 / Scroll	1 / 2 / Scroll
Puron Advance™ (R-454B) Charge (lb-oz)	22-0	—
Humidi-MiZer® Puron Advance™ (R-454B) Charge (lb-oz)	—	31-3
Metering Device	TXV	—
Humidi-MiZer Metering Device	—	TXV
High-Pressure Trip/Reset (psig)	630/505	630/505
Low-Pressure Trip/Reset (psig)	54/117	54/117
EVAPORATOR COIL		
Material (Tube/Fin)	Cu/Al	Cu/Al
Coil Type	3/8 in. RTPF	3/8 in. RTPF
Rows/FPI	3/15	3/15
Total Face Area (ft²)	17.5	17.5
Condensate Drain Connection Size	3/4 in.	3/4 in.
CONDENSER COIL		
Material	Cu/Al	Cu/Al
Coil Type	5/16 in. RTPF	5/16 in. RTPF
Rows/FPI	2/18	2/18
Total Face Area (ft²)	46.2	46.2
HUMIDI-MIZER COIL		
Material	—	Cu/Al
Coil Type	—	5/16 in. RTPF
Rows/FPI	—	2/18
Total Face Area (ft²)	—	8.0
EVAPORATOR FAN AND MOTOR		
Standard/Medium Static		
Motor Qty / Drive Type	1 / Direct	1 / Direct
Maximum Cont bhp	3	3
Range (rpm)	250-2200	250-2200
Fan Qty / Type	1 / Vane Axial	1 / Vane Axial
Fan Diameter (in.)	22	22
High Static		
Motor Qty / Drive Type	1 / Direct	1 / Direct
Maximum Cont bhp	5	5
Range (rpm)	250-2200	250-2200
Fan Qty / Type	1 / Vane Axial	1 / Vane Axial
Fan Diameter (in.)	22	22
CONDENSER FAN AND MOTOR		
Qty / Motor Drive Type	3 / Direct	3 / Direct
Motor hp / rpm	1/4 / 1100	1/4 / 1100
Fan Diameter (in.)	22	22
FILTERS		
RA Filter Qty / Size (in.)	6 / 18 x 24 x 2	6 / 18 x 24 x 2
OA Inlet Screen Qty / Size (in.)	Vertical: 2 / 24 x 27 x 1 Horizontal: 1 / 30 x 39 x 1	Vertical: 2 / 24 x 27 x 1 Horizontal: 1 / 30 x 39 x 1

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

48FE 7.5 to 15 Ton Gas Heat Data

48FE UNIT	48FE**08	48FE**09	48FE**12	48FE**14	48FE**16
NOMINAL TONS	7.5	8.5	10.0	12.5	15
GAS CONNECTION					
No. of Gas Valves	1	1	1		1
Natural Gas Supply Line Pressure (in. wg)/(psig)	4-13 / 0.14-0.47	4-13 / 0.14-0.47	4-13 / 0.14-0.47	4-13 / 0.14-0.47	4-13 / 0.14-0.47
Liquid Propane Supply Line Pressure (in. wg)/(psig)	11-13 / 0.40-0.47	11-13 / 0.40-0.47	11-13 / 0.40-0.47	11-13 / 0.40-0.47	11-13 / 0.40-0.47
HEAT ANTICIPATOR SETTING (AMPS)					
First Stage	0.14	0.14	0.14	0.14	0.14
Second Stage	0.14	0.14	0.14	0.14	0.14
NATURAL GAS HEAT					
LOW					
No. of Stages / No. of Burners (total)	1 / 3	1 / 3	2 / 4	2 / 4	2 / 6
Connection Size	1/2 in. NPT	1/2 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115	196 / 115	196 / 115
Temperature Rise (°F)	25-55	20-55	25-65	20-65	15-55
MEDIUM					
No. of Stages / No. of Burners (total)	2 / 4	2 / 4	2 / 5	2 / 5	2 / 8
Connection Size	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115	195 / 115	197 / 115
Temperature Rise (°F)	35-65	30-65	30-65	25-65	20-60
HIGH					
No. of Stages / No. of Burners (total)	2 / 5	2 / 5	2 / 5	2 / 5	2 / 10
Connection Size	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115	195 / 115	198 / 115
Temperature Rise (°F)	40-75	35-75	35-70	30-70	35-65
LIQUID PROPANE HEAT					
LOW					
No. of Stages / No. of Burners (total)	1 / 3	1 / 3	2 / 4	2 / 4	2 / 6
Connection Size	1/2 in. NPT	1/2 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115	195 / 115	196 / 115
Temperature Rise (°F)	25-55	20-55	25-65	20-65	15-55
MEDIUM					
No. of Stages / No. of Burners (total)	2 / 4	2 / 4	2 / 5	2 / 5	2 / 8
Connection Size	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115	195 / 115	197 / 115
Temperature Rise (°F)	35-65	30-65	30-65	25-65	20-60
HIGH					
No. of Stages / No. of Burners (total)	2 / 5	2 / 5	2 / 5	2 / 5	2 / 10
Connection Size	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT	3/4 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115	195 / 115	198 / 115
Temperature Rise (°F)	40-75	35-75	35-70	30-70	35-65

Options and accessories



ITEM	FACTORY- INSTALLED OPTION	FIELD- INSTALLED ACCESSORY
GAS HEAT (48FE units only)		
Low, Medium, or High Gas Heat — Aluminized Heat Exchanger	X	
Low, Medium or High Gas Heat — Stainless Steel Heat Exchanger	X	
Propane Conversion Kit		X
High Altitude Conversion Kit		X
Flue Discharge Deflector		X
Flue Shield (08-12 sizes only)		X
ELECTRIC HEAT (50FE units only)		
Electric Resistance Heaters		X
Single Point Kits		X
CABINET		
Thru-the-Base Electrical or Gas-Line Connections	X	X
Hinged Access Panels	X	
MERV-8, 2 in. Filters		X
MERV-13, 2 in. Filters		X
MERV-13, 4 in. Filters	X	
4 in. Filter Rack (filters not included)		X
Disconnect Switch Bracket ^a		X
Supply Duct Cover ^a		X
COIL OPTIONS		
Cu/Cu Outdoor and/or Indoor Coils ^b	X	
Pre-coated Outdoor Coils	X	
Premium, E-Coated Outdoor and Indoor Coils	X	
HUMIDITY CONTROL		
Humidi-MiZer [®] Adaptive Dehumidification System	X	
CONDENSER PROTECTION		
Condenser Coil Hail Guard (louvered design)	X	X
CONTROLS		
Thermostats, Temperature Sensors, And Subbases		X
SystemVu [™] DDC Communicating Controller ^c	X	
Smoke Detector (supply and/or return air)	X	X
Horn Strobe Annunciator ^d		X
Time Guard Compressor Delay Control Circuit		X
Phase Monitor	X	X

ITEM	FACTORY- INSTALLED OPTION	FIELD- INSTALLED ACCESSORY
ECONOMIZERS AND OUTDOOR AIR DAMPERS		
EconomizerONE for Electromechanical Controls, complies with FDD (Standard and Ultra Low Leak damper models) ^e	X	X
Wi-Fi Stick for EconomizerONE (optional)		X
EconoMiSer [®] 2 for DDC controls (Low and Ultra Low Leak air damper models) ^c	X	X
Motorized Two-Position Outdoor- Air Damper		X
Manual Outdoor-Air Damper (25% and 50%)		X
Barometric Relief ^f	X	X
Power Exhaust, Prop Design		X
Condensate Overflow Switch	X	X
ECONOMIZER SENSORS AND IAQ DEVICES		
Single Dry Bulb Temperature Sensors ^g	X	X
Differential Dry Bulb Temperature Sensors ^g		X
Single Enthalpy Sensors ^g		X
Differential Enthalpy Sensors ^g		X
CO ₂ Sensor (wall, duct, or unit mounted) ^g	X	X
INDOOR MOTOR AND DRIVE		
Multiple Motor and Drive Packages	X	
Fan Filter Status Switch	X	X
LOW AMBIENT CONTROLS		
Winter Start Kit ^{h,i}		X
Low Ambient Controller to 0°F (-18°C) ^{h,j}		X
POWER OPTIONS		
Convenience Outlet (powered)	X	
Convenience Outlet (unpowered)	X	
Convenience Outlet, 20 amp (unpowered)		X
Non-fused Disconnect ^k	X	
High SCCR Protection ^l	X	
ROOF CURBS		
Roof Curb 14 in. (356 mm)		X
Roof Curb 24 in. (610 mm)		X

NOTE(S):

- For Size 16 units only.
- Cu/Cu coils are only available with louvered hail guards.
- Models with SystemVu controls comply with California Title 24 Fault Detection and Diagnostic (FDD).
- Requires a field-supplied 24V transformer for each application. See price pages for details.
- FDD (Fault Detection and Diagnostic) capability per California Title 24 section 120.2.
- Included with economizer.
- Sensors used to optimize economizer performance.
- See application data for assistance.
- Not necessary on SystemVu units, as they are capable of operating at temperatures down to 25°F (4°C).
- Size 14 models operate down to 0°F (-18°C) standard; Low Ambient control is not available.
- Non-fused disconnect switch cannot be used when unit FLA electrical rating exceeds:
 - 48/50FE 08-14: 80 amps all voltages.
 - 48FE 16: 100 amps 208/230V-3-60, 80 amps 460/575V-3-60
 - 50FE 16: 200 amps 208/230V-3-60, 100 amps 460/575V-3-60
 Carrier RTUBuilder automatically selects the amp limitations.
- High SCCR (Short Circuit Current Rating) is not available on the following: units with Humidi-MiZer system, low ambient controls, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v. Not available on size 14 units due to control box constraints.

Factory-installed options

Economizer (dry-bulb or enthalpy)

Economizers save money. They bring in fresh, outside air for ventilation and provide outside air to cool your building. This is the preferred method of low-ambient cooling. When used with CO₂ sensors, economizers can provide even more savings by adjusting the ventilation air intake to just the correct amount.

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 barometric relief 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.

Smoke detector (supply and/or return air)

Our 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.

Optional Humidi-MiZer® adaptive dehumidification system

Carrier's Humidi-MiZer adaptive dehumidification system is an all-inclusive factory-installed option that can be ordered with any WeatherMaker® 48/50FE 08-16 rooftop unit.

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

The Humidi-MiZer adaptive dehumidification system has a unique dual operational mode setting. It provides greater dehumidification of the occupied space through 2 modes of dehumidification operations in addition to its normal design cooling mode.

When coupled with the Humidi-MiZer system, the 48/50FE 08-16 rooftop is capable of operating in normal design cooling mode, sub-cooling mode, and hot gas reheat mode. Normal design cooling mode is when the unit will operate under its normal sequence of operation by cycling compressors to maintain comfort conditions.

Sub-cooling mode will operate to satisfy part load type conditions when the space requires combined sensible and a higher proportion of latent load control. Hot gas reheat mode operates when outdoor temperatures fall and latent capacity is required for humidity control. Hot gas reheat mode provides neutral air for maximum dehumidification operation.

NOTE: Humidi-MiZer system includes Low Ambient controller.

Thru-the-base connections

Thru-the-base connections, available as a factory option, 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, and control power.

Hinged access panels

These specially designed hinged access panels allow access to unit's major components. Panels allow access to filters, the control box, and the indoor fan motor.

MERV-13 return air filters

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

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 the potential for galvanic corrosion between coil and pan. Only available with louvered hail guards.

E-coated (outdoor and indoor) coils

These coils feature a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. The coating process ensures complete coil encapsulation of tubes, fins, and headers.

Pre-coated outdoor coils

These coils feature a durable epoxy-phenolic coating that provides protection in mildly corrosive coastal environments. The coating minimizes galvanic action between dissimilar metals. The 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

These 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.

Stainless steel heat exchanger (48FE units only)

For this option, the tubular heat exchanger is made out of a minimum 20 gauge type 409 stainless steel for applications where the mixed air going to the heat exchanger is expected to drop below 45°F (7°C). Stainless steel may be specified on applications where the presence of airborne contaminants require its use (applications such as paper mills) or in areas with very high outdoor humidity that may result in severe condensation in the heat exchanger during cooling operation.

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. It 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. This

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 that they are sized for the unit as ordered from the factory. The sizing does 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 option provides a whole new approach by using 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, access historical data, generate reports, and provide comfort Carrier is noted for.

Key features include:

- Easy-to-read backlit 4-line text screen for superior visibility
- Quick operational condition LEDs for Run, Alert, and Fault
- Simple navigation using large keypad buttons for 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 needing gauges
 - 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. This option:

- Includes an indicator light showing when the sensor is disconnected (blinking red) and when there has been

more than 10 seconds of water contact (solid red — compressors disabled)

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

Fan filter status switch and 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.

High Short Circuit Current Rating (SCCR) protection

This factory-installed option provides high short circuit current protection of 10 kA against high potential fault current situations for the compressors and all indoor and outdoor fan motors. (A standard unit comes with a 5 kA rating.)

This option is not available on 575-v models or models with a factory-installed Humidi-MiZer system, low ambient controls, powered convenience outlet, phase loss monitor, or non-fused disconnect. Not available on size 14 units due to control box constraints.

Field-installed accessories

Condenser coil hail guard

These 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 a return air enthalpy sensor 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.

Propane conversion kit (48FE units only)

Convert your gas heat rooftop from standard natural gas operation to propane using this field-installed kit.

High altitude conversion kit (48FE units only)

High altitudes have less oxygen, which affects the fuel/air mixture in heat exchangers. In order to maintain a proper fuel/air mixture, heat exchangers operating in altitudes above 2000 ft (610 m) require different orifices. To select the correct burner orifices or determine the heat capacity for a high altitude application, use either the selection software or the unit's service manual. High altitudes have less oxygen, which means heat exchangers need less fuel. The new gas orifices in this field-installed kit make the necessary adjustment for high altitude applications. They restore the optimal fuel to air mixture and maintain healthy combustion on altitudes above 2000 ft (610 m).

NOTE: Typical natural gas heating value ranges from 975 to 1050 Btu/ft³ at sea level nationally. The heating value goes down approximately 1.7% per every thousand feet of elevation. Standard factory orifices can typically be used up to 2000 ft (610 m) elevations without any operational issues.

Flue discharge deflector (48FE units only)

The flue discharge deflector is a useful accessory when flue gas recirculation is a concern. By venting the flue discharge upwards, the deflector minimizes the chance for a neighboring unit to intake the flue exhaust.

Filter rack kit (4 in.)

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.

MERV-8 2 in. return air filters

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

Phase monitor protection

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

Winter start kit

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

Low ambient controller¹

The low ambient controller is a head pressure controller kit 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 not 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)

This full perimeter roof curb with exhaust capability provides separate air streams.

Fan filter status switch and maintenance indicator

When a field-installed filter maintenance indicator is used, a field-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.

Power exhaust

This accessory provides superior internal building pressure control and 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 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 (50FE units only)

Carrier offers a full-line of field-installed accessory heaters. The heaters are very easy to use and install, and they 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 by preventing the compressor from restarting for 30 seconds after stopping. (Not required with SystemVu™ controller or authorized commercial thermostats.)

Disconnect switch bracket

The accessory provides a pre-engineered and sized mounting bracket for applications requiring a unit-mounted fused and non-fused disconnect of greater than 100 amps. The bracket assures that no damage occurs to coils when mounting with screws and other fasteners (size 16 only).

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™2 mobile application for commissioning, troubleshooting, and maintenance operations. The Wi-Fi stick is required to utilize the mobile application but is not required for EconomizerONE setup and commissioning.

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™2 and Apple iOS®2 platforms. The Wi-Fi stick for the EconomizerONE is required to join the Siemens-WiFi-Stick network and setup the controller on a smartphone.

NOTE: The Climatix app is not required to commission the EconomizerONE controller. The unit can be set up using the controller's on board button system.

1. Size 14 models operate down to 0°F (-18°C) standard; Low Ambient controller is not available.

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

Options And Accessory Weights^a

OPTION / ACCESSORY NAME	48/50FE UNIT WEIGHT									
	08		09		12		14		16	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
Humidi-MiZer® System^b	25	12	34	16	34	16	34	16	55	25
Power Exhaust	55	25	55	25	55	25	55	25	85	39
EconomizerONE or EconoMiSer® 2	75	34	75	34	75	34	75	34	135	62
Two-Position Damper	58	26	58	26	58	26	58	26	65	29
Manual Damper	18	8	18	8	18	8	18	8	25	11
High Gas Heat (48FE units only)	81	37	81	37	86	39	86	39	117	53
Hail Guard (louvered)	17	8	17	8	17	8	17	8	44	20
Cu/Cu Condenser Coil	85	39	85	39	100	46	150	68	180	82
Cu/Cu Evaporator Coil	50	23	100	46	100	46	100	46	120	55
Roof Curb (14 in. curb)	143	65	143	65	143	65	143	65	180	82
Roof Curb (24 in. curb)	245	112	245	112	245	112	245	112	255	116
CO₂ Sensor	2	1	2	1	2	1	2	1	2	1
Flue Discharge Deflector	7	3	7	3	7	3	7	3	7	3
Optional Indoor Motor^c	30	14	30	14	30	14	0	0	0	0
Low Ambient Controller	9	4	9	4	9	4	9	4	9	4
Winter Start Kit	5	2	5	2	5	2	5	2	5	2
Return Air Smoke Detector	7	3	7	3	7	3	7	3	7	3
Supply Air Smoke Detector	7	3	7	3	7	3	7	3	7	3
Fan Filter Switch	2	1	2	1	2	1	2	1	2	1
Non-Fused Disconnect	15	7	15	7	15	7	15	7	15	7
Powered Convenience Outlet^d	36	16	36	16	36	16	36	16	36	16
Unpowered Convenience Outlet	4	2	4	2	4	2	4	2	4	2
Enthalpy Sensor	2	1	2	1	2	1	2	1	2	1
Differential Enthalpy Sensor	3	1	3	1	3	1	3	1	3	1

NOTE(S):

- Where multiple variations are available, the heaviest combination is listed.
- For Humidi-MiZer system, add Low Ambient controller weight.
- Add the Optional Indoor Motor weight to the weight of the base unit.
- Weight includes convenience outlet and convenience outlet transformer.

48FE**08-12 Base Unit Dimensions

NOTES:

1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [] ARE IN MILLIMETERS.
2.  CENTER OF GRAVITY
3.  DIRECTION OF AIR FLOW
4.  ALL VIEW DRAWN USING 3RD ANGLE

UNIT	OUTDOOR COIL TYPE	J	K	R
48FE-M08	RTPF	41 3/4 [1046]	33 3/4 [857]	15 7/8 [403]
48FE-M09	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]
48FE-M12	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)

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CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2 1/2" [64] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	1/2"-14 NPT GAS CONNECTION
G	3/4"-14 NPT GAS CONNECTION
G	2" [51] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART (FIELD INST)

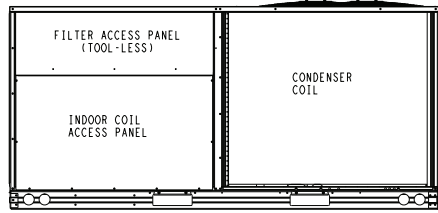
THESE HOLES REQUIRED FOR USE WITH ACCY KITS:
CRBTMPWR002A01: GAS THRU CURB
CRBTMPWR004A01: GAS THRU BASEPAN

	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	1 1/4" (002, 004)	POWER	1 3/4" [44.4]
Z *	(004) 3/4" FPT	GAS	1 3/4" [44.4]
*	(002) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING. HOLE SIZE: 2" [50.8]		

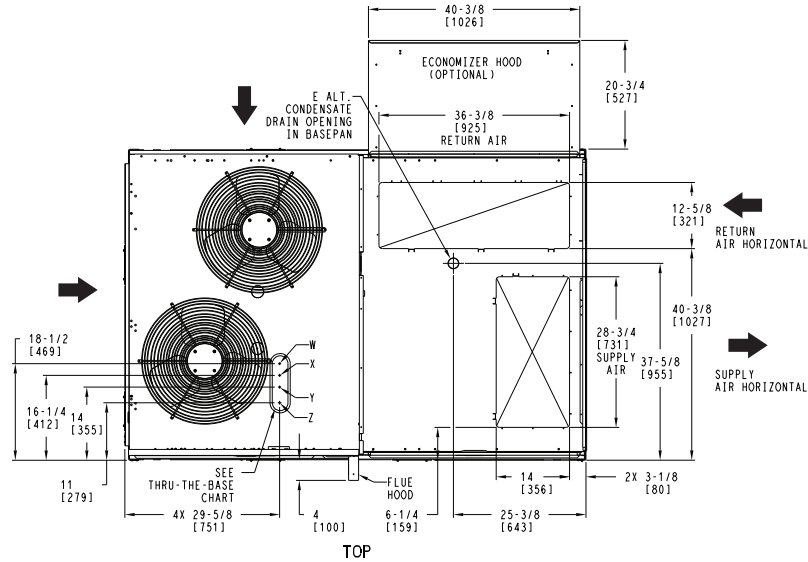
THRU-THE-BASE CHART (FIOP)

FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED. **

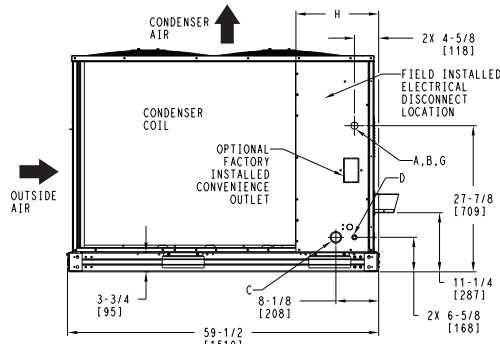
FOR BELOW LISTED MODELS, A FIELD SUPPLIED 1/2" ADAPTER IS REQUIRED BETWEEN BASE PAN FITTING AND GAS VALVE:
48FCD, S*08, 09



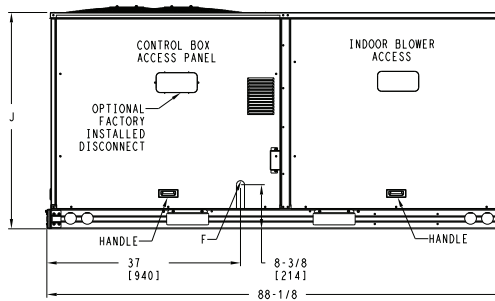
BACK



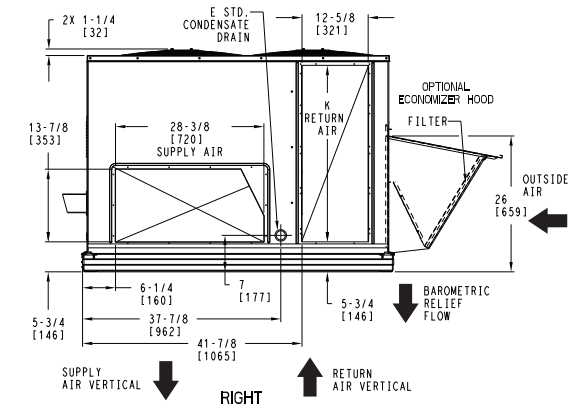
TOP



LEFT



FRONT



RIGHT

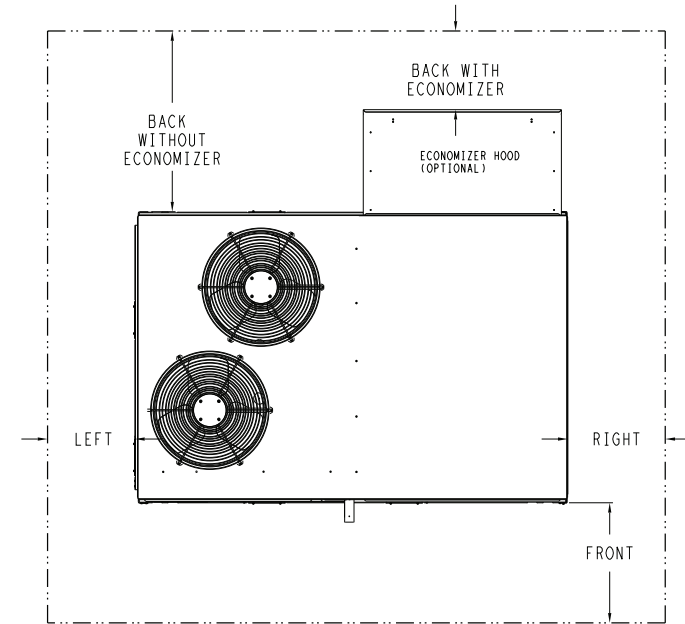
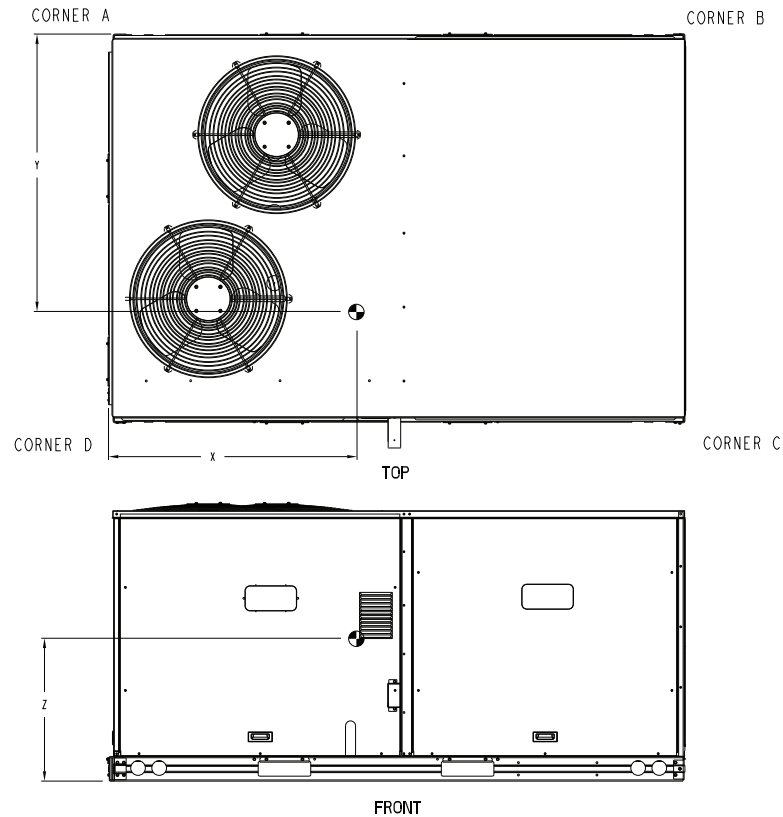
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV
U.S. ECCN:NSR	1 OF 3	8/8/23	-			-

48FE**08-12 Base Unit Dimensions (cont)

UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT ***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FE-M08	RTPF	787	357	181	82	150	68	207	94	249	113	40 [1016]	34 1/2 [876]	19 3/8 [492]
48FE-M09	RTPF	868	394	197	89	160	73	229	104	282	128	39 1/2 [1003]	35 [889]	18 5/8 [473]
48FE-M12	RTPF	878	398	213	97	175	80	221	100	268	121	39 7/8 [1013]	33 1/4 [841]	18 1/2 [470]

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)

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



NOTE:

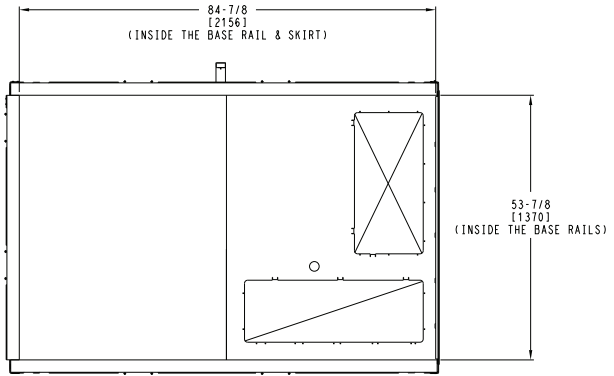
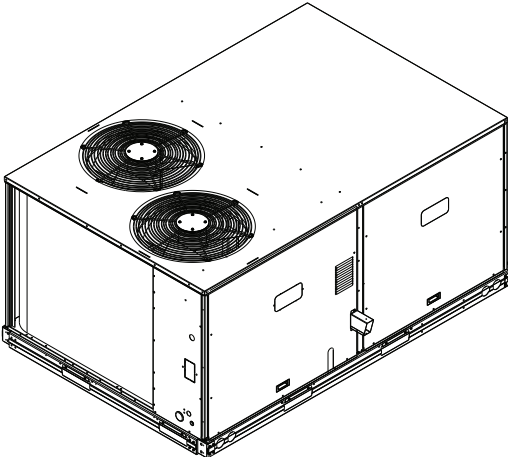
1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

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

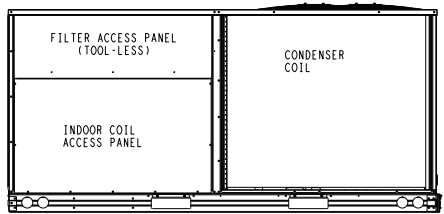
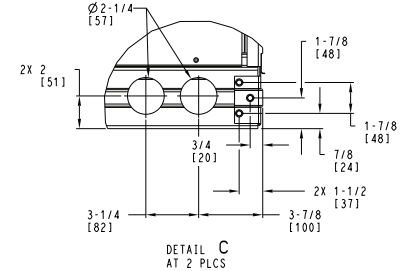
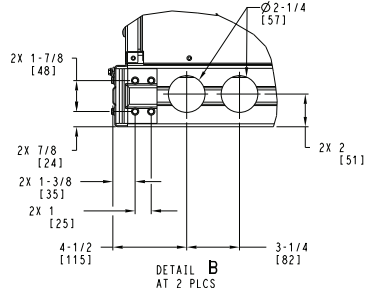
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV
U.S. ECCN: NSR	2 OF 3	8/8/23	-			-

48FE**08-12 Base Unit Dimensions (cont)

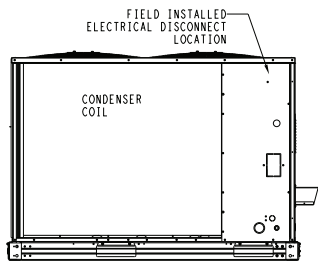
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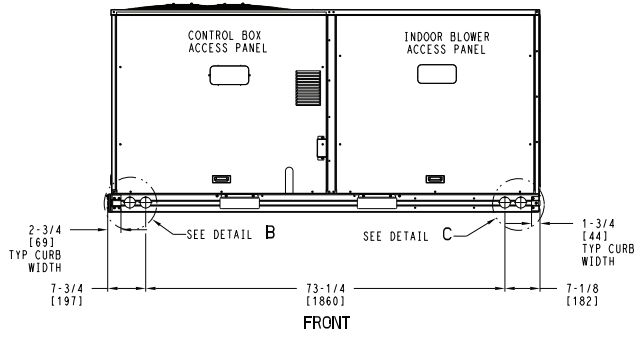
INSIDE BASERAIL DIMENSIONS
BOTTOM



BACK



LEFT



FRONT

ITC CLASSIFICATION U.S. ECCN: NSR	SHEET 3 OF 3	DATE 8/8/23	SUPERCEDES -	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV -
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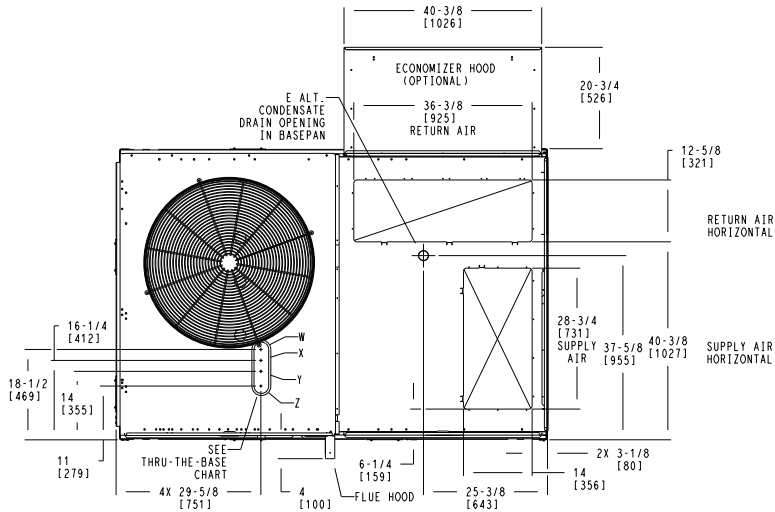
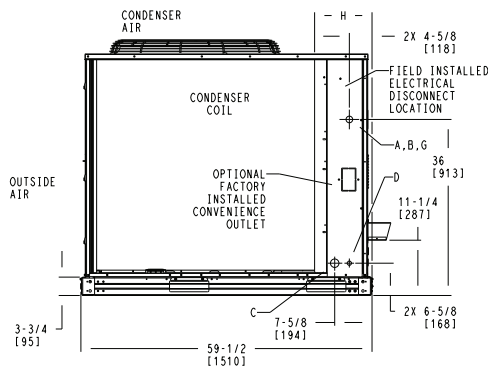
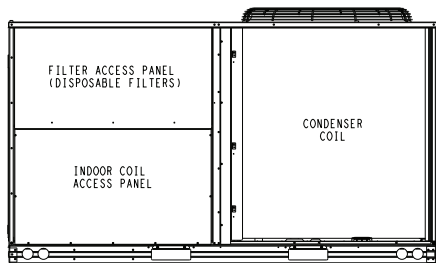


48FE**14 Base Unit Dimensions

NOTES:

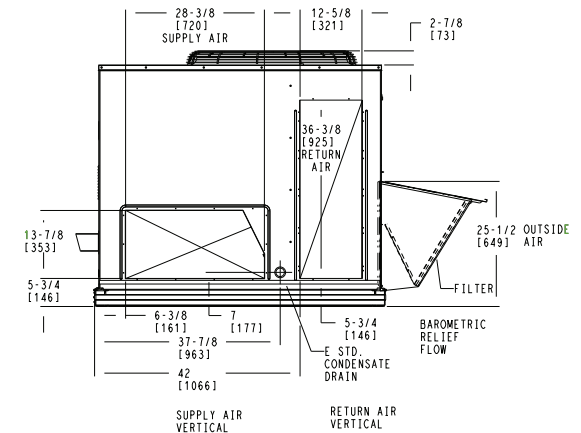
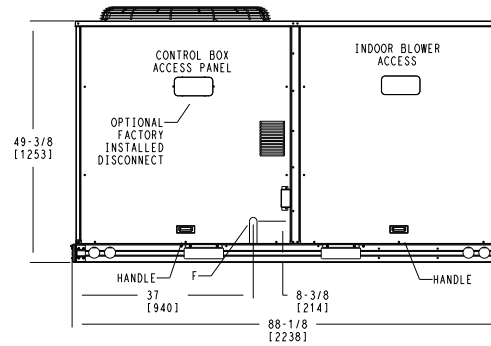
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [] ARE IN MILLIMETERS.
2. ○ CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4.  ALL VIEW DRAWN USING 3RD ANGLE

UNIT	OUTDOOR COIL TYPE	H
48FE-M14	RTPF	15 7/8 [403]
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)		



CONNECTION SIZES		
A	1 3/8" [35]	DIA FIELD POWER SUPPLY HOLE
B	2 1/2" [64]	DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51]	DIA GAUGE ACCESS PLUG
D	7/8" [22]	DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT	CONDENSATE DRAIN
F	3/4"-14 NPT	GAS CONNECTION
G	2" [51]	DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPWR02A01,004A01			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	1 1/4" (002,004)	POWER	1 3/4" [44.4]
Z*	(004) 3/4" FPT	GAS	1 5/8" [41.3]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED			
* (002) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.			



ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE-14 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009978	REV
U.S. ECCN:NSR	1 OF 3	08/02/24	-			-

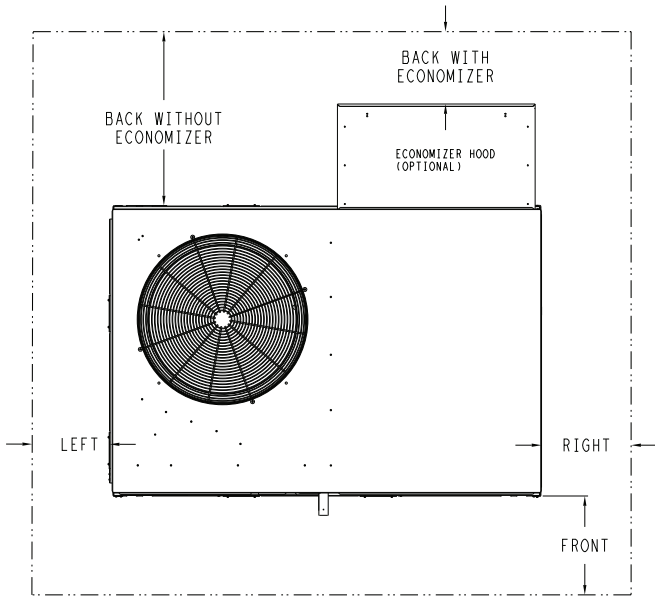
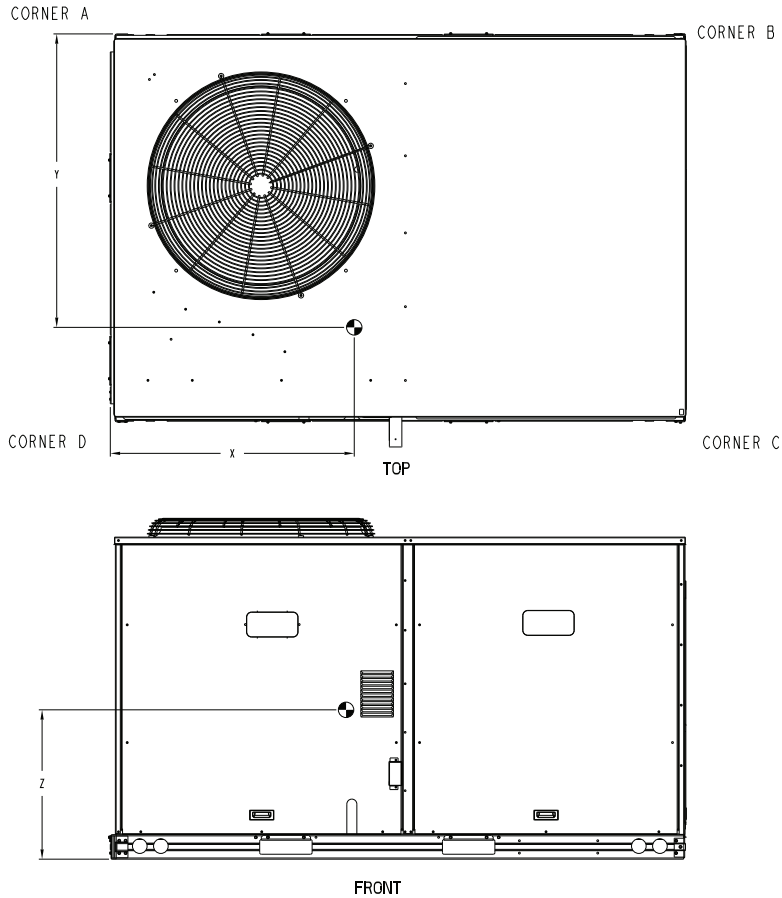


48FE**14 Base Unit Dimensions (cont)

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UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FE-M14	RTPF	1041	472	243	110	195	88	269	122	335	152	39 1/4 [997]	34 1/2 [876]	21 7/8 [556]
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)														

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

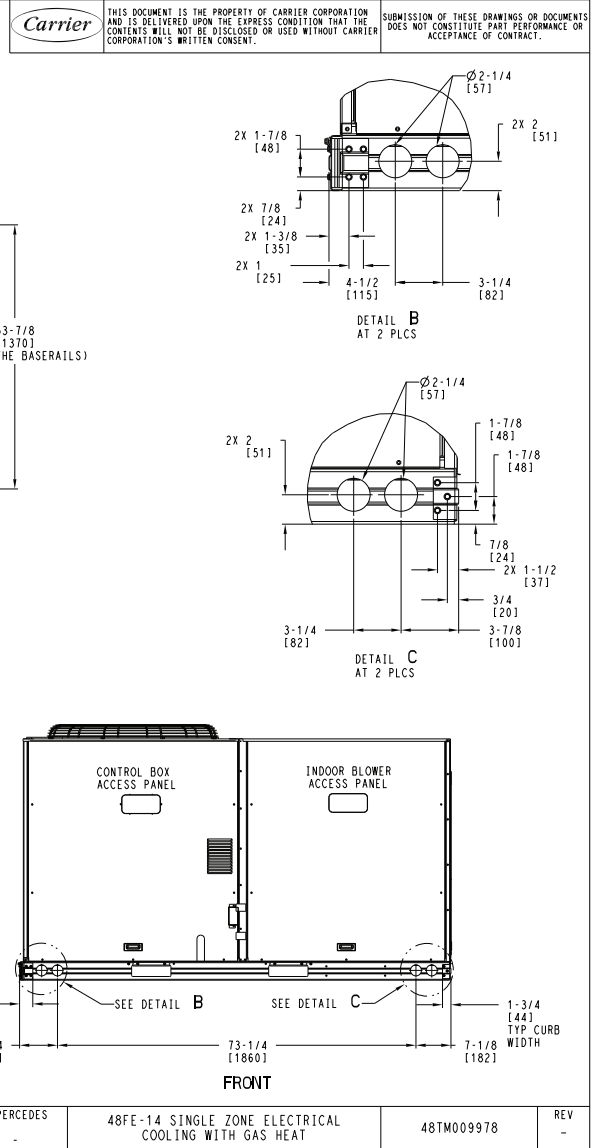


NOTE:
1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

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

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE-14 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009978	REV
U.S. ECCN:NSR	2 OF 3	08/02/24	-			-

48FE**14 Base Unit Dimensions (cont)



48FE**16 Base Unit Dimensions

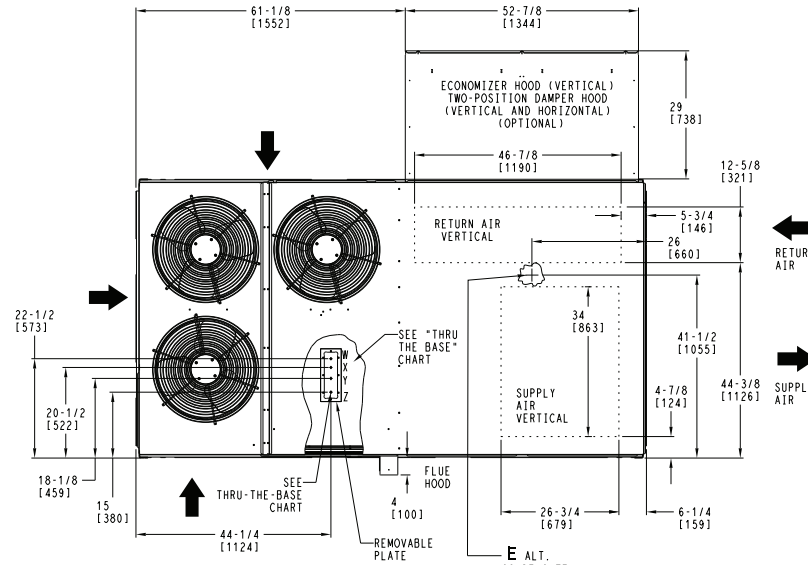
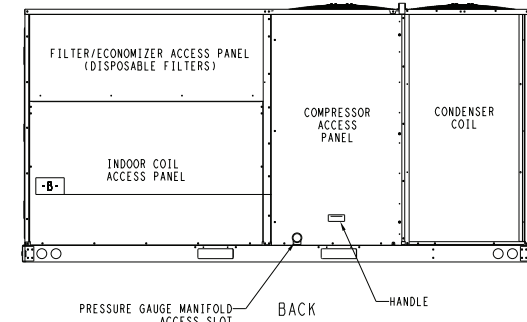
NOTES:

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

Carrier

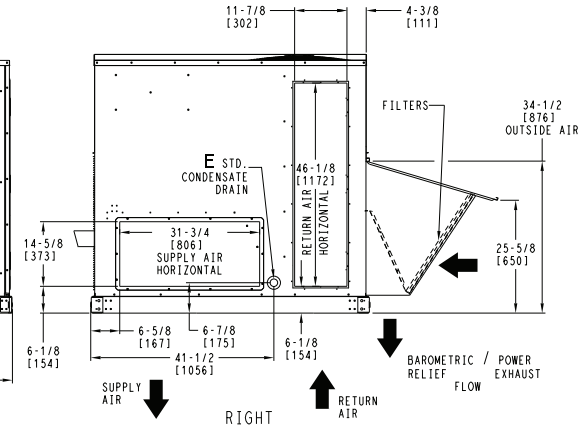
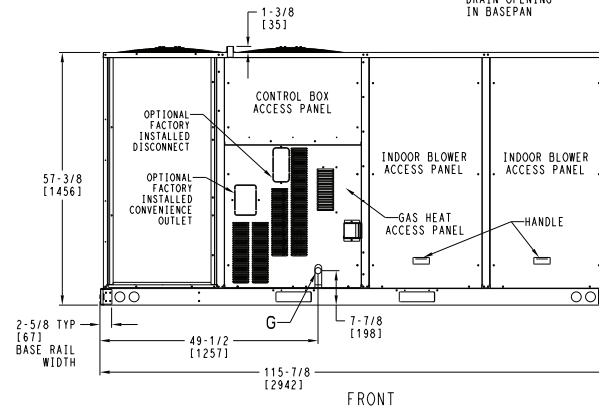
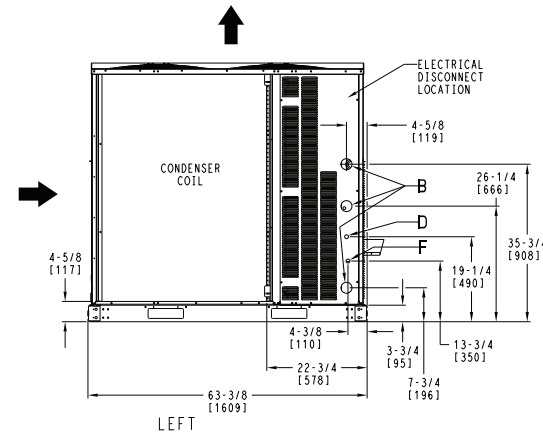
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CONNECTION SIZES	
B	2 1/2" [64] DIA POWER SUPPLY HOLE
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	7/8" [22] DIA FIELD CONVENIENCE OUTLET HOLE
G	3/4"-14 NPT GAS CONNECTION

THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPWR005A00, 006A00, 007A00				
ACCESSORY NO.	W	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
005	X	1/2"	ACC.	7/8" [22.2]
	Y	1 1/4"	POWER	1 1/2" [38.1]
	Z	3/4" PIPE	GAS	1 3/4" [44.5]
	W	1/2"	ACC.	7/8" [22.2]
006	X	1/2"	24V	7/8" [22.2]
	Y	1 1/2"	POWER	2" [50.8]
	Z	3/4" PIPE	GAS	1 3/4" [44.5]
	W	1/2"	ACC.	7/8" [22.2]
007	X	1/2"	24V	7/8" [22.2]
	Y	2"	POWER	2 1/2" [63.5]
	Z	3/4" PIPE	GAS	1 3/4" [44.5]
	W	1/2"	ACC.	7/8" [22.2]

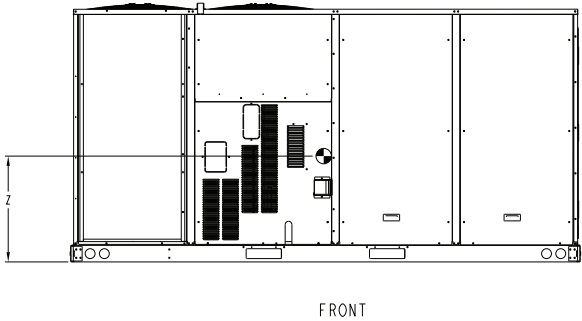
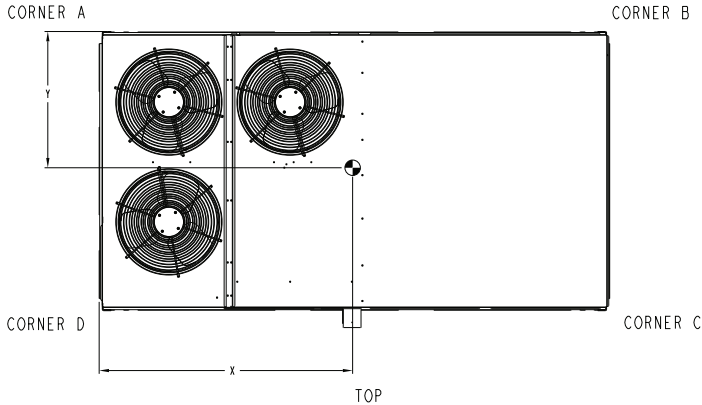


ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 16 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50TM003162	REV
U.S. ECCN:NSR	1 OF 2	8/10/23	-			-

48FE**16 Base Unit Dimensions (cont)

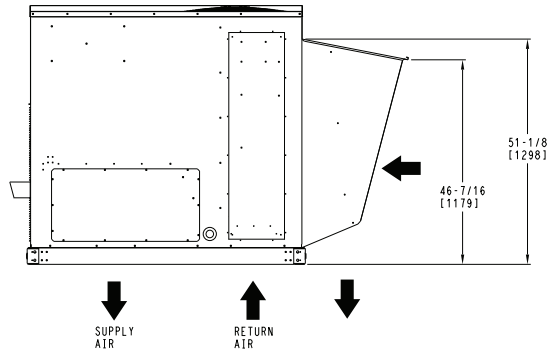
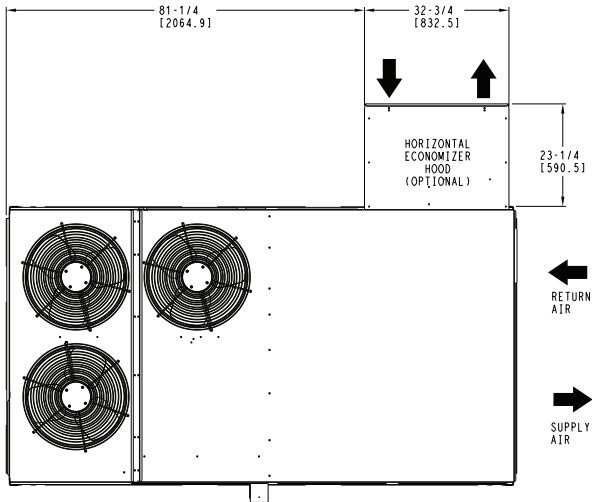
UNIT	STD UNIT WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FE-M16	1408	639	373	169	341	155	332	150	362	164	55 3/8 [1407]	31 1/4 [794]	21 1/8 [537]

STANDARD UNIT WEIGHT IS WITH LOW HEAT & WITHOUT PACKAGING.
FOR OPTIONS & ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



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

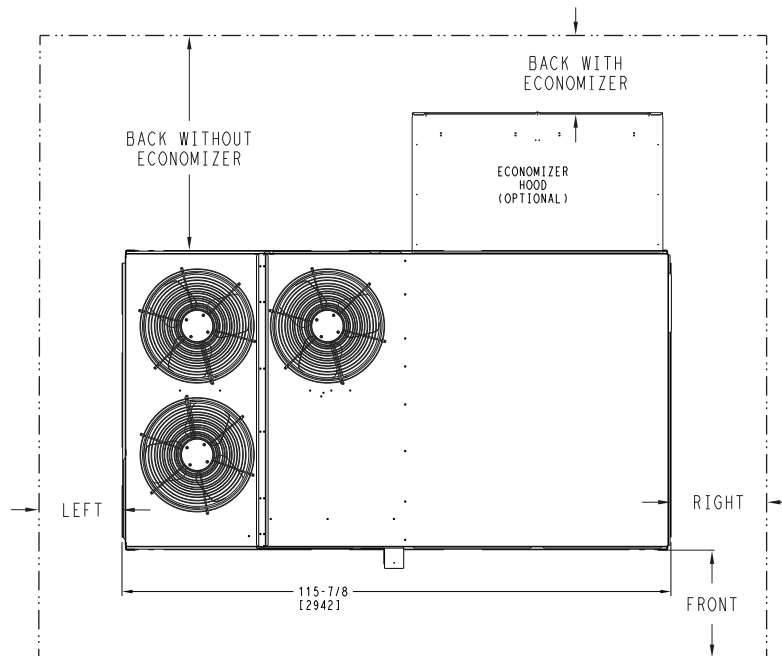


HORIZONTAL ECONOMIZER

ITC CLASSIFICATION U.S. ECCN:NSR	SHEET 2 OF 2	DATE 8/10/23	SUPERCEDES -	48FE 16 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50TM003162	REV -
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48FE**16 Base Unit Dimensions — Clearances



CLEARANCE^{a,b}

SURFACE	Service with Conductive Barrier	Service with Non-conductive Barrier	Operating Clearance
FRONT	48 in. (1219 mm)	36 in. (914 mm)	18 in. (457 mm)
LEFT	48 in. (1219 mm)	42 in. (1067 mm)	18 in. (457 mm)
BACK W/O ECONOMIZER	48 in. (1219 mm)	42 in. (1067 mm)	18 in. (457 mm)
BACK W/ ECONOMIZER	36 in. (914 mm)	36 in. (914 mm)	18 in. (457 mm)
RIGHT	36 in. (914 mm)	36 in. (914 mm)	18 in. (457 mm)
LEFT	72 in. (1829 mm)	72 in. (1829 mm)	72 in. (1829 mm)

NOTE(S):

- a. For all minimum clearances local codes or jurisdictions may prevail.
- b. See page 20 for 48FE 08-12 clearances, See page 23 for 48FE 14 clearances.

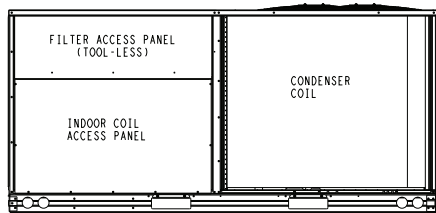
50FE-*08*12 Base Unit Dimensions

NOTES:

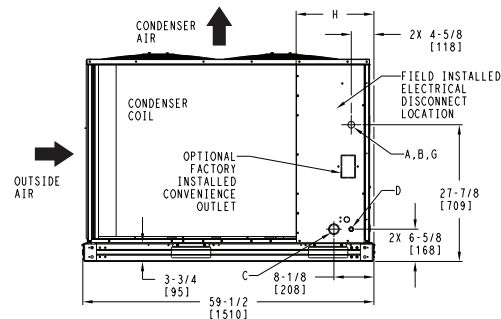
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [] ARE IN MILLIMETERS.
2.  CENTER OF GRAVITY
3.  DIRECTION OF AIR FLOW
4.  ALL VIEW DRAWN USING 3RD ANGLE

UNIT	OUTDOOR COIL TYPE	J	K	H
50FE-M08	RTPF	41 1/4 [1048]	33 3/4 [857]	15 7/8 [403]
50FE-M09	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]
50FE-M12	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]

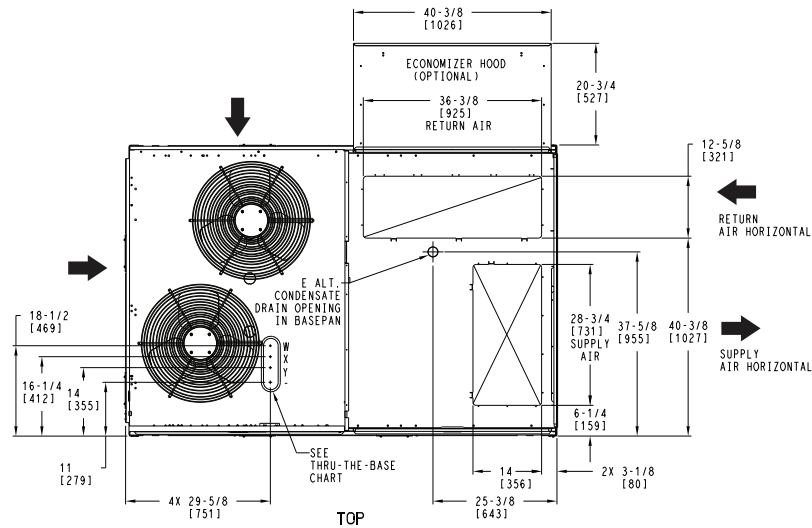
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)



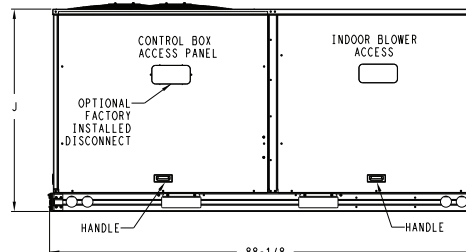
BACK



LEFT



TOP



FRONT

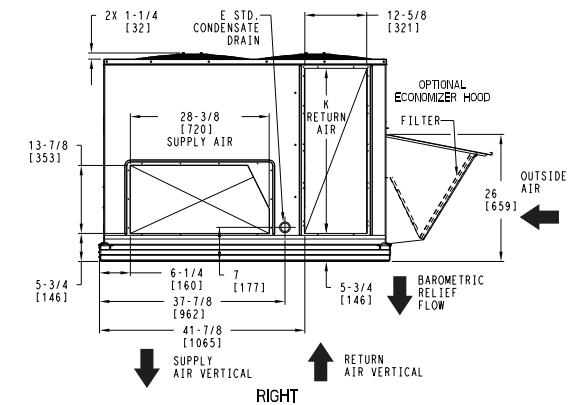
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CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2 1/2" [64] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
G	2" [51] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART (FIELD INST)	
THESE HOLES REQUIRED FOR USE WITH ACCY KITS: CRBTMPW002A01	
THREADED CONDUIT SIZE	WIRE USE
W	1/2"
X	1/2"
Y	1 1/4" (002)

REQ'D HOLE SIZES (MAX.)	WIRE USE
7/8" [22.2]	ACC.
7/8" [22.2]	24V
1 3/4" [44.4]	POWER

THRU-THE-BASE CHART (FIOP)	
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X & Y ARE PROVIDED: (1) 1/2" & (1) 1 1/4" ELECTRICAL FITTINGS.	



