Product Data

WeatherMaster® Hybrid Heat Single Packaged Rooftop

3 to 5 Nominal Tons

ecoblue™ technology

48QE**04, 05, 06
Single-Package Rooftop Heat Pump with Gas Heat
with Puron Advance™ Refrigerant (R-454B) and EcoBlue™ Technology

Features/Benefits

Introducing Carrier's WeatherMaster® Hybrid Heat Single Packaged Rooftop units (RTUs) with Puron Advance™ and EcoBlue™ Fan Technology.

The WeatherMaster line has always stood for cooling solutions that are innovative, high quality, and easy to use. Carrier's new 48QE hybrid heat pump rooftop units continue that legacy with Puron Advance, our low global warming potential refrigerant. With competitive efficiencies, EcoBlue fan technology, hybrid heat technology, and direct fit footprints, new installations and replacements are easier than ever.

Major design features include:

- Puron Advance (R-454B) refrigerant, which delivers a 75% reduction in global warming potential (GWP) compared to the original Puron (R-410A). Puron Advance's GWP of 466 easily exceeds the EPA (Environmental Protection Agency) requirement of <700 GWP.
- New Hybrid Heat technology which pairs a high efficiency heat pump with the reliability and occupant comfort of gas heat.
- 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 protected 2-stage cooling designs with fully active evaporator coils
- Reliable copper tube/aluminum fin condenser coil with 5/16 in. tubing to help reduce refrigerant charge and weight versus prior designs
- Carrier exclusive Ultra Low NOx (ULN) gas heat emissions burner box and heat exchanger design that provides 14 nanograms/joule (ng/J) operation[1,2]

Designed to fit on existing roof curbs, Carrier 48QE 3 to 5 ton models make replacements even easier.

Two-speed staged air volume (SAV) Vane Axial indoor fan speed control helps deliver SEER2s up to 15.3 and HSPF2 up to 7.2.

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 3 to 5 ton Carrier WeatherMaster rooftop unit (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 controller (standard) that provides
  - Large, full text, multi-line display
  - USB flash port for data transfer
  - Built-in i-Vu®, CCN, and BACnet®[3]
  - 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 system
- 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. ULN units cannot operate with Liquid Propane (LP) gas.
2. ULN units can operate from 0 to 7,800 feet altitude only.

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

Table of contents

Features/Benefits (cont)

Installation ease

Lighter units make for easy replacement and aid in the structural approval process. All units have SystemVu controls standard for easy, tool free commissioning. Clearly labeled connection points reduce installation time, and a 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 SystemVu controller. For regular service activities, our easy-access handles provide a quick solution to all commonly accessed service panels, and our sloped, corrosion-resistant composite drain pan sheds water and will not rust. Service gauge connections are included on compressor suction/discharge lines and before and after the filter drier to monitor system operation during maintenance. The SystemVu controller provides readable LEDs and fault information should an error occur.

Hybrid Heat flexibility

48QE models offer the best of both worlds. All units have onboard mechanical heating standard and are rigorously tested to ensure reliable reverse cycle heating operation. The result is a more sustainable heat source to keep occupants comfortable year-round. When the temperature dips and mechanical heating starts to diminish, 48QE models kick on gas heat to supplement the heat pump, in place of the electric strip heaters a traditional heat pump would use. This ensures occupants are comfortable with a proven reliable heat source that doesn't require upsized wires. On the coldest days of the year all 48QE models are automatically designed to read the outdoor air temperature and exclusively use gas heating to ensure occupants are comfortable and defrost cycles are minimized. All Hybrid Heat models allow building owners to adjust this change over temperature to provide maximum flexibility for a space's unique needs. The result is a powerful Hybrid Heat unit that makes electrification possible in cold environments.