RIGHT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FE-08-12 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TM009323	REV
U.S. ECCN:NSR	1 OF 3	8/8/23	-			-

50FE-*08-12 Base Unit Dimensions (cont)

Carrier

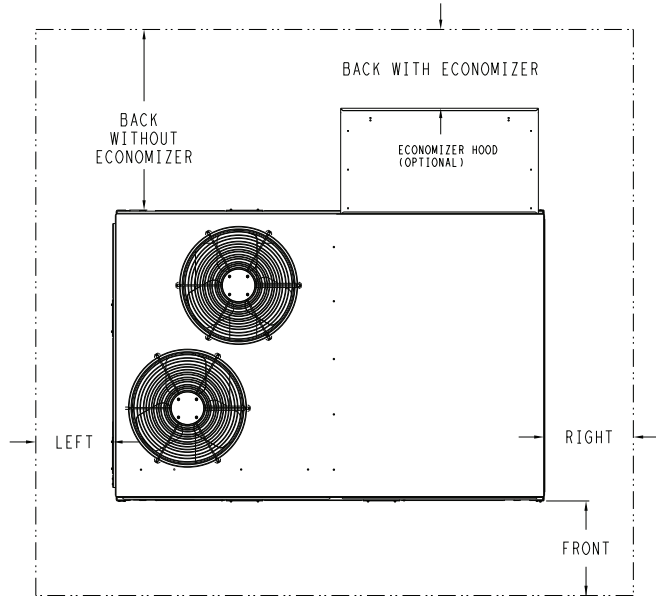
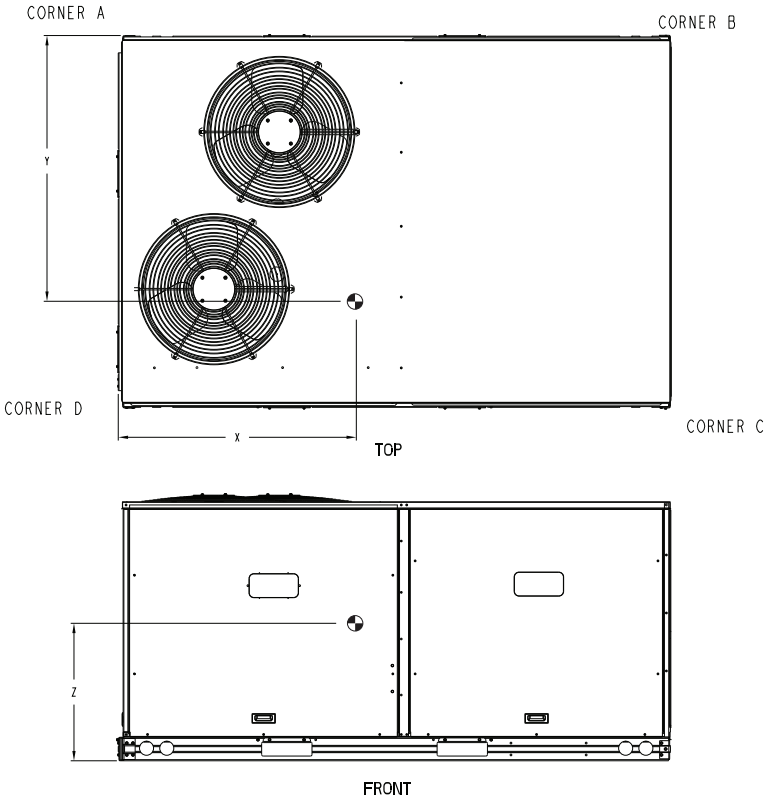
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UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT ***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
50FE-M08	RTPF	743	337	170	77	142	64	196	89	235	107	40 [1016]	34 1/2 [876]	20 [508]
50FE-M09	RTPF	805	365	201	91	157	71	196	89	251	114	38 5/8 [981]	33 [838]	19 1/8 [486]
50FE-M12	RTPF	815	370	204	92	159	72	198	90	254	115	38 5/8 [981]	33 [838]	19 1/8 [486]

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)

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



NOTE:
1. 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 W/O ECON	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/ECON	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 2 OF 3	DATE 8/8/23	SUPERCEDES -	50FE-08-12 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TM009323	REV -
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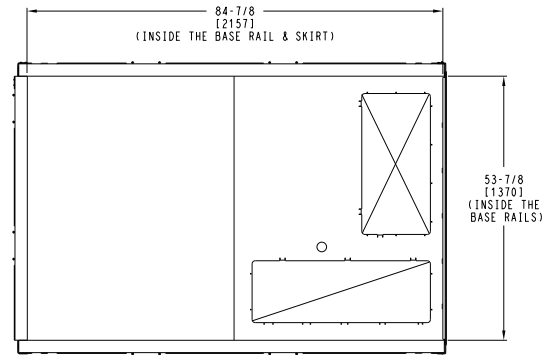
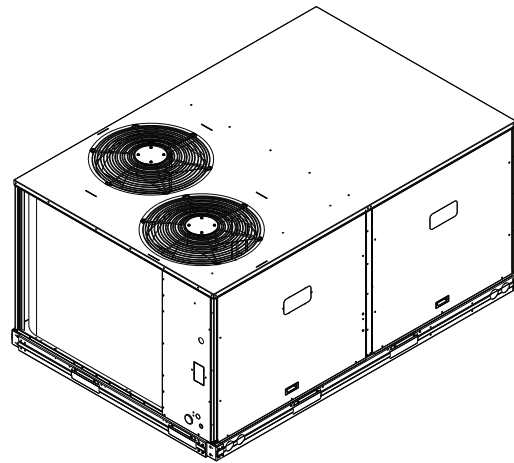


50FE-*08-12 Base Unit Dimensions (cont)

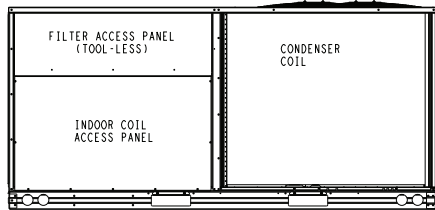


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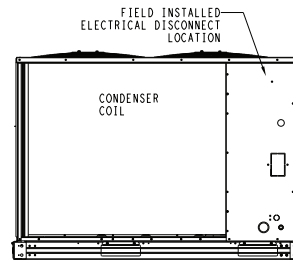
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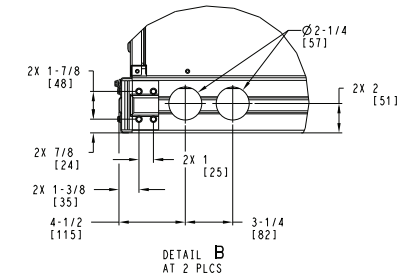
INSIDE BASERAIL DIMENSIONS
BOTTOM



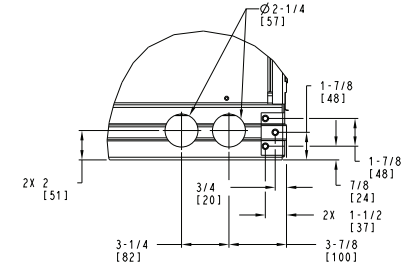
BACK



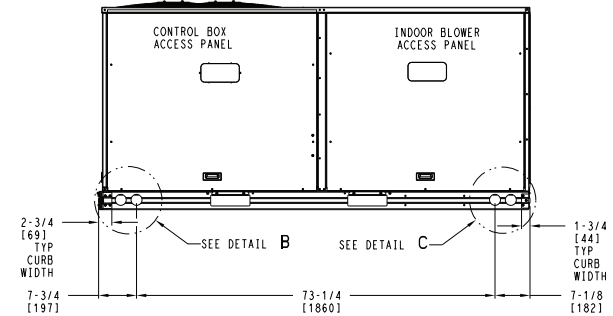
LEFT



DETAIL B
AT 2 PLCS



DETAIL C
AT 2 PLCS



FRONT

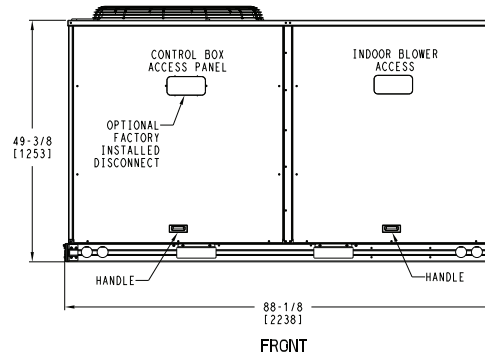
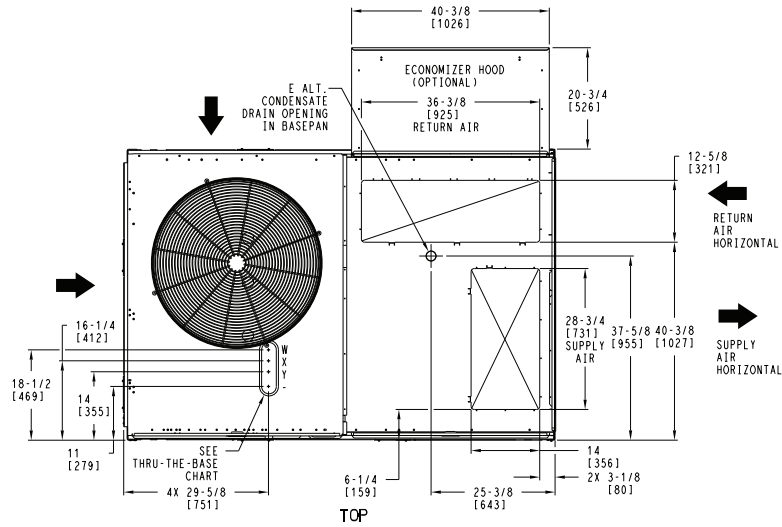
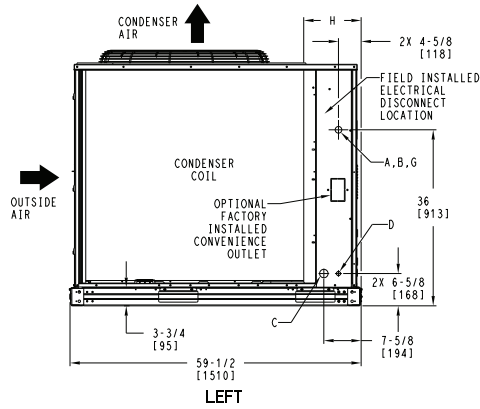
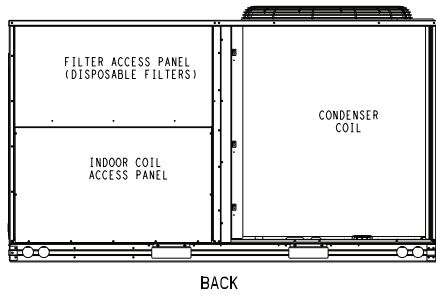
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FE-08-12 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TM009323	REV
U.S. ECCN:NSR	3 OF 3	8/8/23	-			-

50FE-*14 Base Unit Dimensions

NOTES:

1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [] ARE IN MILLIMETERS.
2.  CENTER OF GRAVITY
3.  DIRECTION OF AIR FLOW
4.  ALL VIEW DRAWN USING 3RD ANGLE

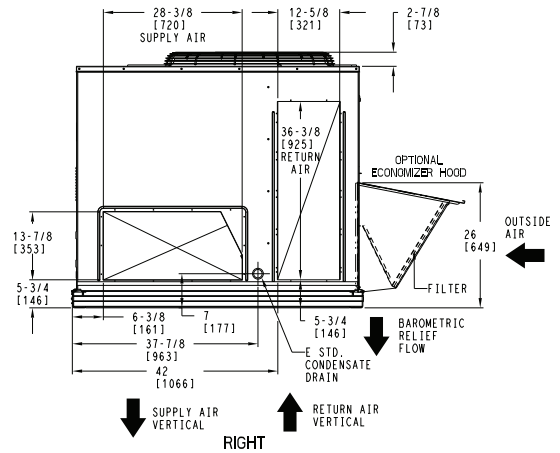
UNIT	OUTDOOR COIL TYPE	H
50FE-M14	RTPF	15 7/8 [403]
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)		



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CONNECTION SIZES	
A	1 3/8" [35] DIA. FIELD POWER SUPPLY HOLE
B	2 1/2" [64] DIA. POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA. GAUGE ACCESS PLUG
D	7/8" [22] DIA. FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
G	2" [51] DIA. POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPWR002A01			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	1 1/4" (002)	POWER	1 3/4" [44.4]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X & Y ARE PROVIDED			



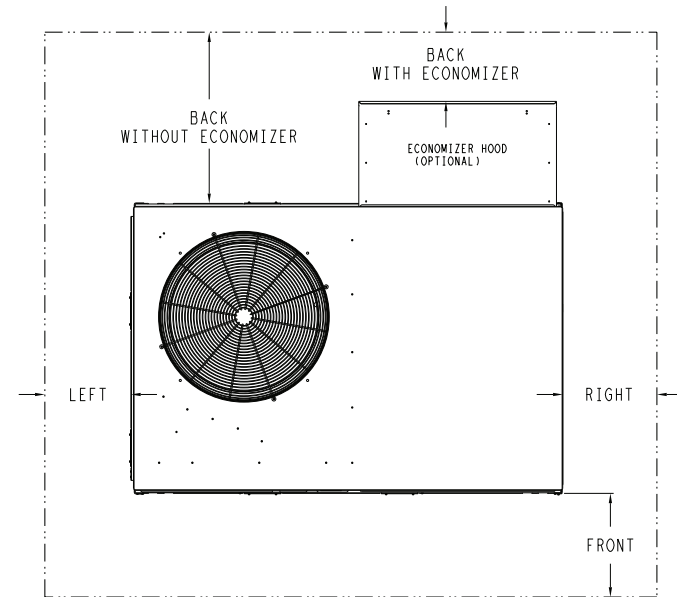
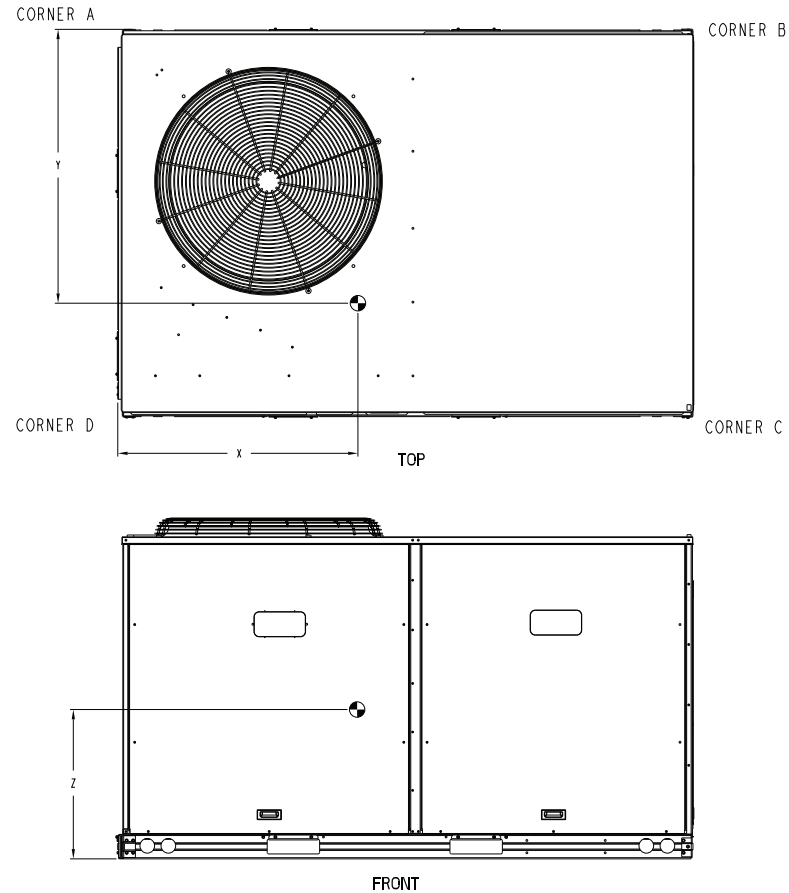
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FE-14 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TM009981	REV
U.S. ECCN:NSR	1 OF 3	08/02/24	-			-

50FE-*14 Base Unit Dimensions (cont)

UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
50FE-M14	RTPF	978	444	245	111	191	87	238	108	305	138	38 5/8 [981]	33 [838]	20 1/2 [521]

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)

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



NOTE:

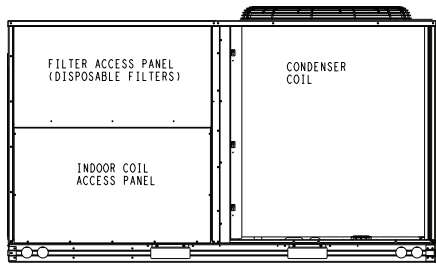
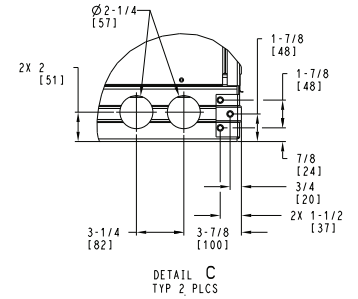
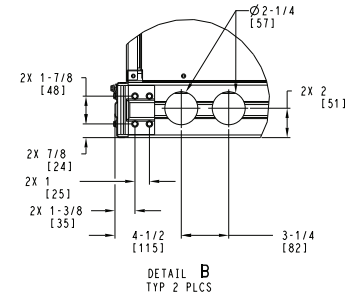
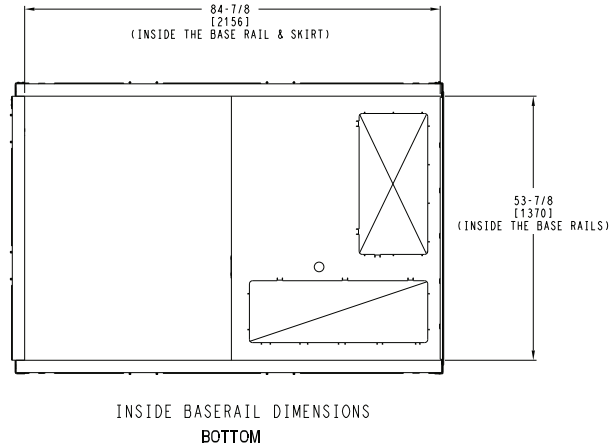
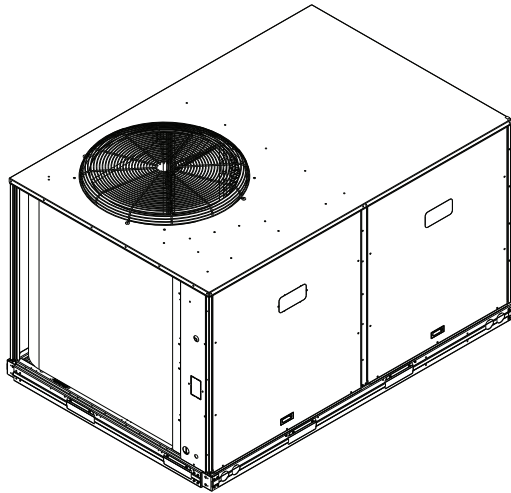
1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

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

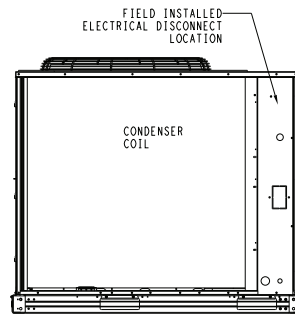
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FE-14 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TM009981	REV
U.S. ECCN:NSR	2 OF 3	08/02/24	-			-

50FE-*14 Base Unit Dimensions (cont)

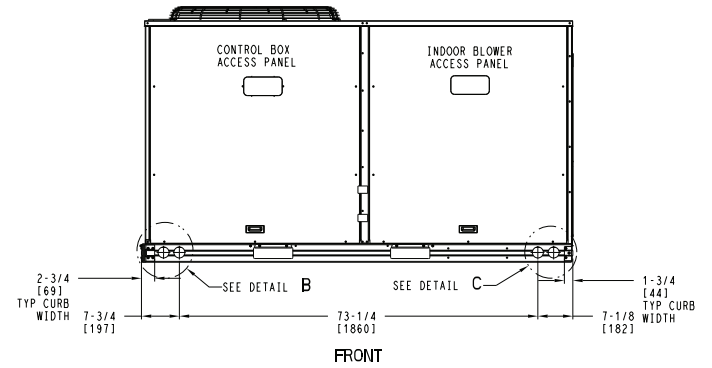
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BACK



LEFT



ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FE-14 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TM009981	REV
U.S. ECCN:NSR	3 OF 3	08/02/24	-			-

50FE-*16 Base Unit Dimensions

NOTES:

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

Carrier

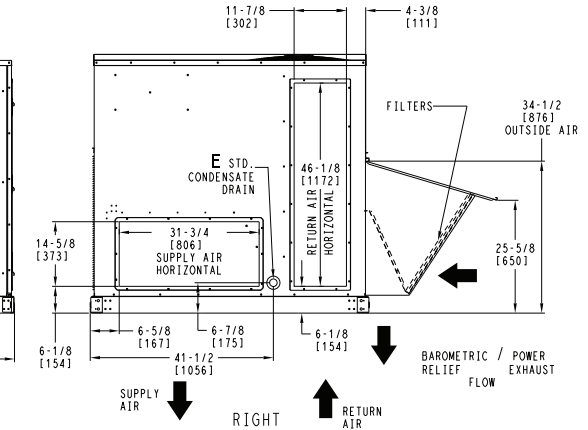
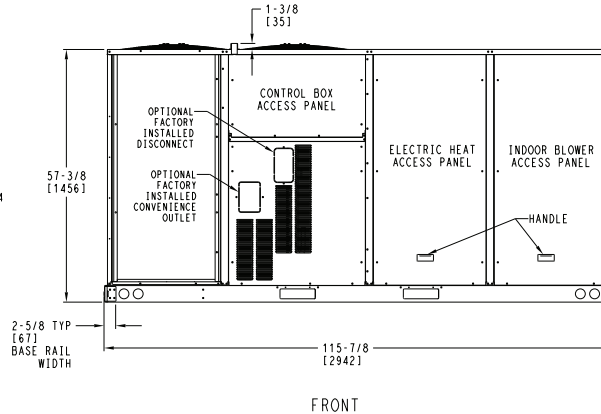
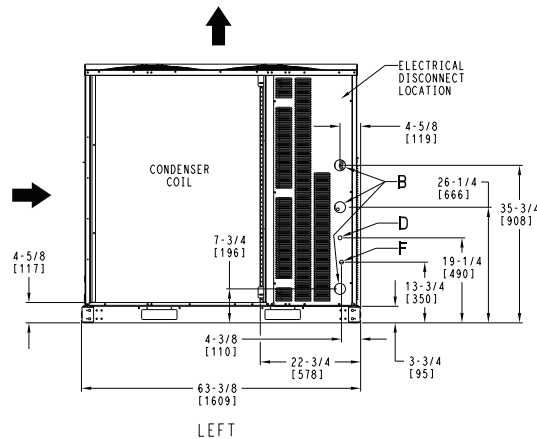
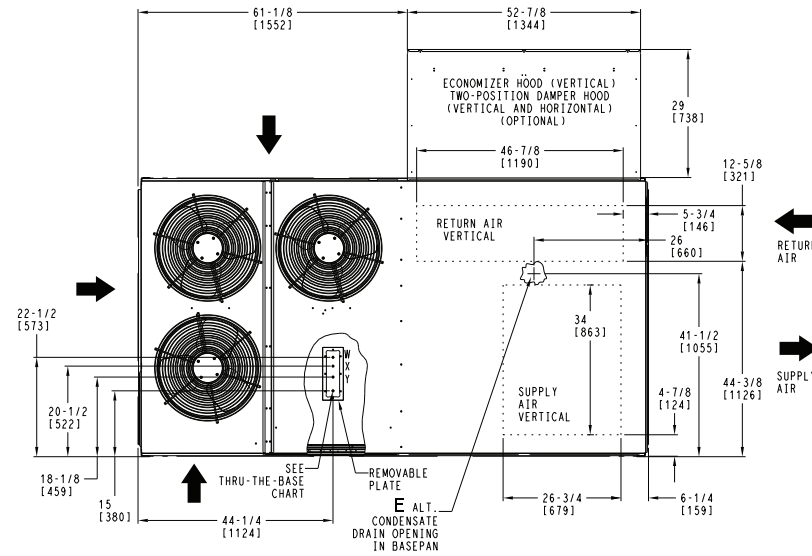
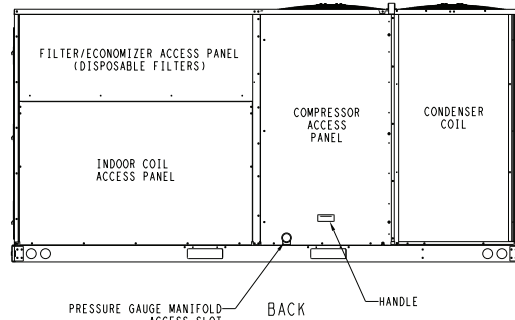
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SUBMISSION OF THESE DRAWINGS OR DOCUMENTS DOES NOT CONSTITUTE PART PERFORMANCE OR ACCEPTANCE OF CONTRACT.

CONNECTION SIZES	
B	2 1/2" [64] DIA POWER SUPPLY HOLE
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	7/8" [22] DIA FIELD CONVENIENCE OUTLET HOLE

THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPW005A00, 006A00, 007A00				
ACCESSORY NO.	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)	
005	W 1/2"	ACC.	7/8"	[22.2]
	X 1/2"	24V	7/8"	[22.2]
	Y 1 1/4"	POWER	1 1/2"	[38.1]
006	W 1/2"	ACC.	7/8"	[22.2]
	X 1/2"	24V	7/8"	[22.2]
	Y 1 1/2"	POWER	2"	[50.8]
007	W 1/2"	ACC.	7/8"	[22.2]
	X 1/2"	24V	7/8"	[22.2]
	Y 2"	POWER	2 1/2"	[63.5]

FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR X & Y ARE PROVIDED AS SPECIFIED ON "006".

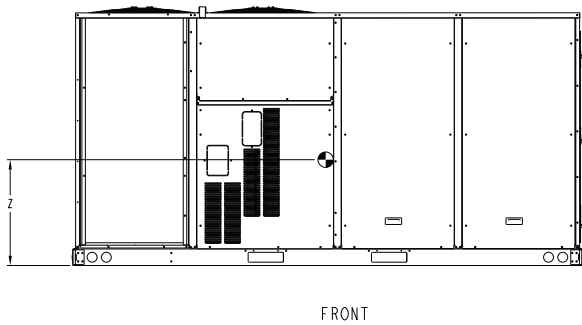
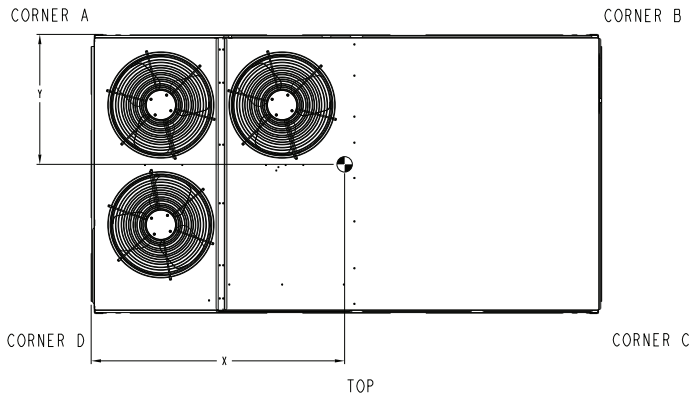


ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FE 16 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	50TM003165	REV
U.S. ECCN:NSR	1 OF 2	8/10/23	-			-

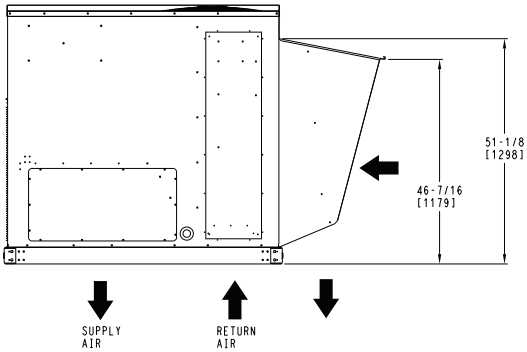
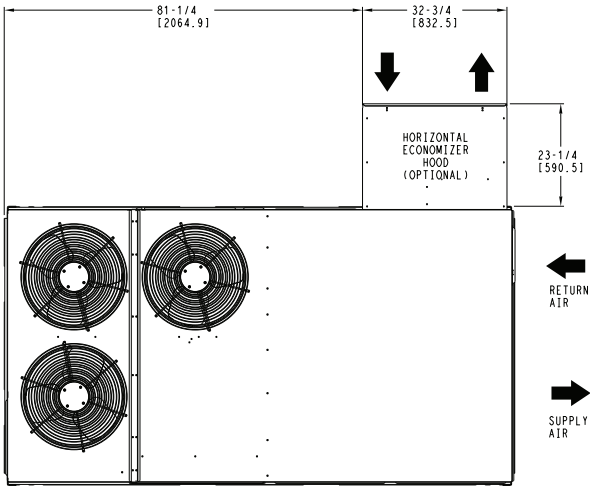
50FE-*16 Base Unit Dimensions (cont)

UNIT	STD UNIT WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
50FE-M16	1325	601	370	168	312	142	294	133	349	158	53 [1345]	30 3/4 [781]	22 [559]

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



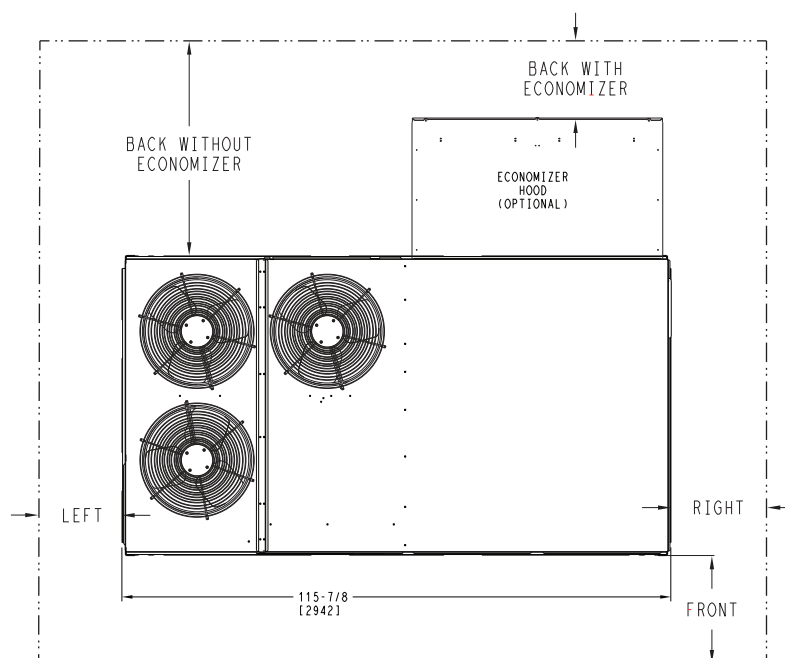
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HORIZONTAL ECONOMIZER

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FE 16 SINGLE ZONE ELECTRICAL COOLING WITH ELECTRIC HEAT	50TM003165	REV
U.S. ECCN:NSR	2 OF 2	8/10/23	-			-

50FE**16 Base Unit Dimensions — Clearances



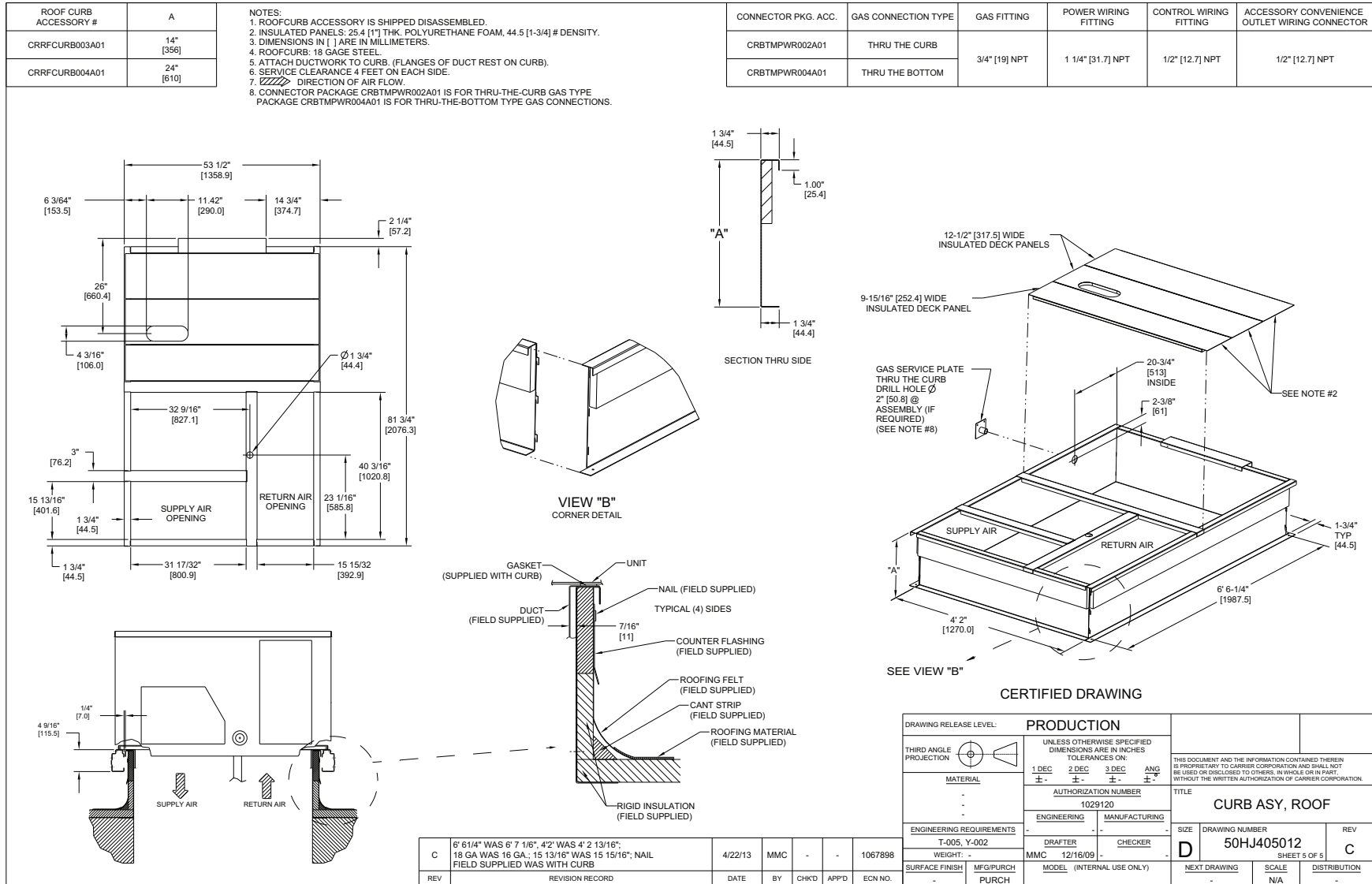
CLEARANCE^{a,b}

SURFACE	Service with Conductive Barrier	Service with Non-conductive Barrier	Operating Clearance
FRONT	48 in. (1219 mm)	36 in. (914 mm)	18 in. (457 mm)
LEFT	48 in. (1219 mm)	42 in. (1067 mm)	18 in. (457 mm)
BACK W/O ECONOMIZER	48 in. (1219 mm)	42 in. (1067 mm)	18 in. (457 mm)
BACK W/ ECONOMIZER	36 in. (914 mm)	36 in. (914 mm)	18 in. (457 mm)
RIGHT	36 in. (914 mm)	36 in. (914 mm)	18 in. (457 mm)
LEFT	72 in. (1829 mm)	72 in. (1829 mm)	72 in. (1829 mm)

NOTE(S):

- For all minimum clearances local codes or jurisdictions may prevail.
- See page 29 for 48FE 08-12 clearances, See page 32 for 48FE 14 clearances.

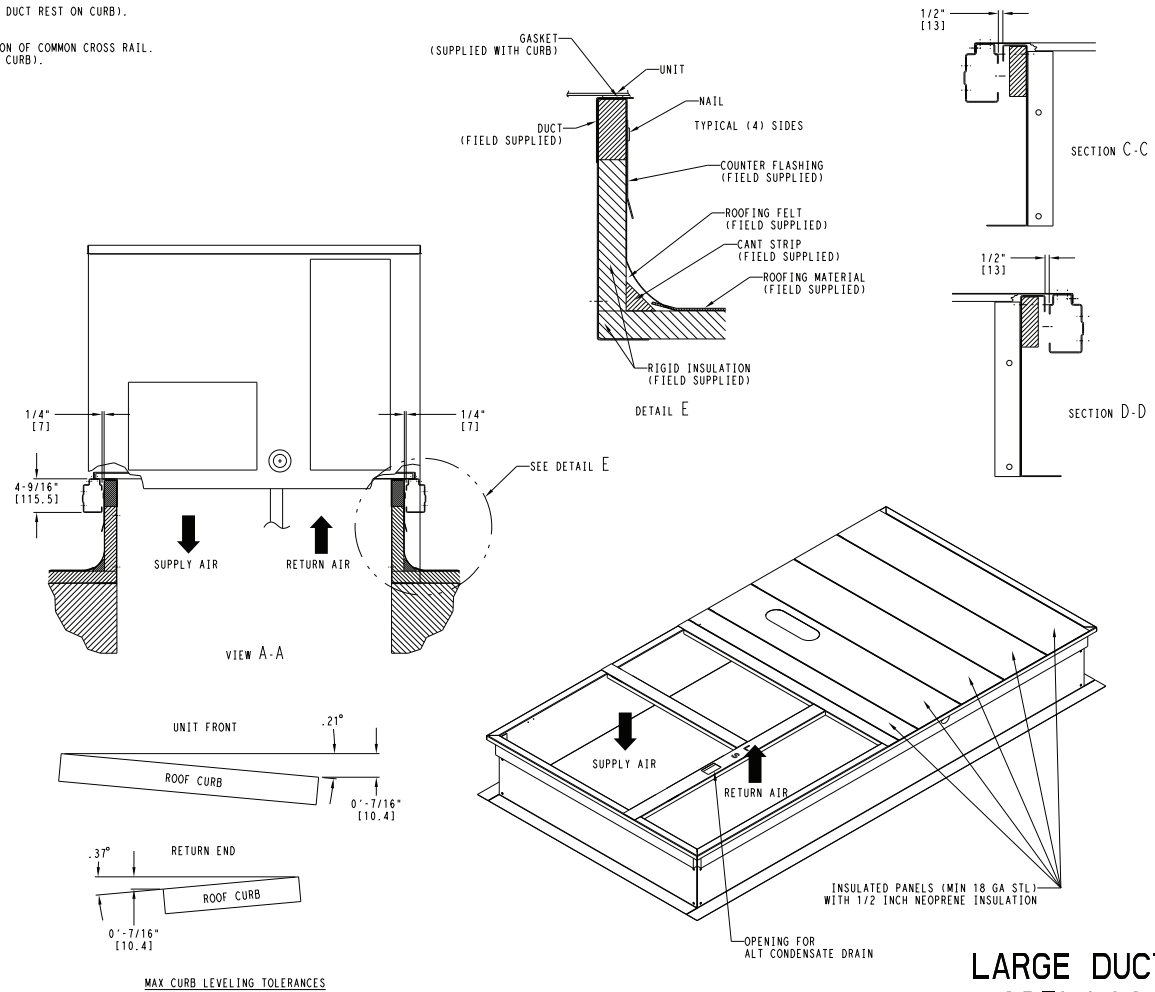
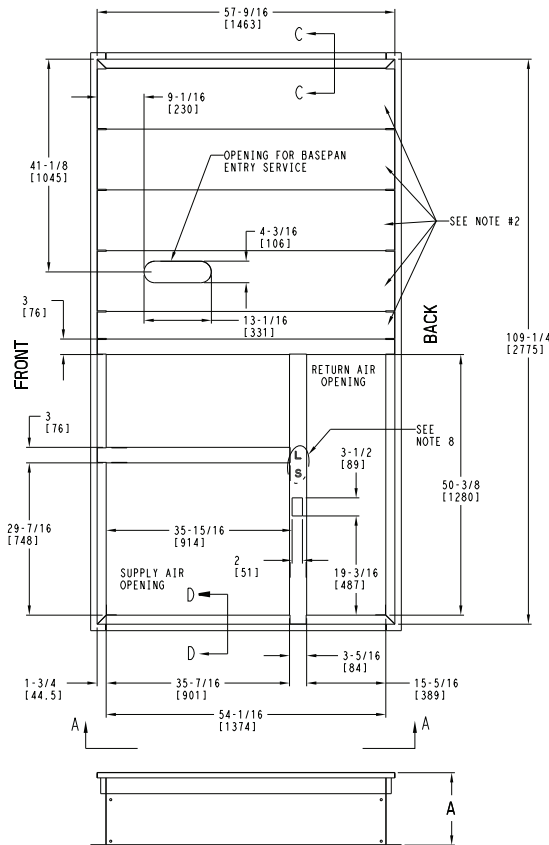
Roof Curb Dimensions — 48/50FE 08-14



Roof Curb Dimensions — 48/50FE 16

ROOF CURB ACCESSORY #	A
CRRFCURB074A00	14" [356]
CRRFCURB075A00	24" [610]

- NOTES:
1. ROOFCURB ACCESSORY IS SHIPPED DISASSEMBLED.
 2. INSULATED PANELS: 1/2" THK. NEOPRENE FOAM, 1.0# DENSITY.
 3. DIMENSIONS IN [] ARE IN MILLIMETERS.
 4. ROOFCURB SIDEWALLS: 16 GAGE STEEL.
 5. ATTACH DUCTWORK TO CURB: (FLANGES OF DUCT REST ON CURB).
 6. SERVICE CLEARANCE 4 FT ON EACH SIDE.
 7. DIRECTION OF AIR FLOW.
 8. "L" & "S" DESIGNATIONS DENOTE LOCATION OF COMMON CROSS RAIL. (POSITION "L" FOR LARGE DUCT OPENING CURB).



LARGE DUCT OPENINGS

50TM500780

REV B

48/50FE**08 Two Stage Cooling Capacities

48/50FE**08				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
2250 cfm	EA (wb)	58	TC	80.7	80.7	91.2	77.4	77.4	87.5	73.8	73.8	83.6	70.0	70.0	79.3	65.9	65.9	74.7
			SHC	70.2	80.7	91.2	67.3	77.4	87.5	64.1	73.8	83.6	60.7	70.0	79.3	57.1	65.9	74.7
		62	TC	85.2	85.2	85.2	80.7	80.7	84.3	76.3	76.3	81.9	71.5	71.5	79.3	66.5	66.5	76.2
			SHC	56.5	67.6	78.7	61.1	72.7	84.3	58.7	70.3	81.9	56.2	67.7	79.3	53.4	64.8	76.2
		67	TC	93.4	93.4	93.4	88.9	88.9	88.9	84.0	84.0	84.0	78.8	78.8	78.8	73.3	73.3	73.3
			SHC	51.8	63.4	75.0	49.7	61.3	72.9	47.4	59.0	70.7	45.0	56.7	68.3	42.5	54.2	65.9
		72	TC	102.8	102.8	102.8	97.9	97.9	97.9	92.6	92.6	92.6	87.0	87.0	87.0	80.9	80.9	80.9
			SHC	40.1	51.5	62.9	37.9	49.4	60.8	35.6	47.1	58.6	33.2	44.8	56.3	30.7	42.3	53.9
		76	TC	—	111.1	111.1	—	105.8	105.8	—	100.1	100.1	—	94.0	94.0	—	87.6	87.6
			SHC	—	41.5	53.8	—	39.5	51.9	—	37.3	47.3	—	35.0	45.7	—	32.6	43.6
2650 cfm	EA (wb)	58	TC	85.5	85.5	96.6	81.9	81.9	92.6	78.1	78.1	88.3	74.0	74.0	83.7	69.5	69.5	78.7
			SHC	74.4	85.5	96.6	71.3	81.9	92.6	67.9	78.1	88.3	64.2	74.0	83.7	60.2	69.5	78.7
		62	TC	87.8	87.8	95.4	83.4	83.4	92.8	78.9	78.9	89.9	75.3	75.3	83.2	70.6	70.6	78.6
			SHC	68.6	82.0	95.4	66.2	79.5	92.8	63.6	76.7	89.9	59.1	71.1	83.2	55.6	67.1	78.6
		67	TC	96.4	96.4	96.4	91.6	91.6	91.6	86.5	86.5	86.5	81.0	81.0	81.0	75.2	75.2	75.2
			SHC	55.3	68.8	82.4	53.1	66.6	80.2	50.8	64.4	77.9	48.3	61.9	75.5	45.8	59.4	73.0
		72	TC	105.8	105.8	105.8	100.6	100.6	100.6	95.1	95.1	95.1	89.1	89.1	89.1	82.9	82.9	82.9
			SHC	41.4	54.8	68.1	39.2	52.6	66.0	36.8	50.3	63.8	34.4	47.9	61.5	31.9	45.4	59.0
		76	TC	—	114.1	114.1	—	108.5	108.5	—	102.6	102.6	—	96.2	96.2	—	89.6	89.6
			SHC	—	43.2	55.1	—	41.1	53.5	—	38.9	51.6	—	36.5	49.5	—	34.1	47.2
3000 cfm	EA (wb)	58	TC	89.0	89.0	100.5	85.3	85.3	96.4	81.2	81.2	91.8	76.9	76.9	87.0	72.2	72.2	81.7
			SHC	77.5	89.0	100.5	74.2	85.3	96.4	70.6	81.2	91.8	66.7	76.9	87.0	62.6	72.2	81.7
		62	TC	90.0	90.0	102.0	85.7	85.7	98.7	82.0	82.0	93.2	77.4	77.4	88.9	72.3	72.3	85.1
			SHC	72.6	87.3	102.0	69.8	84.2	98.7	66.0	79.6	93.2	62.7	75.8	88.9	59.4	72.3	85.1
		67	TC	98.3	98.3	98.3	93.4	93.4	93.4	88.1	88.1	88.1	82.5	82.5	82.5	76.5	76.5	79.0
			SHC	58.1	73.3	88.5	55.9	71.1	86.4	53.5	68.8	84.0	51.1	66.3	81.6	48.5	63.7	79.0
		72	TC	107.8	107.8	107.8	102.5	102.5	102.5	96.7	96.7	96.7	90.6	90.6	90.6	84.2	84.2	84.2
			SHC	42.3	57.4	72.5	40.1	55.2	70.3	37.7	52.9	68.1	35.3	50.5	65.7	32.8	48.0	63.2
		76	TC	—	116.2	116.2	—	110.4	110.4	—	104.3	104.3	—	97.7	97.7	—	90.9	90.9
			SHC	—	44.4	58.5	—	42.2	56.6	—	40.0	54.6	—	37.6	52.3	—	35.1	50.0
3400 cfm	EA (wb)	58	TC	92.5	92.5	104.4	88.5	88.5	100.0	84.2	84.2	95.2	79.6	79.6	90.1	74.8	74.8	84.7
			SHC	80.6	92.5	104.4	77.0	88.5	100.0	73.2	84.2	95.2	69.2	79.6	90.1	64.9	74.8	84.7
		62	TC	94.5	94.5	101.5	90.3	90.3	97.8	84.3	84.3	99.0	79.7	79.7	93.7	74.8	74.8	88.1
			SHC	73.3	87.4	101.5	70.3	84.1	97.8	69.6	84.3	99.0	65.7	79.7	93.7	61.6	74.8	88.1
		67	TC	100.1	100.1	100.1	95.0	95.0	95.0	89.5	89.5	90.7	83.8	83.8	88.2	77.6	77.6	85.4
			SHC	61.2	78.3	95.3	58.9	76.0	93.1	56.6	73.6	90.7	54.1	71.1	88.2	51.5	68.4	85.4
		72	TC	109.7	109.7	109.7	104.1	104.1	104.1	98.2	98.2	98.2	91.9	91.9	91.9	85.4	85.4	85.4
			SHC	43.2	60.2	77.2	41.0	58.0	75.0	38.6	55.7	72.7	36.2	53.3	70.3	33.7	50.8	67.9
		76	TC	—	118.0	118.0	—	112.1	112.1	—	105.8	105.8	—	99.0	99.0	—	84.7	84.7
			SHC	—	45.5	61.7	—	43.3	59.7	—	41.0	57.6	—	38.5	55.3	—	52.2	73.0
3750 cfm	EA (wb)	58	TC	95.0	95.0	107.3	90.9	90.9	102.7	86.5	86.5	97.8	81.7	81.7	92.4	76.6	76.6	86.7
			SHC	82.8	95.0	107.3	79.1	90.9	102.7	75.2	86.5	97.8	71.0	81.7	92.4	66.5	76.6	86.7
		62	TC	97.2	97.2	103.5	91.0	91.0	106.8	86.6	86.6	101.6	81.8	81.8	96.1	76.7	76.7	90.2
			SHC	74.9	89.2	103.5	75.3	91.0	106.8	71.5	86.6	101.6	67.5	81.8	96.1	63.2	76.7	90.2
		67	TC	101.4	101.4	101.4	96.2	96.2	98.8	90.6	90.6	96.3	84.7	84.7	93.6	78.5	78.5	90.8
			SHC	63.8	82.4	101.1	61.5	80.2	98.8	59.1	77.7	96.3	56.6	75.1	93.6	54.0	72.4	90.8
		72	TC	111.0	111.0	111.0	105.3	105.3	105.3	99.3	99.3	99.3	92.9	92.9	92.9	86.2	86.2	86.2
			SHC	43.9	62.5	81.1	41.6	60.3	78.9	39.3	58.0	76.6	36.8	55.5	74.2	34.3	53.0	71.8
		76	TC	—	119.3	119.3	—	113.3	113.3	—	106.8	106.8	—	99.9	99.9	—	92.9	92.9
			SHC	—	46.2	64.2	—	44.0	62.1	—	41.6	59.9	—	39.2	57.6	—	36.7	55.2

LEGEND

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

NOTE: See minimum-maximum airflow ratings on page 8.

48/50FE**08 Single Stage Cooling Capacities

48/50FE**08				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
1150 cfm	EA (wb)	58	TC	41.5	41.5	47.1	40.2	40.2	45.6	38.7	38.7	43.9	37.0	37.0	42.0	35.1	35.1	39.9
			SHC	35.9	41.5	47.1	34.8	40.2	45.6	33.5	38.7	43.9	32.0	37.0	42.0	30.4	35.1	39.9
		62	TC	44.1	44.1	44.6	42.3	42.3	43.7	40.2	40.2	42.8	38.0	38.0	41.8	35.6	35.6	40.6
			SHC	32.4	38.5	44.6	31.5	37.6	43.7	30.6	36.7	42.8	29.6	35.7	41.8	28.5	34.5	40.6
		67	TC	49.0	49.0	49.0	47.0	47.0	47.0	44.8	44.8	44.8	42.3	42.3	42.3	39.7	39.7	39.7
			SHC	26.6	32.7	38.8	25.8	31.9	38.0	24.9	31.0	37.1	23.9	30.0	36.1	22.8	29.0	35.1
		72	TC	54.3	54.3	54.3	52.1	52.1	52.1	49.7	49.7	49.7	47.1	47.1	47.1	44.2	44.2	44.2
			SHC	20.8	26.8	32.7	20.0	26.0	32.0	19.0	25.1	31.1	18.1	24.1	30.2	17.0	23.1	29.1
		76	TC	—	59.0	59.0	—	56.6	56.6	—	54.0	54.0	—	51.1	51.1	—	44.8	44.8
			SHC	—	21.8	28.1	—	21.0	27.4	—	20.2	25.4	—	19.3	24.8	—	21.3	27.5
1350 cfm	EA (wb)	58	TC	44.3	44.3	50.2	42.8	42.8	48.5	41.2	41.2	46.7	39.3	39.3	44.6	37.3	37.3	42.3
			SHC	38.4	44.3	50.2	37.1	42.8	48.5	35.7	41.2	46.7	34.1	39.3	44.6	32.3	37.3	42.3
		62	TC	45.8	45.8	49.5	43.8	43.8	48.6	41.7	41.7	47.5	40.0	40.0	44.6	37.4	37.4	44.0
			SHC	35.3	42.4	49.5	34.4	41.5	48.6	33.4	40.5	47.5	31.5	38.0	44.6	30.7	37.4	44.0
		67	TC	50.7	50.7	50.7	48.6	48.6	48.6	46.2	46.2	46.2	43.7	43.7	43.7	40.9	40.9	40.9
			SHC	28.6	35.7	42.8	27.7	34.9	42.0	26.8	33.9	41.1	25.8	32.9	40.1	24.7	31.9	39.0
		72	TC	56.2	56.2	56.2	53.8	53.8	53.8	51.2	51.2	51.2	48.4	48.4	48.4	45.4	45.4	45.4
			SHC	21.7	28.7	35.7	20.8	27.9	34.9	19.9	27.0	34.0	18.9	26.0	33.1	17.8	24.9	32.0
		76	TC	—	60.8	60.8	—	58.3	58.3	—	55.6	55.6	—	52.6	52.6	—	49.3	49.3
			SHC	—	22.9	29.2	—	22.1	28.6	—	21.3	27.9	—	20.3	27.1	—	19.3	26.1
1600 cfm	EA (wb)	58	TC	47.2	47.2	53.4	45.5	45.5	51.6	43.7	43.7	49.5	41.7	41.7	47.3	39.5	39.5	44.8
			SHC	40.9	47.2	53.4	39.5	45.5	51.6	37.9	43.7	49.5	36.2	41.7	47.3	34.2	39.5	44.8
		62	TC	47.5	47.5	54.8	46.0	46.0	52.7	43.8	43.8	51.5	41.8	41.8	49.2	39.5	39.5	46.6
			SHC	38.5	46.6	54.8	37.1	44.9	52.7	36.0	43.8	51.5	34.4	41.8	49.2	32.5	39.5	46.6
		67	TC	52.4	52.4	52.4	50.1	50.1	50.1	47.6	47.6	47.6	44.9	44.9	44.9	41.9	41.9	43.7
			SHC	30.9	39.3	47.7	30.0	38.4	46.8	29.0	37.5	45.9	28.0	36.4	44.8	26.9	35.3	43.7
		72	TC	57.9	57.9	57.9	55.4	55.4	55.4	52.7	52.7	52.7	49.7	49.7	49.7	48.2	48.2	48.2
			SHC	22.7	31.0	39.3	21.8	30.1	38.5	20.8	29.2	37.5	19.8	28.2	36.5	17.8	26.4	35.0
		76	TC	—	62.6	62.6	—	60.0	60.0	—	57.1	57.1	—	53.9	53.9	—	50.5	50.5
			SHC	—	24.2	32.1	—	23.4	31.3	—	22.4	30.5	—	21.4	29.6	—	20.4	28.6
1800 cfm	EA (wb)	58	TC	49.1	49.1	55.6	47.4	47.4	53.6	45.4	45.4	51.4	43.3	43.3	49.0	41.0	41.0	46.4
			SHC	42.6	49.1	55.6	41.1	47.4	53.6	39.4	45.4	51.4	37.6	43.3	49.0	35.5	41.0	46.4
		62	TC	48.8	48.8	57.8	47.4	47.4	55.8	45.5	45.5	53.5	43.3	43.3	51.0	41.0	41.0	48.3
			SHC	39.8	48.8	57.8	39.0	47.4	55.8	37.4	45.5	53.5	35.7	43.3	51.0	33.7	41.0	48.3
		67	TC	53.4	53.4	53.4	51.0	51.0	51.0	48.4	48.4	49.6	45.6	45.6	48.5	42.6	42.6	47.2
			SHC	32.6	42.0	51.4	31.7	41.1	50.6	30.8	40.2	49.6	29.7	39.1	48.5	28.5	37.9	47.2
		72	TC	59.0	59.0	59.0	56.4	56.4	56.4	53.5	53.5	53.5	50.5	50.5	50.5	47.2	47.2	47.2
			SHC	23.4	32.7	42.0	22.5	31.8	41.2	21.5	30.9	40.2	20.5	29.9	39.2	19.3	28.7	38.1
		76	TC	—	63.7	63.7	—	61.0	61.0	—	58.0	58.0	—	54.7	54.7	—	51.2	51.2
			SHC	—	25.1	34.1	—	24.2	33.3	—	23.3	32.4	—	22.3	31.5	—	21.2	30.4
2050 cfm	EA (wb)	58	TC	51.2	51.2	57.9	49.3	49.3	55.8	47.2	47.2	53.4	45.0	45.0	50.9	42.5	42.5	48.1
			SHC	44.4	51.2	57.9	42.8	49.3	55.8	41.0	47.2	53.4	39.0	45.0	50.9	36.9	42.5	48.1
		62	TC	51.2	51.2	60.2	49.3	49.3	58.0	47.3	47.3	55.6	45.0	45.0	52.9	42.5	42.5	50.0
			SHC	42.2	51.2	60.2	40.7	49.3	58.0	39.0	47.3	55.6	37.1	45.0	52.9	35.0	42.5	50.0
		67	TC	54.4	54.4	56.0	51.9	51.9	55.0	49.2	49.2	53.9	46.4	46.4	52.8	43.3	43.3	51.5
			SHC	34.7	45.4	56.0	33.8	44.4	55.0	32.8	43.4	53.9	31.7	42.2	52.8	30.5	41.0	51.5
		72	TC	60.0	60.0	60.0	57.3	57.3	57.3	54.4	54.4	54.4	51.2	51.2	51.2	47.8	47.8	47.8
			SHC	24.2	34.8	45.3	23.3	33.9	44.5	22.3	32.9	43.5	21.2	31.9	42.5	20.1	30.8	41.4
		76	TC	—	64.8	64.8	—	62.0	62.0	—	58.8	58.8	—	55.4	55.4	—	51.8	51.8
			SHC	—	26.1	36.4	—	25.2	35.6	—	24.3	34.7	—	23.3	33.7	—	22.1	32.6

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE*N08 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		2250/0.14			3000 /0.15			3750/0.17		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	95.0	86.0	77.0	104.0	93.0	83.0	108.0	97.0	87.0
	SHC	38.0	49.0	60.0	47.0	60.0	72.0	53.0	69.0	83.0
	kW	6.4	6.4	6.3	6.6	6.5	6.4	6.6	6.5	6.4
85	TC	86.0	81.0	71.0	97.0	86.0	77.0	101.0	91.0	81.0
	SHC	29.0	44.0	54.0	40.0	53.0	67.0	46.0	63.0	76.0
	kW	6.9	7.0	7.0	7.2	7.1	7.0	7.2	7.2	7.1
95	TC	84.0	74.0	65.0	90.0	80.0	71.0	94.0	83.0	74.0
	SHC	28.0	38.0	49.0	34.0	47.0	61.0	40.0	56.0	70.0
	kW	7.8	7.7	7.7	7.9	7.8	7.7	8.0	7.9	7.8
105	TC	77.0	68.0	59.0	82.0	73.0	64.0	86.0	76.0	68.0
	SHC	22.0	32.0	43.0	27.0	41.0	55.0	33.0	49.0	64.0
	kW	8.7	8.5	8.4	8.8	8.6	8.5	8.8	8.7	8.6
115	TC	70.0	61.0	53.0	74.0	65.0	57.0	78.0	68.0	60.0
	SHC	15.0	26.0	37.0	20.0	35.0	49.0	25.0	42.0	57.0
	kW	9.5	9.4	9.3	9.6	9.5	9.4	9.7	9.5	9.4
125	TC	62.0	54.0	46.0	66.0	58.0	50.0	69.0	60.0	53.0
	SHC	8.0	20.0	31.0	13.0	28.0	42.0	18.0	35.0	50.0
	kW	10.5	10.4	10.3	10.6	10.5	10.3	10.7	10.5	10.4

48/50FE*N08 — Unit With Humidi-MiZer System in Hot Gas Reheat Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (°F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — cfm								
		2250	3000	3750	2250	3000	3750	2250	3000	3750
80	TC	35.0	39.0	41.0	37.0	40.0	42.0	38.0	41.0	43.0
	SHC	8.0	14.0	21.0	4.0	9.0	15.0	0.0	5.0	10.0
	kW	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
75	TC	37.0	41.0	43.0	39.0	42.0	44.0	40.0	43.0	46.0
	SHC	9.0	16.0	23.0	6.0	12.0	17.0	2.0	7.0	12.0
	kW	5.9	5.9	6.0	5.9	6.0	6.0	6.0	6.1	6.1
70	TC	40.0	43.0	45.0	41.0	44.0	47.0	42.0	46.0	48.0
	SHC	11.0	18.0	25.0	8.0	13.0	19.0	4.0	9.0	14.0
	kW	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
60	TC	44.0	47.0	50.0	45.0	49.0	51.0	47.0	50.0	53.0
	SHC	15.0	22.0	29.0	11.0	17.0	23.0	8.0	13.0	18.0
	kW	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
50	TC	47.0	51.0	54.0	49.0	53.0	55.0	51.0	54.0	57.0
	SHC	19.0	26.0	33.0	15.0	21.0	27.0	12.0	17.0	22.0
	kW	5.7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
40	TC	51.0	55.0	58.0	53.0	57.0	60.0	54.0	59.0	61.0
	SHC	22.0	30.0	37.0	18.0	25.0	31.0	15.0	21.0	26.0
	kW	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6

LEGEND

Edb	—	Entering Dry Bulb
Ewb	—	Entering Wet Bulb
kW	—	Compressor Power Input
SCFM/BF	—	Standard Cubic Feet per Minute/Bypass Factor
SHC	—	Sensible Heat Capacity (1000 Btuh) Gross
TC	—	Total Capacity (1000 Btuh) Gross

48/50FE**09 Two Stage Cooling Capacities

48/50FE**09				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
2550 cfm	EA (wb)	58	TC	88.4	88.4	99.8	84.9	84.9	95.9	81.0	81.0	91.6	76.5	76.5	86.6	71.4	71.4	80.9
			SHC	76.9	88.4	99.8	73.9	84.9	95.9	70.4	81.0	91.6	66.4	76.5	86.6	62.0	71.4	80.9
		62	TC	92.6	92.6	95.8	88.2	88.2	93.6	88.5	88.5	88.5	77.6	77.6	88.0	71.5	71.5	84.2
			SHC	69.9	82.9	95.8	67.7	80.6	93.6	60.6	70.0	79.5	62.3	75.1	88.0	59.0	71.5	84.2
		67	TC	102.2	102.2	102.2	97.3	97.3	97.3	91.8	91.8	91.8	85.7	85.7	85.7	78.9	78.9	78.9
			SHC	57.2	70.0	83.0	54.9	67.8	80.6	52.4	65.4	78.3	49.8	62.7	75.7	46.8	59.8	72.8
		72	TC	112.8	112.8	112.8	107.4	107.4	107.4	101.5	101.5	101.5	94.7	94.7	94.7	87.4	87.4	87.4
			SHC	44.4	57.2	69.9	42.1	54.9	67.8	39.6	52.4	65.3	36.9	49.7	62.7	33.9	46.9	59.9
		76	TC	—	122.2	122.2	—	116.4	116.4	—	109.9	109.9	—	102.8	102.8	—	94.9	94.9
			SHC	—	46.6	59.8	—	44.3	55.9	—	41.9	54.0	—	39.2	51.6	—	36.4	49.0
3000 cfm	EA (wb)	58	TC	93.8	93.8	105.9	90.1	90.1	101.8	85.7	85.7	96.9	81.0	81.0	91.6	75.5	75.5	85.4
			SHC	81.7	93.8	105.9	78.4	90.1	101.8	74.6	85.7	96.9	70.3	81.0	91.6	65.5	75.5	85.4
		62	TC	101.6	101.6	101.6	95.6	95.6	95.6	86.2	86.2	99.9	81.1	81.1	95.3	75.6	75.6	88.9
			SHC	70.4	81.4	92.2	69.2	81.2	93.2	70.5	85.2	99.9	66.9	81.1	95.3	62.3	75.6	88.9
		67	TC	105.6	105.6	105.6	100.3	100.3	100.3	94.5	94.5	94.5	84.4	84.4	84.4	80.1	80.1	80.1
			SHC	61.2	76.5	91.6	59.0	74.1	89.3	56.4	71.6	86.8	38.5	53.8	69.0	47.4	62.7	78.0
		72	TC	116.4	116.4	116.4	110.8	110.8	110.8	104.3	104.3	104.3	97.2	97.2	97.2	89.4	89.4	89.4
			SHC	46.1	61.1	76.2	43.8	58.9	73.9	41.2	56.4	71.5	38.4	53.6	68.7	35.4	50.6	65.8
		76	TC	—	126.0	126.0	—	119.7	119.7	—	112.9	112.9	—	105.3	105.3	—	97.1	97.1
			SHC	—	48.8	62.9	—	46.4	60.8	—	43.8	58.4	—	41.1	55.8	—	38.2	53.2
3400 cfm	EA (wb)	58	TC	98.0	98.0	110.6	93.9	93.9	106.1	89.3	89.3	100.9	84.1	84.1	95.1	78.3	78.3	88.6
			SHC	85.3	98.0	110.6	81.8	93.9	106.1	77.7	89.3	100.9	73.1	84.1	95.1	68.0	78.3	88.6
		62	TC	101.1	101.1	108.4	94.8	94.8	108.8	89.5	89.5	105.0	84.4	84.4	99.1	78.6	78.6	92.4
			SHC	78.4	93.4	108.4	77.1	93.0	108.8	73.9	89.5	105.0	69.6	84.4	99.1	64.8	78.6	92.4
		67	TC	107.9	107.9	107.9	102.5	102.5	102.5	96.5	96.5	96.5	89.6	89.6	91.3	82.2	82.2	88.3
			SHC	64.7	81.8	98.9	61.2	78.3	95.5	58.7	75.9	93.1	57.0	74.1	91.3	54.0	71.2	88.3
		72	TC	118.9	118.9	118.9	112.9	112.9	112.9	106.2	106.2	106.2	99.2	99.2	99.2	90.8	90.8	90.8
			SHC	47.5	64.5	81.6	45.1	62.1	79.2	42.4	59.5	76.6	39.8	56.9	74.0	36.7	53.8	71.0
		76	TC	—	128.4	128.4	—	122.0	122.0	—	115.0	115.0	—	107.0	107.0	—	98.5	98.5
			SHC	—	50.4	66.8	—	48.0	64.5	—	45.5	62.1	—	42.6	59.4	—	39.7	56.6
3850 cfm	EA (wb)	58	TC	101.7	101.7	114.8	97.4	97.4	110.0	92.7	92.7	104.7	87.1	87.1	98.5	81.4	81.4	92.0
			SHC	88.6	101.7	114.8	84.9	97.4	110.0	80.7	92.7	104.7	75.8	87.1	98.5	70.7	81.4	92.0
		62	TC	102.1	102.1	119.5	97.8	97.8	114.6	92.8	92.8	108.9	87.4	87.4	102.6	81.5	81.5	95.7
			SHC	84.6	102.1	119.5	80.9	97.8	114.6	76.7	92.8	108.9	72.2	87.4	102.6	67.2	81.5	95.7
		67	TC	110.4	110.4	110.4	104.3	104.3	104.9	98.1	98.1	102.1	91.1	91.1	99.1	83.5	83.5	95.8
			SHC	67.7	87.0	106.3	66.2	85.5	104.9	63.5	82.8	102.1	60.6	79.9	99.1	57.5	76.6	95.8
		72	TC	121.1	121.1	121.1	114.8	114.8	114.8	108.0	108.0	108.0	100.5	100.5	100.5	92.3	92.3	92.3
			SHC	48.9	68.1	87.3	46.5	65.8	85.1	43.8	63.1	82.4	41.0	60.4	79.7	38.0	57.4	76.7
		76	TC	—	130.7	130.7	—	124.0	124.0	—	116.7	116.7	—	108.6	108.6	—	99.6	99.6
			SHC	—	52.1	70.8	—	49.7	68.5	—	47.1	66.0	—	44.3	63.3	—	41.2	60.3
4250 cfm	EA (wb)	58	TC	104.9	104.9	118.3	100.3	100.3	113.1	95.3	95.3	107.6	89.7	89.7	101.3	83.3	83.3	94.1
			SHC	91.4	104.9	118.3	87.3	100.3	113.1	82.9	95.3	107.6	78.0	89.7	101.3	72.3	83.3	94.1
		62	TC	105.0	105.0	123.0	100.5	100.5	117.7	95.4	95.4	112.0	89.7	89.7	105.3	83.4	83.4	98.1
			SHC	87.0	105.0	123.0	83.3	100.5	117.7	78.9	95.4	112.0	74.1	89.7	105.3	68.9	83.4	98.1
		67	TC	111.3	111.3	114.1	105.7	105.7	111.8	99.2	99.2	108.9	92.1	92.1	105.7	84.6	84.6	102.2
			SHC	71.7	92.9	114.1	69.4	90.5	111.8	66.6	87.7	108.9	63.7	84.7	105.7	60.5	81.4	102.2
		72	TC	122.6	122.6	122.6	116.2	116.2	116.2	109.3	109.3	109.3	101.7	101.7	101.7	93.4	93.4	93.4
			SHC	50.1	71.3	92.5	47.6	68.8	90.1	45.0	66.2	87.4	42.1	63.3	84.5	39.2	60.5	81.8
		76	TC	—	132.4	132.4	—	125.5	125.5	—	117.9	117.9	—	109.6	109.6	—	—	—
			SHC	—	53.5	74.2	—	51.0	71.8	—	48.4	69.3	—	45.5	66.5	—	—	—

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE**09 Single Stage Cooling Capacities

48/50FE**09				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
1275 cfm	EA (wb)	58	TC	42.8	42.8	49.0	39.9	39.9	45.9	36.9	36.9	42.6	33.6	33.6	39.1	30.0	30.0	35.2
			SHC	36.6	42.8	49.0	33.9	39.9	45.9	31.1	36.9	42.6	28.0	33.6	39.1	24.8	30.0	35.2
		62	TC	45.7	45.7	46.8	42.2	42.2	44.5	38.5	38.5	42.1	38.8	38.8	44.9	31.1	31.1	35.3
			SHC	33.0	39.9	46.8	30.7	37.6	44.5	28.2	35.1	42.1	32.7	38.8	44.9	22.4	28.9	35.3
		67	TC	51.7	51.7	51.7	48.1	48.1	48.1	44.1	44.1	44.1	39.9	39.9	39.9	35.2	35.2	35.2
			SHC	27.1	34.0	40.9	24.7	31.6	38.5	22.3	29.2	36.1	19.7	26.6	33.5	17.0	23.9	30.9
		72	TC	58.3	58.3	58.3	54.4	54.4	54.4	50.2	50.2	50.2	45.7	45.7	45.7	40.8	40.8	40.8
			SHC	21.1	27.9	34.7	18.7	25.5	32.4	16.2	23.1	29.9	13.7	20.5	27.4	11.0	17.8	24.7
		76	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1500 cfm	EA (wb)	58	TC	46.3	46.3	52.9	43.2	43.2	49.6	40.0	40.0	46.1	36.4	36.4	42.3	32.6	32.6	38.1
			SHC	39.7	46.3	52.9	36.9	43.2	49.6	33.9	40.0	46.1	30.6	36.4	42.3	27.1	32.6	38.1
		62	TC	49.6	49.6	56.6	44.2	44.2	50.3	41.2	41.2	46.3	36.5	36.5	44.3	32.7	32.7	40.1
			SHC	40.8	48.7	56.6	34.2	42.3	50.3	31.1	38.7	46.3	28.7	36.5	44.3	25.3	32.7	40.1
		67	TC	53.9	53.9	53.9	50.1	50.1	50.1	47.2	47.2	47.2	41.5	41.5	41.5	37.6	37.6	38.6
			SHC	29.6	37.6	45.7	27.1	35.2	43.3	27.9	35.9	44.0	22.0	30.1	38.2	22.4	30.5	38.6
		72	TC	60.7	60.7	60.7	56.6	56.6	56.6	52.2	52.2	52.2	47.4	47.4	47.4	—	—	—
			SHC	22.3	30.4	38.4	19.9	27.9	36.0	17.4	25.4	33.5	14.8	22.8	30.9	—	—	—
		76	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1700 cfm	EA (wb)	58	TC	49.0	49.0	55.8	45.7	45.7	52.4	42.3	42.3	48.7	38.6	38.6	44.7	34.6	34.6	40.3
			SHC	42.1	49.0	55.8	39.1	45.7	52.4	35.9	42.3	48.7	32.5	38.6	44.7	28.9	34.6	40.3
		62	TC	50.2	50.2	56.0	45.8	45.8	54.7	42.4	42.4	50.9	38.7	38.7	46.8	34.7	34.7	42.3
			SHC	39.0	47.5	56.0	37.0	45.8	54.7	33.9	42.4	50.9	30.6	38.7	46.8	27.0	34.7	42.3
		67	TC	55.5	55.5	55.5	51.4	51.4	51.4	47.2	47.2	47.2	42.6	42.6	42.6	37.6	37.6	39.5
			SHC	31.6	40.8	49.9	29.2	38.3	47.5	26.6	35.8	44.9	24.0	33.1	42.3	21.2	30.3	39.5
		72	TC	62.3	62.3	62.3	58.1	58.1	58.1	53.5	53.5	53.5	—	—	—	—	—	—
			SHC	23.3	32.4	41.5	20.9	29.9	39.0	18.3	27.4	36.5	—	—	—	—	—	—
		76	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1925 cfm	EA (wb)	58	TC	51.5	51.5	58.7	48.1	48.1	55.0	44.6	44.6	51.2	40.7	40.7	47.0	36.5	36.5	42.4
			SHC	44.4	51.5	58.7	41.2	48.1	55.0	38.0	44.6	51.2	34.4	40.7	47.0	30.6	36.5	42.4
		62	TC	51.6	51.6	61.2	48.2	48.2	57.4	44.6	44.6	53.5	40.8	40.8	49.2	36.6	36.6	44.5
			SHC	42.0	51.6	61.2	39.0	48.2	57.4	35.8	44.6	53.5	32.4	40.8	49.2	28.6	36.6	44.5
		67	TC	56.8	56.8	56.8	52.7	52.7	52.7	48.3	48.3	49.4	43.5	43.5	46.7	38.4	38.4	43.8
			SHC	33.8	44.1	54.5	31.4	41.7	52.0	28.8	39.1	49.4	26.1	36.4	46.7	23.2	33.5	43.8
		72	TC	63.8	63.8	63.8	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	24.3	34.6	44.8	—	—	—	—	—	—	—	—	—	—	—	—
		76	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2125 cfm	EA (wb)	58	TC	53.5	53.5	60.9	50.0	50.0	57.1	46.3	46.3	53.1	42.3	42.3	48.8	38.0	38.0	44.1
			SHC	46.1	53.5	60.9	42.9	50.0	57.1	39.5	46.3	53.1	35.8	42.3	48.8	31.9	38.0	44.1
		62	TC	53.6	53.6	63.4	50.1	50.1	59.6	46.4	46.4	55.5	42.4	42.4	51.0	38.0	38.0	46.2
			SHC	43.7	53.6	63.4	40.6	50.1	59.6	37.3	46.4	55.5	33.7	42.4	51.0	29.9	38.0	46.2
		67	TC	57.8	57.8	58.4	53.6	53.6	55.9	49.1	49.1	53.3	44.3	44.3	50.5	39.1	39.1	47.5
			SHC	35.7	47.1	58.4	33.2	44.5	55.9	30.6	41.9	53.3	27.8	39.2	50.5	25.0	36.2	47.5
		72	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		76	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE*N09 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		2550/0.11			3400/0.14			4250/0.15		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	108.0	96.0	86.0	108.0	97.0	90.0	119.0	107.0	97.0
	SHC	46.0	57.0	69.0	48.0	64.0	82.0	61.0	79.0	95.0
	kW	7.3	7.2	7.1	7.2	7.1	7.1	7.5	7.3	7.3
85	TC	101.0	86.0	79.0	107.0	96.0	85.0	111.0	100.0	90.0
	SHC	40.0	48.0	63.0	47.0	63.0	77.0	54.0	73.0	88.0
	kW	8.0	7.8	7.8	8.1	8.0	7.9	8.1	8.0	7.9
95	TC	93.0	82.0	73.0	99.0	88.0	78.0	103.0	92.0	84.0
	SHC	33.0	46.0	58.0	40.0	56.0	71.0	47.0	66.0	77.0
	kW	8.7	8.6	8.5	8.8	8.7	8.6	8.9	8.7	8.6
105	TC	85.0	75.0	66.0	90.0	80.0	71.0	94.0	83.0	75.0
	SHC	27.0	40.0	52.0	33.0	50.0	65.0	40.0	60.0	74.0
	kW	9.5	9.4	9.3	9.6	9.5	9.4	9.7	9.5	9.4
115	TC	77.0	68.0	59.0	81.0	72.0	63.0	85.0	75.0	69.0
	SHC	21.0	33.0	46.0	26.0	43.0	59.0	33.0	53.0	62.0
	kW	10.4	10.3	10.2	10.5	10.4	10.3	10.5	10.4	10.3
125	TC	69.0	60.0	51.0	73.0	64.0	56.0	75.0	66.0	60.0
	SHC	14.0	27.0	40.0	20.0	37.0	52.0	25.0	46.0	58.0
	kW	11.4	11.3	11.2	11.5	11.4	11.3	11.5	11.4	11.3

48/50FE*N09 — Unit With Humidi-MiZer System in Hot Gas Reheat Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (°F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — cfm								
		2550	3400	4250	2550	3400	4250	2550	3400	4250
80	TC	36.0	39.0	41.0	37.0	40.0	430.0	38.0	42.0	44.0
	SHC	7.0	14.0	22.0	2.0	8.0	155.0	-2.0	3.0	9.0
	kW	6.2	6.2	6.2	6.3	6.3	6.2	6.3	6.3	6.3
75	TC	38.0	41.0	43.0	39.0	43.0	45.0	41.0	44.0	46.0
	SHC	8.0	16.0	24.0	4.0	11.0	17.0	0.0	6.0	12.0
	kW	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.6	5.7
70	TC	40.0	43.0	46.0	41.0	45.0	47.0	43.0	46.0	48.0
	SHC	10.0	18.0	26.0	6.0	13.0	19.0	2.0	8.0	14.0
	kW	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
60	TC	44.0	48.0	50.0	46.0	49.0	52.0	47.0	50.0	53.0
	SHC	14.0	22.0	30.0	9.0	16.0	23.0	5.0	11.0	17.0
	kW	5.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
50	TC	48.0	52.0	54.0	50.0	54.0	56.0	51.0	55.0	57.0
	SHC	17.0	26.0	34.0	13.0	20.0	27.0	9.0	15.0	21.0
	kW	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
40	TC	52.0	56.0	58.0	54.0	58.0	60.0	55.0	59.0	62.0
	SHC	21.0	30.0	38.0	16.0	24.0	31.0	12.0	19.0	25.0
	kW	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.0

LEGEND

Edb	—	Entering Dry Bulb
Ewb	—	Entering Wet Bulb
kW	—	Compressor Power Input
SCFM/BF	—	Standard Cubic Feet per Minute/Bypass Factor
SHC	—	Sensible Heat Capacity (1000 Btuh) Gross
TC	—	Total Capacity (1000 Btuh) Gross

48/50FE**12 Two Stage Cooling Capacities

48/50FE**12				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3000 cfm	EA (wb)	58	TC	106.2	106.2	120.5	100.9	100.9	114.7	95.3	95.3	108.4	89.3	89.3	101.8	82.9	82.9	94.9
			SHC	92.0	106.2	120.5	87.2	100.9	114.7	82.1	95.3	108.4	76.8	89.3	101.8	71.1	82.9	94.9
		62	TC	112.7	112.7	112.8	106.2	106.2	109.0	99.3	99.3	105.0	91.9	91.9	100.8	84.3	84.3	96.5
			SHC	82.2	97.5	112.8	78.4	93.7	109.0	74.5	89.7	105.0	70.3	85.6	100.8	66.1	81.3	96.5
		67	TC	124.5	124.5	124.5	117.4	117.4	117.4	110.0	110.0	110.0	102.0	102.0	102.0	93.8	93.8	93.8
			SHC	67.4	82.7	98.0	63.6	78.9	94.2	59.7	75.0	90.3	55.6	70.9	86.3	51.4	66.7	82.1
		72	TC	137.3	137.3	137.3	129.8	129.8	129.8	121.7	121.7	121.7	113.1	113.1	113.1	—	—	—
			SHC	52.3	67.6	82.9	48.5	63.8	79.2	44.6	59.9	75.2	40.6	55.9	71.2	—	—	—
		76	TC	—	148.3	148.3	—	140.2	140.2	—	131.7	131.7	—	122.6	122.6	—	—	—
			SHC	—	55.3	70.2	—	51.5	66.5	—	47.6	62.6	—	43.5	58.5	—	—	—
3500 cfm	EA (wb)	58	TC	112.9	112.9	127.8	107.2	107.2	121.6	101.2	101.2	115.0	94.8	94.8	108.0	88.0	88.0	100.5
			SHC	97.9	112.9	127.8	92.7	107.2	121.6	87.3	101.2	115.0	81.6	94.8	108.0	75.5	88.0	100.5
		62	TC	116.7	116.7	124.6	109.9	109.9	120.7	102.7	102.7	116.6	95.2	95.2	111.9	88.2	88.2	104.8
			SHC	89.3	107.0	124.6	85.4	103.1	120.7	81.3	99.0	116.6	77.0	94.4	111.9	71.4	88.2	104.8
		67	TC	128.4	128.4	128.4	121.1	121.1	121.1	113.3	113.3	113.3	105.0	105.0	105.0	96.4	96.4	96.4
			SHC	71.9	89.7	107.4	68.1	85.9	103.6	64.1	81.8	99.6	59.9	77.7	95.5	55.8	73.4	91.2
		72	TC	141.4	141.4	141.4	133.4	133.4	133.4	125.0	125.0	125.0	116.2	116.2	116.2	—	—	—
			SHC	54.2	71.9	89.7	50.4	68.1	85.9	46.4	64.1	81.9	42.3	60.0	77.7	—	—	—
		76	TC	—	152.5	152.5	—	144.0	144.0	—	135.1	135.1	—	125.7	125.7	—	—	—
			SHC	—	57.5	74.9	—	53.6	71.0	—	49.6	67.1	—	45.5	63.0	—	—	—
4000 cfm	EA (wb)	58	TC	118.4	118.4	134.0	112.4	112.4	127.5	106.0	106.0	120.5	99.3	99.3	113.1	92.2	92.2	105.2
			SHC	102.7	118.4	134.0	97.4	112.4	127.5	91.7	106.0	120.5	85.6	99.3	113.1	79.2	92.2	105.2
		62	TC	120.0	120.0	135.9	113.1	113.1	131.5	107.0	107.0	123.1	99.5	99.5	117.7	92.3	92.3	109.6
			SHC	96.0	115.9	135.9	91.9	111.7	131.5	85.9	104.5	123.1	81.1	99.5	117.7	75.0	92.3	109.6
		67	TC	131.6	131.6	131.6	123.9	123.9	123.9	115.8	115.8	115.8	107.3	107.3	107.3	98.4	98.4	100.0
			SHC	76.2	96.4	116.6	72.3	92.5	112.7	68.3	88.4	108.6	64.1	84.3	104.3	59.9	80.0	100.0
		72	TC	144.5	144.5	144.5	136.2	136.2	136.2	127.6	127.6	127.6	118.4	118.4	118.4	—	—	—
			SHC	55.9	76.0	96.2	52.0	72.1	92.2	48.0	68.1	88.3	43.8	63.9	84.1	—	—	—
		76	TC	—	155.6	155.6	—	146.9	146.9	—	137.7	137.7	—	128.0	128.0	—	—	—
			SHC	—	59.4	79.1	—	55.5	75.2	—	51.5	71.3	—	47.3	67.2	—	—	—
4500 cfm	EA (wb)	58	TC	123.0	123.0	139.3	116.8	116.8	132.3	110.1	110.1	125.0	103.1	103.1	117.2	95.7	95.7	109.1
			SHC	106.9	123.0	139.3	101.3	116.8	132.3	95.3	110.1	125.0	88.9	103.1	117.2	82.3	95.7	109.1
		62	TC	125.3	125.3	138.0	119.2	119.2	129.7	110.3	110.3	130.2	103.2	103.2	122.2	95.8	95.8	113.6
			SHC	98.3	118.2	138.0	92.2	111.0	129.7	90.3	110.3	130.2	84.3	103.2	122.2	77.9	95.8	113.6
		67	TC	134.0	134.0	134.0	126.2	126.2	126.2	117.8	117.8	117.8	109.1	109.1	113.1	100.0	100.0	108.7
			SHC	80.4	102.9	125.4	76.4	98.9	121.4	72.4	94.8	117.3	68.2	90.6	113.1	63.9	86.4	108.7
		72	TC	147.0	147.0	147.0	138.5	138.5	138.5	129.6	129.6	129.6	120.2	120.2	120.2	—	—	—
			SHC	57.4	79.9	102.4	53.4	75.9	98.4	49.4	71.9	94.4	45.2	67.7	90.3	—	—	—
		76	TC	—	158.1	158.1	—	149.1	149.1	—	139.7	139.7	—	129.7	129.7	—	—	—
			SHC	—	61.1	83.2	—	57.2	79.2	—	53.1	75.2	—	48.9	71.1	—	—	—
5000 cfm	EA (wb)	58	TC	127.0	127.0	143.7	120.6	120.6	136.5	113.7	113.7	129.0	106.3	106.3	120.8	98.6	98.6	112.3
			SHC	110.4	127.0	143.7	104.5	120.6	136.5	98.3	113.7	129.0	91.8	106.3	120.8	84.9	98.6	112.3
		62	TC	127.2	127.2	149.4	120.7	120.7	142.0	113.8	113.8	134.2	106.4	106.4	125.8	98.7	98.7	117.0
			SHC	105.0	127.2	149.4	99.3	120.7	142.0	93.4	113.8	134.2	87.0	106.4	125.8	80.4	98.7	117.0
		67	TC	135.9	135.9	135.9	128.0	128.0	130.1	119.5	119.5	125.9	110.6	110.6	121.5	—	—	—
			SHC	84.4	109.2	134.0	80.4	105.2	130.1	76.4	101.1	125.9	72.1	96.8	121.5	—	—	—
		72	TC	148.9	148.9	148.9	140.2	140.2	140.2	131.1	131.1	131.1	121.6	121.6	121.6	—	—	—
			SHC	58.7	83.6	108.4	54.8	79.6	104.5	50.7	75.5	100.4	46.6	71.3	96.1	—	—	—
		76	TC	—	160.1	160.1	—	150.9	150.9	—	141.2	141.2	—	131.1	131.1	—	—	—
			SHC	—	62.6	87.0	—	58.7	83.1	—	54.6	79.0	—	50.4	74.9	—	—	—

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE**12 Single Stage Cooling Capacities

48/50FE**12				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
1800 cfm	EA (wb)	58	TC	60.0	60.0	68.4	56.3	56.3	64.4	52.4	52.4	60.2	48.3	48.3	55.7	44.0	44.0	51.0
			SHC	51.6	60.0	68.4	48.2	56.3	64.4	44.7	52.4	60.2	40.9	48.3	55.7	36.9	44.0	51.0
		62	TC	62.6	62.6	66.5	58.2	58.2	63.6	53.6	53.6	60.7	48.7	48.7	57.5	44.0	44.0	53.4
			SHC	47.0	56.7	66.5	44.1	53.9	63.6	41.2	50.9	60.7	38.1	47.8	57.5	34.6	44.0	53.4
		67	TC	70.0	70.0	70.0	65.2	65.2	65.2	60.2	60.2	60.2	55.0	55.0	55.0	49.5	49.5	49.5
			SHC	38.1	47.8	57.6	35.2	45.0	54.8	32.3	42.1	51.8	29.3	39.1	48.8	26.2	36.0	45.8
		72	TC	77.9	77.9	77.9	72.9	72.9	72.9	67.6	67.6	67.6	62.0	62.0	62.0	56.1	56.1	56.1
			SHC	29.0	38.8	48.5	26.1	35.9	45.7	23.2	33.0	42.8	20.2	30.0	39.8	17.2	26.9	36.7
		76	TC	—	84.8	84.8	—	79.5	79.5	—	73.9	73.9	—	68.0	68.0	—	61.7	61.7
			SHC	—	31.4	41.0	—	28.5	38.2	—	25.6	35.3	—	22.6	32.3	—	19.6	29.2
2100 cfm	EA (wb)	58	TC	64.1	64.1	72.9	60.1	60.1	68.6	56.0	56.0	64.2	51.7	51.7	59.4	47.0	47.0	54.3
			SHC	55.2	64.1	72.9	51.6	60.1	68.6	47.8	56.0	64.2	43.9	51.7	59.4	39.6	47.0	54.3
		62	TC	65.0	65.0	74.1	60.4	60.4	71.1	56.1	56.1	67.0	51.7	51.7	62.1	47.1	47.1	56.9
			SHC	51.6	62.9	74.1	48.6	59.8	71.1	45.1	56.1	67.0	41.3	51.7	62.1	37.2	47.1	56.9
		67	TC	72.3	72.3	72.3	67.3	67.3	67.3	62.1	62.1	62.1	56.7	56.7	56.7	50.9	50.9	51.7
			SHC	41.1	52.5	63.8	38.2	49.5	60.9	35.2	46.6	57.9	32.2	43.5	54.9	29.0	40.4	51.7
		72	TC	80.2	80.2	80.2	75.0	75.0	75.0	69.5	69.5	69.5	63.7	63.7	63.7	57.6	57.6	57.6
			SHC	30.3	41.7	53.1	27.5	38.8	50.2	24.5	35.9	47.2	21.5	32.8	44.2	18.3	29.7	41.1
		76	TC	—	87.2	87.2	—	81.6	81.6	—	75.8	75.8	—	69.7	69.7	—	63.3	63.3
			SHC	—	33.0	44.2	—	30.1	41.3	—	27.1	38.4	—	24.1	35.4	—	21.0	32.3
2400 cfm	EA (wb)	58	TC	67.5	67.5	76.7	63.3	63.3	72.2	59.0	59.0	67.5	54.4	54.4	62.5	49.5	49.5	57.2
			SHC	58.2	67.5	76.7	54.4	63.3	72.2	50.5	59.0	67.5	46.3	54.4	62.5	41.9	49.5	57.2
		62	TC	67.5	67.5	79.9	63.4	63.4	75.2	59.0	59.0	70.4	54.5	54.5	65.4	49.5	49.5	59.7
			SHC	55.2	67.5	79.9	51.5	63.4	75.2	47.7	59.0	70.4	43.7	54.5	65.4	39.3	49.5	59.7
		67	TC	74.0	74.0	74.0	68.9	68.9	68.9	63.5	63.5	63.9	58.0	58.0	60.8	52.1	52.1	57.5
			SHC	44.0	56.9	69.8	41.0	53.9	66.9	38.0	50.9	63.9	34.9	47.8	60.8	31.8	44.7	57.5
		72	TC	82.0	82.0	82.0	76.6	76.6	76.6	70.9	70.9	70.9	65.0	65.0	65.0	58.7	58.7	58.7
			SHC	31.6	44.5	57.5	28.7	41.6	54.6	25.7	38.6	51.5	22.6	35.5	48.5	19.4	32.4	45.3
		76	TC	—	89.0	89.0	—	83.2	83.2	—	77.3	77.3	—	71.0	71.0	—	64.4	64.4
			SHC	—	34.5	47.3	—	31.5	44.3	—	28.6	41.4	—	25.5	38.3	—	22.3	35.2
2700 cfm	EA (wb)	58	TC	70.3	70.3	79.9	66.0	66.0	75.2	61.5	61.5	70.3	56.7	56.7	65.1	51.6	51.6	59.4
			SHC	60.8	70.3	79.9	56.9	66.0	75.2	52.7	61.5	70.3	48.4	56.7	65.1	43.7	51.6	59.4
		62	TC	70.5	70.5	83.2	66.1	66.1	78.4	61.6	61.6	73.3	56.8	56.8	68.0	51.7	51.7	62.2
			SHC	57.7	70.5	83.2	53.9	66.1	78.4	49.9	61.6	73.3	45.6	56.8	68.0	41.2	51.7	62.2
		67	TC	75.3	75.3	75.6	70.1	70.1	72.7	64.7	64.7	69.6	59.0	59.0	66.5	53.0	53.0	63.2
			SHC	46.7	61.2	75.6	43.7	58.2	72.7	40.7	55.2	69.6	37.6	52.0	66.5	34.4	48.8	63.2
		72	TC	83.4	83.4	83.4	77.8	77.8	77.8	72.0	72.0	72.0	65.9	65.9	65.9	59.5	59.5	59.5
			SHC	32.7	47.2	61.7	29.8	44.3	58.8	26.7	41.2	55.7	23.6	38.1	52.6	20.5	34.9	49.4
		76	TC	—	90.3	90.3	—	84.5	84.5	—	78.4	78.4	—	72.0	72.0	—	65.2	65.2
			SHC	—	35.8	50.1	—	32.9	47.2	—	29.9	44.2	—	26.8	41.2	—	23.6	38.0
3000 cfm	EA (wb)	58	TC	72.8	72.8	82.6	68.3	68.3	77.7	63.6	63.6	72.6	58.6	58.6	67.2	53.4	53.4	61.4
			SHC	63.0	72.8	82.6	58.8	68.3	77.7	54.6	63.6	72.6	50.1	58.6	67.2	45.3	53.4	61.4
		62	TC	72.8	72.8	85.9	68.4	68.4	81.0	63.7	63.7	75.7	58.7	58.7	70.1	53.4	53.4	64.2
			SHC	59.7	72.8	85.9	55.8	68.4	81.0	51.6	63.7	75.7	47.3	58.7	70.1	42.6	53.4	64.2
		67	TC	76.4	76.4	81.3	71.2	71.2	78.4	65.6	65.6	75.2	59.9	59.9	71.9	53.9	53.9	68.4
			SHC	49.4	65.3	81.3	46.4	62.4	78.4	43.3	59.3	75.2	40.2	56.1	71.9	36.9	52.6	68.4
		72	TC	84.5	84.5	84.5	78.8	78.8	78.8	72.9	72.9	72.9	66.7	66.7	66.7	60.2	60.2	60.2
			SHC	33.7	49.8	65.8	30.8	46.8	62.9	27.8	43.8	59.8	24.6	40.7	56.7	21.4	37.4	53.4
		76	TC	—	91.4	91.4	—	85.5	85.5	—	79.3	79.3	—	72.8	72.8	—	—	—
			SHC	—	37.1	52.9	—	34.1	50.0	—	31.1	47.0	—	28.0	43.9	—	—	—

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE*N12 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		3000/0.06			4000/0.08			5000/0.10		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	137.0	124.0	111.0	147.0	132.0	120.0	147.0	135.0	129.0
	SHC	58.0	78.0	97.0	72.0	96.0	117.0	78.0	110.0	125.0
	kW	9.6	9.4	9.2	9.8	9.6	9.4	9.8	9.7	9.6
85	TC	128.0	116.0	103.0	135.0	123.0	112.0	140.0	127.0	118.0
	SHC	51.0	72.0	89.0	61.0	88.0	109.0	72.0	104.0	118.0
	kW	10.4	10.3	10.0	10.6	10.4	10.2	10.7	10.5	10.3
95	TC	117.0	107.0	96.0	124.0	111.0	101.0	128.0	117.0	110.0
	SHC	41.0	63.0	83.0	52.0	77.0	98.0	62.0	95.0	110.0
	kW	11.3	11.1	10.9	11.4	11.2	11.0	11.5	11.3	11.2
105	TC	110.0	98.0	87.0	117.0	104.0	95.0	120.0	104.0	99.0
	SHC	35.0	55.0	76.0	46.0	72.0	89.0	55.0	83.0	99.0
	kW	12.3	12.1	11.9	12.5	12.2	12.0	12.6	12.2	12.2
115	TC	101.0	89.0	78.0	106.0	92.0	84.0	109.0	96.0	92.0
	SHC	28.0	48.0	68.0	37.0	61.0	82.0	46.0	77.0	92.0
	kW	13.4	13.2	13.0	13.6	13.3	13.1	13.6	13.4	13.3
125	TC	92.0	79.0	69.0	95.0	81.0	75.0	98.0	87.0	81.0
	SHC	20.0	39.0	60.0	28.0	52.0	74.0	37.0	69.0	81.0
	kW	14.7	14.4	14.2	14.8	14.4	14.3	14.8	14.6	14.5

48/50FE*N12 — Unit With Humidi-MiZer System in Hot Gas Reheat Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (°F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — cfm								
		3000	4000	5000	3000	4000	5000	3000	4000	5000
80	TC	45.0	49.0	52.0	46.0	51.0	53.0	48.0	52.0	54.0
	SHC	7.0	16.0	25.0	2.0	9.0	17.0	-3.0	4.0	10.0
	kW	7.4	7.6	7.7	7.6	7.7	7.7	7.7	7.8	7.8
75	TC	47.0	52.0	54.0	49.0	53.0	56.0	50.0	54.0	57.0
	SHC	9.0	18.0	28.0	4.0	12.0	20.0	0.0	7.0	14.0
	kW	6.8	6.9	6.9	6.9	6.9	7.0	7.0	7.1	7.1
70	TC	50.0	54.0	57.0	51.0	56.0	59.0	53.0	57.0	60.0
	SHC	11.0	20.0	30.0	5.0	14.0	22.0	2.0	8.0	15.0
	kW	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8
60	TC	54.0	59.0	62.0	56.0	61.0	64.0	58.0	62.0	65.0
	SHC	15.0	25.0	35.0	9.0	18.0	26.0	5.0	12.0	19.0
	kW	6.6	6.6	6.7	6.6	6.7	6.7	6.7	6.7	6.7
50	TC	59.0	64.0	67.0	61.0	66.0	69.0	63.0	68.0	71.0
	SHC	19.0	29.0	39.0	13.0	22.0	31.0	9.0	16.0	24.0
	kW	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
40	TC	63.0	69.0	72.0	66.0	71.0	74.0	67.0	73.0	76.0
	SHC	23.0	33.0	44.0	17.0	26.0	35.0	13.0	20.0	28.0
	kW	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6

LEGEND

Edb	—	Entering Dry Bulb
Ewb	—	Entering Wet Bulb
kW	—	Compressor Power Input
SCFM/BF	—	Standard Cubic Feet per Minute/Bypass Factor
SHC	—	Sensible Heat Capacity (1000 Btu/h) Gross
TC	—	Total Capacity (1000 Btu/h) Gross

48/50FE**14 Two Stage Cooling Capacities

48/50FE**14				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3750 cfm	EA (wb)	58	TC	132.4	132.4	150.1	126.1	126.1	143.2	119.3	119.3	135.8	112.1	112.1	127.8	104.4	104.4	119.3
			SHC	114.7	132.4	150.1	109.0	126.1	143.2	102.9	119.3	135.8	96.4	112.1	127.8	89.5	104.4	119.3
		62	TC	140.5	140.5	151.5	131.2	131.2	138.8	122.8	122.8	134.1	114.1	114.1	129.1	105.1	105.1	123.4
			SHC	110.5	131.0	151.5	99.0	118.9	138.8	94.3	114.2	134.1	89.4	109.2	129.1	84.1	103.8	123.4
		67	TC	153.2	153.2	153.2	144.9	144.9	144.9	136.2	136.2	136.2	126.4	126.4	126.4	116.6	116.6	116.6
			SHC	83.5	103.4	123.3	79.1	99.0	118.9	74.5	94.4	114.3	69.6	89.5	109.4	64.6	84.6	104.5
		72	TC	169.3	169.3	169.3	160.1	160.1	160.1	150.7	150.7	150.7	140.1	140.1	140.1	129.6	129.6	129.6
			SHC	63.7	83.2	102.7	59.1	78.7	98.3	54.5	74.1	93.8	49.5	69.2	88.9	44.5	64.3	84.1
		76	TC	—	182.8	182.8	—	172.9	172.9	—	163.0	163.0	—	151.9	151.9	—	—	—
			SHC	—	66.4	87.0	—	62.0	79.2	—	57.5	75.7	—	52.7	71.4	—	—	—
4400 cfm	EA (wb)	58	TC	140.5	140.5	159.1	133.8	133.8	151.7	126.6	126.6	143.9	118.9	118.9	135.3	110.6	110.6	126.3
			SHC	121.9	140.5	159.1	115.8	133.8	151.7	109.3	126.6	143.9	102.4	118.9	135.3	95.0	110.6	126.3
		62	TC	143.9	143.9	159.2	135.8	135.8	154.2	127.2	127.2	148.6	120.7	120.7	136.0	110.8	110.8	131.7
			SHC	113.0	136.1	159.2	108.2	131.2	154.2	103.1	125.8	148.6	94.6	115.3	136.0	89.9	110.8	131.7
		67	TC	157.9	157.9	157.9	149.2	149.2	149.2	140.3	140.3	140.3	130.0	130.0	130.0	119.7	119.7	119.7
			SHC	89.3	112.4	135.6	84.7	107.9	131.1	80.2	103.4	126.6	75.2	98.4	121.7	70.2	93.5	116.7
		72	TC	173.9	173.9	173.9	164.5	164.5	164.5	154.5	154.5	154.5	143.8	143.8	143.8	—	—	—
			SHC	65.4	88.2	111.1	60.8	83.7	106.6	56.0	79.0	102.0	51.1	74.1	97.1	—	—	—
		76	TC	—	187.8	187.8	—	177.6	177.6	—	167.0	167.0	—	155.7	155.7	—	—	—
			SHC	—	68.6	89.8	—	64.0	85.7	—	59.4	81.4	—	54.5	76.8	—	—	—
5000 cfm	EA (wb)	58	TC	146.8	146.8	166.2	139.7	139.7	158.3	132.1	132.1	150.0	123.9	123.9	141.0	115.4	115.4	131.6
			SHC	127.5	146.8	166.2	121.0	139.7	158.3	114.2	132.1	150.0	106.9	123.9	141.0	99.2	115.4	131.6
		62	TC	147.6	147.6	171.2	143.0	143.0	153.9	132.3	132.3	156.2	124.1	124.1	146.9	115.5	115.5	137.1
			SHC	120.3	145.8	171.2	109.6	131.8	153.9	108.3	132.3	156.2	101.3	124.1	146.9	93.8	115.5	137.1
		67	TC	161.7	161.7	161.7	152.4	152.4	152.4	143.0	143.0	143.0	132.6	132.6	132.7	121.9	121.9	127.6
			SHC	94.4	120.5	146.7	89.7	115.9	142.1	85.1	111.3	137.5	80.3	106.5	132.7	75.3	101.5	127.6
		72	TC	177.6	177.6	177.6	167.7	167.7	167.7	157.5	157.5	157.5	146.4	146.4	146.4	—	—	—
			SHC	66.6	92.5	118.4	61.9	87.9	113.8	57.1	83.1	109.1	52.1	78.2	104.2	—	—	—
		76	TC	—	191.4	191.4	—	180.9	180.9	—	170.4	170.4	—	158.4	158.4	—	—	—
			SHC	—	69.8	94.6	—	65.2	90.2	—	60.6	85.8	—	55.5	80.9	—	—	—
5650 cfm	EA (wb)	58	TC	152.6	152.6	172.6	145.1	145.1	164.4	137.1	137.1	155.6	128.6	128.6	146.2	119.7	119.7	136.3
			SHC	132.6	152.6	172.6	125.8	145.1	164.4	118.7	137.1	155.6	111.0	128.6	146.2	103.0	119.7	136.3
		62	TC	153.8	153.8	176.2	145.3	145.3	171.1	137.3	137.3	162.0	128.8	128.8	152.3	119.8	119.8	142.1
			SHC	124.3	150.3	176.2	119.5	145.3	171.1	112.6	137.3	162.0	105.2	128.8	152.3	97.5	119.8	142.1
		67	TC	164.4	164.4	164.4	155.2	155.2	155.2	146.1	146.1	148.3	134.7	134.7	144.2	123.9	123.9	139.2
			SHC	99.5	128.9	158.2	95.0	124.4	153.8	89.4	118.8	148.3	85.6	114.9	144.2	80.7	109.9	139.2
		72	TC	180.9	180.9	180.9	170.8	170.8	170.8	159.9	159.9	159.9	148.6	148.6	148.6	—	—	—
			SHC	67.5	96.6	125.8	62.8	92.0	121.1	57.9	87.1	116.3	52.9	82.2	111.4	—	—	—
		76	TC	—	194.8	194.8	—	184.2	184.2	—	172.5	172.5	—	160.7	160.7	—	—	—
			SHC	—	70.5	98.6	—	65.9	94.2	—	60.9	89.4	—	55.9	84.5	—	—	—
6250 cfm	EA (wb)	58	TC	157.2	157.2	177.8	149.5	149.5	169.2	141.2	141.2	160.1	132.3	132.3	150.4	123.1	123.1	140.1
			SHC	136.6	157.2	177.8	129.7	149.5	169.2	122.2	141.2	160.1	114.3	132.3	150.4	106.0	123.1	140.1
		62	TC	157.4	157.4	184.8	149.6	149.6	176.0	141.3	141.3	166.6	132.2	132.2	156.3	123.2	123.2	146.0
			SHC	129.9	157.4	184.8	123.2	149.6	176.0	116.0	141.3	166.6	108.2	132.2	156.3	100.4	123.2	146.0
		67	TC	168.3	168.3	171.9	157.1	157.1	164.1	147.0	147.0	159.5	136.4	136.4	154.5	125.4	125.4	149.3
			SHC	107.6	139.8	171.9	99.7	131.9	164.1	95.2	127.3	159.5	90.4	122.5	154.5	85.6	117.5	149.3
		72	TC	182.9	182.9	182.9	172.6	172.6	172.6	161.7	161.7	161.7	150.3	150.3	150.3	—	—	—
			SHC	67.7	99.8	131.9	63.0	95.1	127.3	58.2	90.4	122.5	53.3	85.5	117.6	—	—	—
		76	TC	—	197.6	197.6	—	185.9	185.9	—	174.5	174.5	—	163.0	163.0	—	—	—
			SHC	—	70.5	101.6	—	65.5	96.8	—	60.6	92.0	—	55.6	87.1	—	—	—

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE**14 Single Stage Cooling Capacities

48/50FE**14				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
2050 cfm	EA (wb)	58	TC	71.2	71.2	80.8	66.9	66.9	76.1	62.2	62.2	71.1	57.2	57.2	65.6	51.8	51.8	59.5
			SHC	61.5	71.2	80.8	57.6	66.9	76.1	53.4	62.2	71.1	48.9	57.2	65.6	44.0	51.8	59.5
		62	TC	74.1	74.1	78.5	68.9	68.9	75.4	63.3	63.3	72.0	58.5	58.5	65.4	51.9	51.9	62.2
			SHC	56.0	67.3	78.5	52.9	64.1	75.4	49.6	60.8	72.0	44.8	55.1	65.4	41.5	51.9	62.2
		67	TC	82.4	82.4	82.4	76.8	76.8	76.8	69.9	69.9	69.9	64.2	64.2	64.2	57.2	57.2	57.2
			SHC	45.4	56.7	68.0	42.3	53.6	64.8	38.8	49.9	61.1	35.6	46.7	57.8	32.0	42.9	53.9
		72	TC	91.5	91.5	91.5	85.3	85.3	85.3	78.7	78.7	78.7	71.7	71.7	71.7	63.8	63.8	63.8
			SHC	34.7	46.0	57.2	31.6	42.8	54.1	28.3	39.5	50.7	25.0	36.0	47.0	21.3	32.1	42.9
		76	TC	—	99.3	99.3	—	92.6	92.6	—	85.6	85.6	—	78.0	78.0	—	69.7	69.7
			SHC	—	37.2	48.5	—	34.1	45.4	—	30.8	42.0	—	27.3	38.0	—	23.4	33.5
2500 cfm	EA (wb)	58	TC	77.2	77.2	87.5	72.4	72.4	82.3	67.3	67.3	76.7	61.8	61.8	70.7	55.3	55.3	63.4
			SHC	66.8	77.2	87.5	62.5	72.4	82.3	57.9	67.3	76.7	53.0	61.8	70.7	47.2	55.3	63.4
		62	TC	79.0	79.0	87.0	72.5	72.5	85.8	67.4	67.4	80.0	61.9	61.9	73.7	55.7	55.7	66.6
			SHC	61.6	74.3	87.0	59.3	72.5	85.8	54.9	67.4	80.0	50.1	61.9	73.7	44.8	55.7	66.6
		67	TC	85.8	85.8	85.8	79.7	79.7	79.7	73.3	73.3	73.3	66.4	66.4	67.1	58.9	58.9	63.0
			SHC	50.0	63.7	77.5	46.8	60.6	74.3	43.5	57.2	70.8	40.0	53.6	67.1	36.2	49.6	63.0
		72	TC	95.0	95.0	95.0	88.4	88.4	88.4	81.3	81.3	81.3	72.7	72.7	72.7	65.8	65.8	65.8
			SHC	36.6	50.3	64.1	33.4	47.2	60.9	30.1	43.8	57.5	23.9	37.4	50.9	22.9	36.2	49.5
		76	TC	—	102.9	102.9	—	95.8	95.8	—	88.3	88.3	—	80.4	80.4	—	71.7	71.7
			SHC	—	39.5	53.2	—	36.3	50.0	—	33.0	46.7	—	29.4	42.8	—	25.4	38.3
2900 cfm	EA (wb)	58	TC	81.4	81.4	92.3	76.4	76.4	86.7	70.9	70.9	80.7	64.7	64.7	73.8	58.6	58.6	67.1
			SHC	70.6	81.4	92.3	66.0	76.4	86.7	61.1	70.9	80.7	55.5	64.7	73.8	50.0	58.6	67.1
		62	TC	81.5	81.5	96.0	76.5	76.5	90.3	71.0	71.0	84.1	65.1	65.1	77.4	58.6	58.6	70.0
			SHC	67.0	81.5	96.0	62.6	76.5	90.3	57.9	71.0	84.1	52.8	65.1	77.4	47.3	58.6	70.0
		67	TC	87.9	87.9	87.9	81.5	81.5	82.5	74.9	74.9	79.1	67.8	67.8	75.3	60.1	60.1	71.1
			SHC	53.8	69.8	85.7	50.6	66.6	82.5	47.3	63.2	79.1	43.8	59.5	75.3	39.9	55.5	71.1
		72	TC	97.2	97.2	97.2	90.3	90.3	90.3	83.1	83.1	83.1	75.1	75.1	75.1	67.0	67.0	67.0
			SHC	38.1	54.0	70.0	34.8	50.8	66.7	31.5	47.4	63.4	27.9	43.7	59.4	24.2	39.8	55.3
		76	TC	—	105.1	105.1	—	97.8	97.8	—	90.1	90.1	—	—	—	—	—	—
			SHC	—	41.2	57.1	—	38.0	53.9	—	34.6	50.5	—	—	—	—	—	—
3300 cfm	EA (wb)	58	TC	85.0	85.0	96.3	79.6	79.6	90.4	73.9	73.9	84.1	67.7	67.7	77.2	60.4	60.4	69.1
			SHC	73.7	85.0	96.3	68.9	79.6	90.4	63.8	73.9	84.1	58.2	67.7	77.2	51.7	60.4	69.1
		62	TC	85.1	85.1	100.2	79.7	79.7	94.1	74.0	74.0	87.5	67.6	67.6	80.3	60.8	60.8	72.6
			SHC	70.1	85.1	100.2	65.4	79.7	94.1	60.4	74.0	87.5	54.9	67.6	80.3	49.1	60.8	72.6
		67	TC	89.4	89.4	93.9	83.0	83.0	90.6	76.1	76.1	87.2	68.8	68.8	83.4	62.1	62.1	73.9
			SHC	57.6	75.7	93.9	54.4	72.5	90.6	51.1	69.2	87.2	47.5	65.5	83.4	41.6	57.8	73.9
		72	TC	98.8	98.8	98.8	91.8	91.8	91.8	84.3	84.3	84.3	76.4	76.4	76.4	67.8	67.8	67.8
			SHC	39.5	57.6	75.8	36.1	54.3	72.4	32.8	50.9	69.1	29.3	47.3	65.3	25.5	43.2	60.9
		76	TC	—	106.7	106.7	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	42.8	60.9	—	—	—	—	—	—	—	—	—	—	—	—
3700 cfm	EA (wb)	58	TC	88.0	88.0	99.6	82.4	82.4	93.4	76.4	76.4	86.8	69.9	69.9	79.7	62.8	62.8	71.8
			SHC	76.4	88.0	99.6	71.3	82.4	93.4	66.0	76.4	86.8	60.2	69.9	79.7	53.8	62.8	71.8
		62	TC	88.1	88.1	103.6	82.5	82.5	97.2	76.5	76.5	90.4	69.8	69.8	82.8	62.8	62.8	74.8
			SHC	72.6	88.1	103.6	67.7	82.5	97.2	62.5	76.5	90.4	56.8	69.8	82.8	50.8	62.8	74.8
		67	TC	90.7	90.7	102.0	84.0	84.0	98.8	78.2	78.2	90.9	70.1	70.1	89.6	63.0	63.0	81.0
			SHC	61.4	81.7	102.0	58.2	78.5	98.8	53.2	72.0	90.9	50.6	70.1	89.6	45.0	63.0	81.0
		72	TC	100.1	100.1	100.1	92.9	92.9	92.9	85.3	85.3	85.3	78.2	78.2	78.2	68.5	68.5	68.5
			SHC	40.6	61.0	81.3	37.3	57.7	78.0	34.1	54.5	74.8	32.2	52.5	72.8	26.7	46.6	66.5
		76	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE*N14 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		3750/0.11			5000/0.13			6250/0.15		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	157.0	140.0	127.0	165.0	150.0	135.0	172.0	156.0	141.0
	SHC	64.0	82.0	101.0	74.0	99.0	122.0	85.0	114.0	138.0
	kW	12.4	12.0	11.8	12.6	12.3	12.0	12.8	12.4	12.1
85	TC	137.0	132.0	118.0	144.0	141.0	127.0	151.0	132.0	133.0
	SHC	46.0	75.0	93.0	55.0	91.0	114.0	66.0	92.0	129.0
	kW	13.0	13.1	12.8	13.2	13.4	13.0	13.4	12.9	13.2
95	TC	137.0	122.0	110.0	145.0	129.0	117.0	150.0	134.0	123.0
	SHC	47.0	66.0	86.0	57.0	80.0	105.0	66.0	95.0	120.0
	kW	14.7	14.3	14.0	14.9	14.5	14.2	15.0	14.6	14.3
105	TC	127.0	113.0	103.0	134.0	120.0	108.0	139.0	125.0	114.0
	SHC	39.0	58.0	74.0	48.0	73.0	97.0	56.0	86.0	110.0
	kW	15.9	15.6	15.3	16.1	15.8	15.5	16.3	15.9	15.6
115	TC	116.0	103.0	94.0	123.0	110.0	98.0	127.0	114.0	103.0
	SHC	29.0	50.0	66.0	38.0	64.0	89.0	46.0	76.0	102.0
	kW	17.3	16.9	11.7	17.5	17.1	16.8	17.6	17.2	16.9

48/50FE*N14 — Unit With Humidi-MiZer System in Hot Gas Reheat Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (°F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — cfm								
		3750	5000	6250	3750	5000	6250	3750	5000	6250
80	TC	54.0	59.0	62.0	56.0	61.0	64.0	58.0	63.0	66.0
	SHC	9.0	20.0	31.0	3.0	12.0	21.0	-3.0	5.0	13.0
	kW	10.9	11.0	11.1	11.0	11.1	11.1	11.0	11.1	11.2
75	TC	57.0	62.0	65.0	60.0	65.0	68.0	62.0	67.0	70.0
	SHC	13.0	24.0	35.0	7.0	16.0	25.0	2.0	9.0	17.0
	kW	10.5	10.6	10.6	10.6	10.6	10.7	10.6	10.7	10.8
70	TC	61.0	66.0	69.0	63.0	68.0	72.0	66.0	71.0	74.0
	SHC	17.0	28.0	39.0	12.0	21.0	30.0	7.0	15.0	22.0
	kW	10.1	10.2	10.3	10.2	10.3	10.3	10.2	10.3	10.4
60	TC	62.0	67.0	70.0	64.0	69.0	72.0	66.0	71.0	74.0
	SHC	16.0	27.0	38.0	10.0	19.0	28.0	4.0	12.0	20.0
	kW	11.0	11.3	11.5	11.1	11.4	11.6	11.3	11.5	11.7
50	TC	69.0	74.0	77.0	71.0	76.0	80.0	73.0	79.0	82.0
	SHC	23.0	34.0	45.0	17.0	26.0	35.0	11.0	19.0	27.0
	kW	10.2	10.4	10.6	10.3	10.5	10.7	10.4	10.7	10.8
40	TC	75.0	80.0	84.0	78.0	83.0	87.0	80.0	86.0	89.0
	SHC	31.0	41.0	52.0	25.0	34.0	43.0	19.0	27.0	35.0
	kW	9.4	9.7	9.8	9.6	9.8	10.0	9.7	9.9	10.1

LEGEND

Edb	—	Entering Dry Bulb
Ewb	—	Entering Wet Bulb
kW	—	Compressor Power Input
SCFM/BF	—	Standard Cubic Feet per Minute/Bypass Factor
SHC	—	Sensible Heat Capacity (1000 Btuh) Gross
TC	—	Total Capacity (1000 Btuh) Gross

48/50FE**16 Two Stage Cooling Capacities

48/50FE**16				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3750 cfm	EA (wb)	58	TC	148.3	148.3	161.5	139.6	139.6	155.2	130.2	130.2	148.9	121.5	121.5	139.5	112.5	112.5	129.6
			SHC	123.8	142.7	161.5	117.7	136.4	155.2	111.5	130.2	148.9	103.6	121.5	139.5	95.4	112.5	129.6
		62	TC	160.4	160.4	160.4	151.1	151.1	151.1	141.3	141.3	141.3	130.9	130.9	130.9	119.8	119.8	122.1
			SHC	109.8	128.8	147.8	103.8	122.8	141.7	97.6	116.5	135.4	91.1	110.0	128.9	84.4	103.3	122.1
		67	TC	177.3	177.3	177.3	167.5	167.5	167.5	157.0	157.0	157.0	145.9	145.9	145.9	134.2	134.2	134.2
			SHC	91.8	110.8	129.9	85.8	104.8	123.9	79.6	98.7	117.7	73.3	92.3	111.2	66.7	85.6	104.6
		72	TC	196.2	196.2	196.2	185.6	185.6	185.6	174.4	174.4	174.4	162.5	162.5	162.5	149.9	149.9	149.9
			SHC	73.5	92.5	111.6	67.6	86.6	105.6	61.4	80.4	99.3	55.1	74.0	92.9	48.5	67.4	86.3
		76	TC	—	212.2	212.2	—	201.0	201.0	—	189.1	189.1	—	176.4	176.4	—	163.2	163.2
			SHC	—	77.6	98.2	—	71.6	92.2	—	65.4	83.7	—	59.0	77.4	—	52.5	71.0
4150 cfm	EA (wb)	58	TC	153.0	153.0	171.5	144.2	144.2	164.3	135.7	135.7	155.1	126.9	126.9	145.4	117.5	117.5	135.2
			SHC	130.7	151.1	171.5	124.1	144.2	164.3	116.4	135.7	155.1	108.4	126.9	145.4	99.9	117.5	135.2
		62	TC	164.8	164.8	164.8	155.2	155.2	155.2	145.1	145.1	145.1	134.4	134.4	138.0	123.1	123.1	131.0
			SHC	115.6	136.3	157.1	109.4	130.2	150.9	103.1	123.8	144.5	96.7	117.3	138.0	89.9	110.4	131.0
		67	TC	182.0	182.0	182.0	171.8	171.8	171.8	161.0	161.0	161.0	149.5	149.5	149.5	137.4	137.4	137.4
			SHC	95.6	116.5	137.4	89.6	110.4	131.3	83.3	104.2	125.0	76.9	97.7	118.5	70.2	90.9	111.7
		72	TC	201.1	201.1	201.1	190.1	190.1	190.1	178.4	178.4	178.4	166.2	166.2	166.2	153.2	153.2	153.2
			SHC	75.4	96.2	117.1	69.3	90.1	110.9	63.0	83.8	104.6	56.6	77.4	98.1	50.0	70.7	91.4
		76	TC	—	217.2	217.2	—	205.5	205.5	—	193.1	193.1	—	180.1	180.1	—	166.4	166.4
			SHC	—	79.6	99.2	—	73.5	93.5	—	67.2	87.3	—	60.7	81.0	—	54.1	74.4
4500 cfm	EA (wb)	58	TC	157.0	157.0	178.3	148.9	148.9	169.5	140.2	140.2	160.1	131.1	131.1	150.2	121.5	121.5	139.6
			SHC	135.7	157.0	178.3	128.2	148.9	169.5	120.4	140.2	160.1	112.1	131.1	150.2	103.4	121.5	139.6
		62	TC	168.2	168.2	168.2	158.4	158.4	158.8	148.0	148.0	152.3	137.1	137.1	145.6	125.6	125.6	138.6
			SHC	120.3	142.6	164.9	114.2	136.5	158.8	107.8	130.1	152.3	101.3	123.4	145.6	94.4	116.5	138.6
		67	TC	185.5	185.5	185.5	175.0	175.0	175.0	164.0	164.0	164.0	152.2	152.2	152.2	139.8	139.8	139.8
			SHC	98.8	121.2	143.7	92.7	115.1	137.5	86.4	108.8	131.1	79.8	102.2	124.5	73.1	95.4	117.7
		72	TC	204.7	204.7	204.7	193.4	193.4	193.4	181.4	181.4	181.4	168.9	168.9	168.9	155.6	155.6	155.6
			SHC	76.8	99.2	121.6	70.6	93.0	115.3	64.3	86.7	109.0	57.8	80.1	102.4	51.1	73.4	95.7
		76	TC	—	220.9	220.9	—	208.9	208.9	—	196.2	196.2	—	182.8	182.8	—	168.8	168.8
			SHC	—	81.1	102.5	—	74.9	96.5	—	68.6	90.3	—	62.0	83.8	—	55.4	77.1
5250 cfm	EA (wb)	58	TC	166.3	166.3	188.7	157.6	157.6	179.3	148.6	148.6	169.4	139.1	139.1	159.0	128.9	128.9	147.9
			SHC	143.9	166.3	188.7	136.0	157.6	179.3	127.8	148.6	169.4	119.2	139.1	159.0	110.0	128.9	147.9
		62	TC	174.2	174.2	181.0	164.1	164.1	174.7	153.3	153.3	168.0	141.9	141.9	160.8	130.1	130.1	152.7
			SHC	130.1	155.6	181.0	123.9	149.3	174.7	117.4	142.7	168.0	110.5	135.6	160.8	103.1	127.9	152.7
		67	TC	191.6	191.6	191.6	180.7	180.7	180.7	169.1	169.1	169.1	156.9	156.9	156.9	143.9	143.9	143.9
			SHC	105.0	130.7	156.4	98.7	124.4	150.0	92.3	117.9	143.5	85.7	111.2	136.8	78.8	104.3	129.8
		72	TC	210.9	210.9	210.9	199.1	199.1	199.1	186.7	186.7	186.7	173.4	173.4	173.4	159.7	159.7	159.7
			SHC	79.2	104.8	130.4	73.0	98.5	124.1	66.6	92.1	117.7	59.9	85.5	111.0	53.1	78.6	104.1
		76	TC	—	227.1	227.1	—	214.6	214.6	—	201.4	201.4	—	187.4	187.4	—	173.0	173.0
			SHC	—	83.7	108.4	—	77.4	102.2	—	71.0	95.8	—	64.3	89.2	—	57.5	82.4
6000 cfm	EA (wb)	58	TC	174.3	174.3	197.6	165.4	165.4	187.9	155.9	155.9	177.5	145.8	145.8	166.4	135.1	135.1	154.8
			SHC	151.0	174.3	197.6	142.9	165.4	187.9	134.3	155.9	177.5	125.1	145.8	166.4	115.5	135.1	154.8
		62	TC	179.1	179.1	196.2	168.6	168.6	189.3	157.6	157.6	181.9	146.1	146.1	173.8	135.3	135.3	161.5
			SHC	139.3	167.7	196.2	132.7	161.0	189.3	125.8	153.9	181.9	118.5	146.1	173.8	109.1	135.3	161.5
		67	TC	196.4	196.4	196.4	185.1	185.1	185.1	173.1	173.1	173.1	160.5	160.5	160.5	147.1	147.1	147.1
			SHC	110.6	139.4	168.3	104.3	133.1	161.9	97.8	126.5	155.2	91.1	119.7	148.3	84.1	112.7	141.2
		72	TC	215.7	215.7	215.7	203.5	203.5	203.5	190.6	190.6	190.6	177.0	177.0	177.0	162.9	162.9	162.9
			SHC	81.0	109.8	138.6	74.8	103.5	132.2	68.3	96.9	125.6	61.5	90.2	118.8	54.7	83.2	111.8
		76	TC	—	232.0	232.0	—	219.0	219.0	—	205.4	205.4	—	191.0	191.0	—	176.1	176.1
			SHC	—	85.6	113.5	—	79.3	107.2	—	72.7	100.7	—	66.0	93.9	—	59.1	87.0
6750 cfm	EA (wb)	58	TC	181.1	181.1	205.1	171.8	171.8	195.0	161.9	161.9	184.2	151.3	151.3	172.6	140.2	140.2	160.4
			SHC	157.0	181.1	205.1	148.6	171.8	195.0	139.6	161.9	184.2	130.0	151.3	172.6	120.0	140.2	160.4
		62	TC	183.3	183.3	209.6	172.6	172.6	202.3	162.1	162.1	191.9	151.5	151.5	180.0	140.4	140.4	167.4
			SHC	147.4	178.5	209.6	140.7	171.5	202.3	132.3	162.1	191.9	123.1	151.5	180.0	113.4	140.4	167.4
		67	TC	200.3	200.3	200.3	188.6	188.6	188.6	176.3	176.3	176.3	163.4	163.4	163.4	149.8	149.8	152.1
			SHC	115.8	147.7	179.5	109.5	141.3	173.1	102.9	134.6	166.3	96.1	127.7	159.3	89.2	120.6	152.1
		72	TC	219.6	219.6	219.6	207.0	207.0	207.0	193.8	193.8	193.8	179.9	179.9	179.9	165.5	165.5	165.5
			SHC	82.5	114.3	146.1	76.1	107.8	139.6	69.5	101.2	132.9	62.8	94.4	126.0	55.9	87.4	119.0
		76	TC	—	235.9	235.9	—	222.6	222.6	—	208.6	208.6	—	193.8	193.8	—	178.5	178.5
			SHC	—	86.9	117.8	—	80.5	111.4	—	73.9	104.8	—	67.0	97.9	—	60.0	90.8

48/50FE**16 Two Stage Cooling Capacities (cont)