Puron Advance™ features

In 2018, Carrier announced Puron Advance (R-454B) as our next generation refrigerant for light commercial rooftops. With a GWP of 466 and similar working pressure and performance to R-410A, Puron Advance easily exceeds the EPA's new, stringent <700 GWP refrigerant requirement while minimizing unit redesign. Like other next generation refrigerants (R-32, etc.), R-454B is classified as an "A2L" refrigerant by ASHRAE®[1] (American Society of Heating, Refrigerating, and Air-Conditioning Engineers). This designation means that R454B is "mildly flammable" under certain conditions. While this is a change from legacy "A1 — No Flame Propagation" refrigerants like Puron (R-410A), A2Ls are still very low on the flammability scale and quite safe for use. A2L refrigerants are difficult to ignite and have an extremely low flame speed — much less so than natural gas, propane, or even rubbing alcohol. At Carrier, we are committed to safety. As such, all of our Puron Advance rooftop units include a factory-installed dissipation control board and leak sensor designed to last the lifetime of the unit. This system is certified to UL 60335-2-40 and designed to work right away, without any field configuration or wiring. In the event of a leak, these systems are designed to automatically identify and resolve the issue by dissipating the refrigerant to minimize risk to equipment, buildings, or occupants.

EcoBlue™ technology

Our direct drive EcoBlue indoor fan system uses a 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

The 48QE unit's standard SystemVu controls make connecting these units into existing building automation systems easy.

Operating efficiency and flexibility

The 48QE rooftops meet the DOE 2023 efficiency standard, as well as ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 90.1 and IECC®[1] (International Energy Conservation Code) requirements.

Comfort control

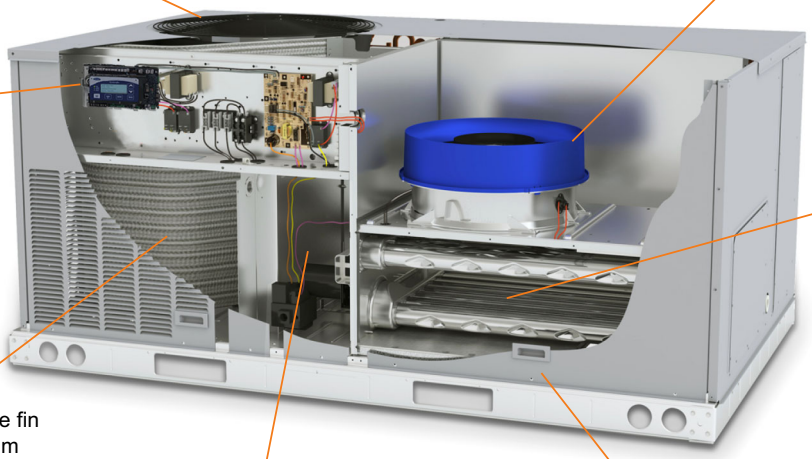
Carrier's patented Humidi-MiZer adaptive dehumidification system is an all-inclusive, factory-installed option. This system provides reliable, flexible operation to meet indoor part load sensible and latent requirements.

---

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

Features/Benefits (cont)

WeatherMaster®
with ecoblue™ technology
48QE 3 - 5 Ton Models



Multi-Speed High Efficiency Outdoor Fan
– Non-corrosive blade
– Balanced blade
– Efficient airflow collar

Vane Axial Indoor Fan
– Direct drive ECM
– Slow ramp up
– Phase loss protection
– No belts or pulleys

Unit Controls
– SystemVu™ control

Heating
– Gas Heating
  – Induced draft heat exchanger
  – Multiple sizes available
  – Efficient dimpled gas design
  – Ultra Low NOx (14 ng/J) models available

Efficient Coils
– Round tube/plate fin
– Copper/Aluminum
– Special coating available
– New 5/16 in. condenser tube
– Humidi-MiZer® system available

Compression
– Fully hermetic scroll
– Internally protected
– Two-stage on all models

Cabinet Design
– Heavy gauge base rails
– Large handled access panels
– Tool-less filter access door
– Replacement “original” fit design

Model number nomenclature

48QE 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	Q	E	S	M	0	5	A	2	A	6	-	3	A	0	A	0

Unit Heat Type
48 = Gas Heat Packaged Rooftop

Model Series - WeatherMaster®
QE = Mid Tier Hybrid Heat with Puron Advance™

Heat Type
G = Ultra Low NOx - Low Heat, Stainless Steel (SS) Heat Exchanger[a]
H = Ultra Low NOx - Medium Heat, SS Heat Exchanger[a]
L = Low NOx - Low Gas Heat, SS Heat Exchanger[a]
S = Low Gas Heat, SS Heat Exchanger
R = Medium Gas Heat, SS Heat Exchanger
T = High Gas Heat, SS Heat Exchanger[b]