48/50FE**16				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
7150 cfm	EA (wb)	58	TC	184.3	184.3	208.7	174.6	174.6	198.1	164.7	164.7	187.3	154.0	154.0	175.6	142.6	142.6	163.1
			SHC	159.9	184.3	208.7	151.0	174.6	198.1	142.1	164.7	187.3	132.4	154.0	175.6	122.1	142.6	163.1
		62	TC	185.4	185.4	216.0	179.1	179.1	189.9	167.9	167.9	183.0	154.2	154.2	183.0	142.8	142.8	170.1
			SHC	151.4	183.7	216.0	135.4	162.6	189.9	128.7	155.8	183.0	125.3	154.2	183.0	115.4	142.8	170.1
		67	TC	202.1	202.1	202.1	190.3	190.3	190.3	177.8	177.8	177.8	164.8	164.8	164.9	151.0	151.0	157.7
			SHC	118.4	151.9	185.3	112.1	145.4	178.8	105.5	138.7	172.0	98.7	131.8	164.9	91.8	124.7	157.7
		72	TC	221.3	221.3	221.3	208.6	208.6	208.6	195.3	195.3	195.3	181.2	181.2	181.2	166.7	166.7	166.7
			SHC	83.0	116.4	149.8	76.6	109.9	143.3	70.0	103.3	136.6	63.2	96.4	129.6	56.3	89.4	122.5
		76	TC	—	237.6	237.6	—	224.2	224.2	—	210.0	210.0	—	195.1	195.1	—	179.7	179.7
			SHC	—	87.4	119.9	—	80.9	113.4	—	74.2	106.7	—	67.4	99.8	—	60.3	92.6
7500 cfm	EA (wb)	58	TC	187.0	187.0	211.7	177.3	177.3	201.1	167.0	167.0	189.9	156.1	156.1	178.0	144.9	144.9	165.4
			SHC	162.2	187.0	211.7	153.4	177.3	201.1	144.1	167.0	189.9	134.3	156.1	178.0	124.3	144.9	165.4
		62	TC	191.3	191.3	203.3	181.7	181.7	191.1	167.2	167.2	197.7	156.2	156.2	185.4	144.7	144.7	172.4
			SHC	145.7	174.5	203.3	136.5	163.8	191.1	136.6	167.2	197.7	127.1	156.2	185.4	117.1	144.7	172.4
		67	TC	203.5	203.5	203.5	191.6	191.6	191.6	179.0	179.0	179.0	165.9	165.9	169.7	152.0	152.0	162.5
			SHC	120.7	155.4	190.2	114.3	149.0	183.6	107.7	142.3	176.8	100.9	135.3	169.7	94.0	128.3	162.5
		72	TC	222.7	222.7	222.7	209.9	209.9	209.9	196.4	196.4	196.4	182.3	182.3	182.3	167.6	167.6	167.6
			SHC	83.4	118.1	152.9	77.0	111.7	146.4	70.4	105.0	139.6	63.6	98.1	132.7	56.7	91.1	125.5
		76	TC	—	239.0	239.0	—	225.4	225.4	—	211.2	211.2	—	196.1	196.1	—	180.6	180.6
			SHC	—	87.7	121.5	—	81.1	114.9	—	74.4	108.2	—	67.5	101.2	—	60.4	94.0

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE**16 Single Stage Cooling Capacities

48/50FE**16				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
2050 Cfm	EA (wb)	58	TC	89.7	89.7	92.5	83.8	83.8	88.1	77.6	77.6	83.6	71.1	71.1	78.9	64.3	64.3	73.9
			SHC	71.1	81.8	92.5	66.8	77.5	88.1	62.3	73.0	83.6	57.6	68.3	78.9	52.8	63.3	73.9
		62	TC	98.5	98.5	98.5	92.3	92.3	92.3	85.7	85.7	85.7	78.9	78.9	78.9	71.6	71.6	71.6
			SHC	64.0	74.7	85.4	59.6	70.3	81.0	55.1	65.9	76.6	50.5	61.2	71.9	45.7	56.4	67.1
		67	TC	110.5	110.5	110.5	104.0	104.0	104.0	97.1	97.1	97.1	89.7	89.7	89.7	81.8	81.8	81.8
			SHC	54.8	65.5	76.3	50.4	61.1	71.9	45.9	56.6	67.3	41.2	52.0	62.7	36.4	47.1	57.8
		72	TC	123.8	123.8	123.8	116.7	116.7	116.7	109.2	109.2	109.2	101.4	101.4	101.4	93.0	93.0	93.0
			SHC	45.4	56.1	66.8	41.0	51.7	62.4	36.4	47.1	57.8	31.8	42.5	53.2	27.0	37.6	48.3
		76	TC	—	135.0	135.0	—	127.6	127.6	—	119.7	119.7	—	111.4	111.4	—	102.5	102.5
			SHC	—	48.2	59.5	—	43.9	55.1	—	39.3	50.6	—	34.7	46.0	—	29.9	41.1
2250 Cfm	EA (wb)	58	TC	92.9	92.9	98.7	86.8	86.8	94.2	80.4	80.4	89.5	73.8	73.8	84.4	67.2	67.2	78.4
			SHC	75.4	87.0	98.7	71.0	82.6	94.2	66.4	77.9	89.5	61.5	73.0	84.4	56.0	67.2	78.4
		62	TC	101.8	101.8	101.8	95.4	95.4	95.4	88.6	88.6	88.6	81.5	81.5	81.5	73.9	73.9	73.9
			SHC	67.5	79.2	90.9	63.0	74.7	86.4	58.5	70.2	81.8	53.7	65.4	77.1	48.8	60.5	72.2
		67	TC	114.1	114.1	114.1	107.2	107.2	107.2	100.0	100.0	100.0	92.3	92.3	92.3	84.2	84.2	84.2
			SHC	57.3	69.0	80.7	52.8	64.5	76.2	48.2	59.9	71.6	43.5	55.2	66.9	38.6	50.2	61.9
		72	TC	127.4	127.4	127.4	120.1	120.1	120.1	112.4	112.4	112.4	104.2	104.2	104.2	95.5	95.5	95.5
			SHC	46.8	58.5	70.1	42.3	54.0	65.6	37.7	49.4	61.0	33.0	44.6	56.3	28.1	39.7	51.3
		76	TC	—	138.8	138.8	—	131.0	131.0	—	122.8	122.8	—	114.1	114.1	—	105.0	105.0
			SHC	—	49.8	62.2	—	45.3	57.7	—	40.7	53.1	—	35.9	48.3	—	31.1	42.1
2500 Cfm	EA (wb)	58	TC	96.4	96.4	106.0	90.2	90.2	101.3	83.5	83.5	96.2	77.6	77.6	89.7	71.2	71.2	82.8
			SHC	80.4	93.2	106.0	75.9	88.6	101.3	70.8	83.5	96.2	65.5	77.6	89.7	59.6	71.2	82.8
		62	TC	105.4	105.4	105.4	98.7	98.7	98.7	91.7	91.7	91.7	84.3	84.3	84.3	76.4	76.4	78.3
			SHC	71.6	84.5	97.4	67.1	80.0	92.9	62.4	75.3	88.2	57.6	70.5	83.4	52.6	65.5	78.3
		67	TC	117.8	117.8	117.8	110.7	110.7	110.7	103.2	103.2	103.2	95.2	95.2	95.2	86.8	86.8	86.8
			SHC	60.1	73.0	86.0	55.6	68.5	81.4	50.9	63.8	76.7	46.1	58.9	71.8	41.1	53.9	66.8
		72	TC	131.3	131.3	131.3	123.6	123.6	123.6	115.6	115.6	115.6	107.1	107.1	107.1	98.1	98.1	98.1
			SHC	48.4	61.2	74.1	43.8	56.7	69.5	39.1	52.0	64.8	34.3	47.1	59.9	29.3	42.1	55.0
		76	TC	—	142.7	142.7	—	134.6	134.6	—	126.1	126.1	—	117.0	117.0	—	107.6	107.6
			SHC	—	51.5	65.2	—	46.9	60.7	—	42.2	56.0	—	37.4	49.6	—	32.4	44.8
2900 Cfm	EA (wb)	58	TC	101.7	101.7	115.9	95.9	95.9	109.7	89.8	89.8	103.1	83.4	83.4	96.2	76.6	76.6	88.8
			SHC	87.4	101.7	115.9	82.1	95.9	109.7	76.5	89.8	103.1	70.6	83.4	96.2	64.4	76.6	88.8
		62	TC	110.1	110.1	110.1	103.0	103.0	103.0	95.7	95.7	97.9	87.9	87.9	92.9	79.6	79.6	87.6
			SHC	77.9	92.6	107.4	73.2	88.0	102.7	68.4	83.2	97.9	63.4	78.2	92.9	58.3	72.9	87.6
		67	TC	122.6	122.6	122.6	115.1	115.1	115.1	107.2	107.2	107.2	98.9	98.9	98.9	90.0	90.0	90.0
			SHC	64.3	79.1	93.9	59.6	74.4	89.2	54.8	69.6	84.4	49.9	64.6	79.4	44.8	59.5	74.3
		72	TC	136.2	136.2	136.2	128.2	128.2	128.2	119.8	119.8	119.8	110.8	110.8	110.8	101.3	101.3	101.3
			SHC	50.5	65.2	79.9	45.8	60.5	75.3	41.0	55.7	70.5	36.1	50.8	65.5	31.0	45.7	60.4
		76	TC	—	147.6	147.6	—	139.2	139.2	—	130.3	130.3	—	120.8	120.8	—	111.0	111.0
			SHC	—	53.8	67.3	—	49.1	63.1	—	44.3	58.4	—	39.4	53.6	—	34.4	48.6
3300 Cfm	EA (wb)	58	TC	107.6	107.6	122.5	101.5	101.5	115.9	95.1	95.1	109.0	88.3	88.3	101.7	81.1	81.1	93.8
			SHC	92.7	107.6	122.5	87.1	101.5	115.9	81.2	95.1	109.0	75.0	88.3	101.7	68.5	81.1	93.8
		62	TC	113.8	113.8	116.9	106.5	106.5	112.0	98.8	98.8	107.0	90.8	90.8	101.7	82.4	82.4	96.1
			SHC	83.6	100.3	116.9	78.8	95.4	112.0	73.9	90.4	107.0	68.8	85.3	101.7	63.4	79.8	96.1
		67	TC	126.4	126.4	126.4	118.6	118.6	118.6	110.4	110.4	110.4	101.8	101.8	101.8	92.6	92.6	92.6
			SHC	68.1	84.7	101.4	63.3	80.0	96.6	58.5	75.1	91.7	53.4	70.0	86.6	48.2	64.8	81.3
		72	TC	140.1	140.1	140.1	131.6	131.6	131.6	122.9	122.9	122.9	113.5	113.5	113.5	103.9	103.9	103.9
			SHC	52.2	68.8	85.4	47.5	64.0	80.6	42.6	59.2	75.7	37.6	54.1	70.7	32.5	49.0	65.5
		76	TC	—	151.5	151.5	—	142.7	142.7	—	133.6	133.6	—	123.7	123.7	—	113.7	113.7
			SHC	—	55.7	71.5	—	51.0	66.9	—	46.2	62.1	—	41.1	57.1	—	36.0	52.1
3700 Cfm	EA (wb)	58	TC	112.7	112.7	128.2	106.3	106.3	121.3	99.6	99.6	114.0	92.5	92.5	106.3	85.0	85.0	98.1
			SHC	97.3	112.7	128.2	91.4	106.3	121.3	85.2	99.6	114.0	78.8	92.5	106.3	71.9	85.0	98.1
		62	TC	116.9	116.9	125.7	109.4	109.4	120.7	101.6	101.6	115.4	93.5	93.5	109.6	85.2	85.2	102.7
			SHC	89.0	107.4	125.7	84.1	102.4	120.7	79.0	97.2	115.4	73.7	91.7	109.6	67.6	85.2	102.7
		67	TC	129.5	129.5	129.5	121.5	121.5	121.5	113.0	113.0	113.0	104.1	104.1	104.1	94.7	94.7	94.7
			SHC	71.6	90.1	108.5	66.8	85.2	103.7	61.9	80.3	98.7	56.7	75.1	93.5	51.5	69.8	88.2
		72	TC	143.0	143.0	143.0	134.4	134.4	134.4	125.4	125.4	125.4	115.9	115.9	115.9	106.0	106.0	106.0
			SHC	53.7	72.1	90.5	48.9	67.3	85.7	44.0	62.3	80.7	38.9	57.2	75.6	33.7	52.0	70.3
		76	TC	—	154.6	154.6	—	145.6	145.6	—	136.1	136.1	—	126.3	126.3	—	115.8	115.8
			SHC	—	57.4	75.1	—	52.7	70.4	—	47.7	65.5	—	42.7	60.5	—	37.5	55.3

Performance data (cont)



48/50FE**16 Single Stage Cooling Capacities (cont)

48/50FE**16				AMBIENT TEMPERATURE (°F)														
				85			95			105			115			125		
				EA (db)			EA (db)			EA (db)			EA (db)			EA (db)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3900 Cfm	EA (wb)	58	TC	115.0	115.0	130.7	108.5	108.5	123.7	101.6	101.6	116.2	94.4	94.4	108.4	86.8	86.8	100.1
			SHC	99.3	115.0	130.7	93.3	108.5	123.7	87.0	101.6	116.2	80.5	94.4	108.4	73.5	86.8	100.1
		62	TC	118.3	118.3	129.9	110.7	110.7	124.8	102.9	102.9	119.2	94.7	94.7	113.4	86.9	86.9	104.7
			SHC	91.6	110.7	129.9	86.6	105.7	124.8	81.4	100.3	119.2	75.9	94.7	113.4	69.1	86.9	104.7
		67	TC	130.8	130.8	130.8	122.7	122.7	122.7	114.1	114.1	114.1	105.1	105.1	105.1	95.6	95.6	95.6
			SHC	73.3	92.6	112.0	68.4	87.8	107.1	63.5	82.7	102.0	58.3	77.6	96.8	53.1	72.3	91.5
		72	TC	144.3	144.3	144.3	135.7	135.7	135.7	126.6	126.6	126.6	116.7	116.7	116.7	106.8	106.8	106.8
			SHC	54.4	73.7	92.9	49.6	68.9	88.1	44.7	63.9	83.1	39.5	58.7	77.9	34.3	53.5	72.7
		76	TC	—	155.9	155.9	—	146.8	146.8	—	137.3	137.3	—	127.3	127.3	—	116.7	116.7
			SHC	—	58.2	76.8	—	53.4	72.0	—	48.5	67.1	—	43.4	62.1	—	38.2	56.9
4150 Cfm	EA (wb)	58	TC	117.6	117.6	133.6	111.0	111.0	126.4	104.0	104.0	118.8	96.6	96.6	110.9	88.6	88.6	102.1
			SHC	101.6	117.6	133.6	95.5	111.0	126.4	89.1	104.0	118.8	82.4	96.6	110.9	75.1	88.6	102.1
		62	TC	119.9	119.9	134.9	112.3	112.3	129.5	104.3	104.3	124.2	96.7	96.7	115.7	88.9	88.9	107.0
			SHC	94.6	114.8	134.9	89.5	109.5	129.5	84.4	104.3	124.2	77.7	96.7	115.7	70.8	88.9	107.0
		67	TC	132.3	132.3	132.3	124.1	124.1	124.1	115.4	115.4	115.4	106.2	106.2	106.2	96.6	96.6	96.6
			SHC	75.3	95.8	116.2	70.5	90.9	111.3	65.5	85.8	106.2	60.3	80.6	100.9	55.0	75.2	95.5
		72	TC	145.8	145.8	145.8	137.1	137.1	137.1	127.8	127.8	127.8	118.0	118.0	118.0	107.9	107.9	107.9
			SHC	55.2	75.6	95.9	50.4	70.7	91.1	45.4	65.7	86.0	40.2	60.5	80.8	35.0	55.3	75.5
		76	TC	—	157.5	157.5	—	148.2	148.2	—	138.6	138.6	—	128.5	128.5	—	117.7	117.7
			SHC	—	59.1	78.8	—	54.3	73.9	—	49.3	69.0	—	44.3	64.0	—	39.0	58.7

LEGEND

—	Do Not Operate
cfm	Cubic Feet Per Minute (Supply Air)
EA (db)	Entering Air Temperature (dry bulb)
EA (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 8.

48/50FE*N16 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		4500/0.09			6000/0.12			7500/0.14		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	203.0	181.0	162.0	213.0	196.0	175.0	225.0	202.0	183.0
	SHC	82.0	103.0	124.0	93.0	125.0	152.0	109.0	142.0	175.0
	kW	14.1	13.7	13.4	14.2	14.1	13.7	14.5	14.1	13.8
85	TC	190.0	168.0	149.0	202.0	181.0	161.0	210.0	189.0	169.0
	SHC	70.0	91.0	113.0	83.0	112.0	139.0	95.0	130.0	162.0
	kW	15.3	14.9	14.6	15.5	15.2	14.8	15.7	15.3	14.9
95	TC	176.0	155.0	137.0	187.0	166.0	148.0	195.0	174.0	155.0
	SHC	57.0	79.0	102.0	70.0	98.0	127.0	81.0	117.0	149.0
	kW	16.6	16.2	15.9	16.9	16.5	16.1	17.0	16.7	16.3
105	TC	161.0	141.0	124.0	172.0	152.0	134.0	179.0	159.0	141.0
	SHC	44.0	67.0	90.0	56.0	85.0	114.0	67.0	103.0	135.0
	kW	18.1	17.7	17.4	18.4	17.9	17.6	18.5	18.1	17.8
115	TC	146.0	127.0	110.0	156.0	137.0	120.0	162.0	143.0	126.0
	SHC	31.0	54.0	78.0	42.0	73.0	101.0	52.0	89.0	121.0
	kW	19.8	19.4	19.1	20.0	19.7	19.3	20.2	19.8	19.4
125	TC	130.0	113.0	97.0	139.0	121.0	105.0	145.0	127.0	110.0
	SHC	18.0	42.0	65.0	28.0	59.0	88.0	37.0	75.0	106.0
	kW	21.6	21.2	20.8	21.8	21.4	21.0	21.9	21.6	21.1

48/50FE*N16 — Unit With Humidi-MiZer System in Hot Gas Reheat Mode — Cooling Capacities

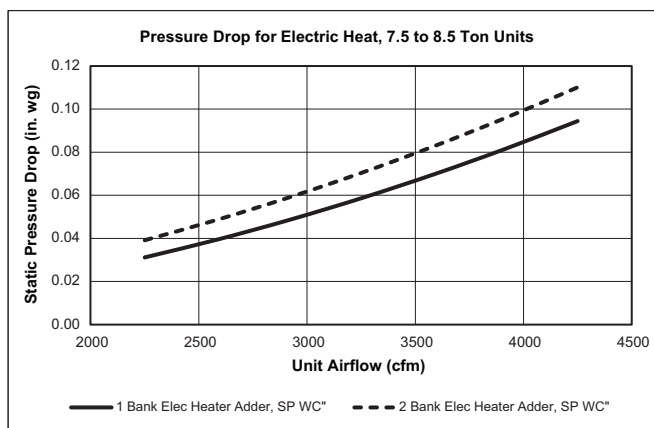
TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (°F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — cfm								
		4500	6000	7500	4500	6000	7500	4500	6000	7500
80	TC	60.0	63.0	65.0	64.0	66.0	68.0	67.0	68.0	70.0
	SHC	9.0	5.0	2.0	16.0	11.0	7.0	22.0	16.0	11.0
	kW	12.8	12.8	12.9	12.9	12.9	13.0	12.9	13.0	13.0
75	TC	63.0	66.0	68.0	67.0	69.0	71.0	70.0	72.0	74.0
	SHC	12.0	8.0	4.0	19.0	14.0	9.0	25.0	19.0	13.0
	kW	12.5	12.5	12.6	12.6	12.6	12.6	12.6	12.6	12.6
70	TC	66.0	69.0	71.0	70.0	73.0	74.0	73.0	75.0	77.0
	SHC	14.0	10.0	7.0	22.0	16.0	12.0	28.0	21.0	16.0
	kW	12.4	12.4	12.5	12.5	12.5	12.5	12.5	12.5	12.5
60	TC	72.0	74.0	77.0	76.0	79.0	80.0	79.0	81.0	83.0
	SHC	21.0	15.0	11.0	26.0	21.0	17.0	33.0	26.0	21.0
	kW	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
50	TC	77.0	80.0	82.0	82.0	84.0	86.0	85.0	87.0	89.0
	SHC	24.0	19.0	16.0	31.0	26.0	22.0	38.0	32.0	26.0
	kW	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
40	TC	82.0	85.0	87.0	87.0	90.0	92.0	90.0	92.0	95.0
	SHC	28.0	24.0	20.0	36.0	31.0	27.0	43.0	37.0	31.0
	kW	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4

LEGEND

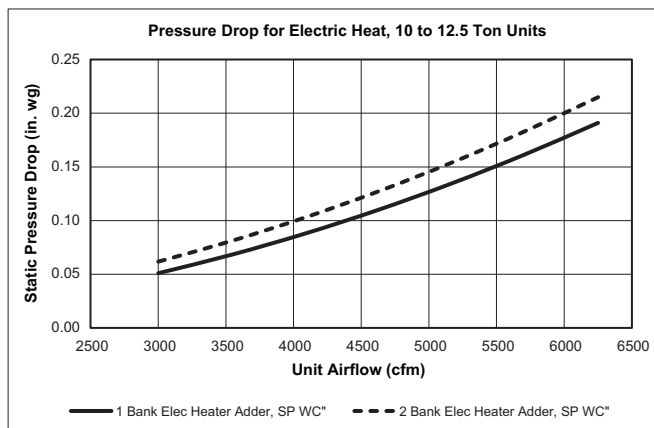
Edb	—	Entering dry bulb
Ewb	—	Entering wet bulb
kW	—	compressor Power Input
SCFM/BF	—	Standard Cubic Feet per Minute/Bypass Factor
SHC	—	Sensible Heat Capacity (1000 Btuh) Gross
TC	—	Total Capacity (1000 Btuh) Gross

Pressure Drops For Electric Heating Units

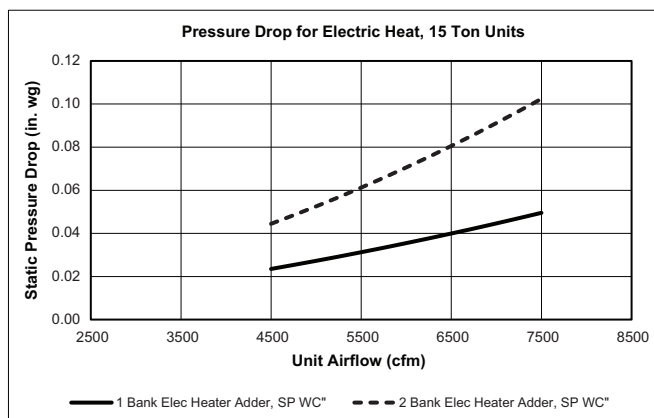
7.5 and 8.5 Ton Units



10 and 12.5 Ton Units



15 Ton Units



Pressure Drops For Gas Heating Units

Gas Heat Stages

48FE UNIT SIZE	HEAT SIZE		
	LOW	MEDIUM	HIGH
08	1	2	2
09	1	2	2
12	2	2	2
14	2	2	2
16	2	2	2

Gas Heat Static Pressure Deductions (in. wg) — 7.5 To 8.5 Ton Units

CFM	2250	2585	2915	3250	3585	3915	4250
MEDIUM GAS HEAT DEDUCTION	0.01	0.01	0.02	0.04	0.05	0.06	0.08
LOW GAS HEAT DEDUCTION	0.11	0.13	0.16	0.19	0.22	0.26	0.29

Gas Heat Static Pressure Deductions (in. wg) — 10 To 12.5 Ton Units

CFM	3000	3540	4085	4625	5165	5710	6250
MEDIUM GAS HEAT DEDUCTION	-0.03	0.00	0.04	0.08	0.13	0.20	0.27
LOW GAS HEAT DEDUCTION	0.17	0.24	0.31	0.40	0.49	0.59	0.71

Gas Heat Static Pressure Deductions (in. wg) — 15 Ton Units

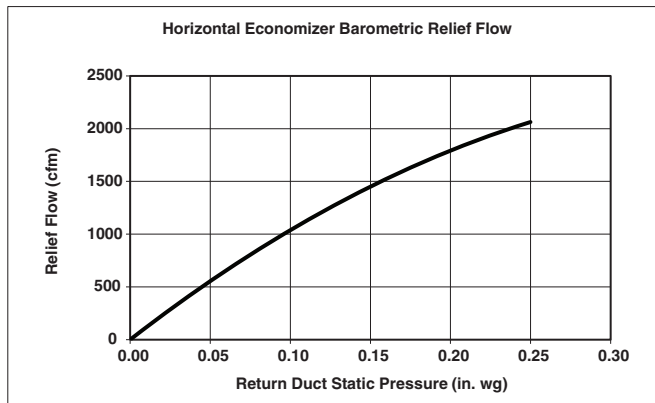
CFM	4500	5000	5500	6000	6500	7000	7500
HIGH GAS HEAT DEDUCTION	0.21	0.24	0.26	0.29	0.31	0.34	0.36
MEDIUM GAS HEAT DEDUCTION	0.20	0.22	0.25	0.27	0.29	0.32	0.34
LOW GAS HEAT DEDUCTION	0.33	0.37	0.42	0.48	0.53	0.59	0.65

Field-installed Accessory Electric Heater Data

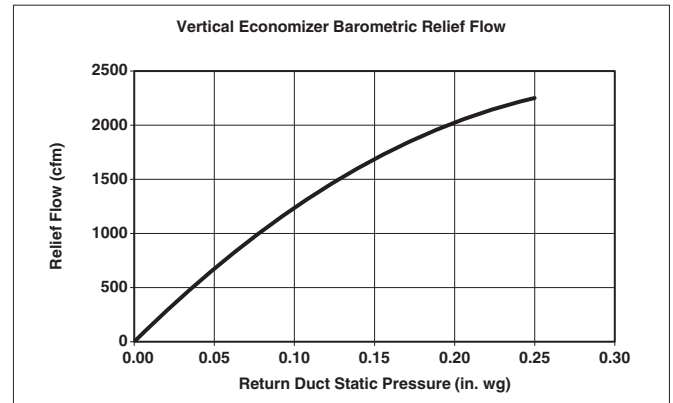
50FE UNIT SIZE	VOLTAGE	HEATER MODEL NUMBER	HEAT STAGES
08	208/230	CRHEATER411A00	1
		CRHEATER412A00	1
		CRHEATER414A00	2
		CRHEATER415A00	2
		CRHEATER416A00	2
	460	CRHEATER420A00	1
		CRHEATER421A00	2
		CRHEATER422A00	2
		CRHEATER423A00	2
	575	CRHEATER425A00	1
CRHEATER427A00		2	
09	208/230	CRHEATER411A00	1
		CRHEATER412A00	1
		CRHEATER414A00	2
		CRHEATER415A00	2
		CRHEATER416A00	2
	460	CRHEATER420A00	1
		CRHEATER421A00	2
		CRHEATER422A00	2
		CRHEATER423A00	2
	575	CRHEATER425A00	1
CRHEATER427A00		2	
12	208/230	CRHEATER411A00	1
		CRHEATER412A00	1
		CRHEATER415A00	2
		CRHEATER416A00	2
		CRHEATER417A00	2
	460	CRHEATER420A00	1
		CRHEATER422A00	2
		CRHEATER423A00	2
		CRHEATER424A00	2
	575	CRHEATER425A00	1
CRHEATER427A00		2	
CRHEATER428A00		2	
14	208/230	CRHEATER411A00	1
		CRHEATER412A00	1
		CRHEATER415A00	2
		CRHEATER416A00	2
		CRHEATER417A00	2
	460	CRHEATER420A00	1
		CRHEATER422A00	2
		CRHEATER423A00	2
		CRHEATER424A00	2
	575	CRHEATER425A00	2
CRHEATER427A00		2	
CRHEATER428A00		2	
16	208/230	CRHEATER412A00	1
		CRHEATER414A00	2
		CRHEATER415A00	2
		CRHEATER416A00	2
		CRHEATER417A00	2
		CRHEATER451A00	2
	460	CRHEATER420A00	1
		CRHEATER421A00	2
		CRHEATER422A00	2
		CRHEATER423A00	2
		CRHEATER424A00	2
	575	CRHEATER452A00	1
		CRHEATER425A00	1
		CRHEATER427A00	2
	CRHEATER428A00	2	
	CRHEATER453A00	2	

Economizer Barometric Relief and Damper Leakage — 7.5 to 12.5 Ton Units (Sizes 08-14)

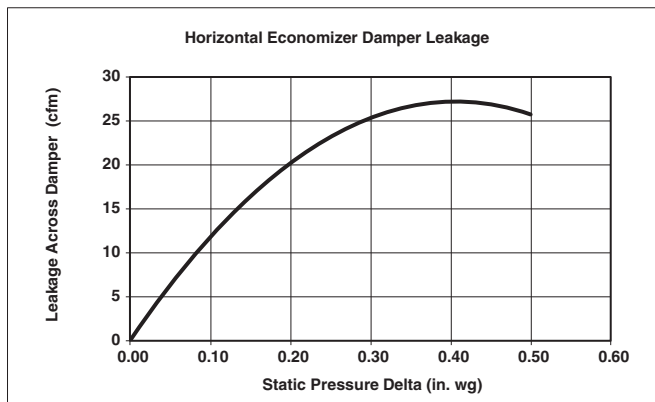
Horizontal Economizer Barometric Relief



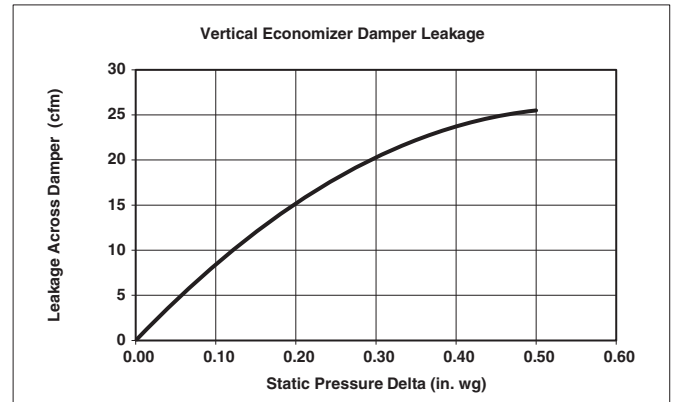
Vertical Economizer Barometric Relief



Horizontal Economizer Damper Leakage

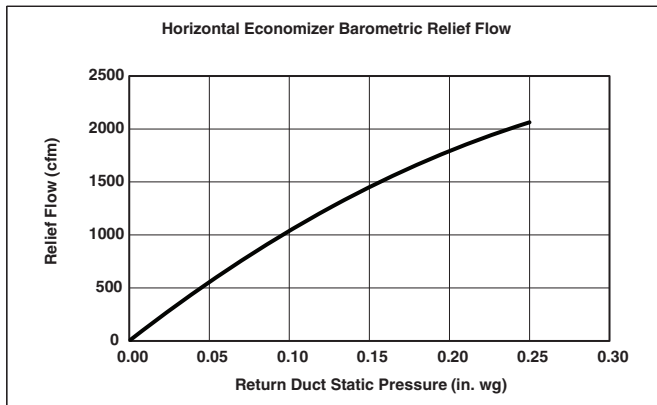


Vertical Economizer Damper Leakage

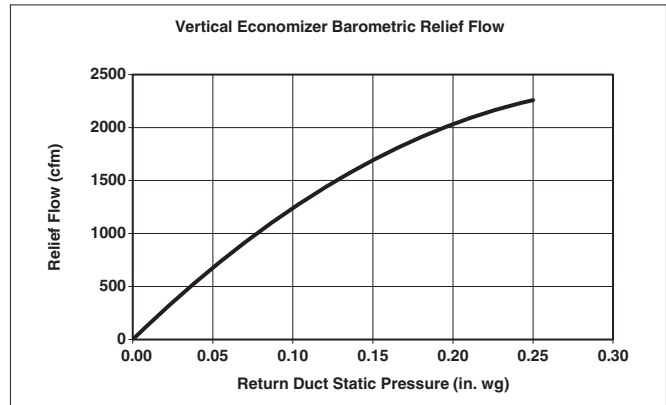


Economizer Barometric Relief and Damper Leakage — 15 Ton Units (Size 16)

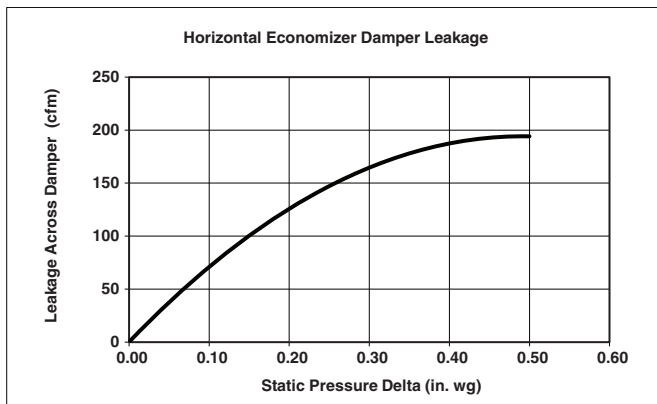
Horizontal Economizer Barometric Relief



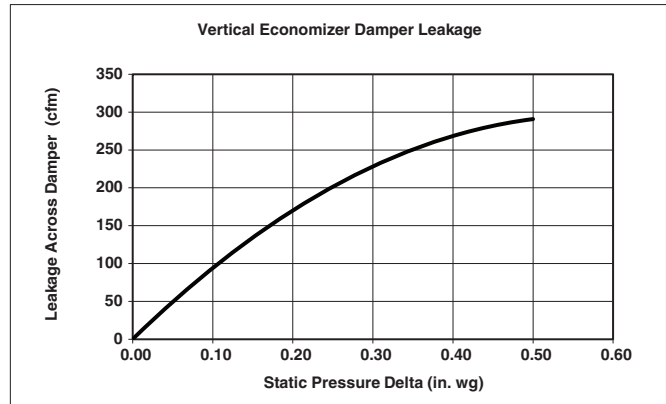
Vertical Economizer Barometric Relief



Horizontal Economizer Damper Leakage

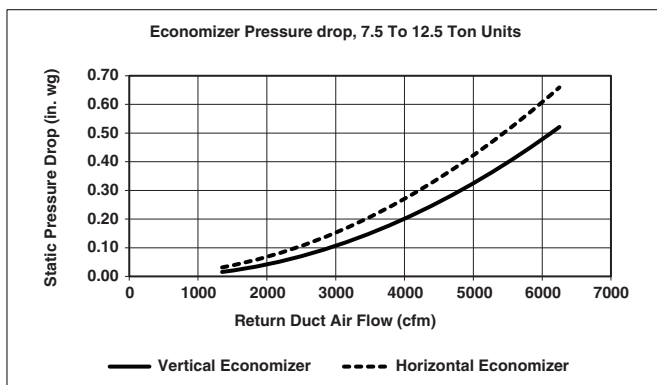


Vertical Economizer Damper Leakage

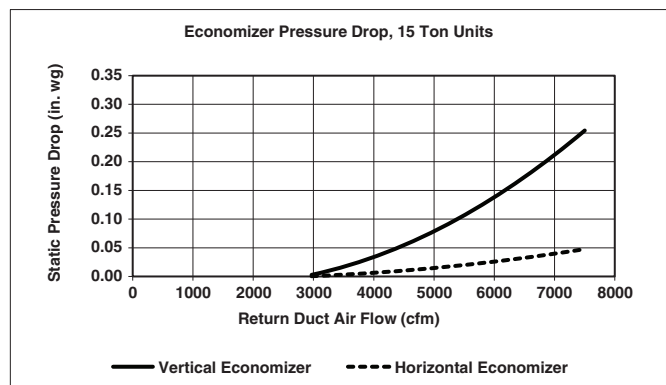


Economizer Pressure Drop 7.5 to 15 Ton Units

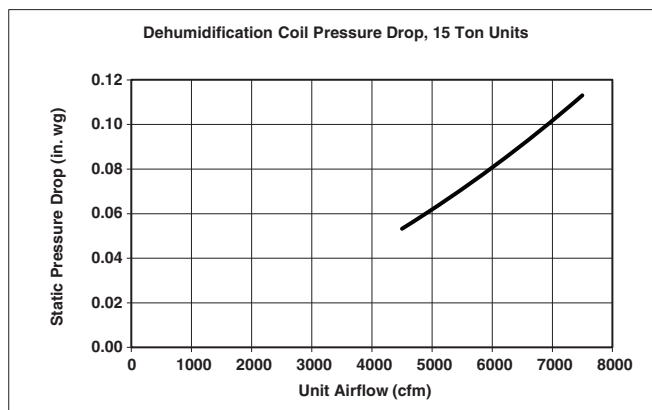
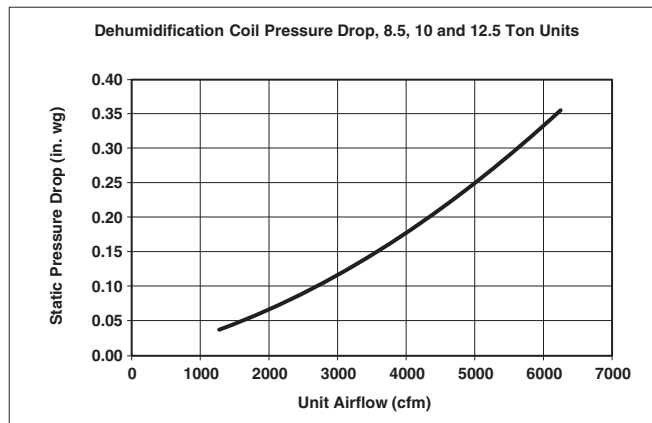
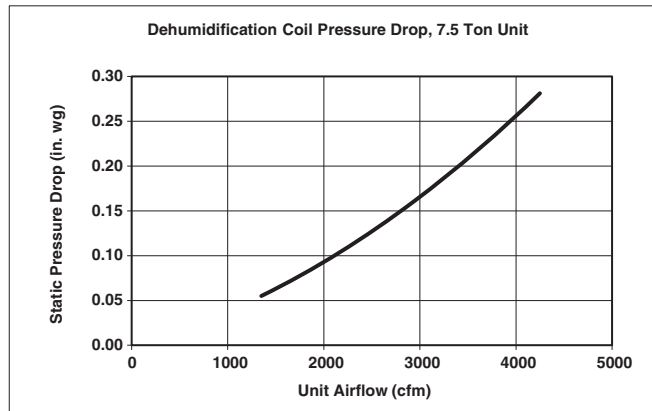
7.5 to 10 Ton Units (Sizes 08-14)



15 Ton Units (Size 16)



Humidi-Mizer® Coil Pressure Drops — 7.5 To 15 Ton Units



MERV-13 filters pressure drop

NOTE: For 4 in. MERV-13 filter factory option, use Pack-aged RTU Builder program for associated pressure drop.

General Fan Performance Notes

1. Interpolation is permissible. Do not extrapolate.
2. External static pressure is the static pressure difference between the return duct and the supply duct plus the static pressure caused by any FIOPs or accessories.
3. Tabular data accounts for pressure loss due to clean filters, unit casing, wet coils, and highest gas heat exchanger (when gas heat unit).
4. Factory options and accessories may effect static pressure losses. Gas heat unit fan tables assume highest gas heat models; for fan selections with low or medium heat models, the user must deduct low and medium heat static pressures. 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. Fan tables for 48FE units include highest gas heat. Utilize static pressure deduction tables on page 57 for lower gas heat capacities.
7. For information on the electrical properties of the fan motors, please see the Electrical information section of this book.
8. For more information on the performance limits of the fan motors, see the application data section of this book.
9. 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.

48FEFM08 — 7.5 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
2250	1045	0.43	1166	0.60	1273	0.78	1372	0.97	1463	1.18
2440	1111	0.51	1226	0.69	1329	0.88	1424	1.08	1512	1.30
2625	1178	0.61	1288	0.80	1387	1.00	1478	1.21	1564	1.43
2815	1246	0.72	1351	0.91	1446	1.12	1534	1.34	1617	1.57
3000	1314	0.83	1415	1.04	1507	1.26	1592	1.48	1672	1.71
3190	1383	0.96	1480	1.17	1568	1.40	1651	1.63	1729	1.87
3375	1453	1.09	1545	1.31	1631	1.55	1711	1.78	1786	2.03
3565	1523	1.23	1612	1.46	1694	1.70	1772	1.94	1845	2.20
3750	1594	1.38	1679	1.62	1759	1.86	1834	2.11	1905	2.36

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
2250	1548	1.40	1629	1.63	1706	1.87	1778	2.12	1848	2.38
2440	1595	1.52	1674	1.76	1749	2.01	1821	2.27	1889	2.53
2625	1645	1.66	1721	1.90	1794	2.16	1865	2.42	1932	2.69
2815	1696	1.81	1770	2.06	1842	2.32	1910	2.58	1976	2.86
3000	1748	1.96	1821	2.22	1891	2.48	1958	2.75	2022	3.03
3190	1803	2.12	1873	2.38	1941	2.65	2007	2.93	—	—
3375	1858	2.29	1927	2.55	1994	2.83	2058	3.11	—	—
3565	1915	2.45	1982	2.72	2047	3.00	—	—	—	—
3750	1973	2.62	2039	2.90	2102	3.17	—	—	—	—

Std/Med Static 1045-2000 rpm, 2.4 maximum bhp

High Static 1045-2200 rpm, 3.0 maximum bhp

48FEFM08 — Standard/Medium Static — 7.5 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
2250	1045	5.1	1166	5.7	1273	6.3	1372	6.8	1463	7.2
2440	1111	5.4	1226	6.0	1329	6.5	1424	7.0	1512	7.5
2625	1178	5.8	1288	6.3	1387	6.8	1478	7.3	1564	7.8
2815	1246	6.1	1351	6.7	1446	7.2	1534	7.6	1617	8.0
3000	1314	6.5	1415	7.0	1507	7.5	1592	7.9	1672	8.3
3190	1383	6.8	1480	7.3	1568	7.8	1651	8.2	1729	8.6
3375	1453	7.2	1545	7.7	1631	8.1	1711	8.5	1786	8.9
3565	1523	7.5	1612	8.0	1694	8.4	1772	8.8	1845	9.2
3750	1594	7.9	1679	8.3	1759	8.8	1834	9.1	1905	9.5

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
2250	1548	7.7	1629	8.1	1706	8.5	1778	8.9	1848	9.2
2440	1595	7.9	1674	8.3	1749	8.7	1821	9.1	—	—
2625	1645	8.2	1721	8.6	1794	8.9	—	—	—	—
2815	1696	8.4	1770	8.8	1842	9.2	—	—	—	—
3000	1748	8.7	1821	9.1	—	—	—	—	—	—
3190	1803	9.0	1873	9.3	—	—	—	—	—	—
3375	1858	9.3	—	—	—	—	—	—	—	—
3565	—	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1045-2000 rpm

48FEFM08 — High Static — 7.5 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
2250	1045	4.7	1166	5.2	1273	5.7	1372	6.2	1463	6.6
2440	1111	5.0	1226	5.5	1329	6.0	1424	6.4	1512	6.8
2625	1178	5.3	1288	5.8	1387	6.2	1478	6.7	1564	7.1
2815	1246	5.6	1351	6.1	1446	6.5	1534	6.9	1617	7.3
3000	1314	5.9	1415	6.4	1507	6.8	1592	7.2	1672	7.6
3190	1383	6.2	1480	6.7	1568	7.1	1651	7.5	1729	7.8
3375	1453	6.6	1545	7.0	1631	7.4	1711	7.7	1786	8.1
3565	1523	6.9	1612	7.3	1694	7.7	1772	8.0	1845	8.4
3750	1594	7.2	1679	7.6	1759	8.0	1834	8.3	1905	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
2250	1548	7.0	1629	7.4	1706	7.7	1778	8.1	1848	8.4
2440	1595	7.2	1674	7.6	1749	7.9	1821	8.3	1889	8.6
2625	1645	7.4	1721	7.8	1794	8.1	1865	8.5	1932	8.8
2815	1696	7.7	1770	8.0	1842	8.3	1910	8.7	1976	9.0
3000	1748	7.9	1821	8.3	1891	8.6	1958	8.9	2022	9.2
3190	1803	8.2	1873	8.5	1941	8.8	2007	9.1	—	—
3375	1858	8.4	1927	8.7	1994	9.0	2058	9.3	—	—
3565	1915	8.7	1982	9.0	2047	9.3	—	—	—	—
3750	1973	9.0	2039	9.3	2102	9.5	—	—	—	—

High Static 1045-2200 rpm

48FEFM09 — 8.5 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
2550	1091	0.48	1198	0.63	1298	0.81	1391	0.99	1478	1.19
2765	1164	0.58	1264	0.74	1359	0.92	1448	1.11	1532	1.31
2975	1238	0.69	1332	0.85	1422	1.04	1507	1.24	1588	1.45
3190	1312	0.81	1402	0.98	1487	1.17	1569	1.38	1646	1.59
3400	1388	0.94	1473	1.12	1554	1.32	1632	1.53	1706	1.75
3615	1464	1.08	1544	1.27	1622	1.47	1696	1.69	1768	1.91
3825	1541	1.24	1617	1.43	1691	1.64	1762	1.85	1831	2.08
4040	1618	1.40	1691	1.59	1761	1.80	1830	2.02	1896	2.25
4250	1696	1.56	1765	1.76	1832	1.97	1898	2.19	1962	2.42

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
2550	1559	1.40	1636	1.61	1709	1.84	1779	2.08	1846	2.32
2765	1611	1.53	1686	1.75	1758	1.98	1826	2.22	1892	2.47
2975	1665	1.67	1738	1.90	1808	2.14	1875	2.38	1939	2.63
3190	1721	1.82	1792	2.05	1860	2.30	1925	2.55	1988	2.80
3400	1778	1.98	1847	2.22	1913	2.46	1977	2.72	2039	2.98
3615	1837	2.14	1904	2.38	1969	2.64	2031	2.89	2091	3.16
3825	1898	2.31	1963	2.56	2026	2.81	2086	3.07	—	—
4040	1961	2.49	2023	2.73	2084	2.98	—	—	—	—
4250	2024	2.66	2085	2.90	2144	3.16	—	—	—	—

Std/Med Static 1091-2000 rpm, 2.4 maximum bhp

High Static 1091-2200 rpm, 3.0 maximum bhp

48FEFM09 — Standard/Medium Static — 8.5 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
2550	1091	5.3	1198	5.9	1298	6.4	1391	6.9	1478	7.3
2765	1164	5.7	1264	6.2	1359	6.7	1448	7.2	1532	7.6
2975	1238	6.1	1332	6.6	1422	7.0	1507	7.5	1588	7.9
3190	1312	6.5	1402	6.9	1487	7.4	1569	7.8	1646	8.2
3400	1388	6.9	1473	7.3	1554	7.7	1632	8.1	1706	8.5
3615	1464	7.2	1544	7.7	1622	8.1	1696	8.4	1768	8.8
3825	1541	7.6	1617	8.0	1691	8.4	1762	8.8	1831	9.1
4040	1618	8.0	1691	8.4	1761	8.8	1830	9.1	1896	9.5
4250	1696	8.4	1765	8.8	1832	9.1	1898	9.5	1962	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
2550	1559	7.7	1636	8.1	1709	8.5	1779	8.9	1846	9.2
2765	1611	8.0	1686	8.4	1758	8.8	1826	9.1	—	—
2975	1665	8.3	1738	8.7	1808	9.0	1875	9.4	—	—
3190	1721	8.6	1792	8.9	1860	9.3	—	—	—	—
3400	1778	8.9	1847	9.2	—	—	—	—	—	—
3615	1837	9.2	1904	9.5	—	—	—	—	—	—
3825	1898	9.5	—	—	—	—	—	—	—	—
4040	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1091-2000 rpm

48FEFM09 — High Static — 8.5 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
2550	1091	4.9	1198	5.4	1298	5.8	1391	6.3	1478	6.7
2765	1164	5.2	1264	5.7	1359	6.1	1448	6.5	1532	6.9
2975	1238	5.6	1332	6.0	1422	6.4	1507	6.8	1588	7.2
3190	1312	5.9	1402	6.3	1487	6.7	1569	7.1	1646	7.4
3400	1388	6.3	1473	6.6	1554	7.0	1632	7.4	1706	7.7
3615	1464	6.6	1544	7.0	1622	7.3	1696	7.7	1768	8.0
3825	1541	7.0	1617	7.3	1691	7.7	1762	8.0	1831	8.3
4040	1618	7.3	1691	7.7	1761	8.0	1830	8.3	1896	8.6
4250	1696	7.7	1765	8.0	1832	8.3	1898	8.6	1962	8.9

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
2550	1559	7.0	1636	7.4	1709	7.7	1779	8.1	1846	8.4
2765	1611	7.3	1686	7.6	1758	8.0	1826	8.3	1892	8.6
2975	1665	7.5	1738	7.9	1808	8.2	1875	8.5	1939	8.8
3190	1721	7.8	1792	8.1	1860	8.4	1925	8.7	1988	9.0
3400	1778	8.1	1847	8.4	1913	8.7	1977	9.0	2039	9.3
3615	1837	8.3	1904	8.6	1969	8.9	2031	9.2	2091	9.5
3825	1898	8.6	1963	8.9	2026	9.2	2086	9.5	—	—
4040	1961	8.9	2023	9.2	2084	9.5	—	—	—	—
4250	2024	9.2	2085	9.5	2144	9.7	—	—	—	—

High Static 1091-2200 rpm

48FEFM12 — 10 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
3000	1266	0.74	1360	0.92	1449	1.12	1534	1.32	1613	1.54
3250	1357	0.91	1444	1.09	1528	1.29	1608	1.51	1684	1.73
3500	1448	1.09	1530	1.28	1609	1.49	1685	1.72	1758	1.95
3750	1539	1.29	1617	1.49	1691	1.71	1764	1.94	1833	2.18
4000	1632	1.51	1705	1.72	1775	1.94	1844	2.18	1911	2.42
4250	1725	1.74	1794	1.96	1861	2.19	1926	2.43	1990	2.68
4500	1818	1.99	1884	2.22	1948	2.45	2010	2.69	2071	2.94
4750	1912	2.25	1974	2.47	2035	2.71	2095	2.96	2153	3.21
5000	2006	2.51	2066	2.74	2124	2.98	2181	3.23	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
3000	1689	1.77	1762	2.01	1831	2.25	1897	2.50	1961	2.77
3250	1757	1.97	1827	2.21	1894	2.47	1959	2.73	2021	3.00
3500	1828	2.19	1895	2.44	1960	2.70	2023	2.97	2084	3.25
3750	1900	2.42	1965	2.68	2028	2.95	2089	3.22	2148	3.50
4000	1975	2.67	2038	2.94	2099	3.21	2158	3.49	—	—
4250	2052	2.94	2112	3.20	2171	3.48	—	—	—	—
4500	2130	3.20	2188	3.47	—	—	—	—	—	—
4750	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1266-2000 rpm, 2.4 maximum bhp

High Static 1266-2200 rpm, 5.0 maximum bhp

48FEFM12 — Standard/Medium Static — 10 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
3000	1266	6.2	1360	6.7	1449	7.2	1534	7.6	1613	8.0
3250	1357	6.7	1444	7.1	1528	7.6	1608	8.0	1684	8.4
3500	1448	7.2	1530	7.6	1609	8.0	1685	8.4	1758	8.8
3750	1539	7.6	1617	8.0	1691	8.4	1764	8.8	1833	9.1
4000	1632	8.1	1705	8.5	1775	8.8	1844	9.2	—	—
4250	1725	8.6	1794	8.9	1861	9.3	—	—	—	—
4500	1818	9.1	1884	9.4	—	—	—	—	—	—
4750	1912	9.5	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—

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
3000	1689	8.4	1762	8.8	1831	9.1	—	—	—	—
3250	1757	8.8	1827	9.1	—	—	—	—	—	—
3500	1828	9.1	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—	—
4000	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—
4500	—	—	—	—	—	—	—	—	—	—
4750	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1266-2000 rpm

48FEFM12 — High Static — 10 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
3000	1266	5.7	1360	6.1	1449	6.5	1534	6.9	1613	7.3
3250	1357	6.1	1444	6.5	1528	6.9	1608	7.3	1684	7.6
3500	1448	6.5	1530	6.9	1609	7.3	1685	7.6	1758	8.0
3750	1539	6.9	1617	7.3	1691	7.7	1764	8.0	1833	8.3
4000	1632	7.4	1705	7.7	1775	8.0	1844	8.4	1911	8.7
4250	1725	7.8	1794	8.1	1861	8.4	1926	8.7	1990	9.0
4500	1818	8.2	1884	8.5	1948	8.8	2010	9.1	2071	9.4
4750	1912	8.7	1974	9.0	2035	9.2	2095	9.5	2153	9.8
5000	2006	9.1	2066	9.4	2124	9.6	2181	9.9	—	—

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
3000	1689	7.6	1762	8.0	1831	8.3	1897	8.6	1961	8.9
3250	1757	8.0	1827	8.3	1894	8.6	1959	8.9	2021	9.2
3500	1828	8.3	1895	8.6	1960	8.9	2023	9.2	2084	9.5
3750	1900	8.6	1965	8.9	2028	9.2	2089	9.5	2148	9.8
4000	1975	9.0	2038	9.3	2099	9.5	2158	9.8	—	—
4250	2052	9.3	2112	9.6	2171	9.9	—	—	—	—
4500	2130	9.7	2188	9.9	—	—	—	—	—	—
4750	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—

High Static 1266-2200 rpm

48FEFM14 — 12.5 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
3750	1320	1.21	1416	1.49	1503	1.79	1583	2.09	1657	2.39
4065	1414	1.48	1504	1.78	1587	2.09	1664	2.41	1736	2.74
4375	1509	1.79	1594	2.11	1673	2.44	1747	2.78	1817	3.13
4690	1604	2.14	1685	2.49	1761	2.84	1832	3.19	1899	3.56
5000	1700	2.54	1777	2.90	1849	3.26	1918	3.64	1983	4.03
5315	1797	2.97	1870	3.35	1939	3.73	2005	4.13	2068	4.53
5625	1894	3.44	1964	3.84	2030	4.24	2093	4.65	2154	5.06
5940	1992	3.95	2058	4.36	2121	4.77	—	—	—	—
6250	2090	4.50	2153	4.92	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
3750	1727	2.71	1794	3.04	1857	3.37	1918	3.71	1976	4.06
4065	1804	3.08	1869	3.42	1930	3.77	1989	4.12	2046	4.49
4375	1883	3.48	1946	3.85	2005	4.21	2063	4.58	2119	4.97
4690	1963	3.93	2024	4.31	2082	4.69	2139	5.08	—	—
5000	2045	4.42	2104	4.81	—	—	—	—	—	—
5315	2128	4.93	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
5940	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1320-2200 rpm, 3.0 maximum bhp

High Static 1320-2200 rpm, 5.0 maximum bhp

48FEFM14 — Standard/Medium Static — 12.5 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
3750	1320	5.9	1416	6.4	1503	6.8	1583	7.2	1657	7.5
4065	1414	6.4	1504	6.8	1587	7.2	1664	7.5	1736	7.9
4375	1509	6.8	1594	7.2	1673	7.6	1747	7.9	—	—
4690	1604	7.2	1685	7.6	1761	8.0	—	—	—	—
5000	1700	7.7	1777	8.0	—	—	—	—	—	—
5315	1797	8.1	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
5940	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

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
3750	1727	7.8	—	—	—	—	—	—	—	—
4065	—	—	—	—	—	—	—	—	—	—
4375	—	—	—	—	—	—	—	—	—	—
4690	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—
5315	—	—	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
5940	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1320-2200 rpm

48FEFM14 — High Static — 12.5 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
3750	1320	5.9	1416	6.4	1503	6.8	1583	7.2	1657	7.5
4065	1414	6.4	1504	6.8	1587	7.2	1664	7.5	1736	7.9
4375	1509	6.8	1594	7.2	1673	7.6	1747	7.9	1817	8.2
4690	1604	7.2	1685	7.6	1761	8.0	1832	8.3	1899	8.6
5000	1700	7.7	1777	8.0	1849	8.4	1918	8.7	1983	9.0
5315	1797	8.1	1870	8.5	1939	8.8	2005	9.1	2068	9.4
5625	1894	8.6	1964	8.9	2030	9.2	2093	9.5	2154	9.8
5940	1992	9.0	2058	9.3	2121	9.6	—	—	—	—
6250	2090	9.5	2153	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
3750	1727	7.8	1794	8.1	1857	8.4	1918	8.7	1976	9.0
4065	1804	8.2	1869	8.5	1930	8.8	1989	9.0	2046	9.3
4375	1883	8.5	1946	8.8	2005	9.1	2063	9.4	2119	9.6
4690	1963	8.9	2024	9.2	2082	9.5	2139	9.7	—	—
5000	2045	9.3	2104	9.6	—	—	—	—	—	—
5315	2128	9.7	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
5940	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

High Static 1320-2200 rpm

48FEFM16 — 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	1251	1.02	1332	1.23	1412	1.47	1491	1.73	1569	2.02
4875	1343	1.26	1417	1.48	1491	1.72	1565	1.99	1637	2.28
5250	1435	1.52	1504	1.75	1573	2.00	1641	2.28	1709	2.57
5625	1528	1.81	1592	2.05	1657	2.31	1721	2.59	1785	2.89
6000	1621	2.13	1682	2.38	1742	2.64	1802	2.92	1862	3.23
6375	1715	2.47	1772	2.73	1829	3.00	1886	3.29	1942	3.59
6750	1810	2.86	1863	3.11	1917	3.39	1971	3.69	2024	3.99
7125	1905	3.29	1955	3.56	2006	3.84	2057	4.15	2108	4.46
7500	2000	3.82	2048	4.10	2096	4.40	2144	4.71	2193	5.04

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	1645	2.33	1719	2.65	1792	3.01	1862	3.37	1930	3.76
4875	1709	2.59	1779	2.93	1848	3.28	1915	3.65	1981	4.04
5250	1777	2.89	1843	3.22	1908	3.58	1973	3.95	2036	4.35
5625	1848	3.21	1911	3.55	1973	3.90	2034	4.28	2094	4.67
6000	1922	3.55	1981	3.88	2040	4.24	2098	4.61	2156	5.01
6375	1999	3.92	2055	4.26	2111	4.61	2166	4.98		
6750	2078	4.32	2131	4.66	2184	5.02				
7125	2158	4.79								
7500										

Std/Med Static 1251-2200 rpm, 3.0 maximum bhp

High Static 1251-2200 rpm, 5.0 maximum bhp

48FEFM16 — 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	1251	5.6	1332	6.0	1412	6.4	1491	6.7	1569	7.1
4875	1343	6.0	1417	6.4	1491	6.7	1565	7.1	1637	7.4
5250	1435	6.5	1504	6.8	1573	7.1	1641	7.4	1709	7.7
5625	1528	6.9	1592	7.2	1657	7.5	1721	7.8	1785	8.1
6000	1621	7.3	1682	7.6	1742	7.9	1802	8.2	—	—
6375	1715	7.8	1772	8.0	—	—	—	—	—	—
6750	1810	8.2	—	—	—	—	—	—	—	—
7125	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

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	1645	7.4	1719	7.8	—	—	—	—	—	—
4875	1709	7.7	1779	8.1	—	—	—	—	—	—
5250	1777	8.0	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—
6375	—	—	—	—	—	—	—	—	—	—
6750	—	—	—	—	—	—	—	—	—	—
7125	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1251-2200 rpm

48FEFM16 — 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	1251	5.6	1332	6.0	1412	6.4	1491	6.7	1569	7.1
4875	1343	6.0	1417	6.4	1491	6.7	1565	7.1	1637	7.4
5250	1435	6.5	1504	6.8	1573	7.1	1641	7.4	1709	7.7
5625	1528	6.9	1592	7.2	1657	7.5	1721	7.8	1785	8.1
6000	1621	7.3	1682	7.6	1742	7.9	1802	8.2	1862	8.4
6375	1715	7.8	1772	8.0	1829	8.3	1886	8.6	1942	8.8
6750	1810	8.2	1863	8.4	1917	8.7	1971	8.9	2024	9.2
7125	1905	8.6	1955	8.9	2006	9.1	2057	9.3	2108	9.6
7500	2000	9.1	2048	9.3	2096	9.5	2144	9.7	2193	10.0

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	1645	7.4	1719	7.8	1792	8.1	1862	8.4	1930	8.8
4875	1709	7.7	1779	8.1	1848	8.4	1915	8.7	1981	9.0
5250	1777	8.0	1843	8.4	1908	8.7	1973	9.0	2036	9.2
5625	1848	8.4	1911	8.7	1973	9.0	2034	9.2	2094	9.5
6000	1922	8.7	1981	9.0	2040	9.3	2098	9.5	2156	9.8
6375	1999	9.1	2055	9.3	2111	9.6	2166	9.8	—	—
6750	2078	9.4	2131	9.7	2184	9.9	—	—	—	—
7125	2158	9.8	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

High Static 1251-2200 rpm

48FEFM08 — 7.5 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
2250	987	0.36	1114	0.52	1227	0.70	1331	0.89	1428	1.10
2440	1047	0.43	1168	0.60	1277	0.78	1377	0.98	1471	1.20
2625	1109	0.51	1223	0.68	1328	0.87	1424	1.08	1515	1.30
2815	1171	0.60	1280	0.78	1380	0.97	1474	1.19	1561	1.41
3000	1234	0.69	1338	0.88	1434	1.08	1524	1.30	1609	1.53
3190	1298	0.79	1397	0.99	1490	1.20	1577	1.42	1659	1.65
3375	1363	0.90	1458	1.10	1546	1.32	1630	1.54	1710	1.78
3565	1428	1.02	1519	1.22	1604	1.44	1685	1.67	1762	1.91
3750	1494	1.14	1580	1.35	1663	1.57	1741	1.80	1816	2.05

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
2250	1518	1.32	1602	1.55	1682	1.79	1757	2.04	1830	2.31
2440	1558	1.42	1641	1.66	1719	1.91	1794	2.17	1865	2.44
2625	1600	1.53	1681	1.77	1758	2.03	1831	2.29	1902	2.57
2815	1644	1.65	1723	1.90	1798	2.15	1871	2.43	1940	2.71
3000	1690	1.77	1767	2.02	1841	2.29	1911	2.56	1979	2.84
3190	1737	1.90	1813	2.16	1884	2.42	1954	2.70	2020	2.98
3375	1786	2.03	1859	2.29	1930	2.56	1997	2.84	2063	3.13
3565	1836	2.16	1908	2.43	1976	2.70	2042	2.98	—	—
3750	1888	2.30	1957	2.56	2024	2.83	2089	3.11	—	—

Std/Med Static 987-2000 rpm, 2.4 maximum bhp

High Static 987-2200 rpm, 3.0 maximum bhp

48FEFM08 — Standard/Medium Static — 7.5 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
2250	987	4.8	1114	5.4	1227	6.0	1331	6.6	1428	7.1
2440	1047	5.1	1168	5.7	1277	6.3	1377	6.8	1471	7.3
2625	1109	5.4	1223	6.0	1328	6.5	1424	7.0	1515	7.5
2815	1171	5.7	1280	6.3	1380	6.8	1474	7.3	1561	7.7
3000	1234	6.1	1338	6.6	1434	7.1	1524	7.6	1609	8.0
3190	1298	6.4	1397	6.9	1490	7.4	1577	7.8	1659	8.2
3375	1363	6.7	1458	7.2	1546	7.7	1630	8.1	1710	8.5
3565	1428	7.1	1519	7.5	1604	8.0	1685	8.4	1762	8.8
3750	1494	7.4	1580	7.8	1663	8.3	1741	8.7	1816	9.1

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
2250	1518	7.5	1602	8.0	1682	8.4	1757	8.8	1830	9.1
2440	1558	7.7	1641	8.2	1719	8.6	1794	8.9	—	—
2625	1600	7.9	1681	8.4	1758	8.8	1831	9.1	—	—
2815	1644	8.2	1723	8.6	1798	9.0	—	—	—	—
3000	1690	8.4	1767	8.8	1841	9.2	—	—	—	—
3190	1737	8.6	1813	9.0	—	—	—	—	—	—
3375	1786	8.9	1859	9.3	—	—	—	—	—	—
3565	1836	9.2	—	—	—	—	—	—	—	—
3750	1888	9.4	—	—	—	—	—	—	—	—

Std/Med Static 987-2000 rpm

48FEFM08 — High Static — 7.5 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
2250	987	4.4	1114	5.0	1227	5.5	1331	6.0	1428	6.4
2440	1047	4.7	1168	5.2	1277	5.7	1377	6.2	1471	6.6
2625	1109	5.0	1223	5.5	1328	6.0	1424	6.4	1515	6.8
2815	1171	5.3	1280	5.8	1380	6.2	1474	6.6	1561	7.1
3000	1234	5.5	1338	6.0	1434	6.5	1524	6.9	1609	7.3
3190	1298	5.8	1397	6.3	1490	6.7	1577	7.1	1659	7.5
3375	1363	6.1	1458	6.6	1546	7.0	1630	7.4	1710	7.7
3565	1428	6.4	1519	6.9	1604	7.2	1685	7.6	1762	8.0
3750	1494	6.7	1580	7.1	1663	7.5	1741	7.9	1816	8.2

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
2250	1518	6.9	1602	7.2	1682	7.6	1757	8.0	1830	8.3
2440	1558	7.0	1641	7.4	1719	7.8	1794	8.1	1865	8.5
2625	1600	7.2	1681	7.6	1758	8.0	1831	8.3	1902	8.6
2815	1644	7.4	1723	7.8	1798	8.1	1871	8.5	1940	8.8
3000	1690	7.6	1767	8.0	1841	8.3	1911	8.7	1979	9.0
3190	1737	7.9	1813	8.2	1884	8.5	1954	8.9	2020	9.2
3375	1786	8.1	1859	8.4	1930	8.8	1997	9.1	2063	9.4
3565	1836	8.3	1908	8.7	1976	9.0	2042	9.3	—	—
3750	1888	8.6	1957	8.9	2024	9.2	2089	9.5	—	—

High Static 987-2200 rpm

48FEFM09 — 8.5 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
2550	1026	0.40	1140	0.55	1248	0.72	1349	0.91	1442	1.11
2765	1092	0.48	1199	0.63	1301	0.80	1398	1.00	1488	1.20
2975	1160	0.56	1261	0.72	1357	0.90	1449	1.10	1536	1.31
3190	1229	0.66	1323	0.83	1414	1.01	1502	1.21	1586	1.42
3400	1298	0.77	1387	0.94	1473	1.12	1557	1.33	1638	1.55
3615	1368	0.88	1452	1.06	1535	1.25	1614	1.45	1692	1.67
3825	1439	1.01	1519	1.19	1597	1.38	1673	1.58	1747	1.80
4040	1511	1.14	1586	1.32	1660	1.51	1733	1.72	1804	1.94
4250	1582	1.27	1654	1.45	1725	1.64	1795	1.85	1863	2.07

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
2550	1529	1.32	1611	1.54	1688	1.77	1761	2.01	1830	2.26
2765	1573	1.42	1654	1.65	1730	1.89	1802	2.14	1870	2.39
2975	1619	1.53	1698	1.77	1773	2.01	1844	2.27	1911	2.52
3190	1667	1.65	1743	1.89	1817	2.14	1887	2.40	1954	2.66
3400	1716	1.78	1790	2.02	1862	2.27	1931	2.53	1997	2.80
3615	1767	1.91	1839	2.15	1909	2.40	1977	2.67	2041	2.94
3825	1820	2.04	1890	2.28	1958	2.54	2024	2.80	2087	3.07
4040	1874	2.17	1942	2.42	2008	2.67	2072	2.93	—	—
4250	1930	2.30	1996	2.55	2060	2.80	2122	3.06	—	—

Std/Med Static 1026-2000 rpm, 2.4 maximum bhp

High Static 1026-2200 rpm, 3.0 maximum bhp

48FEFM09 — Standard/Medium Static — 8.5 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
2550	1026	5.0	1140	5.6	1248	6.1	1349	6.7	1442	7.1
2765	1092	5.3	1199	5.9	1301	6.4	1398	6.9	1488	7.4
2975	1160	5.7	1261	6.2	1357	6.7	1449	7.2	1536	7.6
3190	1229	6.0	1323	6.5	1414	7.0	1502	7.4	1586	7.9
3400	1298	6.4	1387	6.8	1473	7.3	1557	7.7	1638	8.1
3615	1368	6.7	1452	7.2	1535	7.6	1614	8.0	1692	8.4
3825	1439	7.1	1519	7.5	1597	7.9	1673	8.3	1747	8.7
4040	1511	7.5	1586	7.9	1660	8.3	1733	8.6	1804	9.0
4250	1582	7.9	1654	8.2	1725	8.6	1795	8.9	1863	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
2550	1529	7.6	1611	8.0	1688	8.4	1761	8.8	1830	9.1
2765	1573	7.8	1654	8.2	1730	8.6	1802	9.0	1870	9.3
2975	1619	8.0	1698	8.4	1773	8.8	1844	9.2	—	—
3190	1667	8.3	1743	8.7	1817	9.1	1887	9.4	—	—
3400	1716	8.5	1790	8.9	1862	9.3	—	—	—	—
3615	1767	8.8	1839	9.2	1909	9.5	—	—	—	—
3825	1820	9.1	1890	9.4	—	—	—	—	—	—
4040	1874	9.4	—	—	—	—	—	—	—	—
4250	1930	9.6	—	—	—	—	—	—	—	—

Std/Med Static 1026-2000 rpm

48FEFM09 — High Static — 8.5 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
2550	1026	4.6	1140	5.1	1248	5.6	1349	6.1	1442	6.5
2765	1092	4.9	1199	5.4	1301	5.9	1398	6.3	1488	6.7
2975	1160	5.2	1261	5.7	1357	6.1	1449	6.5	1536	6.9
3190	1229	5.5	1323	6.0	1414	6.4	1502	6.8	1586	7.2
3400	1298	5.8	1387	6.2	1473	6.6	1557	7.0	1638	7.4
3615	1368	6.2	1452	6.5	1535	6.9	1614	7.3	1692	7.7
3825	1439	6.5	1519	6.9	1597	7.2	1673	7.6	1747	7.9
4040	1511	6.8	1586	7.2	1660	7.5	1733	7.8	1804	8.2
4250.0	1582	7.1	1654	7.5	1725	7.8	1795	8.1	1863	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
2550	1529	6.9	1611	7.3	1688	7.6	1761	8.0	1830	8.3
2765	1573	7.1	1654	7.5	1730	7.8	1802	8.2	1870	8.5
2975	1619	7.3	1698	7.7	1773	8.0	1844	8.4	1911	8.7
3190	1667	7.5	1743	7.9	1817	8.2	1887	8.6	1954	8.9
3400	1716	7.8	1790	8.1	1862	8.4	1931	8.8	1997	9.1
3615	1767	8.0	1839	8.3	1909	8.7	1977	9.0	2041	9.3
3825	1820	8.2	1890	8.6	1958	8.9	2024	9.2	2087	9.5
4040	1874	8.5	1942	8.8	2008	9.1	2072	9.4	—	—
4250	1930	8.8	1996	9.1	2060	9.4	2122	9.6	—	—

High Static 1026-2200 rpm

48FEFM12 — 10 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
3000	1188	0.62	1288	0.78	1384	0.97	1475	1.18	1562	1.40
3250	1271	0.75	1364	0.92	1454	1.12	1540	1.33	1623	1.55
3500	1355	0.89	1441	1.07	1526	1.27	1608	1.49	1687	1.72
3750	1439	1.05	1521	1.24	1600	1.45	1678	1.67	1753	1.90
4000	1525	1.23	1601	1.42	1676	1.63	1750	1.86	1822	2.10
4250	1611	1.42	1683	1.62	1754	1.83	1824	2.06	1892	2.30
4500	1697	1.62	1765	1.82	1833	2.04	1899	2.27	1965	2.51
4750	1784	1.83	1849	2.03	1913	2.25	1976	2.48	2038	2.72
5000	1872	2.04	1933	2.25	1994	2.47	2054	2.70	2114	2.94

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
3000	1644	1.63	1722	1.87	1796	2.13	1866	2.38	1933	2.65
3250	1702	1.79	1778	2.04	1850	2.30	1919	2.57	1985	2.84
3500	1763	1.96	1836	2.22	1906	2.48	1974	2.76	2039	3.04
3750	1826	2.15	1897	2.41	1965	2.68	2031	2.96	2094	3.24
4000	1892	2.35	1960	2.61	2026	2.89	2090	3.17	2152	3.46
4250	1959	2.56	2025	2.82	2088	3.09	2150	3.38	—	—
4500	2029	2.77	2092	3.03	2153	3.31	—	—	—	—
4750	2100	2.98	2160	3.24	—	—	—	—	—	—
5000	2173	3.19	—	—	—	—	—	—	—	—

Std/Med Static 1188-2000 rpm, 2.4 maximum bhp

High Static 1188-2200 rpm, 5.0 maximum bhp

48FEFM12 — Standard/Medium Static — 10 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
3000	1188	5.8	1288	6.3	1384	6.8	1475	7.3	1562	7.7
3250	1271	6.3	1364	6.7	1454	7.2	1540	7.6	1623	8.1
3500	1355	6.7	1441	7.1	1526	7.6	1608	8.0	1687	8.4
3750	1439	7.1	1521	7.5	1600	7.9	1678	8.3	1753	8.7
4000	1525	7.6	1601	7.9	1676	8.3	1750	8.7	1822	9.1
4250	1611	8.0	1683	8.4	1754	8.7	1824	9.1	1892	9.4
4500	1697	8.4	1765	8.8	1833	9.1	1899	9.5	—	—
4750	1784	8.9	1849	9.2	1913	9.6	—	—	—	—
5000	1872	9.3	1933	9.7	—	—	—	—	—	—

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
3000	1644	8.2	1722	8.6	1796	9.0	1866	9.3	—	—
3250	1702	8.5	1778	8.9	1850	9.2	—	—	—	—
3500	1763	8.8	1836	9.2	1906	9.5	—	—	—	—
3750	1826	9.1	1897	9.5	—	—	—	—	—	—
4000	1892	9.4	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—
4500	—	—	—	—	—	—	—	—	—	—
4750	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1188-2000 rpm

48FEFM12 — High Static — 10 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
3000	1188	5.3	1288	5.8	1384	6.2	1475	6.7	1562	7.1
3250	1271	5.7	1364	6.1	1454	6.6	1540	7.0	1623	7.3
3500	1355	6.1	1441	6.5	1526	6.9	1608	7.3	1687	7.6
3750	1439	6.5	1521	6.9	1600	7.2	1678	7.6	1753	7.9
4000	1525	6.9	1601	7.2	1676	7.6	1750	7.9	1822	8.3
4250	1611	7.3	1683	7.6	1754	7.9	1824	8.3	1892	8.6
4500	1697	7.7	1765	8.0	1833	8.3	1899	8.6	1965	8.9
4750	1784	8.1	1849	8.4	1913	8.7	1976	9.0	2038	9.3
5000	1872	8.5	1933	8.8	1994	9.0	2054	9.3	2114	9.6

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
3000	1644	7.4	1722	7.8	1796	8.1	1866	8.5	1933	8.8
3250	1702	7.7	1778	8.1	1850	8.4	1919	8.7	1985	9.0
3500	1763	8.0	1836	8.3	1906	8.6	1974	9.0	2039	9.3
3750	1826	8.3	1897	8.6	1965	8.9	2031	9.2	2094	9.5
4000	1892	8.6	1960	8.9	2026	9.2	2090	9.5	2152	9.8
4250	1959	8.9	2025	9.2	2088	9.5	2150	9.8	—	—
4500	2029	9.2	2092	9.5	2153	9.8	—	—	—	—
4750	2100	9.5	2160	9.8	—	—	—	—	—	—
5000	2173	9.9	—	—	—	—	—	—	—	—

High Static 1188-2200 rpm

48FEFM14 — 12.5 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
3750	1198	0.90	1298	1.15	1393	1.42	1483	1.72	1566	2.02
4065	1282	1.10	1374	1.36	1464	1.64	1550	1.95	1631	2.27
4375	1367	1.33	1453	1.60	1537	1.90	1619	2.21	1697	2.55
4690	1453	1.59	1533	1.87	1613	2.18	1690	2.51	1765	2.86
5000	1540	1.89	1615	2.17	1690	2.49	1763	2.83	1835	3.19
5315	1628	2.21	1697	2.50	1768	2.83	1838	3.18	1906	3.55
5625	1715	2.56	1781	2.86	1847	3.19	1914	3.55	1979	3.93
5940	1804	2.94	1866	3.25	1929	3.59	1992	3.95	2054	4.33
6250	1892	3.34	1951	3.66	2011	4.01	2071	4.37	2131	4.77

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
3750	1644	2.34	1718	2.67	1787	3.00	1854	3.35	1917	3.70
4065	1707	2.61	1778	2.95	1847	3.30	1912	3.66	1974	4.03
4375	1771	2.90	1841	3.26	1908	3.63	1971	4.00	2033	4.39
4690	1836	3.22	1905	3.59	1970	3.97	2033	4.37	2093	4.76
5000	1904	3.56	1970	3.95	2034	4.34	2095	4.75	2154	5.16
5315	1973	3.93	2037	4.33	2099	4.74	2159	5.15	—	—
5625	2043	4.32	2106	4.73	2166	5.15	—	—	—	—
5940	2116	4.74	2176	5.15	—	—	—	—	—	—
6250	2189	5.17	—	—	—	—	—	—	—	—

Std/Med Static 1198-2200 rpm, 3.0 maximum bhp

High Static 1198-2200 rpm, 5.0 maximum bhp

48FEFM14 — Standard/Medium Static — 12.5 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
3750	1198	5.4	1298	5.8	1393	6.3	1483	6.7	1566	7.1
4065	1282	5.8	1374	6.2	1464	6.6	1550	7.0	1631	7.4
4375	1367	6.2	1453	6.6	1537	6.9	1619	7.3	1697	7.7
4690	1453	6.6	1533	6.9	1613	7.3	1690	7.6	1765	8.0
5000	1540	7.0	1615	7.3	1690	7.6	1763	8.0	—	—
5315	1628	7.4	1697	7.7	1768	8.0	—	—	—	—
5625	1715	7.8	1781	8.1	—	—	—	—	—	—
5940	1804	8.2	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

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
3750	1644	7.4	1718	7.8	1787	8.1	—	—	—	—
4065	1707	7.7	1778	8.1	—	—	—	—	—	—
4375	1771	8.0	—	—	—	—	—	—	—	—
4690	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—
5315	—	—	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
5940	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1198-2200 rpm

48FEFM14 — High Static — 12.5 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
3750	1198	5.4	1298	5.8	1393	6.3	1483	6.7	1566	7.1
4065	1282	5.8	1374	6.2	1464	6.6	1550	7.0	1631	7.4
4375	1367	6.2	1453	6.6	1537	6.9	1619	7.3	1697	7.7
4690	1453	6.6	1533	6.9	1613	7.3	1690	7.6	1765	8.0
5000	1540	7.0	1615	7.3	1690	7.6	1763	8.0	1835	8.3
5315	1628	7.4	1697	7.7	1768	8.0	1838	8.3	1906	8.6
5625	1715	7.8	1781	8.1	1847	8.4	1914	8.7	1979	9.0
5940	1804	8.2	1866	8.5	1929	8.7	1992	9.0	2054	9.3
6250	1892	8.6	1951	8.9	2011	9.1	2071	9.4	2131	9.7

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
3750	1644	7.4	1718	7.8	1787	8.1	1854	8.4	1917	8.7
4065	1707	7.7	1778	8.1	1847	8.4	1912	8.7	1974	9.0
4375	1771	8.0	1841	8.3	1908	8.7	1971	8.9	2033	9.2
4690	1836	8.3	1905	8.6	1970	8.9	2033	9.2	2093	9.5
5000	1904	8.6	1970	8.9	2034	9.2	2095	9.5	2154	9.8
5315	1973	9.0	2037	9.2	2099	9.5	2159	9.8	—	—
5625	2043	9.3	2106	9.6	2166	9.8	—	—	—	—
5940	2116	9.6	2176	9.9	—	—	—	—	—	—
6250	2189	9.9	—	—	—	—	—	—	—	—

High Static 1198-2200 rpm

48FEFM16 — 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	1248	1.02	1328	1.22	1408	1.46	1487	1.72	1566	2.01
4875	1339	1.25	1413	1.47	1487	1.71	1561	1.98	1634	2.27
5250	1431	1.51	1500	1.74	1568	1.98	1637	2.26	1705	2.55
5625	1524	1.80	1588	2.03	1652	2.29	1716	2.57	1780	2.87
6000	1617	2.11	1677	2.36	1737	2.62	1797	2.90	1857	3.20
6375	1711	2.46	1767	2.71	1824	2.98	1881	3.26	1937	3.56
6750	1805	2.83	1858	3.09	1912	3.37	1965	3.65	2019	3.96
7125	1899	3.26	1950	3.53	2001	3.82	2051	4.11	2102	4.42
7500	1994	3.79	2042	4.07	2090	4.36	2139	4.68	2187	5.00

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	1642	2.31	1717	2.64	1790	3.00	1861	3.37	1929	3.75
4875	1705	2.58	1776	2.91	1845	3.26	1913	3.64	1979	4.03
5250	1773	2.87	1839	3.20	1905	3.56	1970	3.94	2033	4.33
5625	1843	3.18	1906	3.52	1968	3.87	2030	4.25	2090	4.64
6000	1917	3.52	1976	3.86	2035	4.21	2094	4.59	2151	4.97
6375	1993	3.88	2050	4.22	2105	4.57	2161	4.95	—	—
6750	2072	4.28	2125	4.62	2178	4.98	—	—	—	—
7125	2153	4.75	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1248-2200 rpm, 3.0 maximum bhp

High Static 1248-2200 rpm, 5.0 maximum bhp

48FEFM16 — Standard/Medium 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	1248	5.6	1328	6.0	1408	6.3	1487	6.7	1566	7.1
4875	1339	6.0	1413	6.4	1487	6.7	1561	7.1	1634	7.4
5250	1431	6.5	1500	6.8	1568	7.1	1637	7.4	1705	7.7
5625	1524	6.9	1588	7.2	1652	7.5	1716	7.8	1780	8.1
6000	1617	7.3	1677	7.6	1737	7.9	1797	8.1	—	—
6375	1711	7.7	1767	8.0	1824	8.3	—	—	—	—
6750	1805	8.2	—	—	—	—	—	—	—	—
7125	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

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	1642	7.4	1717	7.8	—	—	—	—	—	—
4875	1705	7.7	1776	8.0	—	—	—	—	—	—
5250	1773	8.0	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—
6375	—	—	—	—	—	—	—	—	—	—
6750	—	—	—	—	—	—	—	—	—	—
7125	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1248-2200 rpm

48FEFM16 — 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	1248	5.6	1328	6.0	1408	6.3	1487	6.7	1566	7.1
4875	1339	6.0	1413	6.4	1487	6.7	1561	7.1	1634	7.4
5250	1431	6.5	1500	6.8	1568	7.1	1637	7.4	1705	7.7
5625	1524	6.9	1588	7.2	1652	7.5	1716	7.8	1780	8.1
6000	1617	7.3	1677	7.6	1737	7.9	1797	8.1	1857	8.4
6375	1711	7.7	1767	8.0	1824	8.3	1881	8.5	1937	8.8
6750	1805	8.2	1858	8.4	1912	8.7	1965	8.9	2019	9.2
7125	1899	8.6	1950	8.8	2001	9.1	2051	9.3	2102	9.5
7500	1994	9.0	2042	9.3	2090	9.5	2139	9.7	2187	9.9

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	1642	7.4	1717	7.8	1790	8.1	1861	8.4	1929	8.7
4875	1705	7.7	1776	8.0	1845	8.4	1913	8.7	1979	9.0
5250	1773	8.0	1839	8.3	1905	8.6	1970	8.9	2033	9.2
5625	1843	8.4	1906	8.6	1968	8.9	2030	9.2	2090	9.5
6000	1917	8.7	1976	9.0	2035	9.2	2094	9.5	2151	9.8
6375	1993	9.0	2050	9.3	2105	9.6	2161	9.8	—	—
6750	2072	9.4	2125	9.7	2178	9.9	—	—	—	—
7125	2153	9.8	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

High Static 1248-2200 rpm

50FE-M08 — 7.5 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
2250	970	0.34	1102	0.50	1216	0.68	1319	0.86	1414	1.07
2440	1031	0.41	1157	0.58	1267	0.76	1367	0.96	1459	1.17
2625	1092	0.49	1213	0.67	1320	0.86	1416	1.06	1506	1.28
2815	1155	0.57	1271	0.76	1374	0.96	1467	1.17	1554	1.39
3000	1219	0.66	1330	0.86	1429	1.07	1520	1.29	1605	1.52
3190	1284	0.77	1390	0.97	1486	1.19	1574	1.41	1656	1.64
3375	1349	0.87	1451	1.09	1544	1.31	1629	1.54	1709	1.78
3565	1415	0.99	1513	1.21	1603	1.44	1686	1.68	1764	1.92
3750	1481	1.11	1576	1.34	1662	1.57	1743	1.81	1819	2.06

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
2250	1502	1.28	1585	1.50	1664	1.74	1739	1.98	1810	2.23
2440	1545	1.38	1626	1.61	1703	1.85	1777	2.11	1847	2.37
2625	1589	1.50	1669	1.74	1745	1.98	1817	2.24	1886	2.51
2815	1636	1.62	1713	1.86	1788	2.12	1858	2.38	1926	2.65
3000	1684	1.75	1760	2.00	1832	2.26	1901	2.52	1968	2.80
3190	1734	1.89	1808	2.14	1878	2.40	1946	2.67	2012	2.95
3375	1785	2.03	1857	2.28	1926	2.55	1992	2.82	2057	3.10
3565	1837	2.17	1908	2.43	1975	2.69	2040	2.97	—	—
3750	1891	2.31	1960	2.57	2026	2.84	2089	3.11	—	—

Std/Med Static 970-2000 rpm, 2.4 maximum bhp

High Static 970-2200 rpm, 3.0 maximum bhp

50FE-M08 — Standard/Medium Static — 7.5 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
2250	970	4.7	1102	5.4	1216	6.0	1319	6.5	1414	7.0
2440	1031	5.0	1157	5.7	1267	6.2	1367	6.7	1459	7.2
2625	1092	5.3	1213	6.0	1320	6.5	1416	7.0	1506	7.5
2815	1155	5.7	1271	6.3	1374	6.8	1467	7.3	1554	7.7
3000	1219	6.0	1330	6.6	1429	7.1	1520	7.5	1605	8.0
3190	1284	6.3	1390	6.9	1486	7.4	1574	7.8	1656	8.2
3375	1349	6.7	1451	7.2	1544	7.7	1629	8.1	1709	8.5
3565	1415	7.0	1513	7.5	1603	8.0	1686	8.4	1764	8.8
3750	1481	7.3	1576	7.8	1662	8.3	1743	8.7	1819	9.1

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
2250	1502	7.4	1585	7.9	1664	8.3	1739	8.7	1810	9.0
2440	1545	7.7	1626	8.1	1703	8.5	1777	8.9	1847	9.2
2625	1589	7.9	1669	8.3	1745	8.7	1817	9.1	—	—
2815	1636	8.1	1713	8.5	1788	8.9	1858	9.3	—	—
3000	1684	8.4	1760	8.8	1832	9.1	—	—	—	—
3190	1734	8.6	1808	9.0	1878	9.4	—	—	—	—
3375	1785	8.9	1857	9.3	—	—	—	—	—	—
3565	1837	9.2	—	—	—	—	—	—	—	—
3750	1891	9.4	—	—	—	—	—	—	—	—

Std/Med Static 970-2000 rpm

50FE-M08 — High Static — 7.5 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
2250	970	4.3	1102	4.9	1216	5.5	1319	5.9	1414	6.4
2440	1031	4.6	1157	5.2	1267	5.7	1367	6.2	1459	6.6
2625	1092	4.9	1213	5.4	1320	5.9	1416	6.4	1506	6.8
2815	1155	5.2	1271	5.7	1374	6.2	1467	6.6	1554	7.0
3000	1219	5.5	1330	6.0	1429	6.4	1520	6.9	1605	7.3
3190	1284	5.8	1390	6.3	1486	6.7	1574	7.1	1656	7.5
3375	1349	6.1	1451	6.5	1544	7.0	1629	7.4	1709	7.7
3565	1415	6.4	1513	6.8	1603	7.2	1686	7.6	1764	8.0
3750	1481	6.7	1576	7.1	1662	7.5	1743	7.9	1819	8.2

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
2250	1502	6.8	1585	7.2	1664	7.5	1739	7.9	1810	8.2
2440	1545	7.0	1626	7.4	1703	7.7	1777	8.0	1847	8.4
2625	1589	7.2	1669	7.5	1745	7.9	1817	8.2	1886	8.6
2815	1636	7.4	1713	7.8	1788	8.1	1858	8.4	1926	8.7
3000	1684	7.6	1760	8.0	1832	8.3	1901	8.6	1968	8.9
3190	1734	7.8	1808	8.2	1878	8.5	1946	8.8	2012	9.1
3375	1785	8.1	1857	8.4	1926	8.7	1992	9.0	2057	9.3
3565	1837	8.3	1908	8.7	1975	9.0	2040	9.3	—	—
3750	1891	8.6	1960	8.9	2026	9.2	2089	9.5	—	—

High Static 970-2200 rpm

50FE-M09 — 8.5 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
2550	1015	0.39	1128	0.53	1233	0.69	1330	0.87	1421	1.06
2765	1084	0.47	1190	0.62	1289	0.78	1382	0.96	1470	1.16
2975	1154	0.56	1253	0.71	1348	0.89	1437	1.07	1521	1.27
3190	1225	0.66	1319	0.82	1408	1.00	1493	1.19	1574	1.39
3400	1297	0.77	1386	0.94	1470	1.12	1551	1.31	1629	1.52
3615	1370	0.89	1453	1.06	1534	1.25	1612	1.45	1687	1.66
3825	1443	1.02	1522	1.19	1599	1.38	1673	1.58	1745	1.80
4040	1517	1.15	1592	1.33	1665	1.52	1736	1.73	1806	1.94
4250	1591	1.29	1663	1.47	1733	1.67	1801	1.87	1867	2.09

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
2550	1506	1.26	1586	1.47	1662	1.69	1734	1.92	1802	2.16
2765	1552	1.37	1630	1.58	1705	1.81	1776	2.05	1843	2.29
2975	1601	1.48	1677	1.70	1750	1.94	1819	2.17	1886	2.42
3190	1652	1.61	1726	1.84	1796	2.07	1864	2.31	1930	2.57
3400	1704	1.74	1776	1.97	1845	2.21	1911	2.45	1975	2.71
3615	1759	1.88	1828	2.11	1895	2.35	1960	2.60	2023	2.86
3825	1815	2.02	1882	2.25	1947	2.50	2011	2.75	2072	3.01
4040	1873	2.17	1938	2.40	2001	2.64	2063	2.90	2122	3.15
4250	1932	2.31	1995	2.54	2056	2.78	2116	3.04	—	—

Std/Med Static 1015-2000 rpm, 2.4 maximum bhp

High Static 1015-2200 rpm, 3.0 maximum bhp

50FE-M09 — Standard/Medium Static — 8.5 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
2550	1015	4.9	1128	5.5	1233	6.1	1330	6.6	1421	7.0
2765	1084	5.3	1190	5.8	1289	6.3	1382	6.8	1470	7.3
2975	1154	5.6	1253	6.2	1348	6.6	1437	7.1	1521	7.5
3190	1225	6.0	1319	6.5	1408	7.0	1493	7.4	1574	7.8
3400	1297	6.4	1386	6.8	1470	7.3	1551	7.7	1629	8.1
3615	1370	6.8	1453	7.2	1534	7.6	1612	8.0	1687	8.4
3825	1443	7.1	1522	7.5	1599	7.9	1673	8.3	1745	8.7
4040	1517	7.5	1592	7.9	1665	8.3	1736	8.6	1806	9.0
4250	1591	7.9	1663	8.3	1733	8.6	1801	9.0	1867	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
2550	1506	7.5	1586	7.9	1662	8.3	1734	8.6	1802	9.0
2765	1552	7.7	1630	8.1	1705	8.5	1776	8.8	1843	9.2
2975	1601	7.9	1677	8.3	1750	8.7	1819	9.1	—	—
3190	1652	8.2	1726	8.6	1796	9.0	—	—	—	—
3400	1704	8.5	1776	8.8	1845	9.2	—	—	—	—
3615	1759	8.8	1828	9.1	1895	9.5	—	—	—	—
3825	1815	9.0	1882	9.4	—	—	—	—	—	—
4040	1873	9.3	—	—	—	—	—	—	—	—
4250	1932	9.7	—	—	—	—	—	—	—	—

Std/Med Static 1015-2000 rpm

50FE-M09 — High Static — 8.5 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
2550	1015	4.5	1128	5.1	1233	5.5	1330	6.0	1421	6.4
2765	1084	4.8	1190	5.3	1289	5.8	1382	6.2	1470	6.6
2975	1154	5.2	1253	5.6	1348	6.1	1437	6.5	1521	6.9
3190	1225	5.5	1319	5.9	1408	6.3	1493	6.7	1574	7.1
3400	1297	5.8	1386	6.2	1470	6.6	1551	7.0	1629	7.4
3615	1370	6.2	1453	6.6	1534	6.9	1612	7.3	1687	7.6
3825	1443	6.5	1522	6.9	1599	7.2	1673	7.6	1745	7.9
4040	1517	6.8	1592	7.2	1665	7.5	1736	7.9	1806	8.2
4250	1591	7.2	1663	7.5	1733	7.8	1801	8.2	1867	8.5

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
2550	1506	6.8	1586	7.2	1662	7.5	1734	7.8	1802	8.2
2765	1552	7.0	1630	7.4	1705	7.7	1776	8.0	1843	8.4
2975	1601	7.2	1677	7.6	1750	7.9	1819	8.2	1886	8.6
3190	1652	7.5	1726	7.8	1796	8.1	1864	8.4	1930	8.8
3400	1704	7.7	1776	8.0	1845	8.4	1911	8.7	1975	9.0
3615	1759	8.0	1828	8.3	1895	8.6	1960	8.9	2023	9.2
3825	1815	8.2	1882	8.5	1947	8.8	2011	9.1	2072	9.4
4040	1873	8.5	1938	8.8	2001	9.1	2063	9.4	2122	9.6
4250	1932	8.8	1995	9.1	2056	9.3	2116	9.6	—	—

High Static 1015-2200 rpm

50FE-M12 — 10 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
3000	1181	0.60	1279	0.77	1372	0.95	1461	1.14	1544	1.35
3250	1264	0.73	1356	0.91	1443	1.09	1527	1.29	1607	1.51
3500	1348	0.88	1434	1.06	1517	1.25	1596	1.46	1673	1.68
3750	1433	1.04	1514	1.23	1592	1.43	1667	1.64	1740	1.86
4000	1518	1.21	1595	1.41	1669	1.61	1740	1.83	1810	2.06
4250	1605	1.41	1677	1.60	1747	1.81	1815	2.03	1882	2.27
4500	1691	1.60	1760	1.81	1826	2.02	1892	2.24	1955	2.48
4750	1778	1.81	1843	2.01	1907	2.23	1969	2.46	2030	2.69
5000	1866	2.02	1928	2.23	1988	2.44	2048	2.67	2106	2.91

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
3000	1624	1.57	1699	1.80	1771	2.04	1840	2.29	1906	2.54
3250	1684	1.73	1757	1.97	1827	2.21	1894	2.47	1958	2.72
3500	1746	1.91	1817	2.15	1884	2.40	1950	2.66	2013	2.92
3750	1811	2.10	1879	2.34	1945	2.60	2008	2.86	2070	3.13
4000	1878	2.30	1943	2.55	2007	2.81	2069	3.08	2128	3.35
4250	1947	2.51	2010	2.76	2071	3.02	2131	3.29	2189	3.56
4500	2017	2.72	2078	2.97	2138	3.24	2195	3.50	—	—
4750	2090	2.94	2148	3.19	—	—	—	—	—	—
5000	2164	3.15	—	—	—	—	—	—	—	—

Std/Med Static 1181-2000 rpm, 2.4 maximum bhp

High Static 1181-2200 rpm, 5.0 maximum bhp

50FE-M12 — Standard/Medium Static — 10 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
3000	1181	5.8	1279	6.3	1372	6.8	1461	7.2	1544	7.7
3250	1264	6.2	1356	6.7	1443	7.1	1527	7.6	1607	8.0
3500	1348	6.6	1434	7.1	1517	7.5	1596	7.9	1673	8.3
3750	1433	7.1	1514	7.5	1592	7.9	1667	8.3	1740	8.7
4000	1518	7.5	1595	7.9	1669	8.3	1740	8.7	1810	9.0
4250	1605	8.0	1677	8.3	1747	8.7	1815	9.0	1882	9.4
4500	1691	8.4	1760	8.8	1826	9.1	1892	9.4	—	—
4750	1778	8.9	1843	9.2	1907	9.5	—	—	—	—
5000	1866	9.3	1928	9.6	1988	9.9	—	—	—	—

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
3000	1624	8.1	1699	8.5	1771	8.8	1840	9.2	—	—
3250	1684	8.4	1757	8.8	1827	9.1	—	—	—	—
3500	1746	8.7	1817	9.1	1884	9.4	—	—	—	—
3750	1811	9.0	1879	9.4	—	—	—	—	—	—
4000	1878	9.4	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—
4500	—	—	—	—	—	—	—	—	—	—
4750	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1181-2000 rpm

50FE-M12 — High Static — 10 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
3000	1181	5.3	1279	5.7	1372	6.2	1461	6.6	1544	7.0
3250	1264	5.7	1356	6.1	1443	6.5	1527	6.9	1607	7.3
3500	1348	6.1	1434	6.5	1517	6.8	1596	7.2	1673	7.6
3750	1433	6.5	1514	6.8	1592	7.2	1667	7.5	1740	7.9
4000	1518	6.9	1595	7.2	1669	7.5	1740	7.9	1810	8.2
4250	1605	7.3	1677	7.6	1747	7.9	1815	8.2	1882	8.5
4500	1691	7.7	1760	8.0	1826	8.3	1892	8.6	1955	8.9
4750	1778	8.1	1843	8.4	1907	8.6	1969	8.9	2030	9.2
5000	1866	8.5	1928	8.7	1988	9.0	2048	9.3	2106	9.6

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
3000	1624	7.3	1699	7.7	1771	8.0	1840	8.3	1906	8.6
3250	1684	7.6	1757	8.0	1827	8.3	1894	8.6	1958	8.9
3500	1746	7.9	1817	8.2	1884	8.5	1950	8.8	2013	9.1
3750	1811	8.2	1879	8.5	1945	8.8	2008	9.1	2070	9.4
4000	1878	8.5	1943	8.8	2007	9.1	2069	9.4	2128	9.7
4250	1947	8.8	2010	9.1	2071	9.4	2131	9.7	2189	9.9
4500	2017	9.2	2078	9.4	2138	9.7	2195	10.0	—	—
4750	2090	9.5	2148	9.8	—	—	—	—	—	—
5000	2164	9.8	—	—	—	—	—	—	—	—

High Static 1181-2200 rpm

50FE-M14 — 12.5 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
3750	1178	0.86	1287	1.12	1386	1.40	1475	1.69	1558	1.99
4065	1260	1.05	1362	1.32	1456	1.62	1543	1.92	1623	2.24
4375	1343	1.26	1438	1.55	1528	1.86	1612	2.19	1690	2.52
4690	1426	1.51	1516	1.81	1602	2.14	1683	2.48	1759	2.83
5000	1511	1.78	1595	2.09	1677	2.43	1755	2.79	1828	3.15
5315	1596	2.08	1675	2.41	1753	2.76	1828	3.13	1899	3.51
5625	1681	2.41	1756	2.74	1830	3.10	1902	3.49	1971	3.88
5940	1767	2.76	1838	3.10	1909	3.48	1978	3.87	2045	4.28
6250	1854	3.14	1921	3.49	1989	3.88	2055	4.27	2119	4.69

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
3750	1634	2.29	1705	2.61	1772	2.93	1837	3.26	1898	3.60
4065	1698	2.57	1768	2.90	1834	3.23	1897	3.58	1957	3.93
4375	1763	2.86	1832	3.21	1897	3.56	1959	3.92	2018	4.29
4690	1830	3.18	1897	3.55	1961	3.92	2022	4.29	2081	4.68
5000	1898	3.53	1964	3.91	2027	4.30	2087	4.69	2144	5.09
5315	1967	3.90	2031	4.29	2093	4.69	2152	5.10	—	—
5625	2037	4.28	2100	4.69	2161	5.11	—	—	—	—
5940	2109	4.69	2170	5.11	—	—	—	—	—	—
6250	2181	5.11	—	—	—	—	—	—	—	—

Std/Med Static 1178-2200 rpm, 3.0 maximum bhp

High Static 1178-2200 rpm, 5.0 maximum bhp

50FE-M14 — Standard/Medium Static — 12.5 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
3750	1178	5.3	1287	5.8	1386	6.2	1475	6.7	1558	7.0
4065	1260	5.7	1362	6.1	1456	6.6	1543	7.0	1623	7.3
4375	1343	6.0	1438	6.5	1528	6.9	1612	7.3	1690	7.6
4690	1426	6.4	1516	6.8	1602	7.2	1683	7.6	1759	8.0
5000	1511	6.8	1595	7.2	1677	7.6	1755	7.9	—	—
5315	1596	7.2	1675	7.6	1753	7.9	—	—	—	—
5625	1681	7.6	1756	8.0	—	—	—	—	—	—
5940	1767	8.0	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

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
3750	1634	7.4	1705	7.7	1772	8.0	—	—	—	—
4065	1698	7.7	1768	8.0	—	—	—	—	—	—
4375	1763	8.0	—	—	—	—	—	—	—	—
4690	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—
5315	—	—	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
5940	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1178-2200 rpm

50FE-M14 — High Static — 12.5 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
3750	1178	5.3	1287	5.8	1386	6.2	1475	6.7	1558	7.0
4065	1260	5.7	1362	6.1	1456	6.6	1543	7.0	1623	7.3
4375	1343	6.0	1438	6.5	1528	6.9	1612	7.3	1690	7.6
4690	1426	6.4	1516	6.8	1602	7.2	1683	7.6	1759	8.0
5000	1511	6.8	1595	7.2	1677	7.6	1755	7.9	1828	8.3
5315	1596	7.2	1675	7.6	1753	7.9	1828	8.3	1899	8.6
5625	1681	7.6	1756	8.0	1830	8.3	1902	8.6	1971	8.9
5940	1767	8.0	1838	8.3	1909	8.7	1978	9.0	2045	9.3
6250	1854	8.4	1921	8.7	1989	9.0	2055	9.3	2119	9.6

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
3750	1634	7.4	1705	7.7	1772	8.0	1837	8.3	1898	8.6
4065	1698	7.7	1768	8.0	1834	8.3	1897	8.6	1957	8.9
4375	1763	8.0	1832	8.3	1897	8.6	1959	8.9	2018	9.2
4690	1830	8.3	1897	8.6	1961	8.9	2022	9.2	2081	9.5
5000	1898	8.6	1964	8.9	2027	9.2	2087	9.5	2144	9.7
5315	1967	8.9	2031	9.2	2093	9.5	2152	9.8	—	—
5625	2037	9.2	2100	9.5	2161	9.8	—	—	—	—
5940	2109	9.6	2170	9.9	—	—	—	—	—	—
6250	2181	9.9	—	—	—	—	—	—	—	—

High Static 1178-2200 rpm

50FE-M16 — 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	1120	0.73	1201	0.90	1281	1.10	1361	1.32	1441	1.56
4875	1208	0.92	1283	1.10	1357	1.30	1431	1.52	1505	1.77
5250	1297	1.12	1367	1.32	1436	1.52	1504	1.75	1573	2.00
5625	1387	1.36	1452	1.56	1516	1.77	1581	2.01	1645	2.26
6000	1477	1.61	1538	1.82	1598	2.04	1659	2.28	1719	2.54
6375	1568	1.89	1625	2.10	1682	2.33	1739	2.58	1796	2.84
6750	1659	2.20	1713	2.42	1767	2.66	1821	2.91	1874	3.17
7125	1751	2.56	1802	2.79	1891	3.23	1904	3.29	1955	3.56
7500	1842	2.99	1891	3.23	1891	3.23	1988	3.75	2036	4.03

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	1520	1.83	1597	2.13	1673	2.45	1747	2.79	1818	3.14
4875	1579	2.05	1651	2.34	1723	2.66	1793	2.99	1861	3.35
5250	1642	2.28	1710	2.57	1777	2.89	1844	3.23	1909	3.58
5625	1709	2.54	1773	2.83	1836	3.14	1899	3.48	1961	3.83
6000	1779	2.81	1840	3.11	1899	3.42	1959	3.76	2018	4.11
6375	1853	3.12	1909	3.41	1966	3.73	2022	4.05	2078	4.40
6750	1928	3.45	1982	3.75	2035	4.06	2089	4.39	2142	4.73
7125	2006	3.84	2056	4.14	2107	4.46	2158	4.79	—	—
7500	2085	4.33	2133	4.64	2181	4.96	—	—	—	—

Std/Med Static 1120-2200 rpm, 3.0 maximum bhp

High Static 1120-2200 rpm, 5.0 maximum bhp

50FE-M16 — 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	1120	5.0	1201	5.4	1281	5.8	1361	6.1	1441	6.5
4875	1208	5.4	1283	5.8	1357	6.1	1431	6.5	1505	6.8
5250	1297	5.8	1367	6.2	1436	6.5	1504	6.8	1573	7.1
5625	1387	6.2	1452	6.5	1516	6.8	1581	7.1	1645	7.4
6000	1477	6.7	1538	6.9	1598	7.2	1659	7.5	1719	7.8
6375	1568	7.1	1625	7.3	1682	7.6	1739	7.9	1796	8.1
6750	1659	7.5	1713	7.8	1767	8.0	1821	8.3	—	—
7125	1751	7.9	1802	8.2	—	—	—	—	—	—
7500	1842	8.3	—	—	—	—	—	—	—	—

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
4500	1520	6.9	1597	7.2	1673	7.6	1747	7.9	—	—
4875	1579	7.1	1651	7.5	1723	7.8	1793	8.1	—	—
5250	1642	7.4	1710	7.7	1777	8.0	—	—	—	—
5625	1709	7.7	1773	8.0	1836	8.3	—	—	—	—
6000	1779	8.1	1840	8.3	—	—	—	—	—	—
6375	—	—	—	—	—	—	—	—	—	—
6750	—	—	—	—	—	—	—	—	—	—
7125	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1120-2200 rpm

50FE-M16 — 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	1120	5.0	1201	5.4	1281	5.8	1361	6.1	1441	6.5
4875	1208	5.4	1283	5.8	1357	6.1	1431	6.5	1505	6.8
5250	1297	5.8	1367	6.2	1436	6.5	1504	6.8	1573	7.1
5625	1387	6.2	1452	6.5	1516	6.8	1581	7.1	1645	7.4
6000	1477	6.7	1538	6.9	1598	7.2	1659	7.5	1719	7.8
6375	1568	7.1	1625	7.3	1682	7.6	1739	7.9	1796	8.1
6750	1659	7.5	1713	7.8	1767	8.0	1821	8.3	1874	8.5
7125	1751	7.9	1802	8.2	1853	8.4	1904	8.6	1955	8.9
7500	1842	8.3	1891	8.6	1940	8.8	1988	9.0	2036	9.2

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	1520	6.9	1597	7.2	1673	7.6	1747	7.9	1818	8.2
4875	1579	7.1	1651	7.5	1723	7.8	1793	8.1	1861	8.4
5250	1642	7.4	1710	7.7	1777	8.0	1844	8.4	1909	8.7
5625	1709	7.7	1773	8.0	1836	8.3	1899	8.6	1961	8.9
6000	1779	8.1	1840	8.3	1899	8.6	1959	8.9	2018	9.2
6375	1853	8.4	1909	8.7	1966	8.9	2022	9.2	2078	9.4
6750	1928	8.7	1982	9.0	2035	9.2	2089	9.5	2142	9.7
7125	2006	9.1	2056	9.3	2107	9.6	2158	9.8	—	—
7500	2085	9.5	2133	9.7	2181	9.9	—	—	—	—

High Static 1120-2200 rpm

50FE-M08 — 7.5 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
2250	910	0.28	1046	0.43	1167	0.60	1276	0.78	1376	0.98
2440	966	0.34	1095	0.49	1211	0.67	1316	0.86	1414	1.06
2625	1023	0.40	1145	0.56	1256	0.74	1359	0.94	1453	1.15
2815	1081	0.47	1197	0.64	1304	0.82	1403	1.02	1495	1.24
3000	1141	0.54	1251	0.72	1353	0.91	1449	1.12	1538	1.33
3190	1200	0.63	1306	0.81	1404	1.00	1496	1.21	1583	1.44
3375	1261	0.71	1361	0.90	1456	1.10	1545	1.31	1629	1.54
3565	1322	0.81	1418	1.00	1509	1.20	1595	1.42	1677	1.65
3750	1384	0.91	1476	1.10	1563	1.30	1646	1.52	1725	1.75

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
2250	1469	1.19	1556	1.42	1639	1.66	1716	1.90	1790	2.16
2440	1505	1.28	1590	1.51	1671	1.75	1748	2.01	1821	2.27
2625	1542	1.37	1626	1.61	1705	1.85	1781	2.11	1853	2.38
2815	1581	1.46	1663	1.70	1741	1.96	1816	2.22	1887	2.49
3000	1622	1.57	1702	1.81	1778	2.06	1852	2.33	1922	2.60
3190	1665	1.67	1743	1.92	1818	2.18	1889	2.44	1958	2.72
3375	1709	1.78	1785	2.03	1858	2.29	1928	2.55	1996	2.83
3565	1755	1.89	1829	2.14	1900	2.40	1969	2.67	2035	2.95
3750	1801	2.00	1874	2.25	1944	2.51	2011	2.78	2076	3.06

Std/Med Static 910-2000 rpm, 2.4 maximum bhp

High Static 910-2200 rpm, 3.0 maximum bhp

50FE-M08 — Standard/Medium Static — 7.5 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
2250	910	4.4	1046	5.1	1167	5.7	1276	6.3	1376	6.8
2440	966	4.7	1095	5.3	1211	5.9	1316	6.5	1414	7.0
2625	1023	5.0	1145	5.6	1256	6.2	1359	6.7	1453	7.2
2815	1081	5.3	1197	5.9	1304	6.4	1403	6.9	1495	7.4
3000	1141	5.6	1251	6.1	1353	6.7	1449	7.2	1538	7.6
3190	1200	5.9	1306	6.4	1404	6.9	1496	7.4	1583	7.9
3375	1261	6.2	1361	6.7	1456	7.2	1545	7.7	1629	8.1
3565	1322	6.5	1418	7.0	1509	7.5	1595	7.9	1677	8.3
3750	1384	6.8	1476	7.3	1563	7.8	1646	8.2	1725	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
2250	1469	7.3	1556	7.7	1639	8.1	1716	8.5	1790	8.9
2440	1505	7.5	1590	7.9	1671	8.3	1748	8.7	1821	9.1
2625	1542	7.6	1626	8.1	1705	8.5	1781	8.9	1853	9.2
2815	1581	7.8	1663	8.3	1741	8.7	1816	9.1	—	—
3000	1622	8.1	1702	8.5	1778	8.9	1852	9.2	—	—
3190	1665	8.3	1743	8.7	1818	9.1	—	—	—	—
3375	1709	8.5	1785	8.9	1858	9.3	—	—	—	—
3565	1755	8.7	1829	9.1	—	—	—	—	—	—
3750	1801	9.0	1874	9.4	—	—	—	—	—	—

Std/Med Static 910-2000 rpm

50FE-M08 — High Static — 7.5 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
2250	910	4.0	1046	4.7	1167	5.2	1276	5.7	1376	6.2
2440	966	4.3	1095	4.9	1211	5.4	1316	5.9	1414	6.4
2625	1023	4.6	1145	5.1	1256	5.6	1359	6.1	1453	6.6
2815	1081	4.8	1197	5.4	1304	5.9	1403	6.3	1495	6.7
3000	1141	5.1	1251	5.6	1353	6.1	1449	6.5	1538	6.9
3190	1200	5.4	1306	5.9	1404	6.3	1496	6.8	1583	7.2
3375	1261	5.7	1361	6.1	1456	6.6	1545	7.0	1629	7.4
3565	1322	5.9	1418	6.4	1509	6.8	1595	7.2	1677	7.6
3750	1384	6.2	1476	6.7	1563	7.1	1646	7.4	1725	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
2250	1469	6.6	1556	7.0	1639	7.4	1716	7.8	1790	8.1
2440	1505	6.8	1590	7.2	1671	7.6	1748	7.9	1821	8.3
2625	1542	7.0	1626	7.4	1705	7.7	1781	8.1	1853	8.4
2815	1581	7.1	1663	7.5	1741	7.9	1816	8.2	1887	8.6
3000	1622	7.3	1702	7.7	1778	8.1	1852	8.4	1922	8.7
3190	1665	7.5	1743	7.9	1818	8.2	1889	8.6	1958	8.9
3375	1709	7.7	1785	8.1	1858	8.4	1928	8.7	1996	9.1
3565	1755	7.9	1829	8.3	1900	8.6	1969	8.9	2035	9.2
3750	1801	8.2	1874	8.5	1944	8.8	2011	9.1	2076	9.4

High Static 910-2200 rpm

50FE-M09 — 8.5 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
2550	947	0.31	1065	0.45	1178	0.60	1284	0.78	1382	0.97
2765	1010	0.38	1120	0.51	1226	0.67	1327	0.85	1422	1.05
2975	1074	0.45	1177	0.59	1277	0.75	1373	0.94	1464	1.13
3190	1139	0.53	1235	0.67	1329	0.84	1421	1.02	1508	1.22
3400	1205	0.62	1296	0.77	1384	0.93	1471	1.12	1555	1.32
3615	1272	0.71	1357	0.86	1441	1.03	1524	1.22	1604	1.43
3825	1340	0.81	1420	0.97	1499	1.14	1578	1.33	1655	1.53
4040	1407	0.92	1484	1.08	1559	1.25	1634	1.44	1707	1.64
4250	1476	1.03	1548	1.19	1620	1.36	1691	1.55	1762	1.75

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
2550	1473	1.18	1558	1.39	1638	1.62	1713	1.85	1785	2.10
2765	1511	1.26	1595	1.48	1674	1.71	1748	1.95	1819	2.20
2975	1551	1.35	1633	1.57	1710	1.81	1784	2.05	1855	2.31
3190	1592	1.44	1672	1.67	1749	1.91	1822	2.16	1891	2.41
3400	1636	1.54	1714	1.77	1789	2.01	1860	2.26	1929	2.52
3615	1682	1.64	1757	1.87	1830	2.12	1900	2.37	1968	2.63
3825	1730	1.75	1803	1.98	1873	2.22	1942	2.48	2008	2.74
4040	1779	1.86	1850	2.09	1918	2.33	1985	2.58	2050	2.84
4250	1831	1.97	1899	2.19	1965	2.43	2030	2.68	2093	2.94

Std/Med Static 947-2000 rpm, 2.4 maximum bhp

High Static 947-2200 rpm, 3.0 maximum bhp

50FE-M09 — Standard/Medium Static — 8.5 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
2550	947	4.6	1065	5.2	1178	5.8	1284	6.3	1382	6.8
2765	1010	4.9	1120	5.5	1226	6.0	1327	6.5	1422	7.0
2975	1074	5.2	1177	5.8	1277	6.3	1373	6.8	1464	7.2
3190	1139	5.6	1235	6.1	1329	6.5	1421	7.0	1508	7.5
3400	1205	5.9	1296	6.4	1384	6.8	1471	7.3	1555	7.7
3615	1272	6.3	1357	6.7	1441	7.1	1524	7.6	1604	8.0
3825	1340	6.6	1420	7.0	1499	7.4	1578	7.8	1655	8.2
4040	1407	7.0	1484	7.3	1559	7.7	1634	8.1	1707	8.5
4250	1476	7.3	1548	7.7	1620	8.0	1691	8.4	1762	8.8

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
2550	1473	7.3	1558	7.7	1638	8.1	1713	8.5	1785	8.9
2765	1511	7.5	1595	7.9	1674	8.3	1748	8.7	1819	9.1
2975	1551	7.7	1633	8.1	1710	8.5	1784	8.9	1855	9.3
3190	1592	7.9	1672	8.3	1749	8.7	1822	9.1	—	—
3400	1636	8.1	1714	8.5	1789	8.9	1860	9.3	—	—
3615	1682	8.4	1757	8.8	1830	9.1	1900	9.5	—	—
3825	1730	8.6	1803	9.0	1873	9.3	—	—	—	—
4040	1779	8.9	1850	9.2	1918	9.6	—	—	—	—
4250	1831	9.1	1899	9.5	—	—	—	—	—	—

Std/Med Static 947-2000 rpm

50FE-M09 — High Static — 8.5 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
2550	947	4.2	1065	4.8	1178	5.3	1284	5.8	1382	6.2
2765	1010	4.5	1120	5.0	1226	5.5	1327	6.0	1422	6.4
2975	1074	4.8	1177	5.3	1277	5.7	1373	6.2	1464	6.6
3190	1139	5.1	1235	5.5	1329	6.0	1421	6.4	1508	6.8
3400	1205	5.4	1296	5.8	1384	6.2	1471	6.6	1555	7.0
3615	1272	5.7	1357	6.1	1441	6.5	1524	6.9	1604	7.2
3825	1340	6.0	1420	6.4	1499	6.8	1578	7.1	1655	7.5
4040	1407	6.3	1484	6.7	1559	7.0	1634	7.4	1707	7.7
4250	1476	6.7	1548	7.0	1620	7.3	1691	7.7	1762	8.0

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
2550	1473	6.6	1558	7.0	1638	7.4	1713	7.8	1785	8.1
2765	1511	6.8	1595	7.2	1674	7.6	1748	7.9	1819	8.2
2975	1551	7.0	1633	7.4	1710	7.7	1784	8.1	1855	8.4
3190	1592	7.2	1672	7.6	1749	7.9	1822	8.3	1891	8.6
3400	1636	7.4	1714	7.8	1789	8.1	1860	8.4	1929	8.7
3615	1682	7.6	1757	8.0	1830	8.3	1900	8.6	1968	8.9
3825	1730	7.8	1803	8.2	1873	8.5	1942	8.8	2008	9.1
4040	1779	8.1	1850	8.4	1918	8.7	1985	9.0	2050	9.3
4250	1831	8.3	1899	8.6	1965	8.9	2030	9.2	2093	9.5

High Static 947-2200 rpm

50FE-M12 — 10 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
3000	1100	0.49	1202	0.64	1301	0.81	1396	1.00	1487	1.21
3250	1176	0.59	1270	0.74	1363	0.92	1453	1.11	1539	1.32
3500	1252	0.70	1341	0.86	1428	1.04	1512	1.24	1595	1.45
3750	1330	0.83	1413	1.00	1495	1.18	1575	1.38	1653	1.60
4000	1409	0.97	1487	1.14	1563	1.33	1639	1.53	1714	1.75
4250	1488	1.12	1561	1.29	1634	1.48	1706	1.69	1776	1.90
4500	1568	1.28	1637	1.45	1706	1.65	1774	1.85	1841	2.07
4750	1648	1.44	1714	1.62	1779	1.81	1844	2.02	1908	2.23
5000	1728	1.61	1791	1.79	1853	1.98	1915	2.19	1976	2.40

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
3000	1573	1.43	1654	1.66	1732	1.91	1805	2.16	1875	2.42
3250	1622	1.55	1702	1.79	1777	2.04	1849	2.29	1919	2.57
3500	1674	1.68	1751	1.92	1825	2.18	1895	2.44	1964	2.72
3750	1729	1.83	1803	2.07	1874	2.33	1943	2.59	2010	2.87
4000	1786	1.98	1857	2.22	1926	2.48	1993	2.75	2058	3.03
4250	1846	2.14	1914	2.38	1980	2.64	2045	2.91	2108	3.18
4500	1908	2.30	1973	2.54	2036	2.80	2099	3.06	2160	3.34
4750	1971	2.46	2034	2.71	2095	2.96	2155	3.22	—	—
5000	2036	2.63	2096	2.87	2155	3.11	—	—	—	—

Std/Med Static 1100-2000 rpm, 2.4 maximum bhp

High Static 1100-2200 rpm, 5.0 maximum bhp

50FE-M12 — Standard/Medium Static — 10 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
3000	1100	5.4	1202	5.9	1301	6.4	1396	6.9	1487	7.4
3250	1176	5.8	1270	6.2	1363	6.7	1453	7.2	1539	7.6
3500	1252	6.2	1341	6.6	1428	7.1	1512	7.5	1595	7.9
3750	1330	6.6	1413	7.0	1495	7.4	1575	7.8	1653	8.2
4000	1409	7.0	1487	7.4	1563	7.8	1639	8.1	1714	8.5
4250	1488	7.4	1561	7.7	1634	8.1	1706	8.5	1776	8.8
4500	1568	7.8	1637	8.1	1706	8.5	1774	8.8	1841	9.2
4750	1648	8.2	1714	8.5	1779	8.9	1844	9.2	1908	9.5
5000	1728	8.6	1791	8.9	1853	9.2	1915	9.6	1976	9.9

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
3000	1573	7.8	1654	8.2	1732	8.6	1805	9.0	1875	9.4
3250	1622	8.1	1702	8.5	1777	8.9	1849	9.2	—	—
3500	1674	8.3	1751	8.7	1825	9.1	—	—	—	—
3750	1729	8.6	1803	9.0	1874	9.4	—	—	—	—
4000	1786	8.9	1857	9.3	—	—	—	—	—	—
4250	1846	9.2	1914	9.6	—	—	—	—	—	—
4500	1908	9.5	—	—	—	—	—	—	—	—
4750	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1100-2200 rpm

50FE-M12 — High Static — 10 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
3000	1100	4.9	1202	5.4	1301	5.9	1396	6.3	1487	6.7
3250	1176	5.3	1270	5.7	1363	6.1	1453	6.6	1539	6.9
3500	1252	5.6	1341	6.0	1428	6.4	1512	6.8	1595	7.2
3750	1330	6.0	1413	6.4	1495	6.7	1575	7.1	1653	7.5
4000	1409	6.3	1487	6.7	1563	7.1	1639	7.4	1714	7.8
4250	1488	6.7	1561	7.1	1634	7.4	1706	7.7	1776	8.0
4500	1568	7.1	1637	7.4	1706	7.7	1774	8.0	1841	8.3
4750	1648	7.5	1714	7.8	1779	8.1	1844	8.4	1908	8.7
5000	1728	7.8	1791	8.1	1853	8.4	1915	8.7	1976	9.0

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
3000	1573	7.1	1654	7.5	1732	7.8	1805	8.2	1875	8.5
3250	1622	7.3	1702	7.7	1777	8.0	1849	8.4	1919	8.7
3500	1674	7.6	1751	7.9	1825	8.3	1895	8.6	1964	8.9
3750	1729	7.8	1803	8.2	1874	8.5	1943	8.8	2010	9.1
4000	1786	8.1	1857	8.4	1926	8.7	1993	9.0	2058	9.3
4250	1846	8.4	1914	8.7	1980	9.0	2045	9.3	2108	9.6
4500	1908	8.7	1973	9.0	2036	9.2	2099	9.5	2160	9.8
4750	1971	8.9	2034	9.2	2095	9.5	2155	9.8	—	—
5000	2036	9.2	2096	9.5	2155	9.8	—	—	—	—

High Static 1100-2200 rpm

50FE-M14 — 12.5 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
3750	1072	0.65	1166	0.83	1266	1.07	1363	1.33	1454	1.62
4065	1148	0.79	1233	0.98	1324	1.22	1416	1.49	1504	1.78
4375	1226	0.96	1303	1.15	1386	1.39	1472	1.66	1556	1.97
4690	1304	1.15	1374	1.35	1451	1.59	1530	1.86	1610	2.17
5000	1383	1.37	1448	1.57	1518	1.81	1592	2.08	1667	2.39
5315	1463	1.60	1523	1.81	1588	2.05	1656	2.33	1726	2.63
5625	1543	1.86	1599	2.07	1659	2.31	1723	2.59	1789	2.90
5940	1623	2.14	1675	2.35	1732	2.60	1791	2.87	1853	3.18
6250	1704	2.44	1753	2.65	1806	2.90	1861	3.17	1919	3.48

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
3750	1540	1.92	1620	2.24	1694	2.56	1765	2.89	1833	3.24
4065	1587	2.09	1666	2.42	1740	2.76	1810	3.11	1877	3.46
4375	1637	2.29	1713	2.62	1786	2.97	1856	3.34	1922	3.71
4690	1688	2.50	1763	2.85	1834	3.20	1902	3.57	1968	3.96
5000	1741	2.72	1813	3.08	1883	3.45	1950	3.83	2015	4.22
5315	1797	2.97	1867	3.33	1934	3.70	2000	4.10	2063	4.50
5625	1855	3.23	1922	3.60	1987	3.97	2050	4.36	2112	4.77
5940	1915	3.51	1979	3.88	2042	4.26	2103	4.65	2163	5.06
6250	1978	3.81	2038	4.17	2098	4.55	2158	4.95	—	—

Std/Med Static 1072-2200 rpm, 3.0 maximum bhp

High Static 1072-2200 rpm, 5.0 maximum bhp

50FE-M14 — Standard/Medium Static — 12.5 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
3750	1072	4.8	1166	5.2	1266	5.7	1363	6.1	1454	6.6
4065	1148	5.1	1233	5.5	1324	6.0	1416	6.4	1504	6.8
4375	1226	5.5	1303	5.9	1386	6.2	1472	6.6	1556	7.0
4690	1304	5.9	1374	6.2	1451	6.5	1530	6.9	1610	7.3
5000	1383	6.2	1448	6.5	1518	6.9	1592	7.2	1667	7.5
5315	1463	6.6	1523	6.9	1588	7.2	1656	7.5	1726	7.8
5625	1543	7.0	1599	7.2	1659	7.5	1723	7.8	1789	8.1
5940	1623	7.3	1675	7.6	1732	7.8	1791	8.1	—	—
6250	1704	7.7	1753	7.9	1806	8.2	—	—	—	—

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
3750	1540	7.0	1620	7.3	1694	7.7	1765	8.0	—	—
4065	1587	7.2	1666	7.5	1740	7.9	—	—	—	—
4375	1637	7.4	1713	7.8	1786	8.1	—	—	—	—
4690	1688	7.6	1763	8.0	—	—	—	—	—	—
5000	1741	7.9	—	—	—	—	—	—	—	—
5315	1797	8.1	—	—	—	—	—	—	—	—
5625	—	—	—	—	—	—	—	—	—	—
5940	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1072-2200 rpm

50FE-M14 — High Static — 12.5 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
3750	1072	4.8	1166	5.2	1266	5.7	1363	6.1	1454	6.6
4065	1148	5.1	1233	5.5	1324	6.0	1416	6.4	1504	6.8
4375	1226	5.5	1303	5.9	1386	6.2	1472	6.6	1556	7.0
4690	1304	5.9	1374	6.2	1451	6.5	1530	6.9	1610	7.3
5000	1383	6.2	1448	6.5	1518	6.9	1592	7.2	1667	7.5
5315	1463	6.6	1523	6.9	1588	7.2	1656	7.5	1726	7.8
5625	1543	7.0	1599	7.2	1659	7.5	1723	7.8	1789	8.1
5940	1623	7.3	1675	7.6	1732	7.8	1791	8.1	1853	8.4
6250	1704	7.7	1753	7.9	1806	8.2	1861	8.4	1919	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
3750	1540	7.0	1620	7.3	1694	7.7	1765	8.0	1833	8.3
4065	1587	7.2	1666	7.5	1740	7.9	1810	8.2	1877	8.5
4375	1637	7.4	1713	7.8	1786	8.1	1856	8.4	1922	8.7
4690	1688	7.6	1763	8.0	1834	8.3	1902	8.6	1968	8.9
5000	1741	7.9	1813	8.2	1883	8.5	1950	8.8	2015	9.1
5315	1797	8.1	1867	8.5	1934	8.8	2000	9.1	2063	9.4
5625	1855	8.4	1922	8.7	1987	9.0	2050	9.3	2112	9.6
5940	1915	8.7	1979	9.0	2042	9.3	2103	9.6	2163	9.8
6250	1978	9.0	2038	9.3	2098	9.5	2158	9.8	—	—

High Static 1072-2200 rpm

50FE-M16 — 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	1117	0.73	1198	0.90	1278	1.09	1358	1.31	1438	1.55
4875	1205	0.91	1279	1.09	1353	1.29	1427	1.51	1501	1.76
5250	1294	1.12	1363	1.30	1432	1.51	1500	1.74	1569	1.99
5625	1383	1.34	1448	1.54	1512	1.76	1576	1.99	1640	2.24
6000	1473	1.60	1534	1.80	1594	2.02	1654	2.26	1714	2.52
6375	1564	1.88	1621	2.09	1678	2.32	1734	2.56	1791	2.82
6750	1655	2.18	1709	2.40	1762	2.63	1816	2.88	1869	3.14
7125	1746	2.54	1797	2.76	1848	3.01	1899	3.26	1949	3.53
7500	1838	2.97	1886	3.21	1935	3.46	1983	3.73	2031	4.00

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	1516	1.82	1594	2.12	1670	2.43	1744	2.77	1816	3.13
4875	1575	2.03	1647	2.32	1719	2.64	1790	2.98	1858	3.33
5250	1638	2.26	1706	2.56	1773	2.87	1840	3.21	1905	3.56
5625	1704	2.51	1768	2.81	1832	3.12	1895	3.46	1957	3.81
6000	1775	2.79	1835	3.09	1894	3.39	1954	3.73	2013	4.08
6375	1848	3.09	1904	3.38	1961	3.70	2017	4.02	2073	4.37
6750	1923	3.43	1976	3.72	2030	4.03	2083	4.35	2136	4.69
7125	2000	3.81	2051	4.11	2101	4.42	2152	4.75	—	—
7500	2079	4.29	2127	4.60	2175	4.92	—	—	—	—

Std/Med Static 1117-2200 rpm, 3.0 maximum bhp

High Static 1117-2200 rpm, 5.0 maximum bhp

50FE-M16 — Standard/Medium 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	1117	5.0	1198	5.4	1278	5.7	1358	6.1	1438	6.5
4875	1205	5.4	1279	5.7	1353	6.1	1427	6.4	1501	6.8
5250	1294	5.8	1363	6.1	1432	6.5	1500	6.8	1569	7.1
5625	1383	6.2	1448	6.5	1512	6.8	1576	7.1	1640	7.4
6000	1473	6.6	1534	6.9	1594	7.2	1654	7.5	1714	7.8
6375	1564	7.1	1621	7.3	1678	7.6	1734	7.8	1791	8.1
6750	1655	7.5	1709	7.7	1762	8.0	1816	8.2	1869	8.5
7125	1746	7.9	1797	8.1	1848	8.4	—	—	—	—
7500	1838	8.3	—	—	—	—	—	—	—	—

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
4500	1516	6.8	1594	7.2	1670	7.6	1744	7.9	—	—
4875	1575	7.1	1647	7.4	1719	7.8	1790	8.1	—	—
5250	1638	7.4	1706	7.7	1773	8.0	—	—	—	—
5625	1704	7.7	1768	8.0	—	—	—	—	—	—
6000	1775	8.0	—	—	—	—	—	—	—	—
6375	—	—	—	—	—	—	—	—	—	—
6750	—	—	—	—	—	—	—	—	—	—
7125	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—

Std/Med Static 1117-2200 rpm

50FE-M16 — 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	1117	5.0	1198	5.4	1278	5.7	1358	6.1	1438	6.5
4875	1205	5.4	1279	5.7	1353	6.1	1427	6.4	1501	6.8
5250	1294	5.8	1363	6.1	1432	6.5	1500	6.8	1569	7.1
5625	1383	6.2	1448	6.5	1512	6.8	1576	7.1	1640	7.4
6000	1473	6.6	1534	6.9	1594	7.2	1654	7.5	1714	7.8
6375	1564	7.1	1621	7.3	1678	7.6	1734	7.8	1791	8.1
6750	1655	7.5	1709	7.7	1762	8.0	1816	8.2	1869	8.5
7125	1746	7.9	1797	8.1	1848	8.4	1899	8.6	1949	8.8
7500	1838	8.3	1886	8.6	1935	8.8	1983	9.0	2031	9.2

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	1516	6.8	1594	7.2	1670	7.6	1744	7.9	1816	8.2
4875	1575	7.1	1647	7.4	1719	7.8	1790	8.1	1858	8.4
5250	1638	7.4	1706	7.7	1773	8.0	1840	8.3	1905	8.6
5625	1704	7.7	1768	8.0	1832	8.3	1895	8.6	1957	8.9
6000	1775	8.0	1835	8.3	1894	8.6	1954	8.9	2013	9.1
6375	1848	8.4	1904	8.6	1961	8.9	2017	9.2	2073	9.4
6750	1923	8.7	1976	9.0	2030	9.2	2083	9.5	2136	9.7
7125	2000	9.1	2051	9.3	2101	9.5	2152	9.8	—	—
7500	2079	9.4	2127	9.7	2175	9.9	—	—	—	—

High Static 1117-2200 rpm

Legend and Notes

Applicable for Electrical Data Tables on pages 104-131

LEGEND

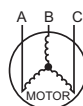
BRKR	— Circuit Breaker
C.O.	— Convenience Outlet
FLA	— Full Load Amps
IFM	— Indoor Fan Motor
LRA	— Locked Rotor Amps
MCA	— Minimum Circuit Amps
P.E.	— Power Exhaust
PWRD C.O.	— Powered Convenience Outlet
RLA	— Rated Load Amps
SCCR	— Short Circuit Current Rating
UNPWR C.O.	— Unpowered Convenience Outlet

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



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

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

Determine maximum deviation from average voltage.