Refrigerant Options
M = Two-Stage Cooling/Single Circuit
N = Two-Stage Cooling/Single Circuit with Humidi-MiZer® System[c]

Cooling Tons
04 = 3.0 tons
05 = 4.0 tons
06 = 5.0 tons

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

Indoor Fan Options - Vane Axial EcoBlue Fan System
2 = Standard/Medium Static Motor
3 = High Static Motor
5 = Standard/Medium Static Motor, Filter Status Switch
6 = High Static Motor, Filter Status Switch

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

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

Design Revision
- = Factory Design Revision

Base Unit Controls
3 = SystemVu™ Controller

Intake / Exhaust Options
A = None
B = Temperature Economizer with Barometric Relief
F = Enthalpy Economizer with Barometric Relief
L = ULL (Ultra Low Leak) Temperature Economizer with Barometric Relief and CO_2 Sensor
M = ULL Enthalpy Economizer with Barometric Relief and CO_2 Sensor
U = ULL Temperature Economizer with Barometric Relief
W = ULL Enthalpy Economizer with Barometric Relief

Service Options
0 = None
1 = Unpowered Convenience Outlet (NPCO)
2 = Powered Convenience Outlet (PCO)
3 = Hinged Panels (HP)
4 = Hinged Panels + NPCO
5 = Hinged Access Panels + PCO
6 = MERV-13 Filters (M13)
7 = NPCO + MERV-13 Filters
8 = PCO + MERV-13 Filters
9 = Hinged Panels + MERV-13 Filters
A = HP + NPCO + MERV-13 Filters
B = HP + PCO + MERV-13 Filters
C = Foil Faced Insulation (FF)
D = FF + NPCO
E = FF + PCO
F = FF + HP
G = FF + HP + NPCO
H = FF + HP + PCO
J = FF + MERV-13 Filters
K = FF + NPCO + MERV-13 Filters
L = FF + PCO + MERV-13 Filters
M = FF + HP + MERV-13 Filters
N = FF + HP + NPCO + MERV-13 Filters
P = FF + HP + PCO + MERV-13 Filters

Electrical Options
A = None
B = HACR Breaker
C = Non-Fused Disconnect (NFDC)
D = Thru-The-Base Connections (TTB)
E = HACR +TTB
F = NFDC + TTB
N = Phase Monitor Protection (PMR)
P = PMR + HACR
Q = PMR + NFDC
R = PMR + TTB
S = PMR + HACR + TTB
T = PMR + NFDC + TTB
1 = HSCCR[d] (High Short Circuit Current Rating)
2 = HSCCR[d] + TTB

Packaging Compliance
0 = Standard

NOTE(S):
a Not available for 575V (voltage code -1) units.
b Not available for 3 ton units.
c Not available for 208/230-1-60 voltage units.
d Not available on the following models/options: Humidi-MiZer system, 575V, Head Pressure Control, Phase Loss Monitor, Non-Fused Disconnect, HACR Breaker, Powered Convenience Outlet.

Capacity ratings

48QE AHRI Ratings — Cooling Mode[a,b,c,d]

UNIT	COOLING STAGES	NOM. CAPACITY (tons)	NET COOLING CAPACITY 2 (MBtuh)	NET COOLING CAPACITY (MBtuh)	TOTAL POWER 2 (kW)	TOTAL POWER (kW)	SEER 2	SEER	EER 2	EER	RATED INDOOR AIRFLOW (cfm)
48QE*M04	2	3	35.0	—	2.9	—	15.3	15.3	12.0	—	1200
48QE*M05	2	4	47.0	—	4.0	—	15.3	15.3	11.8	—	1725
48QE*M06	2	5	59.5	—	5.2	—	15.2	15.2	11.4	—	1875

NOTE(S):

a. Rated in accordance with AHRI Standards 210/240.
b. Rating are based on:
Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.
c. Units comply with ASHRAE 90.1-2016 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) requirements, as well as DOE-2018 (Department of Energy) Energy Standard for minimum SEER and EER and DOE-2023 Energy Standards for minimum SEER2 and EER2 requirements. ASHRAE 90.1 requires M1 ratings on 3-phase models.
d. 48QE 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
MBtuh — Btuh in Thousands
SEER — Seasonal Energy Efficiency Ratio