(AB) 227-224 = 3-v

(BC) 231-227 = 4-v

(AC) 227-226 = 1-v

Maximum deviation is 4-v.

Determine percent of voltage imbalance.

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

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

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

48/50FE**08-16 Cooling Electrical Data

48/50FE UNIT SIZE	V-Ph-Hz	UNIT VOLTAGE		COMP 1		COMP 2		OFM (EA)		STD SCCR kA	HIGH SCCR kA	IFM			COMBUSTION FAN MOTOR (48 SERIES ONLY)	POWER EXHAUST		
		RANGE		RLA	LRA	RLA	LRA	WATTS	FLA			TYPE	EFFCY AT FULL LOAD	FLA		FLA	KIT QTY	FLA (EA KIT)
		MIN	MAX															
08	208-3-60	187	253	12.2	120	12.2	120	325	1.5	5	10	MED	90%	6.4	0.48	1	3.8	
												HIGH	90%	7.5				
	230-3-60	187	253	12.2	120	12.2	120	325	1.5	5	10	MED	90%	6.4	0.48	1	3.8	
												HIGH	90%	7.5				
	460-3-60	414	506	6.4	49	6.4	49	325	0.8	5	10	MED	90%	3.0	0.25	1	3.8	
												HIGH	90%	3.5				
575-3-60	518	633	5.1	4	5.1	4	325	0.6	5	—	MED	90%	2.5	0.24	1	3.8		
											HIGH	90%	3.0					
09	208-3-60	187	253	12.8	120	12.8	120	325	1.5	5	10	MED	90%	6.4	0.48	1	3.8	
												HIGH	90%	7.5				
	230-3-60	187	253	12.8	120	12.8	120	325	1.5	5	10	MED	90%	6.4	0.48	1	3.8	
												HIGH	90%	7.5				
	460-3-60	414	506	6.0	49	6.0	49	325	0.8	5	10	MED	90%	3.0	0.25	1	3.8	
												HIGH	90%	3.5				
575-3-60	518	633	5.8	41	5.8	41	325	0.6	5	—	MED	90%	2.5	0.24	1	3.8		
											HIGH	90%	3.0					
12	208-3-60	187	253	18.6	16	18.6	16	325	1.5	5	10	MED	90%	6.4	0.48	1	3.8	
												HIGH	90%	12.6				
	230-3-60	187	253	18.6	16	18.6	16	325	1.5	5	10	MED	90%	6.4	0.48	1	3.8	
												HIGH	90%	12.6				
	460-3-60	414	506	8.3	58	8.3	58	325	0.8	5	10	MED	90%	3.0	0.25	1	3.8	
												HIGH	90%	5.6				
575-3-60	518	633	7.7	48	7.7	48	325	0.6	5	—	MED	90%	2.5	0.24	1	3.8		
											HIGH	90%	4.6					
14	208-3-60	187	253	22.3	166	21.1	157	1070	7.4	5	—	MED	90%	7.5	0.48	1	3.8	
												HIGH	90%	12.6				
	230-3-60	187	253	22.3	166	21.1	157	1070	7.4	5	—	MED	90%	7.5	0.48	1	3.8	
												HIGH	90%	12.6				
	460-3-60	414	506	8.8	75	9.1	75	1070	7.4	5	—	MED	90%	3.5	0.25	1	3.8	
												HIGH	90%	5.6				
575-3-60	518	633	7.2	54	7.7	48	1070	7.4	5	—	MED	90%	3.0	0.24	1	3.8		
											HIGH	90%	4.6					
16	208-3-60	187	253	28.5	255	21.1	157	280	1.5	5	10	MED	90%	7.5	0.48	1	3.8	
												HIGH	90%	12.6				
	230-3-60	187	253	28.5	255	21.1	157	280	1.5	5	10	MED	90%	7.5	0.48	1	3.8	
												HIGH	90%	12.6				
	460-3-60	414	506	13.4	123	9.1	75	280	0.8	5	10	MED	90%	3.5	0.25	1	3.8	
												HIGH	90%	5.6				
575-3-60	518	633	10.7	94	7.7	48	280	0.6	5	—	MED	90%	3.0	0.24	1	3.8		
											HIGH	90%	4.6					

48FE**08-16 MCA MOCOP Electrical Data

48FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	HIGH SCCR kA ^a	NO CONVENIENCE OUTLET OR UNPOWERED CONVENIENCE OUTLET							
					NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
					MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE		MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE	
							FLA	LRA			FLA	LRA
48FE**08	208/230-3-60	STD/MED	5	10	37	45	39	257	41	50	43	261
		HIGH	5	10	38	50	40	259	42	50	45	263
	460-3-60	STD/MED	5	10	19	25	20	106	21	25	22	108
		HIGH	5	10	20	25	21	109	22	25	23	111
	575-3-60	STD/MED	5	—	16	20	16	90	19	25	20	20
		HIGH	5	—	16	20	17	91	20	25	21	21
48FE**09	208/230-3-60	STD/MED	5	10	39	50	40	257	42	50	45	261
		HIGH	5	10	40	50	42	259	44	50	46	263
	460-3-60	STD/MED	5	10	19	20	19	106	20	25	21	108
		HIGH	5	10	19	25	20	109	21	25	22	111
	575-3-60	STD/MED	5	—	17	20	18	90	21	25	22	94
		HIGH	5	—	18	20	18	91	22	25	23	95
48FE**12	208/230-3-60	STD/MED	5	10	52	60	54	49	56	60	58	53
		HIGH	5	10	58	70	61	58	62	70	65	62
	460-3-60	STD/MED	5	10	24	30	24	124	26	30	26	126
		HIGH	5	10	26	30	27	128	28	30	29	130
	575-3-60	STD/MED	5	—	21	25	22	104	25	30	26	108
		HIGH	5	—	24	30	24	106	27	30	29	110
48FE**14	208/230-3-60	STD/MED	5	—	64	80	67	341	68	80	71	345
		HIGH	5	—	69	80	73	348	73	80	77	352
	460-3-60	STD/MED	5	—	32	40	33	164	33	40	35	166
		HIGH	5	—	34	40	36	165	35	40	38	167
	575-3-60	STD/MED	5	—	28	30	29	114	31	35	33	118
		HIGH	5	—	29	35	31	115	33	40	35	119
48FE**16	208/230-3-60	STD/MED	5	10	69	80	71	435	73	80	75	439
		HIGH	5	10	74	100	77	442	78	100	81	446
	460-3-60	STD/MED	5	10	32	45	33	211	34	45	35	213
		HIGH	5	10	34	45	35	212	36	45	37	214
	575-3-60	STD/MED	5	—	26	30	27	153	30	40	31	157
		HIGH	5	—	28	35	29	154	32	40	33	158

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

48FE**08-16 MCA MOCP Electrical Data (cont)

48FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	WITH POWERED CONVENIENCE OUTLET							
				NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
				MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE		MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE	
						FLA	LRA			FLA	LRA
48FE**08	208/230-3-60	STD/MED	5	42	50	44	262	46	50	49	266
		HIGH	5	43	50	46	264	47	50	50	268
	460-3-60	STD/MED	5	22	25	23	108	23	25	25	110
		HIGH	5	22	25	23	111	24	30	25	113
	575-3-60	STD/MED	5	17	20	18	92	21	25	22	22
		HIGH	5	18	20	19	93	22	25	23	23
48FE**09	208/230-3-60	STD/MED	5	43	50	46	262	47	50	50	266
		HIGH	5	45	50	47	264	48	60	51	268
	460-3-60	STD/MED	5	21	25	22	108	23	25	24	110
		HIGH	5	21	25	22	111	23	25	24	113
	575-3-60	STD/MED	5	19	20	20	92	23	25	24	96
		HIGH	5	19	25	20	93	23	25	24	97
48FE**12	208/230-3-60	STD/MED	5	57	70	59	54	60	70	63	58
		HIGH	5	63	80	66	63	67	80	71	67
	460-3-60	STD/MED	5	26	30	27	126	28	30	29	128
		HIGH	5	29	35	30	130	30	35	32	132
	575-3-60	STD/MED	5	23	30	24	106	27	30	28	110
		HIGH	5	25	30	26	108	29	35	31	112
48FE**14	208/230-3-60	STD/MED	5	69	80	73	346	73	80	77	350
		HIGH	5	74	80	78	353	—	—	—	—
	460-3-60	STD/MED	5	34	40	36	166	36	40	38	168
		HIGH	5	36	40	38	167	38	45	40	169
	575-3-60	STD/MED	5	29	35	31	116	33	40	35	120
		HIGH	5	31	35	33	117	35	40	37	121
48FE**16	208/230-3-60	STD/MED	5	74	100	76	440	78	100	81	444
		HIGH	5	79	100	82	447	83	100	87	451
	460-3-60	STD/MED	5	34	45	35	213	36	45	37	215
		HIGH	5	37	45	38	214	38	50	40	216
	575-3-60	STD/MED	5	28	35	29	155	32	40	33	159
		HIGH	5	30	35	30	156	33	40	35	160

50FE-*08 MCA MOCP Electrical Data

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	HIGH SCCR kA ^a	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
					CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
								MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
										FLA	LRA			FLA	LRA
50FE-08	208/230-3-60	STD/ MED	5	10	—	—	—	37	45	39	257	41	50	43	261
					411A	7.8/10.4	21.7/25.0	37/40	45/45	39/39	257/257	41/44	50/50	43/43	261/261
					412A	12.0/16.0	33.4/38.5	50/57	50/60	46/52	257/257	55/61	60/70	50/56	261/261
					414A	18.8/25.0	52.1/60.1	74/84	80/90	67/76	257/257	78/88	80/90	72/81	261/261
					415A	24.0/32.0	66.7/77.0	92/105	100/110	84/96	257/257	97/109	100/110	88/100	261/261
					416A	31.8/42.4	88.4/102.0	119/136	125/150	109/125	257/257	124/141	125/150	113/129	261/261
		HIGH	5	10	—	—	—	38	50	40	259	42	50	45	263
					411A	7.8/10.4	21.7/25.0	38/41	50/50	40/40	259/259	42/46	50/50	45/45	263/263
					412A	12.0/16.0	33.4/38.5	52/58	60/60	47/53	259/259	56/63	60/70	51/57	263/263
					414A	18.8/25.0	52.1/60.1	75/85	80/90	69/78	259/259	80/90	80/90	73/82	263/263
					415A	24.0/32.0	66.7/77.0	93/106	100/110	85/97	259/259	98/111	100/125	90/102	263/263
					416A	31.8/42.4	88.4/102.0	120/137	125/150	110/126	259/259	125/142	125/150	115/130	263/263
	460-3-60	STD/ MED	5	10	—	—	—	19	25	20	106	21	25	22	108
					420A	15.0	18.0	27	30	24	106	29	30	26	108
					421A	25.0	30.1	42	45	38	106	44	45	40	108
					422A	33.0	39.7	54	60	49	106	56	60	51	108
					423A	41.7	50.2	67	70	61	106	69	70	63	108
					—	—	—	20	25	21	109	22	25	23	111
		HIGH	5	10	420A	15.0	18.0	27	30	25	109	30	30	27	111
					421A	25.0	30.1	42	45	39	109	45	45	41	111
					422A	33.0	39.7	54	60	50	109	57	60	52	111
					423A	41.7	50.2	68	70	62	109	70	70	64	111
					—	—	—	16	20	16	90	19	25	20	94
					425A	18.0	17.3	25	25	23	90	30	30	27	94
	575-3-60	STD/ MED	5	—	427A	36.0	34.6	47	50	43	90	52	60	47	94
					—	—	—	16	20	17	91	20	25	21	95
					425A	18.0	17.3	26	30	23	91	31	35	28	95
		HIGH	5	—	427A	36.0	34.6	47	50	43	91	52	60	48	95

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*08 MCA MOCP Electrical Data (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	ELECTRIC HEATER			WITH POWERED CONVENIENCE OUTLET							
				CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
									FLA	LRA			FLA	LRA
50FE-*08	208/230-3-60	STD/MED	5	—	—	—	42	50	44	262	46	50	49	266
				411A	7.8/10.4	21.7/25.0	42/46	50/50	44/44	262/262	46/50	50/60	49/49	266/266
				412A	12.0/16.0	33.4/38.5	56/63	60/70	51/57	262/262	61/67	70/70	56/62	266/266
				414A	18.8/25.0	52.1/60.1	80/90	80/90	73/82	262/262	84/94	90/100	77/86	266/266
				415A	24.0/32.0	66.7/77.0	98/111	100/125	90/101	262/262	103/115	110/125	94/106	266/266
				416A	31.8/42.4	88.4/102.0	125/142	125/150	115/130	262/262	130/147	150/150	119/135	266/266
		HIGH	5	—	—	—	43	50	46	264	47	50	50	268
				411A	7.8/10.4	21.7/25.0	43/47	50/50	46/46	264/264	48/52	50/60	50/50	268/268
				412A	12.0/16.0	33.4/38.5	58/64	60/70	53/58	264/264	62/69	70/70	57/63	268/268
				414A	18.8/25.0	52.1/60.1	81/91	90/100	74/83	264/264	86/96	90/100	78/88	268/268
				415A	24.0/32.0	66.7/77.0	99/112	100/125	91/103	264/264	104/117	110/125	95/107	268/268
				416A	31.8/42.4	88.4/102.0	126/143	150/150	116/131	264/264	131/148	150/150	120/136	268/268
	460-3-60	STD/MED	5	—	—	—	22	25	23	108	23	25	25	110
				420A	15.0	18.0	29	30	27	108	32	35	29	110
				421A	25.0	30.1	45	45	41	108	47	50	43	110
				422A	33.0	39.7	57	60	52	108	59	60	54	110
				423A	41.7	50.2	70	70	64	108	72	80	66	110
		HIGH	5	—	—	—	22	25	23	111	24	30	25	113
				420A	15.0	18.0	30	30	27	111	32	35	29	113
				421A	25.0	30.1	45	45	41	111	47	50	43	113
				422A	33.0	39.7	57	60	52	111	59	60	54	113
				423A	41.7	50.2	70	70	64	111	73	80	66	113
	575-3-60	STD/MED	5	—	—	—	17	20	18	92	21	25	22	96
				425A	18.0	17.3	27	30	25	92	32	35	29	96
				427A	36.0	34.6	49	50	45	92	54	60	49	96
		HIGH	5	—	—	—	18	20	19	93	22	25	23	97
				425A	18.0	17.3	28	30	25	93	33	35	30	97
				427A	36.0	34.6	50	50	45	93	54	60	50	97

50FE-*09 MCA MOCP Electrical Data

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	HIGH SCCR KA ^a	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
					CRHEATER *****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
								MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
										FLA	LRA			FLA	LRA
50FE-*09	208/230-3-60	STD/MED	5	10	—	—	—	39	50	40	257	42	50	45	261
					411A	7.8/10.4	21.7/25.0	39/40	50/50	40/40	257/257	42/44	50/50	45/45	261/261
					412A	12.0/16.0	33.4/38.5	50/57	50/60	46/52	257/257	55/61	60/70	50/56	261/261
					414A	18.8/25.0	52.1/60.1	74/84	80/90	67/76	257/257	78/88	80/90	72/81	261/261
					415A	24.0/32.0	66.7/77.0	92/105	100/110	84/96	257/257	97/109	100/110	88/100	261/261
					416A	31.8/42.4	88.4/102.0	119/136	125/150	109/125	257/257	124/141	125/150	113/129	261/261
		HIGH	5	10	—	—	—	40	50	42	259	44	50	46	263
					411A	7.8/10.4	21.7/25.0	40/41	50/50	42/42	259/259	44/46	50/50	46/46	263/263
					412A	12.0/16.0	33.4/38.5	52/58	60/60	47/53	259/259	56/63	60/70	51/57	263/263
					414A	18.8/25.0	52.1/60.1	75/85	80/90	69/78	259/259	80/90	80/90	73/82	263/263
					415A	24.0/32.0	66.7/77.0	93/106	100/110	85/97	259/259	98/111	100/125	90/102	263/263
					416A	31.8/42.4	88.4/102.0	120/137	125/150	110/126	259/259	125/142	125/150	115/130	263/263
	460-3-60	STD/MED	5	10	—	—	—	19	20	19	106	20	25	21	108
					420A	15.0	18.0	27	30	24	106	29	30	26	108
					421A	25.0	30.1	42	45	38	106	44	45	40	108
					422A	33.0	39.7	54	60	49	106	56	60	51	108
					423A	41.7	50.2	67	70	61	106	69	70	63	108
		HIGH	5	10	—	—	—	19	25	20	109	21	25	22	111
					420A	15.0	18.0	27	30	25	109	30	30	27	111
					421A	25.0	30.1	42	45	39	109	45	45	41	111
					422A	33.0	39.7	54	60	50	109	57	60	52	111
					423A	41.7	50.2	68	70	62	109	70	70	64	111
	575-3-60	STD/MED	5	—	—	—	—	17	20	18	90	21	25	22	94
					425A	18.0	17.3	25	25	23	90	30	30	27	94
					427A	36.0	34.6	47	50	43	90	52	60	47	94
		HIGH	5	—	—	—	—	18	20	18	91	22	25	23	95
					425A	18.0	17.3	26	30	23	91	31	35	28	95
					427A	36.0	34.6	47	50	43	91	52	60	48	95

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*09 MCA MOCP Electrical Data (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	ELECTRIC HEATER			WITH POWERED CONVENIENCE OUTLET							
				CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
									FLA	LRA			FLA	LRA
50FE-*09	208/230-3-60	STD/MED	5	—	—	—	43	50	46	262	47	50	50	266
				411A	7.8/10.4	21.7/25.0	43/46	50/50	46/46	262/262	47/50	50/60	50/50	266/266
				412A	12.0/16.0	33.4/38.5	56/63	60/70	51/57	262/262	61/67	70/70	56/62	266/266
				414A	18.8/25.0	52.1/60.1	80/90	80/90	73/82	262/262	84/94	90/100	77/86	266/266
				415A	24.0/32.0	66.7/77.0	98/111	100/125	90/101	262/262	103/115	110/125	94/106	266/266
				416A	31.8/42.4	88.4/102.0	125/142	125/150	115/130	262/262	130/147	150/150	119/135	266/266
		HIGH	5	—	—	—	45	50	47	264	48	60	51	268
				411A	7.8/10.4	21.7/25.0	45/47	50/50	47/47	264/264	48/52	60/60	51/51	268/268
				412A	12.0/16.0	33.4/38.5	58/64	60/70	53/58	264/264	62/69	70/70	57/63	268/268
				414A	18.8/25.0	52.1/60.1	81/91	90/100	74/83	264/264	86/96	90/100	78/88	268/268
				415A	24.0/32.0	66.7/77.0	99/112	100/125	91/103	264/264	104/117	110/125	95/107	268/268
				416A	31.8/42.4	88.4/102.0	126/143	150/150	116/131	264/264	131/148	150/150	120/136	268/268
	460-3-60	STD/MED	5	—	—	—	21	25	22	108	23	25	24	110
				420A	15.0	18.0	29	30	27	108	32	35	29	110
				421A	25.0	30.1	45	45	41	108	47	50	43	110
				422A	33.0	39.7	57	60	52	108	59	60	54	110
				423A	41.7	50.2	70	70	64	108	72	80	66	110
		HIGH	5	—	—	—	21	25	22	111	23	25	24	113
				420A	15.0	18.0	30	30	27	111	32	35	29	113
				421A	25.0	30.1	45	45	41	111	47	50	43	113
				422A	33.0	39.7	57	60	52	111	59	60	54	113
				423A	41.7	50.2	70	70	64	111	73	80	66	113
	575-3-60	STD/MED	5	—	—	—	19	20	20	92	23	25	24	96
				425A	18.0	17.3	27	30	25	92	32	35	29	96
				427A	36.0	34.6	49	50	45	92	54	60	49	96
		HIGH	5	—	—	—	19	25	20	93	23	25	24	97
				425A	18.0	17.3	28	30	25	93	33	35	30	97
				427A	36.0	34.6	50	50	45	93	54	60	50	97

50FE-*12 MCA MOCAP Electrical Data

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	HIGH SCCR kA ^a	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
					CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
								MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
										FLA	LRA			FLA	LRA
50FE-*12	208/230-3-60	STD/MED	5	10	—	—	—	52	60	54	327	56	60	58	331
					411A	7.8/10.4	21.7/25.0	52/52	60/60	54/54	327/327	56/56	60/60	58/58	331/331
					412A	12.0/16.0	33.4/38.5	52/57	60/60	54/54	327/327	56/61	60/70	58/58	331/331
					415A	24.0/32.0	66.7/77.0	92/105	100/110	84/96	327/327	97/109	100/110	88/100	331/331
					416A	31.8/42.4	88.4/102.0	119/136	125/150	109/125	327/327	124/141	125/150	113/129	331/331
					417A	37.6/50.0	104.2/120.3	139/129	150/150	127/146	327/327	143/134	150/150	132/150	331/331
		HIGH	5	10	—	—	—	58	70	61	336	62	70	65	340
					411A	7.8/10.4	21.7/25.0	58/58	70/70	61/61	336/336	62/62	70/70	65/65	340/340
					412A	12.0/16.0	33.4/38.5	58/64	70/70	61/61	336/336	63/69	70/70	65/65	340/340
					415A	24.0/32.0	66.7/77.0	100/112	100/125	91/103	336/336	104/117	110/125	96/107	340/340
					416A	31.8/42.4	88.4/102.0	127/144	150/150	116/132	336/336	131/148	150/150	121/136	340/340
					417A	37.6/50.0	104.2/120.3	146/137	150/150	134/153	336/336	151/141	175/175	139/157	340/340
	460-3-60	STD/MED	5	10	—	—	—	24	30	24	124	26	30	26	126
					420A	15.0	18.0	27	30	24	124	29	30	26	126
					422A	33.0	39.7	54	60	49	124	56	60	51	126
					423A	41.7	50.2	67	70	61	124	69	70	63	126
					424A	50.0	60.1	64	70	73	124	67	70	75	126
					—	—	—	26	30	27	128	28	30	29	130
		HIGH	5	10	420A	15.0	18.0	30	30	27	128	32	35	29	130
					422A	33.0	39.7	57	60	52	128	59	60	54	130
					423A	41.7	50.2	70	70	64	128	72	80	66	130
					424A	50.0	60.1	68	80	76	128	70	80	78	130
					—	—	—	21	25	22	104	25	30	26	108
					425A	18.0	17.3	25	25	23	104	30	30	27	108
	575-3-60	STD/MED	5	—	427A	36.0	34.6	47	50	43	104	52	60	47	108
					428A	50.0	48.1	52	60	58	104	56	60	63	108
					—	—	—	24	30	24	106	27	30	29	110
					425A	18.0	17.3	28	30	25	106	33	35	30	110
		HIGH	5	—	427A	36.0	34.6	49	50	45	106	54	60	49	110
					428A	50.0	48.1	54	60	61	106	59	60	65	110

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*12 MCA MOCP Electrical Data (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	ELECTRIC HEATER			WITH POWERED CONVENIENCE OUTLET							
				CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
									FLA	LRA			FLA	LRA
50FE-*12	208/230-3-60	STD/MED	5	—	—	—	57	70	59	332	60	70	63	336
				411A	7.8/10.4	21.7/25.0	57/57	70/70	59/59	332/332	60/60	70/70	63/63	336/336
				412A	12.0/16.0	33.4/38.5	57/63	70/70	59/59	332/332	61/67	70/70	63/63	336/336
				415A	24.0/32.0	66.7/77.0	98/111	100/125	90/101	332/332	103/115	110/125	94/106	336/336
				416A	31.8/42.4	88.4/102.0	125/142	125/150	115/130	332/332	130/147	150/150	119/135	336/336
				417A	37.6/50.0	104.2/120.3	145/135	150/150	133/151	332/332	149/140	150/150	137/156	336/336
		HIGH	5	—	—	—	63	80	66	341	67	80	71	345
				411A	7.8/10.4	21.7/25.0	63/63	80/80	66/66	341/341	67/67	80/80	71/71	345/345
				412A	12.0/16.0	33.4/38.5	64/70	80/80	66/66	341/341	69/75	80/80	71/71	345/345
				415A	24.0/32.0	66.7/77.0	106/118	110/125	97/109	341/341	110/123	110/125	101/113	345/345
				416A	31.8/42.4	88.4/102.0	133/150	150/150	122/137	341/341	137/154	150/175	126/142	345/345
				417A	37.6/50.0	104.2/120.3	152/143	175/175	140/158	341/341	157/147	175/175	144/163	345/345
	460-3-60	STD/MED	5	—	—	—	26	30	27	126	28	30	29	128
				420A	15.0	18.0	29	30	27	126	32	35	29	128
				422A	33.0	39.7	57	60	52	126	59	60	54	128
				423A	41.7	50.2	70	70	64	126	72	80	66	128
				424A	50.0	60.1	67	70	75	126	69	80	77	128
		HIGH	5	—	—	—	29	35	30	130	30	35	32	132
				420A	15.0	18.0	33	35	30	130	35	35	32	132
				422A	33.0	39.7	60	60	55	130	62	70	57	132
	575-3-60	STD/MED	5	423A	41.7	50.2	73	80	67	130	75	80	69	132
				424A	50.0	60.1	70	80	78	130	73	80	80	132
				—	—	—	23	30	24	106	27	30	28	110
				425A	18.0	17.3	27	30	25	106	32	35	29	110
				427A	36.0	34.6	49	50	45	106	54	60	49	110
				428A	50.0	48.1	54	60	60	106	59	60	65	110
		HIGH	5	—	—	—	25	30	26	108	29	35	31	112
				425A	18.0	17.3	30	30	27	108	35	35	32	112
				427A	36.0	34.6	52	60	47	108	56	60	51	112
				428A	50.0	48.1	56	60	63	108	61	70	67	112

50FE-*14 MCA MOCAP Electrical Data

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
				CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
									FLA	LRA			FLA	LRA
50FE-*14	208/230-3-60	STD/MED	5	—	—	—	64	80	67	341	68	80	71	345
				411A	7.8/10.4	21.7/25.0	64/64	80/80	67/67	341/341	68/68	80/80	71/71	345/345
				412A	12.0/16.0	33.4/38.5	64/64	80/80	67/67	341/341	68/68	80/80	71/71	345/345
				415A	24.0/32.0	66.7/77.0	93/106	100/110	85/97	341/341	98/111	100/125	90/102	345/345
				416A	31.8/42.4	88.4/102.0	120/137	125/150	110/126	341/341	125/142	125/150	115/130	345/345
				417A	37.6/50.0	104.2/120.3	140/130	150/150	128/147	341/341	145/135	150/150	133/151	345/345
		HIGH	5	—	—	—	69	80	73	348	73	80	77	352
				411A	7.8/10.4	21.7/25.0	69/69	80/80	73/73	348/348	73/73	80/80	77/77	352/352
				412A	12.0/16.0	33.4/38.5	69/69	80/80	73/73	348/348	73/73	80/80	77/77	352/352
				415A	24.0/32.0	66.7/77.0	100/112	100/125	91/103	348/348	104/117	110/125	96/107	352/352
				416A	31.8/42.4	88.4/102.0	127/144	150/150	116/132	348/348	131/148	150/150	121/136	352/352
				417A	37.6/50.0	104.2/120.3	146/137	150/150	134/153	348/348	151/141	175/175	139/157	352/352
	460-3-60	STD/MED	5	—	—	—	32	40	33	164	33	40	35	166
				420A	15.0	18.0	32	40	33	164	33	40	35	166
				422A	33.0	39.7	54	60	50	164	57	60	52	166
				423A	41.7	50.2	68	70	62	164	70	70	64	166
		HIGH	5	—	—	—	34	40	36	165	35	40	38	167
				420A	15.0	18.0	34	40	36	165	35	40	38	167
				422A	33.0	39.7	57	60	52	165	59	60	54	167
				423A	41.7	50.2	70	70	64	165	72	80	66	167
	575-3-60	STD/MED	5	—	—	—	28	30	29	114	31	35	33	118
				425A	18.0	17.3	28	30	29	114	31	35	33	118
				427A	36.0	34.6	47	50	43	114	52	60	48	118
				428A	50.0	48.1	52	60	59	114	57	60	63	118
		HIGH	5	—	—	—	29	35	31	115	33	40	35	119
				425A	18.0	17.3	29	35	31	115	33	40	35	119
				427A	36.0	34.6	49	50	45	115	54	60	49	119
				428A	50.0	48.1	54	60	61	115	59	60	65	119

50FE-*14 MCA MOCP Electrical Data (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	ELECTRIC HEATER			WITH POWERED CONVENIENCE OUTLET							
				CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
									FLA	LRA			FLA	LRA
50FE-*14	208/230-3-60	STD/MED	5	—	—	—	69	80	73	346	73	80	77	350
				411A	7.8/10.4	21.7/25.0	69/69	80/80	73/73	346/346	73/73	80/80	77/77	350/350
				412A	12.0/16.0	33.4/38.5	69/69	80/80	73/73	346/346	73/73	80/80	77/77	350/350
				415A	24.0/32.0	66.7/77.0	99/112	100/125	91/103	346/346	104/117	110/125	95/107	350/350
				416A	31.8/42.4	88.4/102.0	126/143	150/150	116/131	346/346	131/148	150/150	120/136	350/350
				417A	37.6/50.0	104.2/120.3	146/136	150/150	134/152	346/346	151/141	175/150	138/157	350/350
		HIGH	5	—	—	—	74	80	78	353	78	90	83	357
				411A	7.8/10.4	21.7/25.0	74/74	80/80	78/78	353/353	78/78	90/90	83/83	357/357
				412A	12.0/16.0	33.4/38.5	74/74	80/80	78/78	353/353	78/78	90/90	83/83	357/357
				415A	24.0/32.0	66.7/77.0	106/118	110/125	97/109	353/353	110/123	110/125	101/113	357/357
				416A	31.8/42.4	88.4/102.0	133/150	150/150	122/137	353/353	137/154	150/175	126/142	357/357
				417A	37.6/50.0	104.2/120.3	152/143	175/175	140/158	353/353	157/147	175/175	144/163	357/357
	460-3-60	STD/MED	5	—	—	—	34	40	36	166	36	40	38	168
				420A	15.0	18.0	34	40	36	166	36	40	38	168
				422A	33.0	39.7	57	60	52	166	59	60	54	168
				423A	41.7	50.2	70	70	64	166	73	80	66	168
		HIGH	5	—	—	—	36	40	38	167	38	45	40	169
				420A	15.0	18.0	36	40	38	167	38	45	40	169
				422A	33.0	39.7	60	60	55	167	62	70	57	169
				423A	41.7	50.2	73	80	67	167	75	80	69	169
	575-3-60	STD/MED	5	—	—	—	29	35	31	116	33	40	35	120
				425A	18.0	17.3	29	35	31	116	33	40	35	120
				427A	36.0	34.6	50	50	45	116	54	60	50	120
				428A	50.0	48.1	54	60	61	116	59	60	65	120
		HIGH	5	—	—	—	31	35	33	117	35	40	37	121
				425A	18.0	17.3	31	35	33	117	35	40	37	121
				427A	36.0	34.6	52	60	47	117	56	60	51	121
				428A	50.0	48.1	56	60	63	117	61	70	67	121

50FE-*16 MCA MOCP Electrical Data

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR KA	HIGH SCCR KA ^a	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
					CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
								MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
										FLA	LRA			FLA	LRA
50FE-*16	208/230-3-60	STD/MED	5	10	—	—	—	69	80	71	435	73	80	75	439
					412A	12.0/16.0	33.4/38.5	69/69	80/80	71/71	435/435	73/73	80/80	75/75	439/439
					414A	18.8/25.0	52.1/60.1	75/85	80/90	71/78	435/435	80/90	80/100	75/82	439/439
					415A	24.0/32.0	66.7/77.0	93/106	100/110	85/97	435/435	98/111	100/125	90/102	439/439
					416A	31.8/42.4	88.4/102.0	120/137	125/150	110/126	435/435	125/142	125/150	115/130	439/439
					417A	37.6/50.0	104.2/120.3	140/130	150/150	128/147	435/435	145/135	150/150	133/151	439/439
					451A	50.3/67.0	139.7/161.2	150/171	175/200	169/194	435/435	154/176	175/200	174/198	439/439
		HIGH	5	10	—	—	—	74	100	77	442	78	100	81	446
					412A	12.0/16.0	33.4/38.5	74/74	100/100	77/77	442/442	78/78	100/100	81/81	446/446
					414A	18.8/25.0	52.1/60.1	81/91	100/100	77/84	442/442	86/96	100/100	81/88	446/446
					415A	24.0/32.0	66.7/77.0	100/112	100/125	91/103	442/442	104/117	110/125	96/107	446/446
					416A	31.8/42.4	88.4/102.0	127/144	150/150	116/132	442/442	131/148	150/150	121/136	446/446
					417A	37.6/50.0	104.2/120.3	146/137	150/150	134/153	442/442	151/141	175/175	139/157	446/446
					451A	50.3/67.0	139.7/161.2	156/177	175/200	175/200	442/442	161/182	175/200	180/204	446/446
	460-3-60	STD/MED	5	10	—	—	—	32	45	33	211	34	45	35	213
					420A	15.0	18.0	32	45	33	211	34	45	35	213
					421A	25.0	30.1	42	45	39	211	45	45	41	213
					422A	33.0	39.7	54	60	50	211	57	60	52	213
					423A	41.7	50.2	68	70	62	211	70	70	64	213
					424A	50.0	60.1	65	70	73	211	67	70	75	213
					452A	67.0	80.6	85	90	97	211	88	100	99	213
		HIGH	5	10	—	—	—	34	45	35	212	36	45	37	214
					420A	15.0	18.0	34	45	35	212	36	45	37	214
					421A	25.0	30.1	45	45	41	212	47	50	43	214
					422A	33.0	39.7	57	60	52	212	59	60	54	214
					423A	41.7	50.2	70	70	64	212	72	80	66	214
					424A	50.0	60.1	68	80	76	212	70	80	78	214
					452A	67.0	80.6	88	100	99	212	90	100	101	214
	575-3-60	STD/MED	5	—	—	—	—	26	30	27	153	30	40	31	157
					425A	18.0	17.3	26	30	27	153	31	40	31	157
					427A	36.0	34.6	47	50	43	153	52	60	48	157
					428A	50.0	48.1	52	60	59	153	57	60	63	157
					453A	67.0	64.5	69	80	78	153	73	80	82	157
		HIGH	5	—	—	—	—	28	35	29	154	32	40	33	158
					425A	18.0	17.3	28	35	29	154	33	40	33	158
					427A	36.0	34.6	49	50	45	154	54	60	49	158
					428A	50.0	48.1	54	60	61	154	59	60	65	158
					453A	67.0	64.5	71	80	79	154	75	80	84	158

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*16 MCA MOCP Electrical Data (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	ELECTRIC HEATER			WITH POWERED CONVENIENCE OUTLET							
				CRHEATER ****00	NOM (kW)	FLA	NO POWER EXHAUST				WITH POWER EXHAUST (powered from unit)			
							MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
									FLA	LRA			FLA	LRA
50FE-*16	208/230-3-60	STD/MED	5	—	—	—	74	100	76	440	78	100	81	444
				412A	12.0/16.0	33.4/38.5	74/74	100/100	76/76	440/440	78/78	100/100	81/81	444/444
				414A	18.8/25.0	52.1/60.1	81/91	100/100	76/83	440/440	86/96	100/100	81/88	444/444
				415A	24.0/32.0	66.7/77.0	99/112	100/125	91/103	440/440	104/117	110/125	95/107	444/444
				416A	31.8/42.4	88.4/102.0	126/143	150/150	116/131	440/440	131/148	150/150	120/136	444/444
				417A	37.6/50.0	104.2/120.3	146/136	150/150	134/152	440/440	151/141	175/150	138/157	444/444
				451A	50.3/67.0	139.7/161.2	156/177	175/200	175/200	440/440	160/182	175/200	179/204	444/444
		HIGH	5	—	—	—	79	100	82	447	83	100	87	451
				412A	12.0/16.0	33.4/38.5	79/79	100/100	82/82	447/447	83/83	100/100	87/87	451/451
				414A	18.8/25.0	52.1/60.1	87/97	100/100	82/89	447/447	92/102	100/110	87/93	451/451
				415A	24.0/32.0	66.7/77.0	106/118	110/125	97/109	447/447	110/123	110/125	101/113	451/451
				416A	31.8/42.4	88.4/102.0	133/150	150/150	122/137	447/447	137/154	150/175	126/142	451/451
				417A	37.6/50.0	104.2/120.3	152/143	175/175	140/158	447/447	157/147	175/175	144/163	451/451
				451A	50.3/67.0	139.7/161.2	162/183	175/200	181/205	447/447	167/188	175/200	185/210	451/451
	460-3-60	STD/MED	5	—	—	—	34	45	35	213	36	45	37	215
				420A	15.0	18.0	34	45	35	213	36	45	37	215
				421A	25.0	30.1	45	45	41	213	47	50	43	215
				422A	33.0	39.7	57	60	52	213	59	60	54	215
				423A	41.7	50.2	70	70	64	213	73	80	66	215
				424A	50.0	60.1	68	80	76	213	70	80	78	215
				452A	67.0	80.6	88	100	99	213	90	100	101	215
		HIGH	5	—	—	—	37	45	38	214	38	50	40	216
				420A	15.0	18.0	37	45	38	214	38	50	40	216
				421A	25.0	30.1	48	50	44	214	50	50	46	216
				422A	33.0	39.7	60	60	55	214	62	70	57	216
				423A	41.7	50.2	73	80	67	214	75	80	69	216
				424A	50.0	60.1	70	80	78	214	73	80	80	216
				452A	67.0	80.6	91	100	102	214	93	100	104	216
	575-3-60	STD/MED	5	—	—	—	28	35	29	155	32	40	33	159
				425A	18.0	17.3	28	35	29	155	33	40	33	159
				427A	36.0	34.6	50	50	45	155	54	60	50	159
				428A	50.0	48.1	54	60	61	155	59	60	65	159
				453A	67.0	64.5	71	80	80	155	76	80	84	159
				—	—	—	30	35	30	156	33	40	35	160
		HIGH	5	425A	18.0	17.3	30	35	30	156	35	40	35	160
				427A	36.0	34.6	52	60	47	156	56	60	51	160
				428A	50.0	48.1	56	60	63	156	61	70	67	160
				453A	67.0	64.5	73	80	81	156	78	80	86	160

50FE-*08 Electric Heat Data — Without Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwr fr/unit)	NO P.E	WITH P.E. (pwr fr/unit)
50FE-M08	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	042	042	042	042
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	042	043	043	043
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	043	043	043	043
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	043	043	043	043
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	045	045	045	045
		HIGH	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	042	042	042	042
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	042	043	043	043
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	043	043	043	043
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	043	043	043	043
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	045	045	045	045
		STD/ MED	CRHEATER420A00	15.0	5	10	13.8	47.0	042	042	042	042
			CRHEATER421A00	25.0	5	10	23.0	78.3	042	042	042	042
			CRHEATER422A00	33.0	5	10	30.3	103.4	042	042	042	042
			CRHEATER423A00	41.7	5	10	38.3	130.7	044	044	044	044
			CRHEATER424A00	50.0	5	10	46.2	157.8	044	044	044	044
	460-3-60	HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	042	042	042	042
			CRHEATER421A00	25.0	5	10	23.0	78.3	042	042	042	042
			CRHEATER422A00	33.0	5	10	30.3	103.4	042	042	042	042
			CRHEATER423A00	41.7	5	10	38.3	130.7	044	044	044	044
			CRHEATER424A00	50.0	5	10	46.2	157.8	044	044	044	044
		STD/ MED	CRHEATER425A00	18.0	5	—	16.5	56.4	042	042	042	042
			CRHEATER427A00	36.0	5	—	33.1	112.8	042	042	042	042
			CRHEATER425A00	18.0	5	—	16.5	56.4	042	042	042	042
			CRHEATER427A00	36.0	5	—	33.1	112.8	042	042	042	042
			CRHEATER425A00	18.0	5	—	16.5	56.4	042	042	042	042
			CRHEATER427A00	36.0	5	—	33.1	112.8	042	042	042	042
			CRHEATER425A00	18.0	5	—	16.5	56.4	042	042	042	042
			CRHEATER427A00	36.0	5	—	33.1	112.8	042	042	042	042

NOTE(S):

- High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*08 Electric Heat Data — Without Non-fused Disconnect (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HSCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwrd fr/unit)	NO P.E.	WITH P.E. (pwrd fr/unit)
50FE-M08	208/230-3-60	STD/MED	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	064	064	064	064
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	064	064	064	064
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	065	065	065	065
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	065	065	065	065
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	066	066	066	066
		HIGH	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	064	064	064	064
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	064	064	064	064
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	065	065	065	065
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	065	065	065	065
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	066	066	066	066
	460-3-60	STD/MED	CRHEATER420A00	15.0	5	10	13.8	47.0	064	064	064	064
			CRHEATER421A00	25.0	5	10	23.0	78.3	065	065	065	065
			CRHEATER422A00	33.0	5	10	30.3	103.4	065	065	065	065
			CRHEATER423A00	41.7	5	10	38.3	130.7	065	065	065	065
		HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	064	064	064	064
			CRHEATER421A00	25.0	5	10	23.0	78.3	065	065	065	065
			CRHEATER422A00	33.0	5	10	30.3	103.4	065	065	065	065
			CRHEATER423A00	41.7	5	10	38.3	130.7	065	065	065	065
	575-3-60	STD/MED	CRHEATER425A00	18.0	5	—	16.5	56.4	064	064	064	064
			CRHEATER427A00	36.0	5	—	33.1	112.8	065	065	065	065
		HIGH	CRHEATER425A00	18.0	5	—	16.5	56.4	064	064	064	064
			CRHEATER427A00	36.0	5	—	33.1	112.8	065	065	065	065

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*08 Electric Heat Data — With Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
								NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
								NO P.E.	WITH P.E. (pwrdr fr/unit)	NO P.E.	WITH P.E. (pwrdr fr/unit)
50FE-M08	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	042	042	042	042
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	042	043	043	043
			CRHEATER414A00	25.0	5	18.8/23.0	64.1/78.3	043	043	043	043
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	043	043	043	043
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	045	045	045	045
		HIGH	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	042	042	042	042
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	042	043	043	043
			CRHEATER414A00	25.0	5	18.8/23.0	64.1/78.3	043	043	043	043
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	043	043	043	043
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	045	045	045	045
			CRHEATER420A00	15.0	5	13.8	47.0	042	042	042	042
			CRHEATER421A00	25.0	5	23.0	78.3	042	042	042	042
			CRHEATER422A00	33.0	5	30.3	103.4	042	042	042	042
			CRHEATER423A00	41.7	5	38.3	130.7	044	044	044	044
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	13.8	47.0	042	042	042	042
			CRHEATER421A00	25.0	5	23.0	78.3	042	042	042	042
			CRHEATER422A00	33.0	5	30.3	103.4	042	042	042	042
			CRHEATER423A00	41.7	5	38.3	130.7	044	044	044	044
		HIGH	CRHEATER420A00	15.0	5	13.8	47.0	042	042	042	042
			CRHEATER421A00	25.0	5	23.0	78.3	042	042	042	042
			CRHEATER422A00	33.0	5	30.3	103.4	042	042	042	042
			CRHEATER423A00	41.7	5	38.3	130.7	044	044	044	044
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	16.5	56.4	042	042	042	042
			CRHEATER427A00	36.0	5	33.1	112.8	042	042	042	042
		HIGH	CRHEATER425A00	18.0	5	16.5	56.4	042	042	042	042
			CRHEATER427A00	36.0	5	33.1	112.8	042	042	042	042

50FE-*09 Electric Heat Data — Without Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwrd fr/unit)	NO P.E	WITH P.E. (pwrd fr/unit)
50FE-M09	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	047	047	047	047
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	047	049	049	049
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	051	051	051	051
		HIGH	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	047	047	047	047
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	047	049	049	049
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER420A00	15.0	5	10	13.8	47.0	047	047	047	047
			CRHEATER421A00	25.0	5	10	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	10	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	10	38.3	130.7	050	050	050	050
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	10	13.8	47.0	047	047	047	047
			CRHEATER421A00	25.0	5	10	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	10	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	10	38.3	130.7	050	050	050	050
		HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	047	047	047	047
			CRHEATER421A00	25.0	5	10	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	10	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	10	38.3	130.7	050	050	050	050
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	—	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047
		HIGH	CRHEATER425A00	18.0	5	—	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047

NOTE(S):

- High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*09 Electric Heat Data — Without Non-fused Disconnect (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HSCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwr fr/unit)	NO P.E.	WITH P.E. (pwr fr/unit)
50FE-M09	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	067	067	067	067
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	068	068	068	068
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	069	069	069	069
		HIGH	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	067	067	067	067
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	068	068	068	068
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	069	069	069	069
		STD/ MED	CRHEATER420A00	15.0	5	10	13.8	47.0	067	067	067	067
			CRHEATER421A00	25.0	5	10	23.0	78.3	068	068	068	068
			CRHEATER422A00	33.0	5	10	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	10	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	10	46.0	157.5	068	068	068	068
	460-3-60	HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	067	067	067	067
			CRHEATER421A00	25.0	5	10	23.0	78.3	068	068	068	068
			CRHEATER422A00	33.0	5	10	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	10	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	10	46.0	157.5	068	068	068	068
		STD/ MED	CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*09 Electric Heat Data — With Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
								NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
								NO P.E.	WITH P.E. (pwrdr fr/unit)	NO P.E.	WITH P.E. (pwrdr fr/unit)
50FE-M09	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	047	047	047	047
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	047	049	049	049
			CRHEATER414A00	25.0	5	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
		HIGH	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	047	047	047	047
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	047	049	049	049
			CRHEATER414A00	25.0	5	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	13.8	47.0	047	047	047	047
			CRHEATER421A00	25.0	5	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
		HIGH	CRHEATER420A00	15.0	5	13.8	47.0	047	047	047	047
			CRHEATER421A00	25.0	5	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047
		HIGH	CRHEATER425A00	18.0	5	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047

50FE-*12 Electric Heat Data — Without Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwr fr/unit)	NO P.E.	WITH P.E. (pwr fr/unit)
50FE-M12	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	047	047	049	049
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	047	049	049	049
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	051	051	051	051
		HIGH	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	049	049	049	049
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	051	051	051	051
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	10	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	10	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	10	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	10	45.9	156.7	050	050	050	050
		HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	10	30.3	103.4	047	047	047	050
			CRHEATER423A00	41.7	5	10	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	10	45.9	156.7	050	050	050	050
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	—	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	—	45.9	156.7	047	047	047	047
		HIGH	CRHEATER425A00	18.0	5	—	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	—	45.9	156.7	047	047	047	050

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*12 Electric Heat Data — Without Non-fused Disconnect (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HSCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwrd fr/unit)	NO P.E.	WITH P.E. (pwrd fr/unit)
50FE-M12	208/230-3-60	STD/MED	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	067	067	067	067
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	069	069	069	069
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	069	069	069	069
		HIGH	CRHEATER411A00	10.4	5	10	7.8/9.6	26.7/32.6	067	067	067	067
			CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	T10	31.8/38.9	108.7/132.9	069	069	069	069
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	069	069	069	069
	460-3-60	STD/MED	CRHEATER420A00	15.0	5	10	13.8	47.0	067	067	067	067
			CRHEATER422A00	33.0	5	10	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	10	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	10	45.9	156.7	068	068	068	068
		HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	067	067	067	067
			CRHEATER422A00	33.0	5	10	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	10	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	10	45.9	156.7	068	068	068	068
	575-3-60	STD/MED	CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER428A00	50.0	5	—	45.9	156.7	068	068	068	068
		HIGH	CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER428A00	50.0	5	—	45.9	156.7	068	068	068	068

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

Electrical data (cont)

50FE-*12 Electric Heat Data — With Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXXA00			
								NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
								NO P.E.	WITH P.E. (pwrd fr/unit)	NO P.E	WITH P.E. (pwrd fr/unit)
50FE-M12	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	047	047	049	049
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	047	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	37.6/45.9	128.1/156.7	051	051	051	051
		HIGH	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	049	049	049	049
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	37.6/45.9	128.1/156.7	051	051	051	051
			CRHEATER420A00	15.0	5	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	45.9	156.7	050	050	050	050
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	45.9	156.7	050	050	050	050
		HIGH	CRHEATER420A00	15.0	5	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	050
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	45.9	156.7	050	050	050	050
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	45.9	156.7	047	047	047	047
		HIGH	CRHEATER425A00	18.0	5	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	45.9	156.7	047	047	047	050

50FE-*14 Electric Heat Data — Without Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwr fr/unit)	NO P.E	WITH P.E. (pwr fr/unit)
50FE-M14	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	—	7.8/9.6	26.7/32.6	049	049	049	049
			CRHEATER412A00	16.0	5	—	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER415A00	32.0	5	—	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	—	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	—	37.6/45.9	128.1/156.7	051	051	051	051
		HIGH	CRHEATER411A00	10.4	5	—	7.8/9.6	26.7/32.6	049	049	049	049
			CRHEATER412A00	16.0	5	—	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER415A00	32.0	5	—	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	—	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	—	37.6/45.9	128.1/156.7	051	051	051	051
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	—	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	—	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	—	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	—	45.9	156.7	050	050	050	050
		HIGH	CRHEATER420A00	15.0	5	—	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	—	30.3	103.4	047	047	047	050
			CRHEATER423A00	41.7	5	—	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	—	45.9	156.7	050	050	050	050
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	—	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	—	45.9	156.7	047	047	047	047
		HIGH	CRHEATER425A00	18.0	5	—	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	—	45.9	156.7	047	047	047	050

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*14 Electric Heat Data — Without Non-fused Disconnect (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HSCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwr fr/unit)	NO P.E.	WITH P.E. (pwr fr/unit)
50FE-M14	208/230-3-60	STD/MED	CRHEATER411A00	10.4	5	—	7.8/9.6	26.7/32.6	067	067	067	067
			CRHEATER412A00	16.0	5	—	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER415A00	32.0	5	—	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	—	31.8/38.9	108.7/132.9	069	069	069	069
			CRHEATER417A00	50.0	5	—	37.6/45.9	128.1/156.7	069	069	069	069
		HIGH	CRHEATER411A00	10.4	5	—	7.8/9.6	26.7/32.6	067	067	067	067
			CRHEATER412A00	16.0	5	—	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER415A00	32.0	5	—	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	—	31.8/38.9	108.7/132.9	069	069	069	069
			CRHEATER417A00	50.0	5	—	37.6/45.9	128.1/156.7	069	069	069	069
			CRHEATER420A00	15.0	5	—	13.8	47.0	067	067	067	067
			CRHEATER422A00	33.0	5	—	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	—	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	—	45.9	156.7	068	068	068	068
	460-3-60	STD/MED	CRHEATER420A00	15.0	5	—	13.8	47.0	067	067	067	067
			CRHEATER422A00	33.0	5	—	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	—	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	—	45.9	156.7	068	068	068	068
		HIGH	CRHEATER420A00	15.0	5	—	13.8	47.0	067	067	067	067
			CRHEATER422A00	33.0	5	—	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	—	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	—	45.9	156.7	068	068	068	068
	575-3-60	STD/MED	CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER428A00	50.0	5	—	45.9	156.7	068	068	068	068
		HIGH	CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER428A00	50.0	5	—	45.9	156.7	068	068	068	068

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*14 Electric Heat Data — With Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
								NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
								NO P.E.	WITH P.E. (pwrd fr/unit)	NO P.E.	WITH P.E. (pwrd fr/unit)
50FE-M14	208/230-3-60	STD/ MED	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	049	049	049	049
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	37.6/45.9	128.1/156.7	051	051	051	051
		HIGH	CRHEATER411A00	10.4	5	7.8/9.6	26.7/32.6	049	049	049	049
			CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	37.6/45.9	128.1/156.7	051	051	051	051
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	45.9	156.7	050	050	050	050
		HIGH	CRHEATER420A00	15.0	5	13.8	47.0	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	050
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	45.9	156.7	050	050	050	050
		STD/ MED	CRHEATER425A00	18.0	5	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	45.9	156.7	047	047	047	047
	575-3-60	HIGH	CRHEATER425A00	18.0	5	16.5	56.4	047	047	047	047
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	45.9	156.7	047	047	047	050

50FE-*16 Electric Heat Data — Without Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwr fr/unit)	NO P.E.	WITH P.E. (pwr fr/unit)
50FE-M16	208/230-3-60	STD/ MED	CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	051	051	051	051
			CRHEATER451A00	67.0	5	10	50.3/61.5	171.7/210.0	053	053	053	053
		HIGH	CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	051	051	051	051
			CRHEATER451A00	67.0	5	10	50.3/61.5	171.7/210.0	053	053	053	053
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	10	13.8	47.0	—	—	—	—
			CRHEATER421A00	25.0	5	10	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	10	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	10	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	10	45.9	156.7	050	050	050	050
			CRHEATER452A00	67.0	5	10	61.5	210.0	052	052	052	052
		HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	—	—	—	—
			CRHEATER421A00	25.0	5	10	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	10	30.3	103.4	047	047	047	050
			CRHEATER423A00	41.7	5	10	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	10	45.9	156.7	050	050	050	050
			CRHEATER452A00	67.0	5	10	61.5	210.0	052	052	052	052
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	—	16.5	56.4	—	—	—	—
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	—	45.9	156.7	047	047	047	047
		HIGH	CRHEATER453A00	67.0	5	—	61.5	210.0	052	052	052	052
			CRHEATER425A00	18.0	5	—	16.5	56.4	—	—	—	—
			CRHEATER427A00	36.0	5	—	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	—	45.9	156.7	047	047	047	050
			CRHEATER453A00	67.0	5	—	61.5	210.0	052	052	052	052

NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

50FE-*16 Electric Heat Data — Without Non-fused Disconnect (cont)

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	HIGH SCCR kA ^a	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	HSCCR SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXA00			
									NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
									NO P.E.	WITH P.E. (pwr fr/unit)	NO P.E.	WITH P.E. (pwr fr/unit)
50FE-M16	208/230-3-60	STD/MED	CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	068	068	068	068
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	069	069	069	069
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	069	069	069	069
			CRHEATER451A00	67.0	5	10	50.3/61.5	171.7/210.0	070	070	070	070
		HIGH	CRHEATER412A00	16.0	5	10	12.0/14.7	41.0/50.1	067	067	067	067
			CRHEATER414A00	25.0	5	10	18.8/23.0	64.1/78.3	068	068	068	068
			CRHEATER415A00	32.0	5	10	24.0/29.4	82.0/100.3	068	068	068	068
			CRHEATER416A00	42.4	5	10	31.8/38.9	108.7/132.9	069	069	069	069
			CRHEATER417A00	50.0	5	10	37.6/45.9	128.1/156.7	069	069	069	069
			CRHEATER451A00	67.0	5	10	50.3/61.5	171.7/210.0	070	070	070	070
	460-3-60	STD/MED	CRHEATER420A00	15.0	5	10	13.8	47.0	067	067	067	067
			CRHEATER421A00	25.0	5	10	23.0	78.3	068	068	068	068
			CRHEATER422A00	33.0	5	10	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	10	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	10	45.9	156.7	068	068	068	068
			CRHEATER452A00	67.0	5	10	61.5	210.0	069	069	069	069
		HIGH	CRHEATER420A00	15.0	5	10	13.8	47.0	067	067	067	067
			CRHEATER421A00	25.0	5	10	23.0	78.3	068	068	068	068
			CRHEATER422A00	33.0	5	10	30.3	103.4	068	068	068	068
			CRHEATER423A00	41.7	5	10	38.3	130.7	068	068	068	068
			CRHEATER424A00	50.0	5	10	45.9	156.7	068	068	068	068
			CRHEATER452A00	67.0	5	10	61.5	210.0	069	069	069	069
	575-3-60	STD/MED	CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER428A00	50.0	5	—	45.9	156.7	068	068	068	068
			CRHEATER453A00	67.0	5	—	61.5	210.0	069	069	069	069
		HIGH	CRHEATER425A00	18.0	5	—	16.5	56.4	067	067	067	067
			CRHEATER427A00	36.0	5	—	33.1	112.8	068	068	068	068
			CRHEATER428A00	50.0	5	—	45.9	156.7	068	068	068	068
			CRHEATER453A00	67.0	5	—	61.5	210.0	069	069	069	069

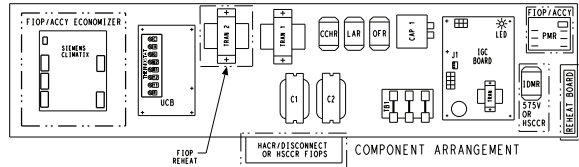
NOTE(S):

- a. High SCCR (Short Circuit Current Rating) is not available on units with Humidi-MiZer system, powered convenience outlet, phase loss monitor, non-fused disconnect, or 575-v.

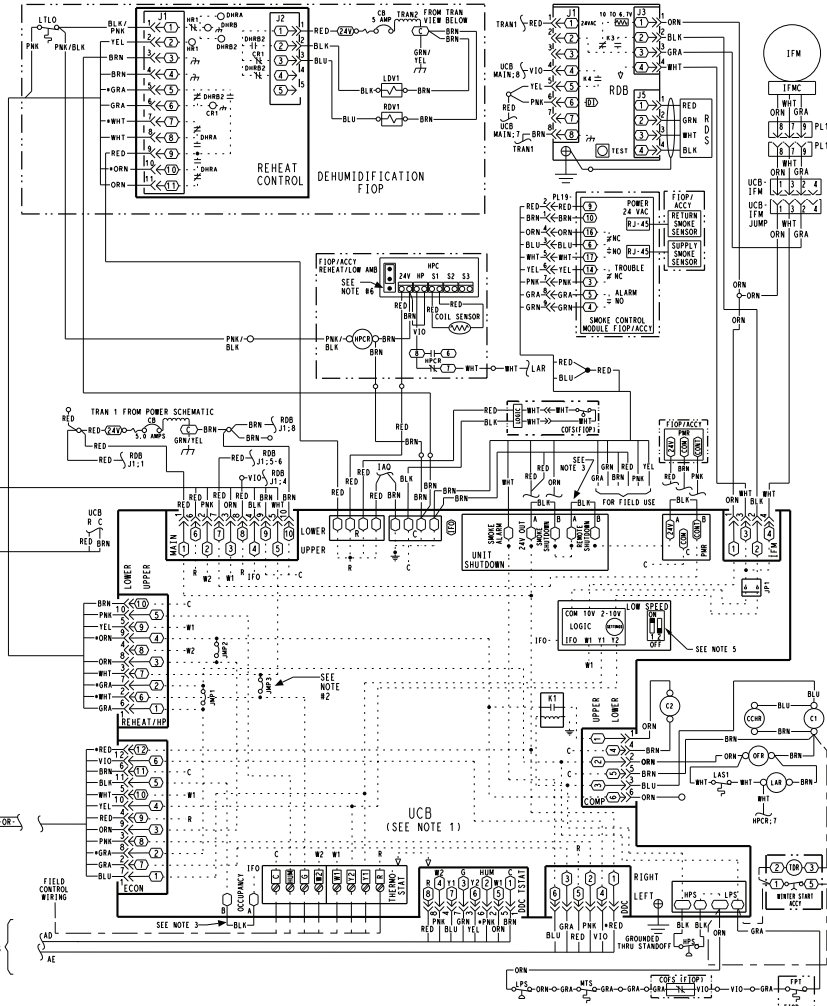
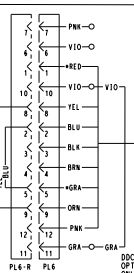
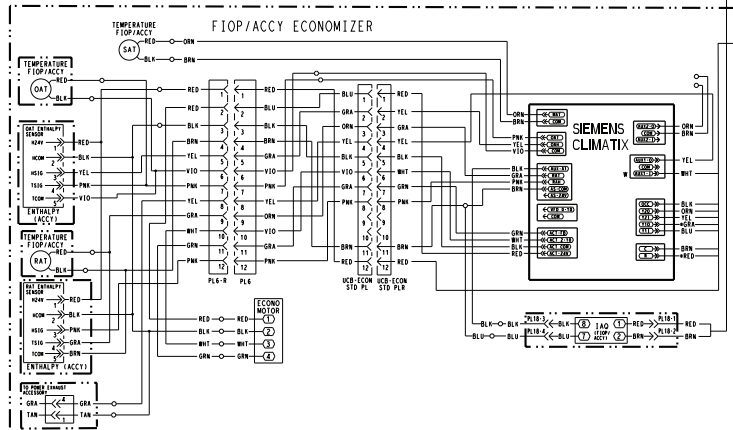
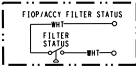
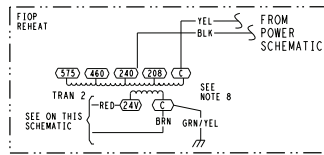
50FE-*16 Electric Heat Data — With Non-fused Disconnect

50FE UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	STD SCCR kA	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION KIT PART NUMBER CRSINGLEXXXXA00			
								NO C.O. OR UNPOWERED C.O.		WITH PWRD C.O.	
								NO P.E.	WITH P.E. (pwrdr fr/unit)	NO P.E.	WITH P.E. (pwrdr fr/unit)
50FE-M16	208/230-3-60	STD/ MED	CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER414A00	25.0	5	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	37.6/45.9	128.1/156.7	051	051	051	051
			CRHEATER451A00	67.0	5	50.3/61.5	171.7/210.0	053	053	053	053
		HIGH	CRHEATER412A00	16.0	5	12.0/14.7	41.0/50.1	049	049	049	049
			CRHEATER414A00	25.0	5	18.8/23.0	64.1/78.3	049	049	049	049
			CRHEATER415A00	32.0	5	24.0/29.4	82.0/100.3	049	049	049	049
			CRHEATER416A00	42.4	5	31.8/38.9	108.7/132.9	051	051	051	051
			CRHEATER417A00	50.0	5	37.6/45.9	128.1/156.7	051	051	051	051
			CRHEATER451A00	67.0	5	50.3/61.5	171.7/210.0	053	053	053	053
	460-3-60	STD/ MED	CRHEATER420A00	15.0	5	13.8	47.0	—	—	—	—
			CRHEATER421A00	25.0	5	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	047
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	45.9	156.7	050	050	050	050
			CRHEATER452A00	67.0	5	61.5	210.0	052	052	052	052
		HIGH	CRHEATER420A00	15.0	5	13.8	47.0	—	—	—	—
			CRHEATER421A00	25.0	5	23.0	78.3	047	047	047	047
			CRHEATER422A00	33.0	5	30.3	103.4	047	047	047	050
			CRHEATER423A00	41.7	5	38.3	130.7	050	050	050	050
			CRHEATER424A00	50.0	5	45.9	156.7	050	050	050	050
			CRHEATER452A00	67.0	5	61.5	210.0	052	052	052	052
	575-3-60	STD/ MED	CRHEATER425A00	18.0	5	16.5	56.4	—	—	—	—
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	45.9	156.7	047	047	047	047
			CRHEATER453A00	67.0	5	61.5	210.0	052	052	052	052
		HIGH	CRHEATER425A00	18.0	5	16.5	56.4	—	—	—	—
			CRHEATER427A00	36.0	5	33.1	112.8	047	047	047	047
			CRHEATER428A00	50.0	5	45.9	156.7	047	047	047	050
			CRHEATER453A00	67.0	5	61.5	210.0	052	052	052	052

Typical Control Wiring Diagram — 48FE 08-12 230/460/575-3-60 Unit with Electromechanical Controller and POL224 Economizer



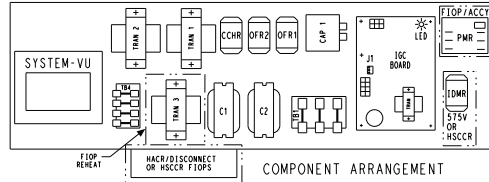
- NOTES:
1. UCB SCHEMATIC LAYOUT DOES NOT MATCH ACTUAL TERMINAL BOARD LAYOUT.
 2. TERMINAL BOARD JUMPS 1, 2 AND 3 ARE CUT FOR REHEAT UNITS ONLY.
 3. REMOVE DESIGNATED JUMPS ON UCB WHEN ADDING SMOKE DETECTORS, OCCUPANCY AND REMOTE SHUTDOWN.
 4. USE ABC AS COARSE AND POT AS FINE ADJUSTMENTS FOR SETTING HIGH FAN SPEED. LOW SPEED IS AN OFFSET BASED ON DIP SWITCHES.
 5. 2-PIN LOW SPEED DIP SWITCH POSITIONS ARE FACTORY SET AS SHOWN. EXCEPTION ON 11.5-15 TON UNITS; THESE ARE SET TO "ON/OFF".
 6. HARDSTART AND CUTOFF SET TO "MIN". JUMPER PIN ON TOP 2-PINS AS SHOWN.
 7. THE "A" WIRE COLOR IS FOR DIFFERENTIATION WITHIN THIS SCHEMATIC.
 8. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 200/230V UNIT TAP IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 200V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 200V TAP.
 9. IGC P3 SETTINGS: 30 SEC.



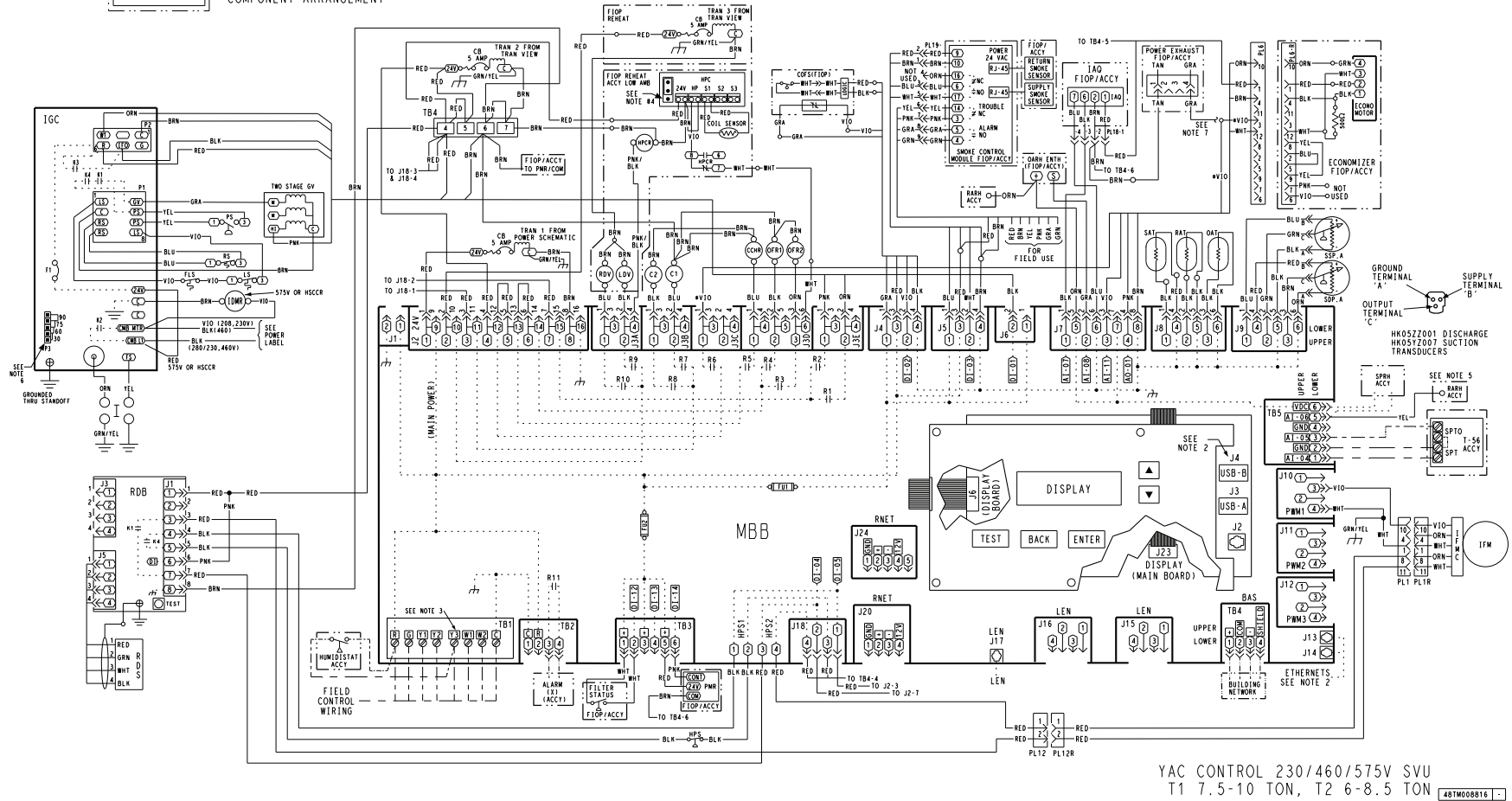
YAC CONTROL 230/460/575V T1 7.5-10 TON, T2 6-8.5 TON

48TMD08B10

Typical Control Wiring Diagram — 48FE 08-12 230/460/575-3-60 Unit with SystemVu™ Controller

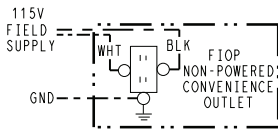
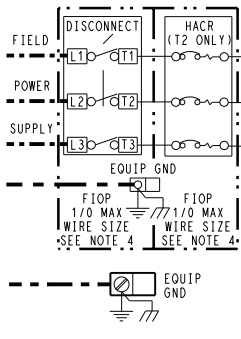


- NOTES:
1. LOW VOLTAGE CONNECTIONS MUST BE CLASS 2.
 2. USB-B AT J4 AND ETHERNETS AT J13, J14 ARE SHOWN FOR FUTURE USE.
 3. THE "Y3" TERMINAL IS CONFIGURABLE IN THE SOFTWARE.
 4. HARDSTART AND CUTOFF SET TO "MIN". JUMPER PIN ON TOP 2-PINS AS SHOWN.
 5. WHEN USING A RARM SENSOR, MAKE CONNECTION IN THE RETURN AIR SECTION WHEN USING SPH SENSOR, MAKE CONNECTION HERE BY DISCONNECTING YELLOW WIRE.
 6. IGC P3 SETTING: 30 SEC.
 7. DISCONNECT VIO TO ALLOW POWER EXHAUST CONNECTION.
 8. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 208/230V UNIT TRAN IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.



Typical Power Wiring Diagram — 48FE 08-12 230/460-3-60 Unit with Electromechanical Controller

YAC POWER 230/460V
T1 7.5-10 TON
T2 6-8.5 TON



LEGEND

- X MARKED WIRE
- X TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- X TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- - - - - FIELD CONTROL WIRING
- - - - - FIELD POWER WIRING
- - - - - CIRCUIT BOARD TRACE
- - - - - ACCESSORY OR OPTIONAL WIRING
- TO INDICATE COMMON POTENTIAL ONLY; NOT TO REPRESENT WIRING

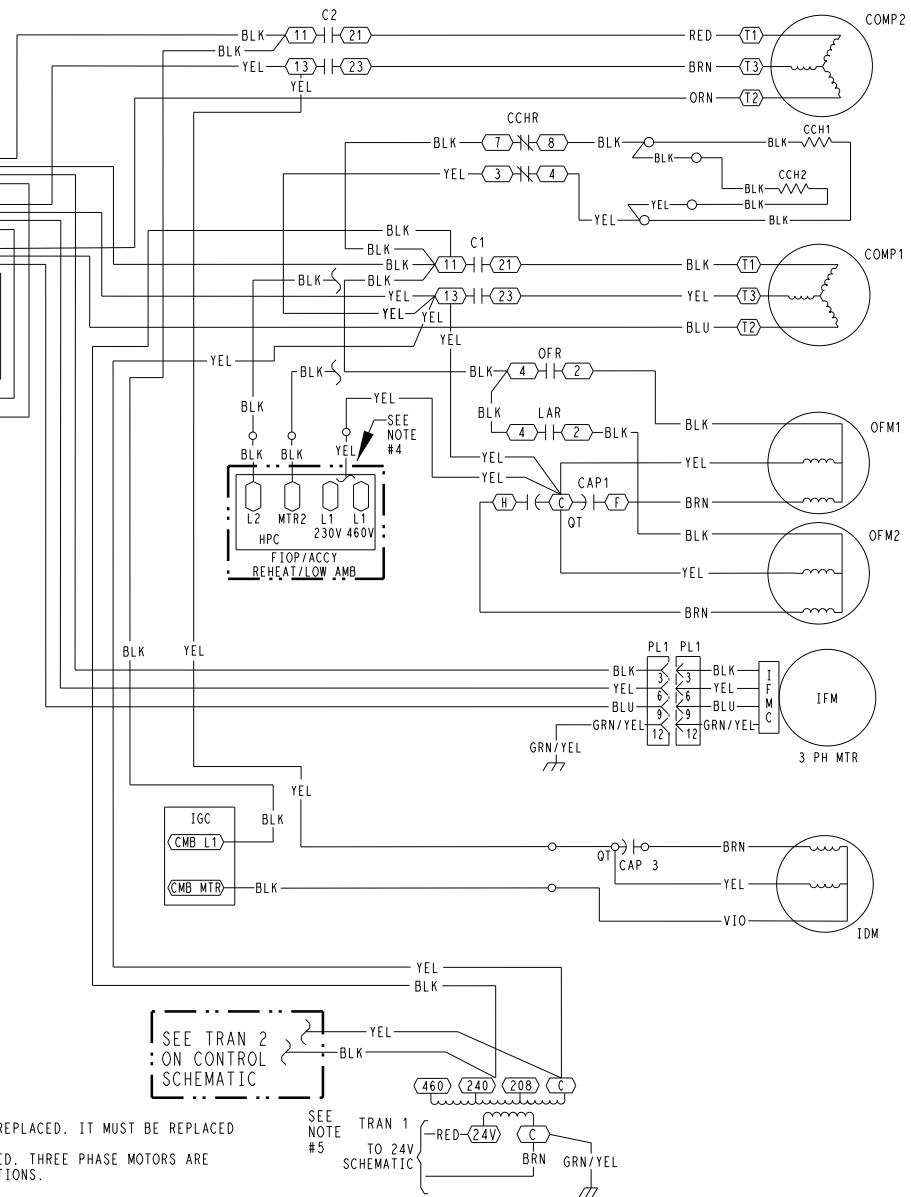
NOTES:

1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED. IT MUST BE REPLACED WITH TYPE 90 C WIRE OR ITS EQUIVALENT.
2. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED. THREE PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING CONDITIONS.
3. USE COPPER CONDUCTOR ONLY.
4. YELLOW WIRE CONNECTED TO RESPECTIVE VOLTAGE TAP.
5. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 208/230V UNIT TRAN IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.

ACCY ACCESSORY
AMB AMBIENT
C CONTACTOR, COMPRESSOR
CAP CAPACITOR
CB CIRCUIT BREAKER
CCH CRANKCASE HEATER
CCHR CRANKCASE HEATER RELAY
CMB COMBUSTION
COFS CONDENSATE OVERFLOW SWT
COMP COMPRESSOR MOTOR
DDC DIRECT DIGITAL CONTROL
ERV ENERGY RECOVERY VENTILATOR
FIOP FACTORY INSTALLED OPTION
FLS FAN LIMIT SWITCH
FPT FREEZE PROTECTION THERMOSTAT
FSD FIRE SHUT DOWN
FS FLAME SENSOR
FU FUSE
GND GROUND
GVR GAS VALVE RELAY
HPC HEAD PRESSURE CONTROL
HPS HIGH PRESSURE SWITCH

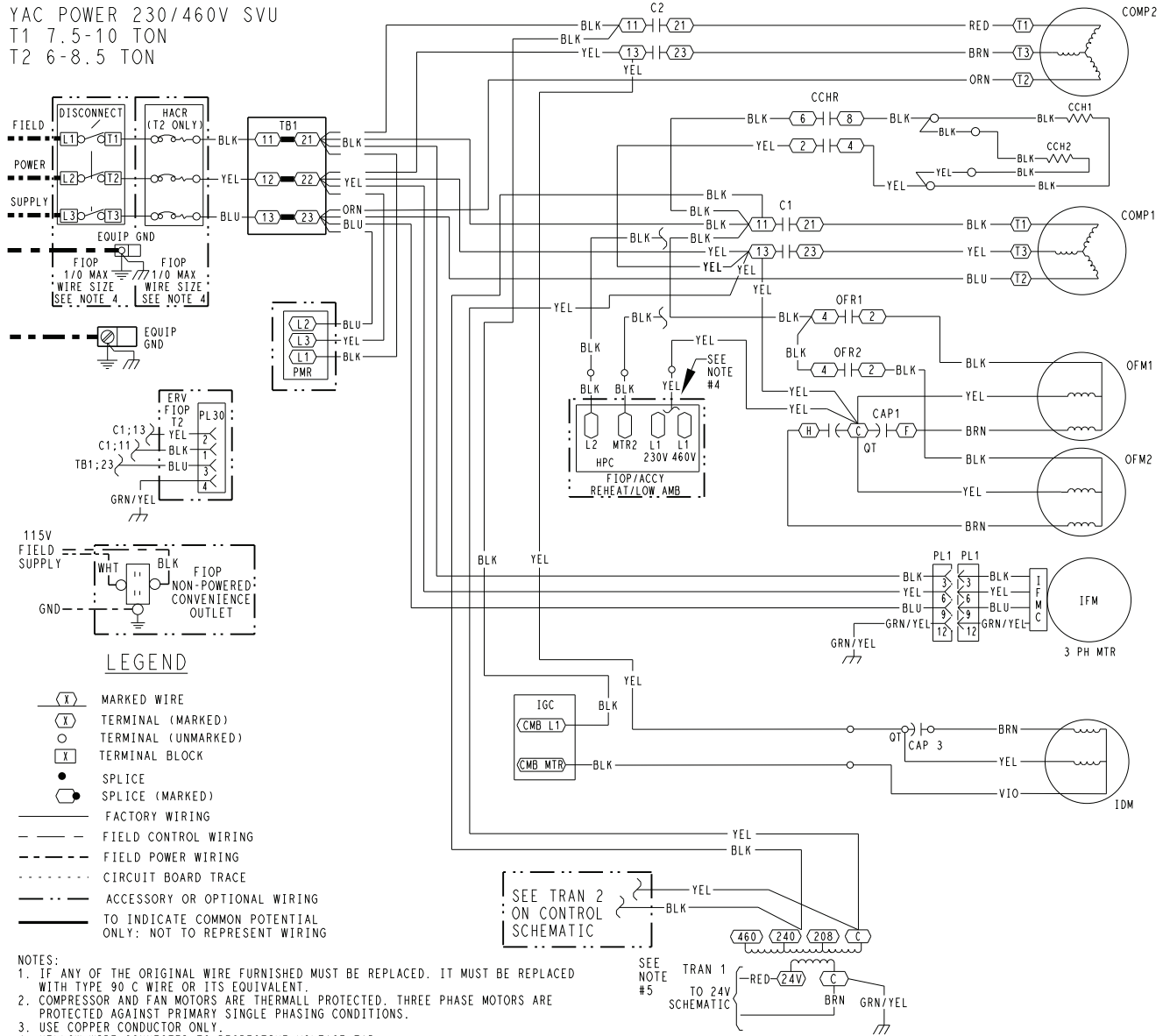
HS HALL EFFECT SENSOR
I IGNITOR
IAQ INDOOR AIR QUALITY SENSORS
IDM INDUCED DRAFT MOTOR
IFCB INDOOR FAN CIRCUIT BREAKER
IFM INDOOR FAN MOTOR
IFMC INDOOR FAN CONTROLLER
IGC INTEGRATED GAS CONTROL
JMP JUMPER
LA LOW AMBIENT
LAR LOW AMBIENT RELAY
LDV LIQUID DIVERTER VALVE
LPS LOW PRESSURE SWITCH
LSM LIMIT SWITCH (MANUAL RESET)
LS LIMIT SWITCH
LTLO LOW TEMPERATURE LOCKOUT
MGV MAIN GAS VALVE
MOV VOLTAGE RESTRICTOR
MTR MOTOR
MTS MIXED AIR TEMPERATURE SWITCH
OAQ OUTDOOR AIR QUALITY
OARH OUTSIDE AIR RELATIVE HUMIDITY
OAT OUTDOOR AIR TEMP. SENSOR

OFM OUTDOOR FAN MOTOR
OFR OUTDOOR FAN RELAY
OL OVERLOAD
PL PLUG ASSEMBLY
POT POTENTIOMETER
PMR PHASE MONITOR RELAY
QT QUADRUPLE TERMINAL
RARH RETURN AIR RELATIVE HUMIDITY
RAT RETURN AIR TEMP. SENSOR
RDB REFRIGERANT DISSIPATION BOARD
RDS REFRIGERANT DISSIPATION SENSOR
RDV REHEAT DISCHARGE VALVE
RS ROLLOUT SWITCH
SAT SUPPLY AIR TEMP. SENSOR
SEN SENSOR
SPRH SPACE RELATIVE HUMIDITY
SPT SPACE TEMPERATURE SENSOR
SPTO SPACE TEMPERATURE OFFSET
STD STANDARD
TB TERMINAL BLOCK
TDR TIME DELAY RELAY (WINTER START)
TRAN TRANSFORMER
UCB UNIT CONTROL BOARD



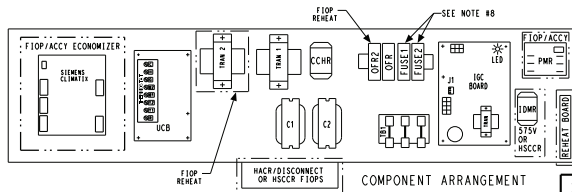
Typical Power Wiring Diagram — 48FE 08-12 230/460-3-60 Unit with SystemVu™ Controller

YAC POWER 230/460V SVU
T1 7.5-10 TON
T2 6-8.5 TON

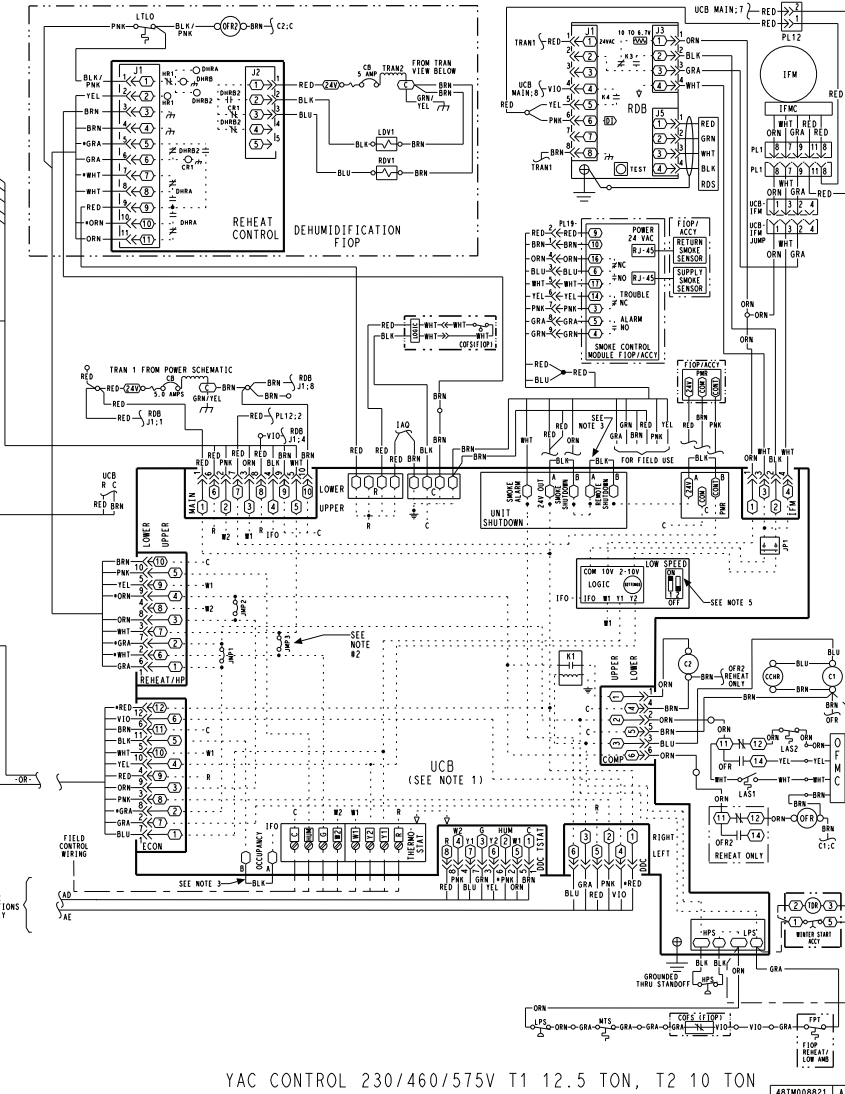
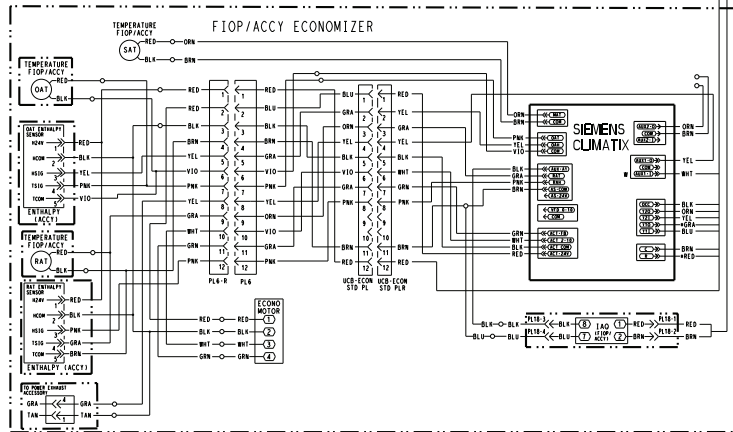
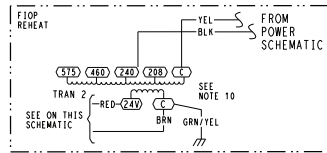


48TM008212 C

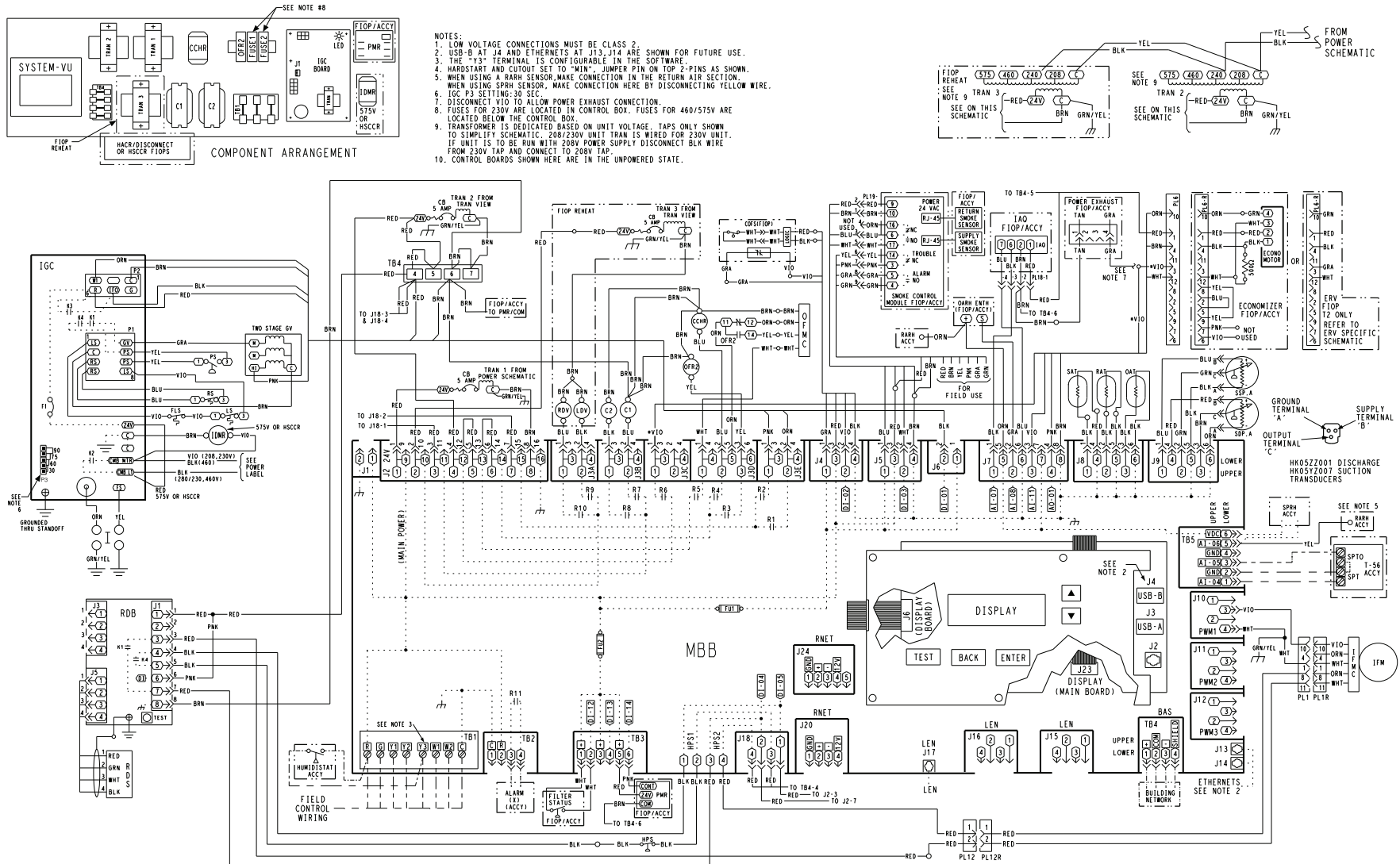
Typical Control Wiring Diagram — 48FE 14 230/460/575-3-60 Unit with Electromechanical Controller and POL224 Economizer



- NOTES:
1. UCB SCHEMATIC LAYOUT DOES NOT MATCH ACTUAL TERMINAL BOARD LAYOUT.
 2. TERMINAL BOARD JUMPERS 1, 2 AND 3 ARE CUT FOR REHEAT UNITS ONLY.
 3. REMOVE DESIGNATED JUMPERS ON UCB WHEN ADDING SMOKE DETECTORS, OCCUPANCY AND REMOTE SHUTDOWN.
 4. USE ABC AS COARSE AND POT AS FINE ADJUSTMENTS FOR SETTING HIGH FAN SPEED. LOW SPEED IS AN OFFSET BASED ON DIP SWITCHES.
 5. 2-PIN LOW SPEED DIP SWITCH POSITIONS ARE FACTORY SET AS SHOWN.
 6. HARDSTART AND CUTOFF SET TO "MIN". JUMPER PIN ON TOP 2-PINS AS SHOWN.
 7. THE * WIRE COLOR IS FOR DIFFERENTIATION WITHIN THIS SCHEMATIC.
 8. FUSES FOR 230V ARE LOCATED IN CONTROL BOX. FUSES FOR 460/575V ARE LOCATED BELOW THE CONTROL BOX.
 9. IFC P3 SETTING: 50 SEC.
 10. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 200/230V UNIT TRAIN IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 200V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 200V TAP.
 11. CONTROL BOARDS SHOWN HERE ARE IN THE UNPOWERED STATE.



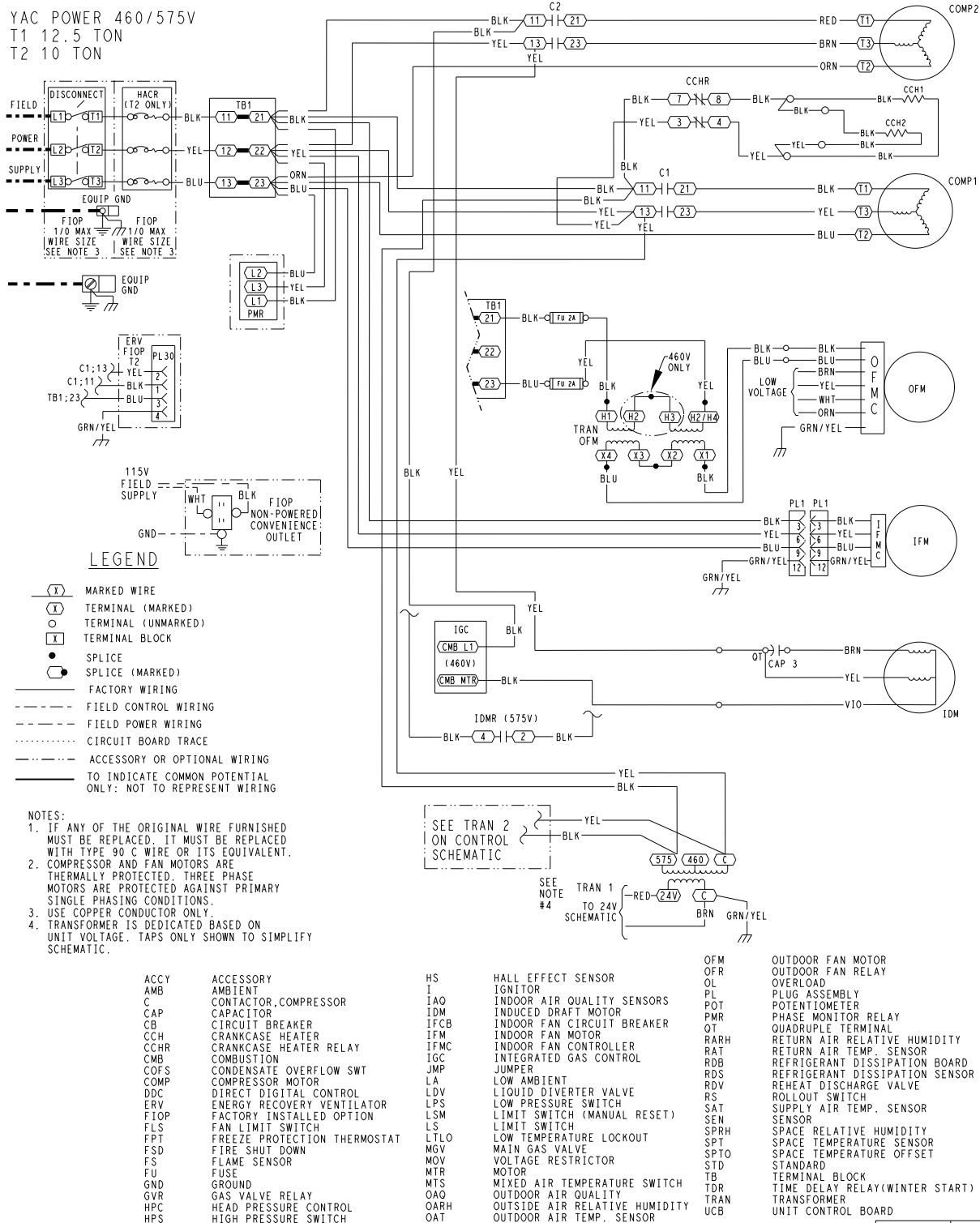
Typical Control Wiring Diagram — 48FE 14 230/460/575-3-60 Unit with SystemVu™ Controller



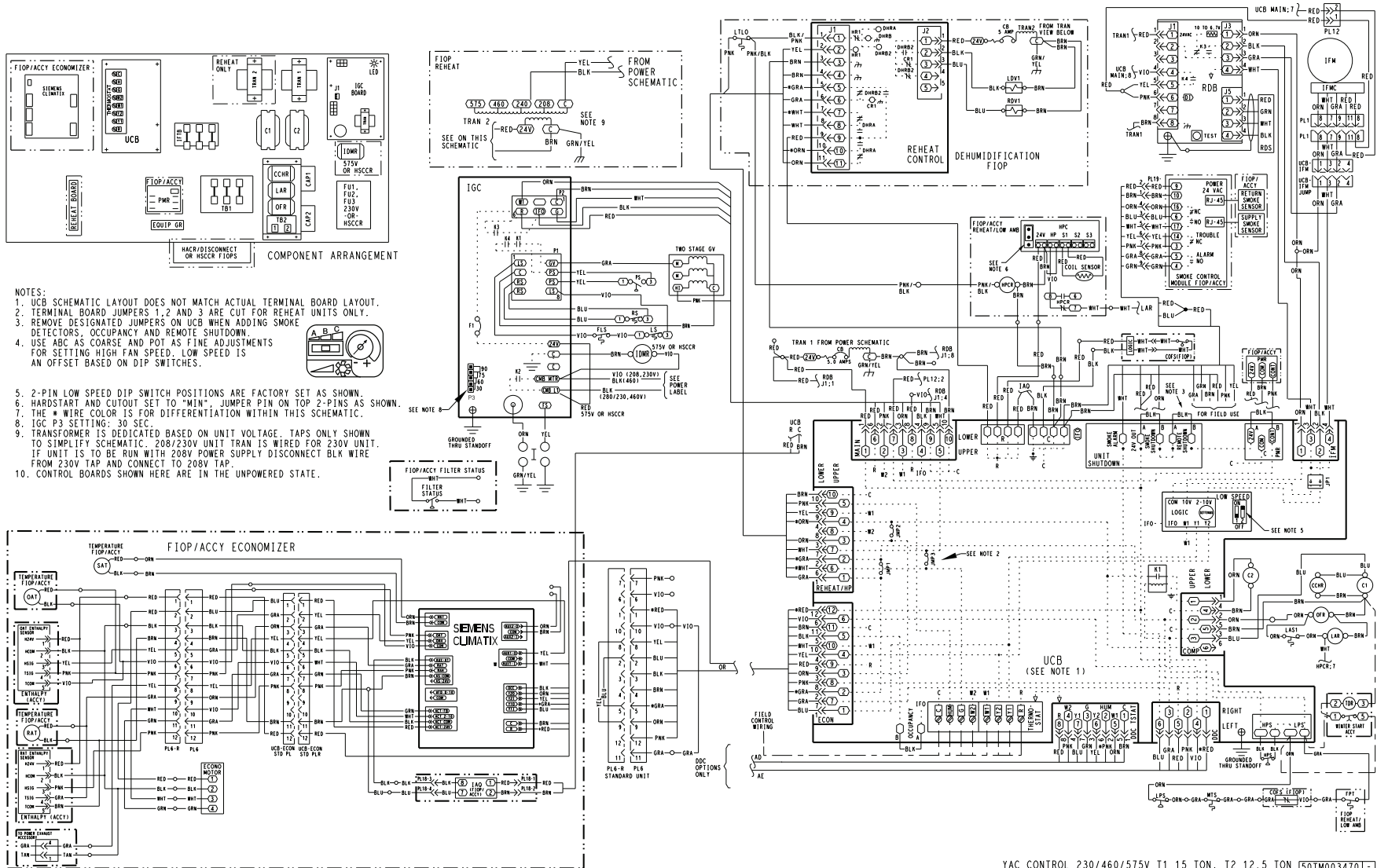
YAC CONTROL 230/460/575V SVU T1 12.5 TON, T2 10 TON

48TMO08823 | A

Typical Power Wiring Diagram — 48FE 14 208/230/460-3-60 Unit Electromechanical and SystemVu Controllers



Typical Control Wiring Diagram — 48FE 16 230/460/575-3-60 Unit with Electromechanical Controller



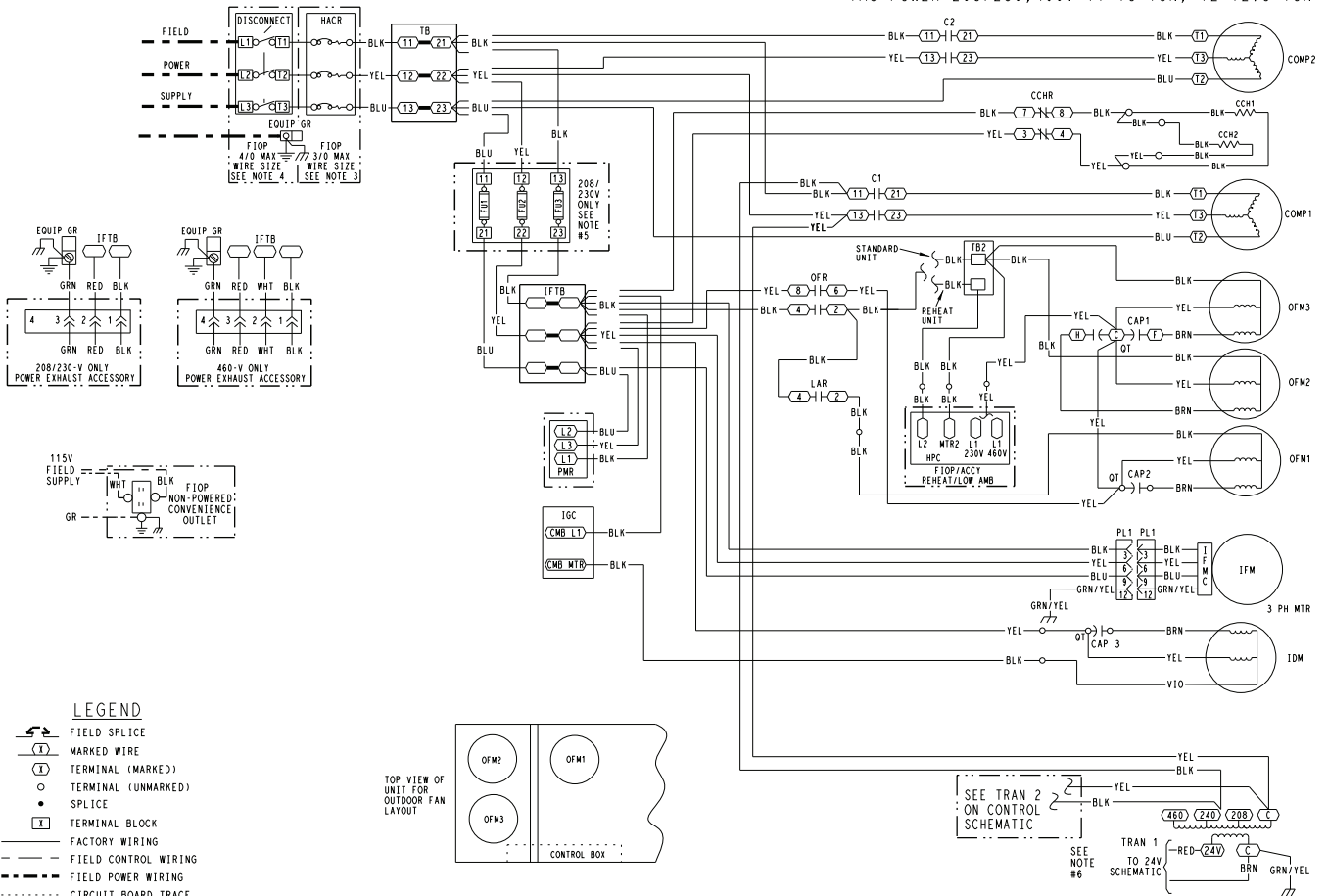


Typical wiring diagrams (cont)

Carrier

Typical Power Wiring Diagram — 48FE 16 208/230/460-3-60 Unit with Electromechanical Controller

YAC POWER 208/230, 460V T1 15 TON, T2 12.5 TON



ACCY	ACCESSORY	I	IGNITOR	OFR	OUTDOOR FAN RELAY
AMB	AMBIENT	IAQ	INDOOR AIR QUALITY SENSORS	OL	OVERLOAD
C	CONTACTOR, COMPRESSOR	IDM	INDUCED DRAFT MOTOR	PL	PLUG ASSEMBLY
CAP	CAPACITOR	IFCB	INDOOR FAN CIRCUIT BREAKER	POT	POTENTIOMETER
CB	CIRCUIT BREAKER	IFM	INDOOR FAN MOTOR	PMR	PHASE MONITOR RELAY
CCH	CRANKCASE HEATER	IFMC	INDOOR FAN CONTROLLER	QTR	QUADRUPLE TERMINAL
CCHR	CRANKCASE HEATER RELAY	IGC	INTEGRATED GAS CONTROL	RARH	RETURN AIR RELATIVE HUMIDITY
CMB	COMBUSTION	IGT	INDOOR FAN TERMINAL BLOCK	RAT	RETURN AIR TEMP. SENSOR
COFS	CONDENSATE OVERFLOW SWT	JMP	JUMPER	RDB	REFRIGERANT DISSIPATION BOARD
COMP	COMPRESSOR MOTOR	LA	LOW AMBIENT	RDS	REFRIGERANT DISSIPATION SENSOR
DDC	DIRECT DIGITAL CONTROL	LAR	LOW AMBIENT RELAY	RDV	REHEAT DISCHARGE VALVE
EDR	ELECTRIC HEATER RELAY	LDV	LIQUID DIVERTER VALVE	RS	ROLL-OUT SWITCH
ERV	ENERGY RECOVERY VENTILATOR	LPS	LOW PRESSURE SWITCH	RVS	REVERSING VALVE SOLENOID RELAY
FIOP	FACTORY INSTALLED OPTION	LS	LIMIT SWITCH (MANUAL RESET)	SAT	SPACE TEMP. SENSOR
FLS	FAN LIMIT SWITCH	LTLO	LOW TEMPERATURE LOCKOUT	SEN	SENSOR
FPT	FREEZE PROTECTION THERMOSTAT	MGV	MAIN GAS VALVE	SPRH	SPACE RELATIVE HUMIDITY
FSD	FIRE SHUT DOWN	MOV	VOLTAGE RESTRICTOR	SPT	SPACE TEMPERATURE SENSOR
FS	FLAME SENSOR	MTR	MOTOR	SPTO	SPACE TEMPERATURE OFFSET
FU	FUSE	MTS	MIXED AIR TEMPERATURE SWITCH	STD	STANDARD
GND	GROUND	OARH	OUTDOOR AIR QUALITY	TB	TERMINAL BLOCK
GVR	GAS VALVE RELAY	OAT	OUTSIDE AIR RELATIVE HUMIDITY	TBR	TEMPERATURE BYPASS RELAY
HPC	HEAD PRESSURE CONTROL	OFM	OUTDOOR FAN MOTOR	TDR	TIME DELAY RELAY (WINTER START)
HPS	HIGH PRESSURE SWITCH			TRAN	TRANSFORMER
HS	HALL EFFECT SENSOR			UCB	UNIT CONTROL BOARD

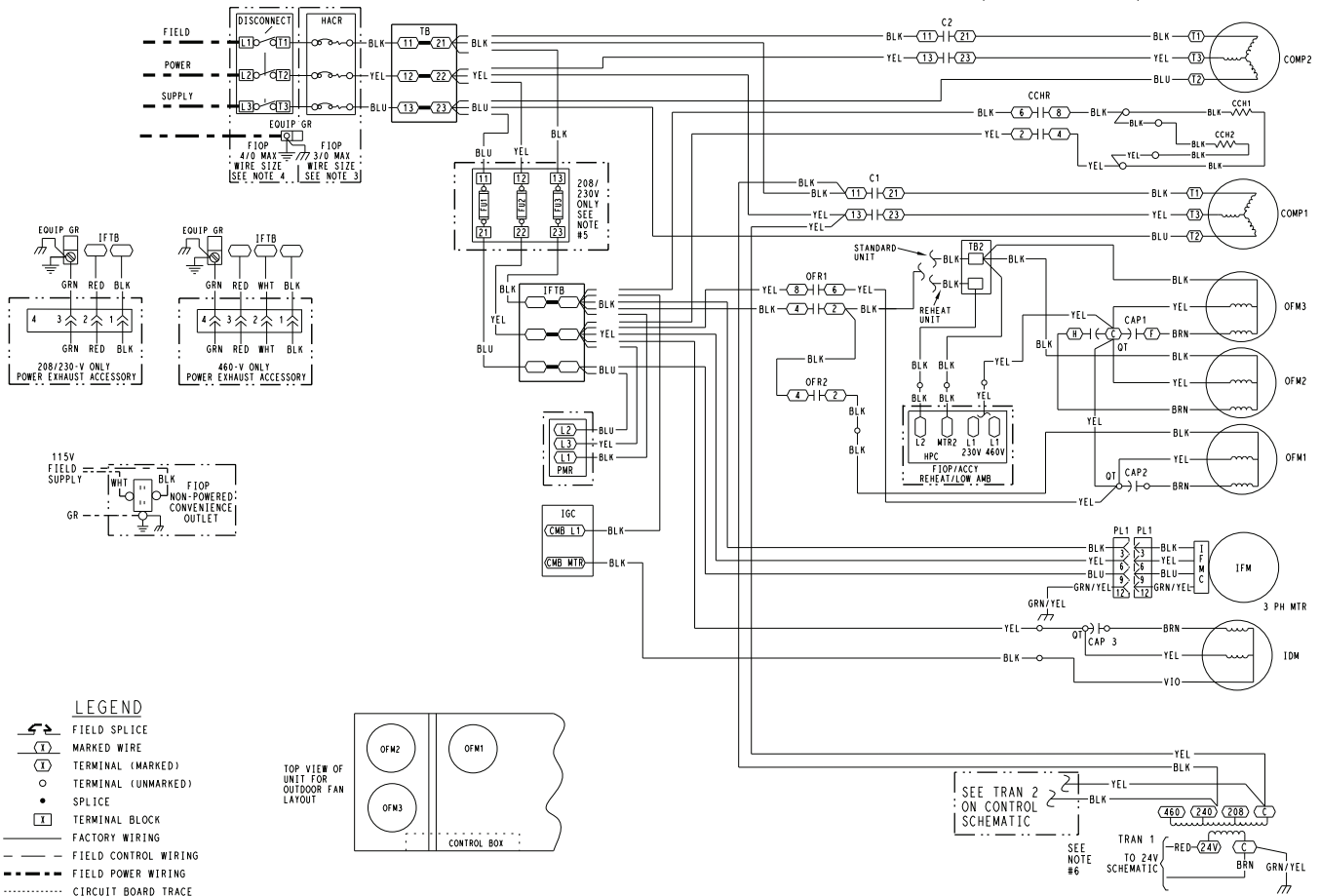
50TM001914 D

Typical wiring diagrams (cont)



Typical Power Wiring Diagram — 48FE 16 208/230/460-3-60 Unit with SystemVu™ Controller

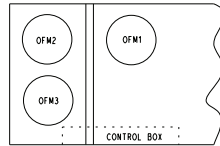
YAC POWER 208/230, 460V T1 15 TON, T2 12.5 TON SVU



LEGEND

- FIELD SPLICE
- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- SPLICE
- TERMINAL BLOCK
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR FIOP
- TO INDICATE COMMON POTENTIAL ONLY: NOT TO REPRESENT WIRING

TOP VIEW OF
UNIT FOR
OUTDOOR FAN
LAYOUT



- NOTES:
- IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 90 C WIRE OR ITS EQUIVALENT.
 - COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED. THREE PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING CONDITIONS.
 - USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS.
 - USE COPPER CONDUCTORS ONLY.
 - FUT, FUD, AND FUS, REPLACE WITH 250V 60A BUSSMAN FNR 60.
 - TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 208/230V UNIT TRANS IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 200V TAP.