48QE AHRI Ratings — Heating Mode[a,b,c,d]

UNIT	HSPF 2	HSPF	HIGH HEATING CAPACITY 2 (MBtuh)	HIGH HEATING CAPACITY (MBtuh)	HIGH HEAT COP 2	HIGH HEAT COP	LOW HEATING CAPACITY 2 (MBtuh)	LOW HEATING CAPACITY (MBtuh)	LOW HEAT COP2	LOW HEAT COP	RATED INDOOR AIRFLOW (cfm)
48QE*M04	6.7	—	32.0	—	3.6	3.6	16.0	—	2.3	—	1200
48QE*M05	7.2	—	45.0	—	3.6	3.6	25.0	—	2.4	—	1725
48QE*M06	6.9	—	54.0	—	3.6	3.6	30.0	—	2.4	—	1875

NOTE(S):

a. Rated in accordance with AHRI Standards 210/240.
b. Rating are based on:
Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.
High Temperature Heating Ratings: 47°F (8°C) db, 43°F (6°C) wb outdoor air temperature and 70°F (21°C) entering indoor coil air.
Low Temperature Heating Ratings: 17°F (–8°C) db, 15°F (–9°C) wb outdoor air temperature and 70°F (21°C) entering indoor coil air.
c. Units comply with ASHRAE 90.1-2016 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) requirements, as well as DOE-2018 (Department of Energy) Energy Standard for minimum SEER and EER and DOE-2023 Energy Standards for minimum SEER2 and EER2 requirements. ASHRAE 90.1 requires M1 ratings on 3-phase models.
d. 48QE 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
COP — Coefficient of Performance
HSPF — Heating Seasonal Performance Factor
MBtuh — Btuh in Thousands

Capacity ratings (cont)

Sound Ratings[a,b,c]

UNIT	COOLING STAGES	OUTDOOR SOUND (dB) AT 60 Hz								
		A-Weighted	63	125	250	500	1000	2000	4000	8000
48QE*M04	2	79.0	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
48QE*M05	2	79.0	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
48QE*M06	2	79.0	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3

NOTE(S):

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

LEGEND

dB — Decibel

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

UNIT	HEAT LEVEL	VOLTAGE	COOLING				SS HX HEATING		ULNX HX HEATING[a]	
			Minimum Airflow cfm	Minimum 2-Speed Airflow (low speed)	Minimum 2-Speed Airflow (high speed)	Maximum Airflow cfm	Minimum Airflow cfm	Maximum Airflow cfm	Minimum Airflow cfm	Maximum Airflow cfm
48QE04**	LOW	1 phase	900	675	900	1275	890	1950	900	1500
	MED		900	675	900	1275	800	1520	1030	1500
	HIGH		900	675	900	1275	—	—	—	—
	LOW	3 phase	900	675	900	1275	910	2010	900	1500
	MED		900	675	900	1275	960	1630	1030	1500
	HIGH		900	675	900	1275	—	—	—	—
48QE05**	LOW	1 phase	1200	900	1200	2000	890	2440	1200	2000
	MED		1200	900	1200	2000	1050	2280	1200	2000
	HIGH		1200	900	1200	2000	1220	2170	—	—
	LOW	3 phase	1200	900	1200	2000	910	2010	1200	2000
	MED		1200	900	1200	2000	1250	2330	1200	2000
	HIGH		1200	900	1200	2000	1390	2220	—	—
48QE06**	LOW	1 phase	1500	1125	1500	2500	890	3250	1500	2500
	MED		1500	1125	1500	2500	1050	2730	1500	2500
	HIGH		1500	1125	1500	2500	1220	2790	—	—
	LOW	3 phase	1500	1125	1500	2500	910	2510	1500	2500
	MED		1500	1125	1500	2500	1250	2720	1500	2500
	HIGH		1500	1125	1500	2500	1390	2780	—	—

NOTE(S):

a. Natural gas heating only.