ACCY
AMB
C
CAP
CB
CCH
CCHR
CMB
COFS
COMP
DDC
EHR
ERV
FIOP
FLS
FPT
FSD
FS
FU
GND
GVR
HPC
HPS
HS

ACCESSORY
AMBIENT
CONTACTOR, COMPRESSOR
CAPACITOR
CIRCUIT BREAKER
CRANKCASE HEATER
CRANKCASE HEATER RELAY
COMBUSTION
CONDENSATE OVERFLOW SWT
COMPRESSOR MOTOR
DIRECT DIGITAL CONTROL
ELECTRIC HEATER RELAY
ENERGY RECOVERY VENTILATOR
FACTORY INSTALLED OPTION
FAN LIMIT SWITCH
FREEZE PROTECTION THERMOSTAT
FIRE SHUT DOWN
FLAME SENSOR
FUSE
GROUND
GAS VALVE RELAY
HEAD PRESSURE CONTROL
HIGH PRESSURE SWITCH
HALL EFFECT SENSOR

I
IAQ
IDM
IFCB
IFM
IFMC
IGC
IFTB
JMP
LA
LAR
LDV
LPS
LSM
LS
LTLO
MGV
MOV
MTR
MTS
OAO
OARH
OAT
OFM

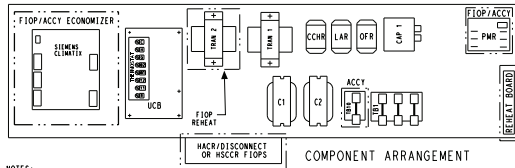
IGNITOR
INDOOR AIR QUALITY SENSORS
INDUCED DRAFT MOTOR
INDOOR FAN CIRCUIT BREAKER
INDOOR FAN MOTOR
INDOOR FAN CONTROLLER
INTEGRATED GAS CONTROL
INDOOR FAN TERMINAL BLOCK
JUMPER
LOW AMBIENT
LOW AMBIENT RELAY
LIQUID DIVERTER VALVE
LOW PRESSURE SWITCH
LIMIT SWITCH (MANUAL RESET)
LIMIT SWITCH
LOW TEMPERATURE LOCKOUT
MAIN GAS VALVE
VOLTAGE RESTRICTOR
MOTOR
MIXED AIR TEMPERATURE SWITCH
OUTDOOR AIR QUALITY
OUTSIDE AIR RELATIVE HUMIDITY
OUTDOOR AIR TEMP. SENSOR
OUTDOOR FAN MOTOR

OFR
OL
PL
POT
PWR
QT
RARH
RAT
RDB
RDS
RDV
RVS
SAT
SEN
SPRH
SPT
SPTO
STD
TB
TBR
TDR
TRAN
UCB

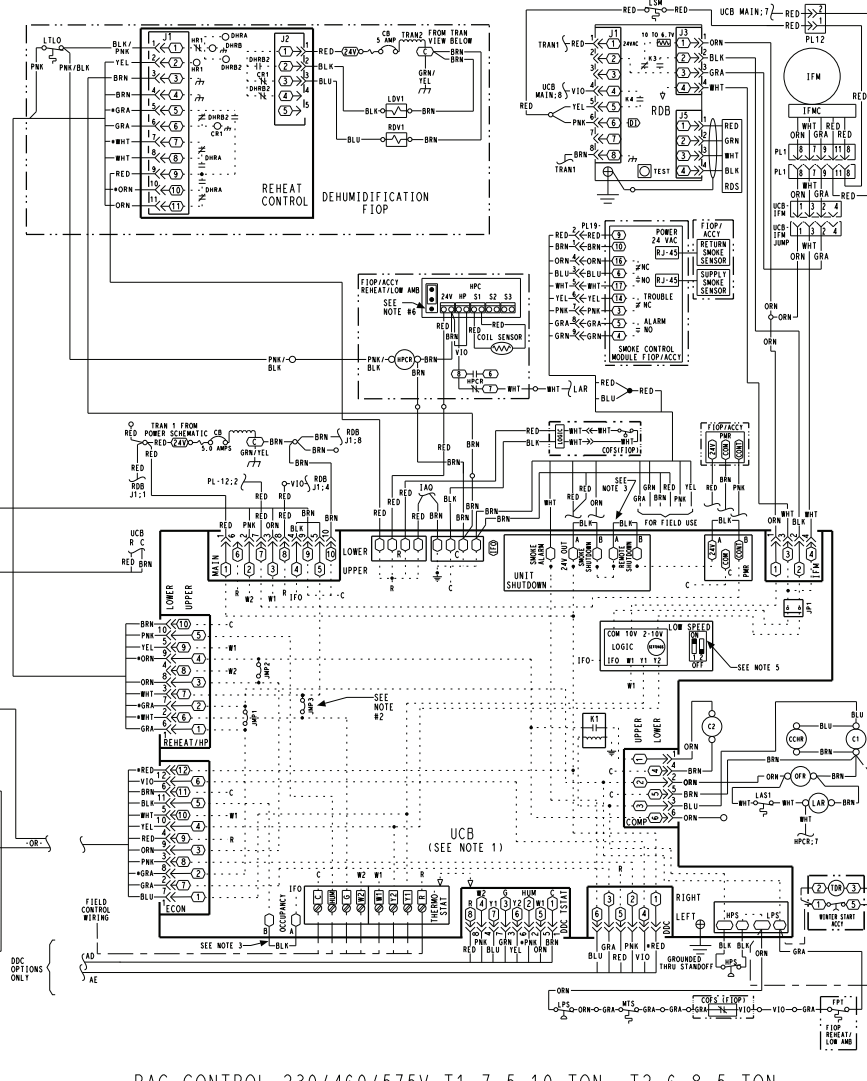
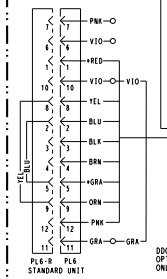
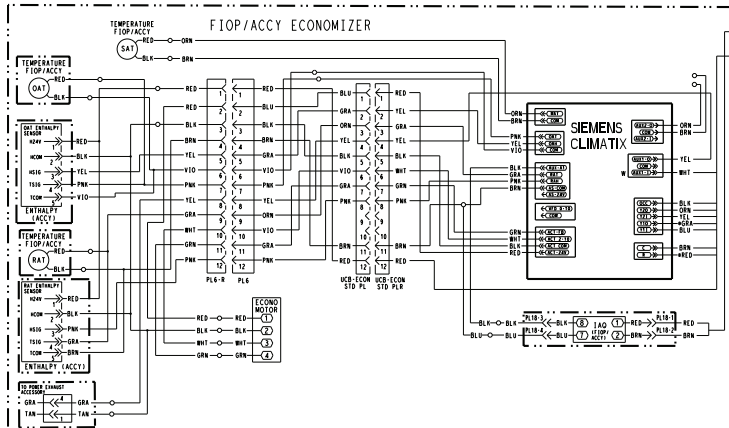
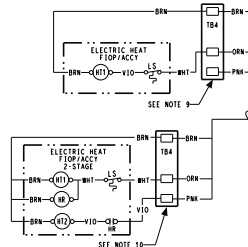
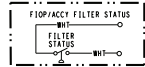
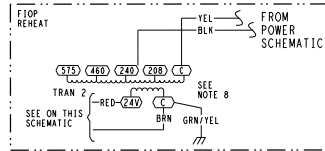
OUTDOOR FAN RELAY
OVERLOAD
PLUG ASSEMBLY
POTENTIOMETER
PHASE MONITOR RELAY
QUADRUPLE TERMINAL
RETURN AIR RELATIVE HUMIDITY
RETURN AIR TEMP. SENSOR
REFRIGERANT DISSIPATION BOARD
REFRIGERANT DISSIPATION SENSOR
REHEAT DISCHARGE VALVE
ROLLOUT SWITCH
REVERSING VALVE SOLENOID RELAY
SUPPLY AIR TEMP. SENSOR
SENSOR
SPACE RELATIVE HUMIDITY
SPACE TEMPERATURE SENSOR
SPACE TEMPERATURE OFFSET
STANDARD
TERMINAL BLOCK
TEMPERATURE BYPASS RELAY
TIME DELAY RELAY (WINTER START)
TRANSFORMER
UNIT CONTROL BOARD

50TM002657 B

Typical Control Wiring Diagram — 50FE 08-12 230/460/575-3-60 Unit with Electromechanical Controller and POL224 Economizer

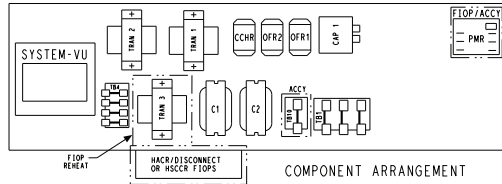


- NOTES:
1. TERMINAL BOARD SCHEMATIC LAYOUT DOES NOT MATCH ACTUAL TERMINAL BOARD LAYOUT.
 2. TERMINAL BOARD JUMPER 1, 2 AND 9 ARE CUT FOR REHEAT UNITS ONLY.
 3. REMOVE DESIGNATED JUMPER ON TERMINAL BOARD WHEN ADDING SMOKE DETECTORS, OCCUPANCY AND REMOTE SHUTDOWN.
 4. USE ABC AS COARSE AND POT AS FINE ADJUSTMENTS FOR SETTING HIGH FAN SPEED. LOW SPEED IS AN OFFSET BASED ON DIP SWITCHES.
 5. 2-PIN LOW SPEED DIP SWITCH POSITIONS ARE FACTORY SET AS SHOWN. EXCEPTION ON T1 8.5 TON UNITS. THESE ARE SET TO "ON-OFF".
 6. HARDSTART AND CUTOFF SET TO "MIN". JUMPER PIN ON TOP 2-PINS AS SHOWN.
 7. THE W WIRE COLOR IS FOR DIFFERENTIATION WITHIN THIS SCHEMATIC.
 8. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 200/230V UNIT TRANS IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 200V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 200V TAP.
 9. TBA LOCATED IN HEAT SECTION.
 10. TO CONVERT TO A SINGLE STAGE HEATER MOVE VIOLET WIRE AT TBA TO CONNECT WITH WHITE WIRE.
 11. CONTROL BOARDS SHOWN HERE ARE IN THE UNFORMED STATE.

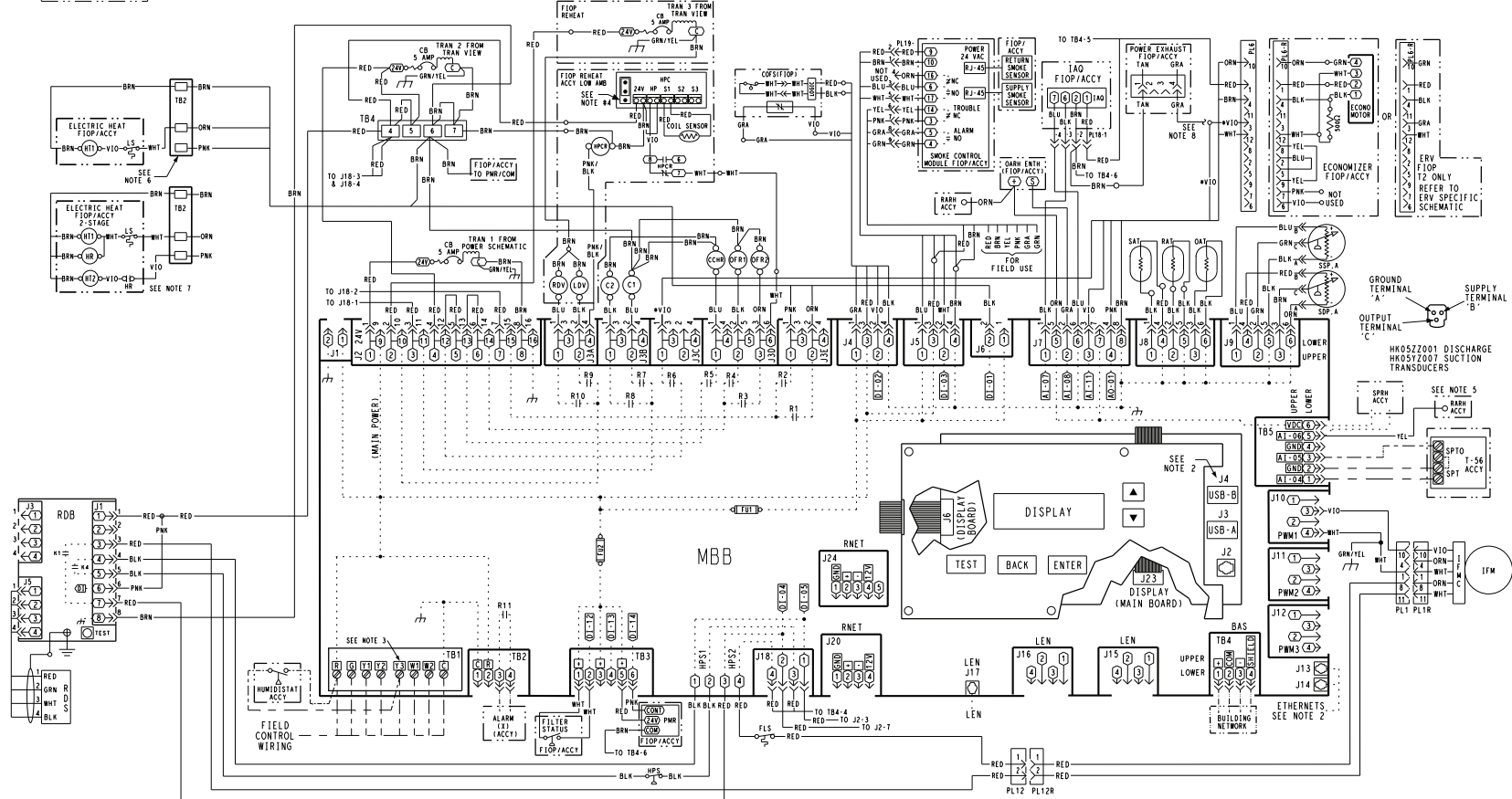
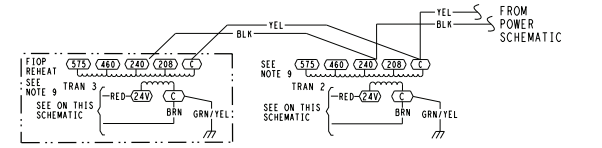


48TMO08B14 A

Typical Control Wiring Diagram — 50FE 08-12 230/460/575-3-60 Unit with SystemVu™ Controller



- NOTES:
1. LOW VOLTAGE CONNECTIONS MUST BE CLASS 2.
 2. USB-B AT J4 AND ETHERNETS AT J13, J14 ARE SHOWN FOR FUTURE USE.
 3. THE "P3" TERMINAL IS CONFIGURABLE IN THE SOFTWARE.
 4. HARDSTART AND CUTOFF SET TO "MIN". JUMPER PIN ON TOP 2-PINS AS SHOWN.
 5. WHEN USING A RARH SENSOR, MAKE CONNECTION IN THE RETURN AIR SECTION.
 6. WHEN USING SPRN SENSOR, MAKE CONNECTION HERE BY DISCONNECTING YELLOW WIRE.
 7. TB2 LOCATED IN HEAT SECTION.
 8. TO CONVERT TO A SINGLE STAGE HEATER MOVE VIOLET WIRE AT TB4 TO CONNECT WITH WHITE WIRE.
 9. DISCONNECT VIO TO ALLOW POWER EXHAUST CONNECTION.
 10. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 208/230V UNIT TRANS IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.
 11. CONTROL BOARDS SHOWN HERE ARE IN THE UNPOWERED STATE.



PAC CONTROL 230/460/575V SVU T1 7.5-10 TON, T2 6-8.5 TON

48TMD08B1S A

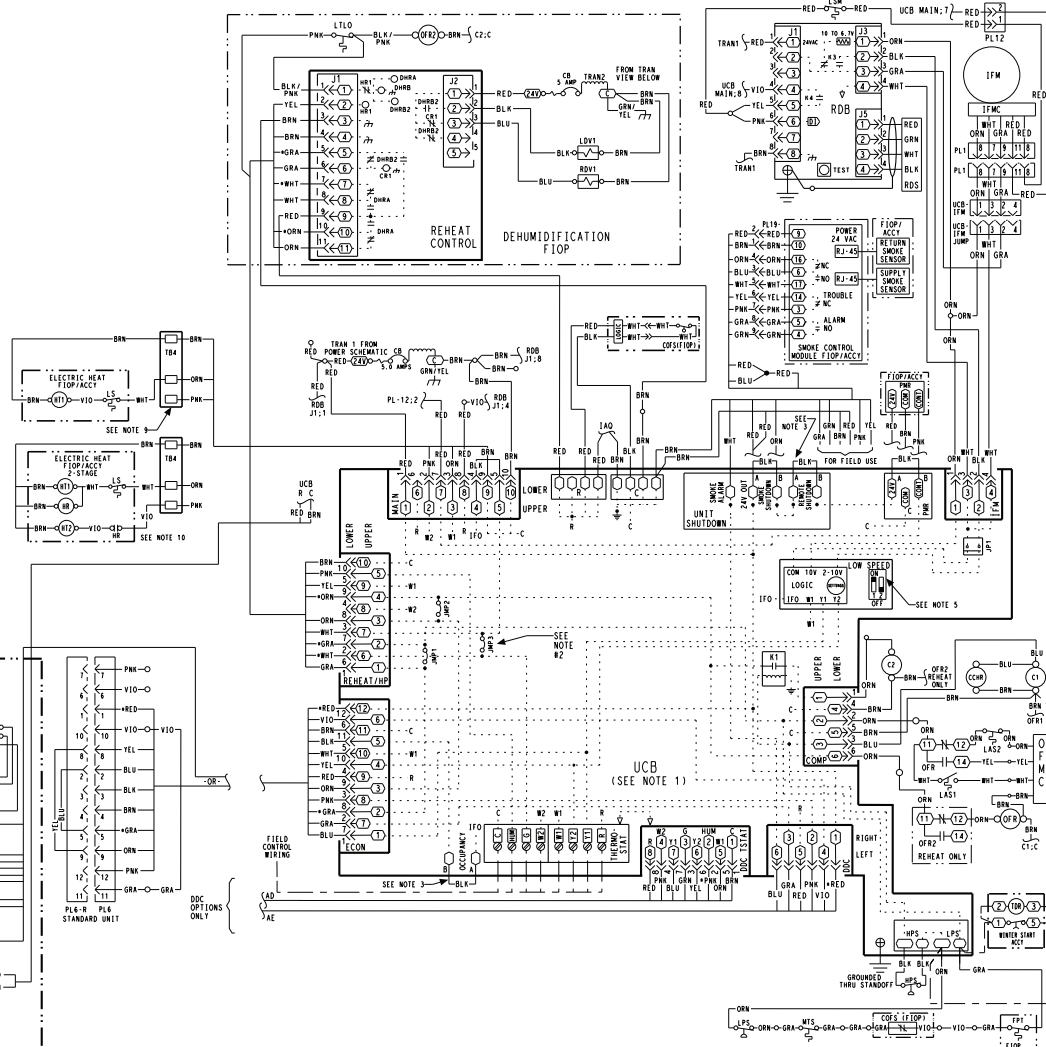
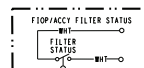
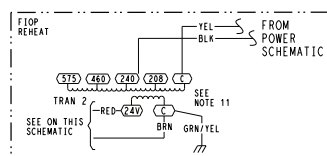
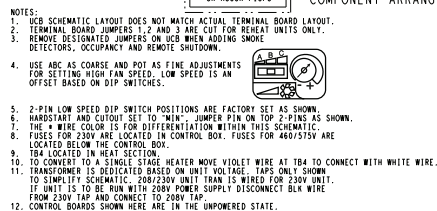
PAC POWER 230/460V
T1 7.5-10 TON, T2 6-8.5 TON
HP POWER 230/460V
T1 7.5-8.5 TON,
T2 6-7.5 TON



PAC POWER 230/460V
T1 7.5-10 TON, T2 6-8.5 TON SVU
HP POWER 230/460V
T1 7.5-8.5, /L1,L2,L3 W
T2 6-7.5 TON SVU /ARE FACTOR
WIRES WITH

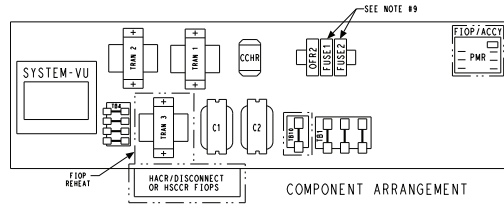


Typical wiring diagrams (cont)

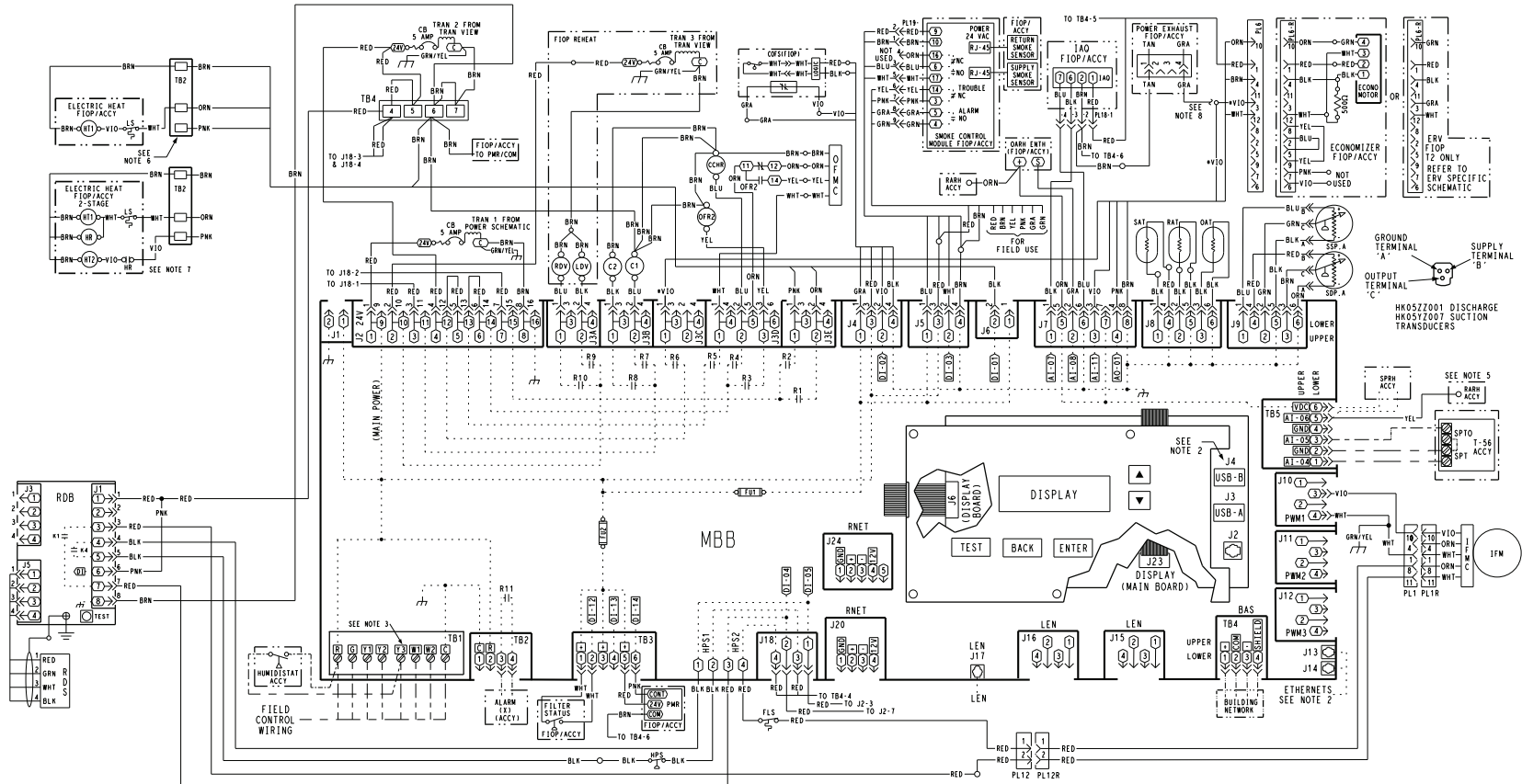
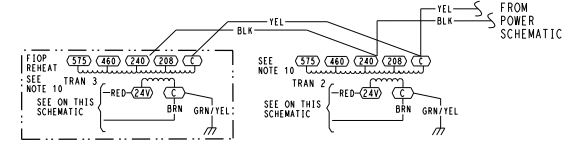


48TM008820

Typical Control Wiring Diagram — 50FE 14 230/460/575-3-60 Unit with SystemVu™ Controller



- NOTES:
1. LOW VOLTAGE CONNECTIONS MUST BE CLASS 2.
 2. USB-B AT J4 AND ETHERNETS AT J13, J14 ARE SHOWN FOR FUTURE USE.
 3. THE "Y3" TERMINAL IS CONFIGURABLE IN THE SOFTWARE.
 4. HARDSTART AND CUTOFF SET TO "MIN". JUMPER PIN ON TOP 2-PINS AS SHOWN.
 5. WHEN USING A RARH SENSOR, MAKE CONNECTION IN THE RETURN AIR SECTION. WHEN USING SPRN SENSOR, MAKE CONNECTION HERE BY DISCONNECTING YELLOW WIRE.
 6. TB2 LOCATED IN HEAT SECTION.
 7. TO CONVERT TO A SINGLE STAGE HEATER MOVE VIOLET WIRE AT TB4 TO CONNECT WITH WHITE WIRE.
 8. DISCONNECT VIO TO ALLOW POWER EXHAUST CONNECTION.
 9. FUSES FOR 230V ARE LOCATED IN CONTROL BOX. FUSES FOR 460/575V ARE LOCATED BELOW THE CONTROL BOX.
 10. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN. TO SIMPLIFY SCHEMATIC, 208/230V UNIT TRAN IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.
 11. CONTROL BOARDS SHOWN HERE ARE IN THE UNPOWERED STATE.

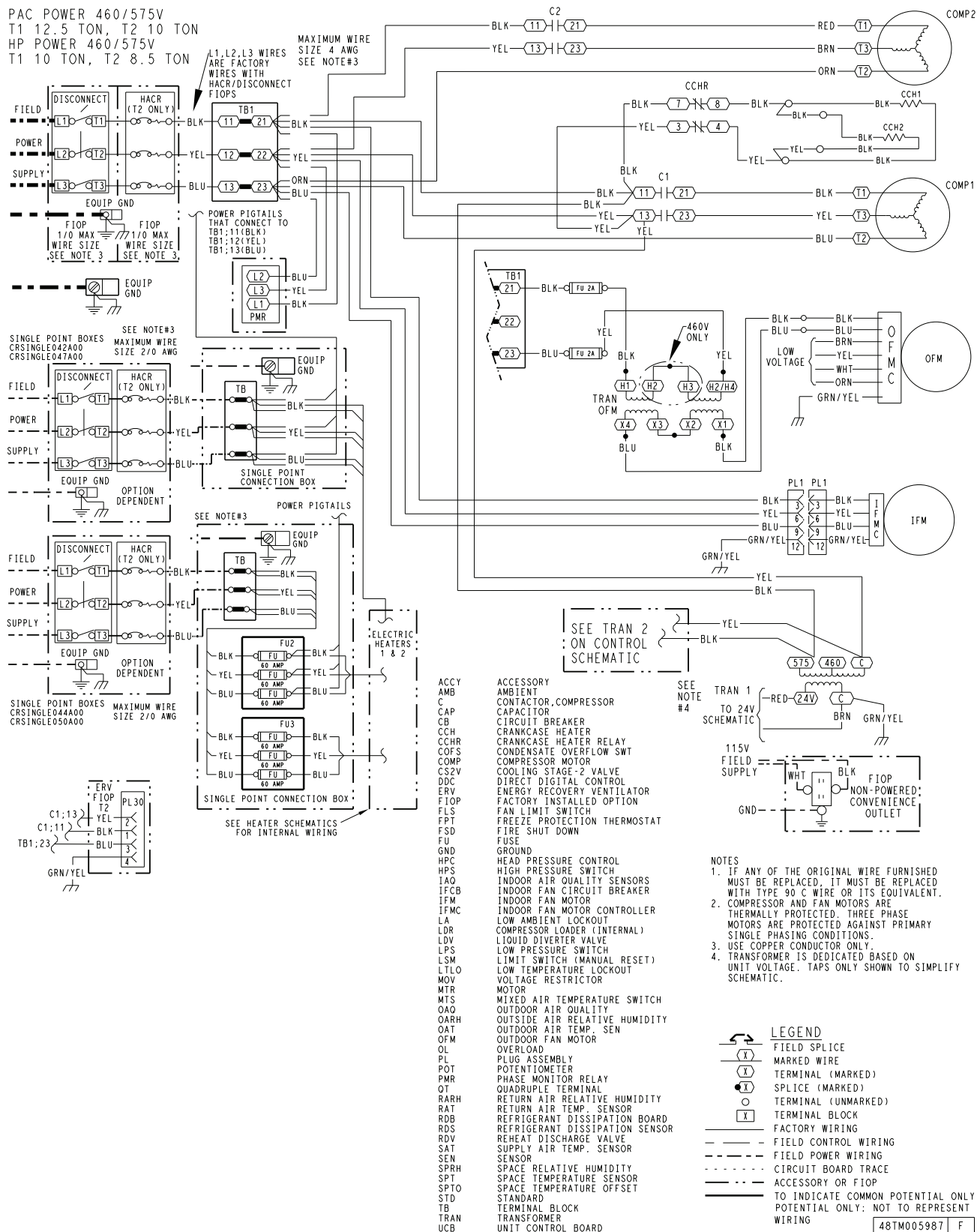


PAC CONTROL 230/460/575V SVU T1 12.5 TON, T2 10 TON

48TW008822 1

PAC POWER 460/575V
T1 12.5 TON, T2 10 TON
HP POWER 460/575V
T1 10 TON, T2 8.5 TON

MAXIMUM WIRE
SIZE 4 AWG
SEE NOTE#3

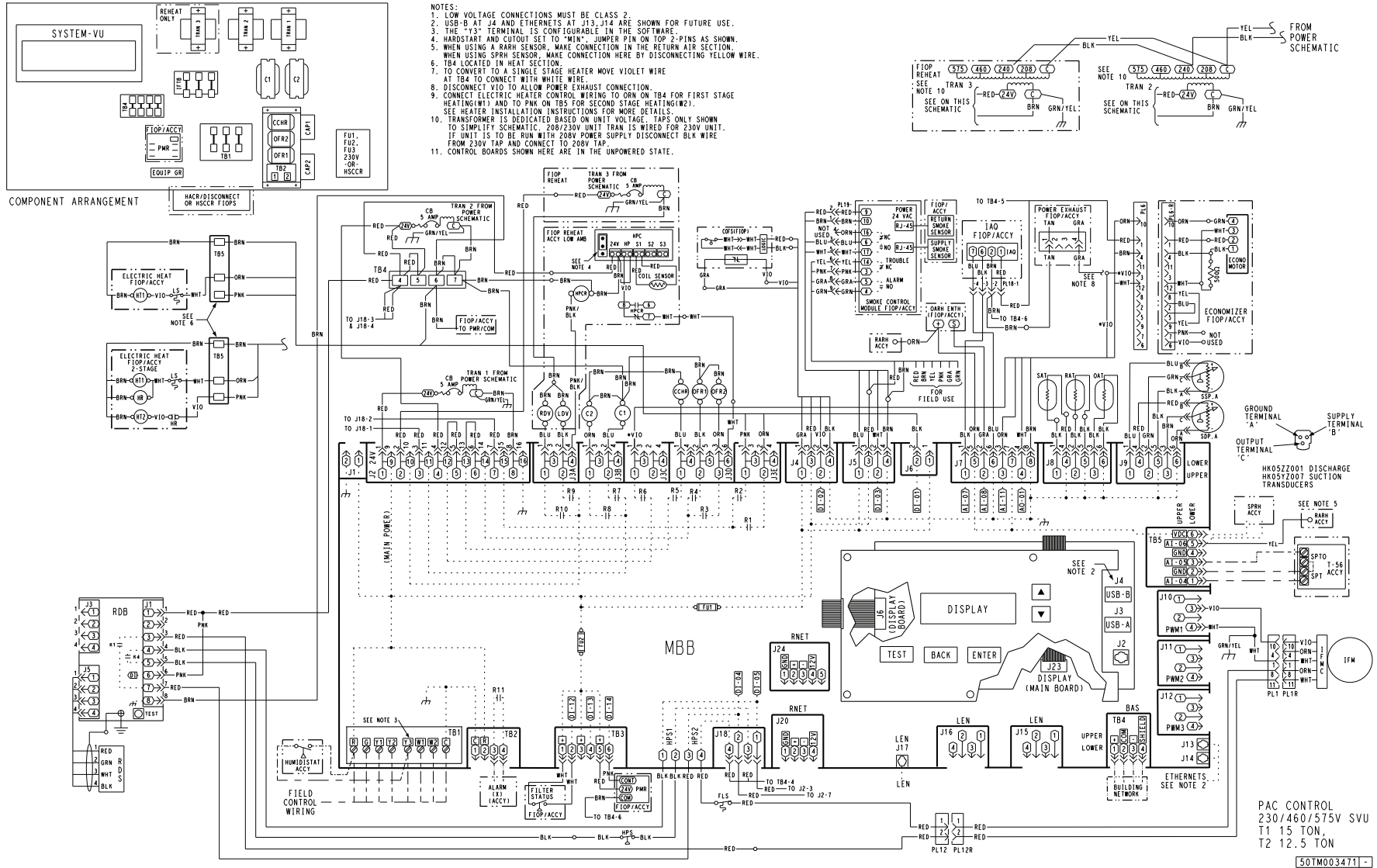


NOTES:

1. UCB LAYOUT DOES NOT MATCH ACTUAL TERMINAL BOARD LAYOUT.
2. TERMINAL BOARD JUMPERS 1, 2 AND 3 ARE CUT FOR REHEAT UNITS ONLY.
3. REMOVE DESIGNATED JUMPERS ON TERMINAL BOARD WHEN ADDING SMOKE DETECTORS, OCCUPANCY AND REMOTE SHUTDOWN.
4. USE ABC AS COARSE AND POT AS FINE ADJUSTMENTS FOR SETTING HIGH FAN SPEED. LOW SPEED IS AN OFFSET BASED ON DIP SWITCHES.
5. 2-PIN LOW SPEED DIP SWITCH POSITIONS ARE FACTORY SET AS SHOWN.
6. HARDSTART AND CUTOFF SET TO "MIN", JUMPER PIN ON TOP 2-PINS AS SHOWN.
7. THE * WIRE COLOR IS FOR DIFFERENTIATION WITHIN THIS SCHEMATIC.
8. TB4 LOCATED IN HEAT SECTION.
9. TO CONVERT TO A SINGLE STAGED HEATER MOVE VIOLET WIRE AT TB4 TO CONNECT WITH WHITE WIRE.
10. TRANSFORMER IS DESIGNATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC. 208/230V UNIT TAP IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.
11. CONTROL BOARDS SHOWN HERE ARE IN THE UNPOWERED STATE.

PAC CONTROL 230/460/575V T1 15 TON, T2 12.5 TON 50TM003469 -

Typical Control Wiring Diagram — 50FE 16 230/460/575-3-60 Unit with SystemVu™ Controller



PAC POWER 208/230, 460V T1 15 TON, T2 12.5 TON
HP POWER 208/230, 460V T1 12.5 TON, T2 10 TON



PAC POWER 208/230,460V T1 15 TON, T2 12.5 TON SVU
HP POWER 208/230,460V T1 12.5 TON, T2 10 TON SVU



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.

Dissipation

When the factory-installed dissipation system detects a level of refrigerant leak in the unit, a safety dissipation mode will be activated. During this dissipation mode, the thermostat will be disabled and the indoor fan will run at 66% of the maximum speed of the motor. When the refrigerant leak levels are normal for 5 minutes, the unit will return to normal operation.

Electromechanical units without economizer

Cooling (2-stage units)

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 50% or 60% of the user-set fan speed, depending on unit size.

If additional cooling is needed, then 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 50% or 60% of the total cfm established for the unit.

Gas heating (48FE units)

NOTE: WeatherMaker® units have 2 stages of gas heat.

When the thermostat calls for heating, power is sent to W on the Integrated Gas Controller (IGC) board. An LED (light-emitting diode) on the IGC board turns on and remains on during normal operation. A check is made to ensure that the roll-out switch and limit switch are closed. If the check was successful, then the induced-draft motor is energized, and when its speed is satisfactory, as proven by the flue gas pressure switch, the ignition activation period begins. The burners will ignite within 5 seconds. If the burners do not light, there is a 22 second delay before another 5 second attempt. This sequence is repeated for 15 minutes or until the burners light. If, after the 15 minutes, the burners still have not lit, heating is locked out. To reset the control, break 24-v power to the thermostat.

When ignition occurs, the IGC board will continue to monitor the condition of the roll-out switch, the limit switches,

the flue gas pressure switch, and the flame sensor. Forty-five seconds after ignition occurs, assuming the unit is controlled through a room thermostat set for fan auto, the indoor-fan motor will energize (and the outdoor-air dampers will open to their minimum position). If, for some reason, the over-temperature limit opens prior to the start of the indoor fan blower, then the unit will shorten the 45 second delay to 5 seconds less than the time from initiation of heat to when the limit tripped. Gas will not be interrupted to the burners and heating will continue. Once the fan-on delay has been modified, it will not change back to 45 seconds until power is reset to the control. On units with 2 stages of heat, when additional heat is required, W2 closes and initiates power to the second stage of the main gas valve. When the thermostat is satisfied, W1 and W2 open and the gas valve closes, interrupting the flow of gas to the main burners. If the unit is controlled through a room thermostat set for fan auto, then the indoor-fan motor will continue to operate for an additional 45 seconds and then stop. A LED indicator is provided on the IGC to monitor operation.

Electric heating (50FE units)

NOTE: 50FE units are sold as cooling only. If electric heaters are required, use only factory-approved heaters. They will operate as follows.

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

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, then 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, then a demand controlled ventilation strategy will begin to operate. As the CO₂ level in the zone increases above the CO₂ setpoint (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, then 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 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 fully closed to fully 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 setpoint at 50°F (10°C) to 55°F (13°C). If there is a further demand for cooling (cooling second stage — Y2 is energized), then the control will bring on compressor stage 1 to maintain the mixed-air temperature setpoint. The EconomizerONE damper will be open at maximum position.

NOTE: For 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 heating is the same as for an electromechanical unit without an 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 the unit's service and maintenance manual for further details.

Optional Humidi-MiZer® dehumidification system

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

The Humidi-MiZer system provides 3 sub-modes of operation: Cool, Reheat1, and Reheat2.

Cool — provides a normal ratio of sensible and latent cooling effect from the evaporator coil.

Reheat1 — provides increased latent cooling while slightly reducing the sensible cooling effect.

Reheat2 — provides normal latent cooling but with null or minimum sensible cooling effect delivered to the space.

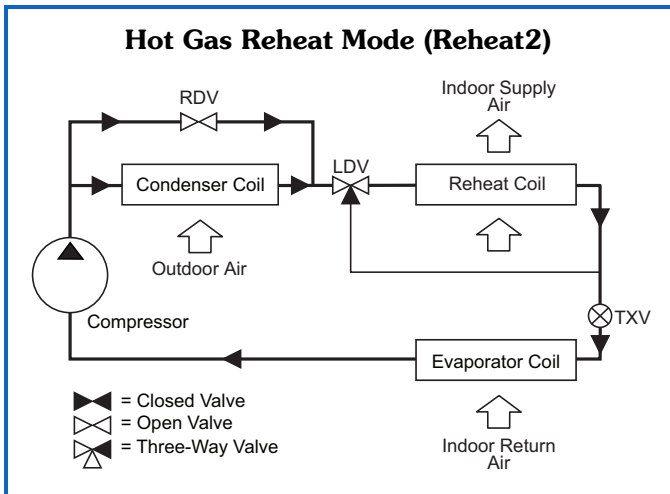
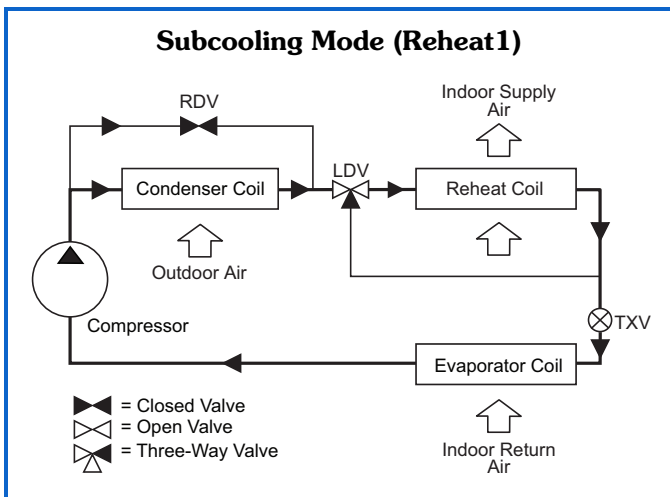
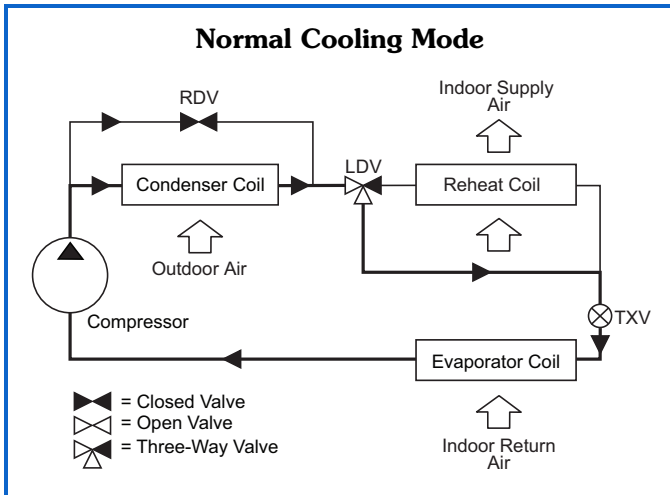
The Reheat1 and Reheat2 modes are available when the unit is not in a heating mode and when the low ambient lockout switch is closed.

Refer to the figures on the next page for piping flow diagrams.

SystemVu™ controller (factory option)

For details on operating 48/50FE units equipped with the factory-installed SystemVu controller option, refer to *FE/GE Series Single Package Rooftop Units with SystemVu Controller Controls, Start-Up, Operation and Troubleshooting* manual.

Sequence of operation (cont)



LEGEND

RDV — Reheat Discharge Valve
 TWV — Three-Way Valve
 TXV — Thermostatic Expansion Valve

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) [0°F (-18°C) for size 14 models]. 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 115°F (46°C) except for size 14 models with 120°F (49°C). While cooling operation above 115°F (46°C) may be possible, it could cause reduced performance, reduced 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.

Stainless steel heat exchanger (48FE units only)

For this option, the tubular heat exchanger is made out of a minimum 20 gauge type 409 stainless steel for applications where the mixed air to the heat exchanger is expected to drop below 45°F (7°C). Stainless steel may be specified on applications where the presence of airborne contaminants require its use (applications such as paper mills) or in area with very high outdoor humidity that may result in severe condensation in the heat exchanger during cooling operation.

Minimum mixed air temperature (heating) (48FE units only)

Using the factory settings, the minimum temperatures for mixed air (the combined temperature of the warm return air and the cold outdoor air) entering the dimpled gas heat exchangers are shown in the following table.

Minimum Temperature for Mixed Air Temperature

ALUMINIZED	STAINLESS STEEL
50°F (10°C) Continuous	40°F (4°C) Continuous
45°F (7°C) Intermittent	35°F (2°C) Intermittent

Operating at lower mixed-air temperatures may be possible if a field-supplied, outdoor-air thermostat initiates both heat stages when the temperature is less than the minimum temperatures listed above. Please contact your local Carrier representative for assistance.

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. The minimum value is the HIGHER of the cooling and heating minimum cfm values published on page 8 and the maximum value is the LOWER of the cooling and heating maximum values published on page 8.

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 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 the 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.

Propane heating (48FE units only)

Propane has different physical qualities than natural gas. As a result, propane requires a different fuel to air mixture. To optimize the fuel/air mixture for propane, Carrier sells different burner orifices in an easy-to-install accessory kit. To select the correct burner orifices or determine the heat capacity for a propane application, use either the selection software or the unit's service manual.

High altitude heating

High altitudes have less oxygen, which affects the fuel/air mixture in heat exchangers. In order to maintain a proper fuel/air mixture, heat exchangers operating in altitudes above 2000 ft (610 m) require different orifices. To select the correct burner orifices or determine the heat capacity for a high altitude application, use either the selection software or the unit's service manual.

High altitudes have less oxygen, which means heat exchangers need less fuel. The new gas orifices in Carrier's field-installed kit make the necessary adjustment for high altitude applications. They restore the optimal fuel to air mixture and maintain healthy combustion at altitudes above 2000 ft (610 m).

NOTE: Typical natural gas heating value ranges from 975 to 1050 Btu/ft³ at sea level nationally. The heating value goes down approximately 1.7% per every thousand feet of elevation. Standard factory orifices can typically be used up to 2000 ft (610 m) elevation without any operational issues.

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 and adding “safety factors” to the calculated load are both signs of oversizing. Oversizing an 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 a unit is equipped with an economizer, 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.

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.



Gas Heat/Electric Cooling Packaged Rooftop

HVAC Guide Specifications

Size Range: **7.5 to 15 Nominal Tons**

Carrier Model Number: **48FE**08-16**

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.) Gas 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:

1. Thermostat must:
 - a. energize both “W” and “G” when calling for heat.
 - b. have capability to energize 1 or 2 stages of cooling, and 2 different stages of heating.
 - c. 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®, BACnet®¹ MS/PT 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.

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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^{®1} 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, 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 (3°C) temperature difference between cooling and heating setpoints to meet the latest ASHRAE 90.1 Energy Standard.
16. 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. Units with the factory-installed Humidi-MiZer[®] system option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle.
19. Supply Air Tempering control operates the gas or 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.
20. Demand limiting in SystemVu[™] is achieved through setpoint expansion. The systems heating and cooling setpoints are expanded in steps or levels. The degree to which the setpoints may be expanded is defined by the 6 demand level offsets and the 2 commanded demand limit levels.
21. 3-year limited part warranty.

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 75VA 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, gas controller, 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. The heat exchanger shall be controlled by an integrated gas controller (IGC) microprocessor. See heat exchanger section of this specification.
5. Unit shall include a minimum of one 8-pin screw terminal connection board for connection of control wiring.

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

1. Compressor over-temperature, over-current. High internal pressure differential.
2. Low Pressure Switch
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
High pressure switch shall use different color wire than the low pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
4. Mixed Air Auto Reset Temperature Switch:
 - a. All cooling units contain a low return air (or mixed air - depending on unit configuration) temperature switch for compressor protection. The switch prevents compressor operation at mixed air temperatures below 60°F (15°C) to ensure long term reliability but allows continued fan and economizer operation (if in-installed). The switch will automatically reset when the return/mixed air temperature warms above 65°F (18°C) and will allow compressor operation to continue.
5. Automatic reset, motor thermal overload protector.
6. Heating section shall be provided with the following minimum protections:
 - a. High temperature limit switches.
 - b. Induced draft motor pressure switch.

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- c. Flame rollout switch.
- d. Flame proving controls.
- 7. 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) 24-v 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.
- 8. 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) 24-v 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) Recallable 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 Operations 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 a fully hermetic scroll compressors for cooling duty and gas combustion for heating duty.
 - 2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
 - 3. Unit shall use Puron Advance™ (R-454B) refrigerant.
 - 4. Unit shall be installed in accordance with the manufacturer’s instructions.

5. Unit must be selected and installed in compliance with local, state, and federal codes.
- B. (23 81 19.13.B.) Quality Assurance:
 1. Unit meets DOE and 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 60335-1 and 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 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 340/360 at ±10% voltage.
 2. Compressor with standard controls shall be capable of operation down to 40°F (4°C) ambient outdoor temperatures. Accessory winter start kit is necessary if mechanically cooling at ambient temperatures down to 25°F (-4°C).
3. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
4. Unit shall be factory configured for vertical supply and return configurations.
5. Unit shall be field convertible from vertical to horizontal airflow on all models. No special kit required except on 16 size models that require a Supply Duct Kit field installed for horizontal air flow.
6. Unit shall be capable of mixed operation: vertical supply with horizontal return or horizontal supply with vertical return.
- 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 inches minimum, gloss (per ASTM D523, 60°F/16°C): 60, Hardness: H-2H Pencil hardness.
 3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 1/2 in. thick, 1 lb density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the heat compartment.
 4. Base of unit shall have a minimum of 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, possible either through the bottom or side of the drain pan. Connection shall be made per manufacturer's recommendations.

7. Top Panel:
 - a. Shall be a single piece top panel on 08-14 models and 2 piece on 16 size models.
 8. Gas Connections:
 - a. All gas piping connecting to unit gas valve shall enter the unit cabinet at a single location on side of unit (horizontal plane).
 - b. Thru-the-Base Capability:
 - 1) Standard unit shall have a thru-the-base gas-line location using a raised, embossed portion of the unit basepan.
 - 2) Optional, factory approved, water-tight connection method must be used for thru-the-base gas connections.
 - 3) No basepan penetration, other than those authorized by the manufacturer, is permitted.
 9. Electrical Connections:
 - a. All unit power wiring shall enter unit cabinet at a single, factory prepared, knockout location.
 - b. Thru-the-Base Capability:
 - 1) Standard unit shall have a thru-the-base electrical location(s) using a raised, embossed portion of the unit basepan.
 - 2) Optional, factory approved, water-tight connection method must be used for thru-the-base electrical connections.
 - 3) No basepan penetration, other than those authorized by the manufacturer, is permitted.
 10. Component Access Panels (standard):
 - a. Cabinet panels shall be easily removable for servicing.
 - b. Unit shall have one factory installed, 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.) Gas Heat:
1. General:
 - a. Heat exchanger shall be an induced draft design. Positive pressure heat exchanger designs shall not be allowed.
 - b. Shall incorporate a direct-spark ignition system and redundant main gas valve.
 - c. Gas supply pressure at the inlet to the rooftop unit gas valve must match that required by the manufacturer.
 2. The heat exchanger shall be controlled by an integrated gas controller (IGC) microprocessor.
 - a. IGC board shall notify users of fault using an LED (light-emitting diode).
 - b. The LED shall be visible without removing the control box access panel.
 - c. IGC board shall contain algorithms that modify evaporator fan operation to prevent future cycling on high temperature limit switch.
 - d. Unit shall be equipped with anti-cycle protection with one short cycle on unit flame rollout switch or 4 continuous short cycles on the high temperature limit switch. Fault indication shall be made using an LED.
 3. Standard Heat Exchanger Construction:
 - a. Heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gauge steel coated with a nominal 1.2 mil aluminum-silicone alloy for corrosion resistance.
 - b. Burners shall be of the in-shot type constructed of aluminum-coated steel.
 - c. Burners shall incorporate orifices for rated heat output up to 2000 ft (610 m) elevation. Additional accessory kits may be required for applications above 2000 ft (610 m) elevation, depending on local gas supply conditions.
 - d. Each heat exchanger tube shall contain multiple dimples for increased heating effectiveness.
 4. Optional Stainless Steel Heat Exchanger Construction:
 - a. Use energy saving, direct-spark ignition system.
 - b. Use a redundant main gas valve.
 - c. Burners shall be of the in-shot type constructed of aluminum-coated steel.
 - d. All gas piping shall enter the unit cabinet at a single location on side of unit (horizontal plane).
 - e. The optional stainless steel heat exchanger shall be of the tubular-section type, constructed of a minimum of 20-gauge type 409 stainless steel.
 - f. Type 409 stainless steel shall be used in heat exchanger tubes and vestibule plate.
 - g. Complete stainless steel heat exchanger allows for greater application flexibility.
 5. Induced Draft Combustion Motor and Blower:
 - a. Shall be a direct-drive, single inlet, forward-curved centrifugal type.

- b. Shall be made from steel with a corrosion resistant finish.
 - c. Shall have permanently lubricated sealed bearings.
 - d. Shall have inherent thermal overload protection.
 - e. Shall have an automatic reset feature.
- I. (23 81 19.13.I.) Coils:
1. Standard Aluminum Fin-Copper Tube Coils:
 - a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internal helically 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.
- J. (23 81 19.13.J.) Refrigerant Components:
1. Refrigerant circuit shall include the following control, safety, and maintenance features:
 - a. Thermostatic Expansion Valve (TXV) shall help provide optimum performance across the entire operating range. Shall contain removable power element to allow change out of power element and bulb without removing the valve body.
 - b. Refrigerant filter drier, solid core design 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 top panel of the unit.
 2. There shall be gauge line access port in the skin of the rooftop:
 - a. The gauge access port shall enable maintenance personnel to route their pressure gauge lines.
 - b. This gauge access port shall facilitate correct and accurate condenser pressure readings by enabling the reading with the compressor access panel on.

3. Compressors:

- a. Unit shall use tandem scroll compressor assembly on a single 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-ampereage 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.

K. (23 81 19.13.K.) Filter Section:

1. Filters access is specified in the unit cabinet section of this specification.
2. Filters shall be held in place by a 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.

L. (23 81 19.13.L.) Evaporator Fan and Motor with EcoBlue™ Technology:

1. Direct Drive Evaporator Fan Motor:
 - a. Shall be an 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 shall eliminate the need of removal of blower access door, required on conventional belt drive systems.
 - h. Shall be internally protected from electrical phase reversal.

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 <66% 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 high impact composite material for stator, rotor, and air inlet casing.
 - f. Shall be a patented/pending design with a corrosion resistant material.
 - 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. Shall be a slide out design with removal of a few support brackets.
- ## 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, gas controller, 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.

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

1. Condenser Fan Motors:
 - a. Shall be a totally enclosed motor.
 - b. Shall use permanently lubricated bearings.
 - c. Shall have inherent thermal overload protection with an automatic reset feature.
 - d. Shall use a shaft-down design 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.

N. (23 81 19.13.N.) 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.
 - 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™ controllers shall be a 4 to 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 economizers 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. Contains LED indicators for free cooling, sensor, and damper operation.
2. Integrated EconoMi\$er 2 and EconomizerONE 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.

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- 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™ controllers shall be a 4 to 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 economizers 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 air flow 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. Contains LED indicators 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 setpoint.
 - b. Damper shall include adjustable damper travel from 25% to 100% (full open).
 - c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
 - d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
 - e. Damper will admit up to 100% outdoor air for applicable rooftop units.
 - f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
 - g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
 - h. Outside air hood shall include aluminum water entrainment filter.
- 5. Manual Damper (field-installed only):
 - a. 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. Humidi-MiZer® Adaptive Dehumidification System:

The Humidi-MiZer Adaptive Dehumidification System shall be factory installed and shall provide greater dehumidification of the occupied space by 2 modes of dehumidification operations in addition to its normal design cooling mode:

 - a. Subcooling mode further sub cools the hot liquid refrigerant leaving the condenser coil

when both temperature and humidity in the space are not satisfied.

- b. Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to create a 2-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.
 - c. Includes low ambient controller.
7. 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.
8. Propane Gas Conversion Kit:
- a. Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane, up to 2000 ft (610 m) elevation.
 - b. Additional accessory kits may be required for applications above 2000 ft (610 m) elevation.
9. Flue Shield (08-14 sizes only):
- a. Flue shield shall provide protection from the hot sides of the gas flue hood.
10. Condenser Coil Hail Guard Assembly (Factory or field-installed):
- a. Shall protect against hail and additional coil damage.
 - b. Shall be louvered type.
11. Unit-Mounted, Non-Fused Disconnect Switch
- a. Available on 7.5 to 12.5 ton units with factory equipped FLA of 80 amps or less, or 15 ton units with FLA of 80 amps or less (460/575V) or 100 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.

12. 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 115/120v 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.

- 6) Outlet shall include a field installed “Wet in Use” cover.
13. Flue Discharge Deflector:
 - a. Flue discharge deflector shall direct unit exhaust vertically instead of horizontally.
 - b. Deflector shall be defined as a “natural draft” device by the National Fuel and Gas (NFG) code.
14. 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 connection locations per unit.
15. Supply Duct Cover (size 16 only):
 - a. Required when field converting the factory standard vertical duct supply to horizontal duct supply configuration. One required per unit.
16. Propeller 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.
17. 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.
18. High Altitude Gas Conversion Kit:

Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit to operate from 2000 to 7000 ft (610 to 2134 m) elevation with natural gas or from 0 to 7000 ft (0 to 2134 m) elevation with liquefied propane.
19. 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.
20. 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.
21. 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.
22. Smoke Detectors:
 - a. Shall be a 4-Wire controller and detector.
 - b. Shall be environmentally 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 shut-down applications.
23. Winter Start Kit:
 - a. Shall contain a bypass device around the low pressure switch.
 - b. Shall be required when mechanical cooling is required below 40°F (4°C).
 - c. Shall not be required to operate an economizer for cooling when below an outdoor ambient of 40°F (4°C).
 - d. Is not compatible with SystemVu controls.
24. Time Guard:
 - a. Shall prevent compressor short-cycling by providing a 5-minute delay (±2 minutes) before restarting a compressor after shut-down for any reason.
 - b. One device shall be required per compressor.

25. Disconnect Switch Bracket (size 16 only):
Provides a pre-engineered and sized mounting bracket for applications requiring a unit mounted fused and non-fused disconnect of greater than 100 amps. Bracket assures that no damage will occur to coils when mounting with screws and other fasteners.
26. Hinged Access Panels:
 - a. Shall provide easy access through integrated quarter turn latches.
 - b. Shall be on major panels of: filter, control box, fan motor, and compressor.
27. 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 on 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).
 - c. Disables the compressors operation when condensate plug is detected, but still allows fans to run for economizer.
28. 4 in. MERV-13 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
 - c. Shall not be compatible with horizontal units with field installed economizers.
29. 4 in. Return Air Rack (field-installed only):
 - a. Accessory kit is designed to hold 4 in. MERV-8 or MERV-13 filters. Filters not included in kit.
 - b. Shall not be compatible with horizontal units with field installed economizers.
30. 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.
31. 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.
32. 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.
33. 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.
34. 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 rated at 10 kA against high potential fault current situations. (Standard unit comes with 5 kA rating.)
 - b. This option is not available with factory installed Humidi-MiZer system, powered convenience outlet, non-fused disconnect, low ambient controls, phase loss monitor/protection, and 575-v models.

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

HVAC Guide Specifications

Size Range: **7.5 to 15 Nominal Tons**

Carrier Model Number: **50FE-08-16**

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:

1. Thermostat must:
 - a. energize both “W” and “G” when calling for heat.
 - b. have capability to energize 1 or 2 stages of cooling, and 2 different stages of heating.
 - c. 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®, BACnet®1 MS/PT 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.

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8. Reverse Rotation Protection of compressors if field 3-phase wiring is misapplied.
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®¹ 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, 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 (3°C) temperature difference between cooling and heating setpoints to meet the latest ASHRAE 90.1 Energy Standard.
16. 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. Units with the factory-installed Humidi-MiZer® system option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle.
19. Supply Air Tempering control operates the gas or 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.
20. Demand limiting in SystemVu™ is achieved through setpoint expansion. The systems heating and cooling setpoints are expanded in steps

or levels. The degree to which the setpoints may be expanded is defined by the 6 demand level offsets and the 2 commanded demand limit levels.

21. 3-year limited part warranty.

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 75VA 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.

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

1. Compressor over-temperature, over-current. High internal pressure differential.
2. Low Pressure Switch
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
High pressure switch shall use different color wire than the low pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
4. Mixed Air Auto Reset Temperature Switch:
All cooling units contain a low return air (or mixed air - depending on unit configuration) temperature switch for compressor protection. The switch prevents compressor operation at mixed air temperatures below 60°F (15°C) to ensure long term reliability but allows continued fan and economizer operation (if in-stalled). The switch will automatically reset when the return/mixed air temperature warms above 65°F (18°C) and will allow compressor operation to continue.
5. Heating section shall be provided with the following minimum protections:
 - a. High temperature limit switches.

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6. 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) 24-v 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.
7. 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) 24-v 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) Recallable 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.
 8. Dissipation shall allow smoke and building fire systems to override in case of event.

Part 6 — (23 09 93) Sequence of Operations 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.
 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-454B) refrigerant.
 4. Unit shall be installed in accordance with the manufacturer’s instructions.
 5. Unit must be selected and installed in compliance with local, state, and federal codes.

B. (23 81 19.13.B.) Quality Assurance:

1. Unit meets DOE and 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 60335-1 and 60335-2-40, including tested 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 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 340/360 at $\pm 10\%$ voltage.
2. Compressor with standard controls shall be capable of operation down to 40°F (4°C) ambient outdoor temperatures.
3. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.

4. Unit shall be factory configured for vertical supply and return configurations.

5. Unit shall be field convertible from vertical to horizontal airflow on all models. No special kit required except on 16 size models that requires a Supply Duct Kit field installation for horizontal air flow.

6. Unit shall be capable of mixed operation: vertical supply with horizontal return or horizontal supply with vertical return.

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, possible either through the bottom or side of the drain pan. Connection shall be made per manufacturer's recommendations.
7. Top Panel:
 - a. Shall be a single piece top panel on 08-14 models and 2 piece on 16 size models.

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) Standard unit shall have a thru-the-base electrical location(s) using a raised, embossed portion of the unit basepan.
 - 2) Optional, factory approved, water-tight connection method must be used for thru-the-base electrical connections.
 - 3) 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 internal helical 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 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 top panel of the unit.
2. There shall be gauge line access port in the skin of the rooftop:
 - a. The gauge access port shall enable maintenance personnel to route their pressure gauge lines.
 - b. This gauge access port shall facilitate correct and accurate condenser pressure readings by enabling the reading with the compressor access panel on.
3. Compressors:
 - a. Unit shall use tandem scroll compressor assembly on a single 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 an 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 shall eliminate the need of removal of blower access door, required on conventional belt drive systems.
 - h. Shall be internally protected from electrical phase reversal.
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 <66% 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 on board fan motor assembly.
 - e. Shall be constructed of a cast aluminum stator and high impact composite material on stator, rotor and air inlet casing.
 - f. Shall be a patented / pending design with a corrosion resistant material.
 - g. Fan assembly design shall be integrated into 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. Shall be a slide out design with removal of a few support brackets.
 - 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 setpoints.
 - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
 - f. 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™ controllers shall be a 4 to 20mA 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.
 - 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.

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- 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. Contains LED indication for free cooling, sensor, and damper operation.
- 2. Integrated EconoMi\$er® 2 and EconomizerONE 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™ controller shall be a 4 to 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.
 - 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. Contains LED indicators 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 setpoint.
 - b. Damper shall include adjustable damper travel from 25% to 100% (full open).
 - c. Damper shall include single or dual blade, gear driven dampers and actuator motor.

- d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
 - e. Damper will admit up to 100% outdoor air for applicable rooftop units.
 - f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
 - g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
 - h. Outside air hood shall include aluminum water entrainment filter.
5. Manual Damper (field-installed only):
- a. 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. Humidi-MiZer Adaptive Dehumidification System: The Humidi-MiZer® Adaptive Dehumidification System shall be factory installed and shall provide greater dehumidification of the occupied space by 2 modes of dehumidification operations in addition to its normal design cooling mode:
- a. Subcooling mode further sub cools the hot liquid refrigerant leaving the condenser coil when both temperature and humidity in the space are not satisfied.
 - b. Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to create a 2-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.
 - c. Includes low ambient controller.
7. 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.
8. Condenser Coil Hail Guard Assembly:
- a. Shall protect against hail and additional coil damage.
 - b. Shall be louvered type.
9. Unit-Mounted, Non-Fused Disconnect Switch
- a. Available on 7.5 to 12.5 ton units with factory equipped FLA of 80 amps or less, or 15 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.
10. 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 115/120v 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.
 - 6) Outlet shall include a field installed "Wet in Use" cover.
11. 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 connection locations per unit.
12. Supply Duct Cover (size 16 only):
- a. Required when field converting the factory standard vertical duct supply to horizontal duct supply configuration. One required per unit.
13. Propeller 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.
14. Roof Curbs (Vertical):
- a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
 - b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
 - c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
15. 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.
16. 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.
17. 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.
18. Smoke Detectors:
- a. Shall be a 4-wire controller and detector.
 - b. Shall be environmentally 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 shut-down applications.
19. Winter Start Kit:
- a. Shall contain a bypass device around the low pressure switch.
 - b. Shall be required when mechanical cooling is required below 40°F (4°C).
 - c. Shall not be required to operate an economizer for cooling when below an outdoor ambient of 40°F (4°C).
 - d. Is not compatible with SystemVu controls.
20. Time Guard:
- a. Shall prevent compressor short-cycling by providing a 5-minute delay (±2 minutes) before restarting a compressor after shut-down for any reason.
 - b. One device shall be required per compressor.
21. Disconnect Switch Bracket (size 16 only):
- Provides a pre-engineered and sized mounting bracket for applications requiring a unit mounted fused and non-fused disconnect of greater than 100 amps. Bracket assures that no

- damage will occur to coils when mounting with screws and other fasteners.
22. 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.
 23. 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 on 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).
 - c. Disables the compressors operation when condensate plug is detected, but still allows fans to run for Economizer.
 24. 4 in. MERV-13 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.
 - c. Shall not be compatible with horizontal units with field-installed economizers.
 25. 4 in. Return Air Rack (field-installed only):
 - a. Accessory kit is designed to hold 4 in. MERV-8 or MERV-13 filters. Filters not included in kit.
 - b. Shall not be compatible with horizontal units with field installed economizers.
 26. 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
 27. 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.
 28. 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.
 29. 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.
 30. Electric Heat:
 - a. Heating Section:
 - 1) Heater element open coil resistance wire, nickel-chrome alloy, 0.29 in. 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 reset thermo limit controls, magnetic heater contactors (24-v coil), and terminal block all mounted in electric heater control box (minimum 18 ga galvanized steel) attached to end of heater assembly.
 31. 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 rated at 10 kA against high potential fault current situations. (Standard unit comes with 5 kA rating.)
 - b. This option is not available with factory installed HumidiMiZer system, powered convenience outlet, non-fused disconnect, low ambient controls, phase loss monitor/protection, and 575-v models.