LEGEND

SS HX — Stainless Steel Heat Exchanger
ULNX HX — Ultra Low NOx Heat Exchanger

Capacity ratings (cont)

Heat Rating — Natural Gas and Propane

UNIT		GAS HEAT	STAINLESS STEEL HEAT EXCHANGER		TEMPERATURE RISE (°F)	THERMAL EFFICIENCY (%)	AFUE EFFICIENCY (%)
			Input/Output Stage 1 (MBtuh)	Input/Output Stage 2 (MBtuh)			
48QE**04	Single Phase	LOW	— / —	65 / 53	25-55	81	81
		MED	— / —	90 / 73	45-85	82	81
		HIGH	— / —	— / —	—	—	—
	Three Phase	LOW	50 / 40	67 / 54	25-55	81	—
		MED	82 / 65	110 / 88	50-85	80	—
		HIGH	— / —	— / —	—	—	—
48QE**05	Single Phase	LOW	— / —	65 / 53	20-55	81	81
		MED	— / —	90 / 73	30-65	82	81
		HIGH	— / —	130 / 106	45-80	81	81
	Three Phase	LOW	50 / 40	67 / 54	25-55	81	—
		MED	82 / 65	110 / 88	35-65	80	—
		HIGH	120 / 96	150 / 120	50-80	80	—
48QE**06	Single Phase	LOW	— / —	65 / 53	15-55	81	81
		MED	— / —	90 / 73	25-65	82	81
		HIGH	— / —	130 / 106	35-80	81	81
	Three Phase	LOW	50 / 40	67 / 54	20-55	81	—
		MED	82 / 65	110 / 88	30-65	80	—
		HIGH	120 / 96	150 / 120	40-80	80	—

Heat Rating — Ultra Low NOx Natural Gas

UNIT		GAS HEAT	INPUT/OUTPUT (MBtuh)	TEMPERATURE RISE (°F)	THERMAL EFFICIENCY(%)	AFUE EFFICIENCY (%)
48QE**04	Single Phase	LOW	60 / 49	20-50	81	82
		MED	82 / 66	20-60	81	81
	Three Phase	LOW	60 / 49	20-50	81	—
		MED	82 / 66	20-60	81	81
48QE**05	Single Phase	LOW	60 / 49	20-50	81	82
		MED	82 / 66	20-60	81	81
	Three Phase	LOW	60 / 49	20-50	81	—
		MED	82 / 66	20-60	81	81
48QE**06	Single Phase	LOW	60 / 49	15-45	81	82
		MED	82 / 66	20-60	81	81
	Three Phase	LOW	60 / 49	15-45	81	—
		MED	82 / 66	20-60	81	81

Physical data

48QE 3 to 5 Ton Physical Data

48QE UNIT	48QE*M04	48QE*N04	48QE*M05	48QE*N05	48QE*M06	48QE*N06
NOMINAL TONS	3	3	4	4	5	5
BASE UNIT OPERATING WT (lb)[a]	624	624	651	651	653	653
REFRIGERATION SYSTEM						
No. Circuits/No. Compressors/Type	1 / 1 / 2-Stage Scroll	1 / 1 / 2-Stage Scroll	1 /1 / 2-Stage Scroll	1 / 1 / 2-Stage Scroll	1 / 1 / 2-Stage Scroll	1 /1 / 2-Stage Scroll
Puron Advance™ (R-454B) Charge A/B (lb-oz)	12-0	—	15-1	—	16-0	—
Humidi-MiZer® Puron Advance (R-454B) Charge A/B (lb-oz)	—	16-0	—	22-11	—	19-8
Metering Device	TXV	TXV	TXV	TXV	TXV	TXV
High-Pressure Trip/Reset (psig)	630 / 505	630 / 505	630 / 505	630 / 505	630 / 505	630 / 505
Low-Pressure Trip/Reset (psig)	54 / 117	54 / 117	54 / 117	54 / 117	54 / 117	54 / 117
EVAPORATOR COIL						
Material (Tube/Fin)	Cu/Al	Cu/Al	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	3/8 in. RTPF	3/8 in. RTPF
Rows/FPI	3/15	3/15	4/15	4/15	4/15	4/15
Total Face Area (ft^2)	7.3	7.3	7.3	7.3	7.3	7.3
Condensate Drain Connection Size	3/4 in.	3/4 in.	3/4 in.	3/4 in.	3/4 in.	3/4 in.
CONDENSER COIL						
Material	Cu/Al	Cu/Al	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	5/16 in. RTPF	5/16 in. RTPF
Rows/FPI	2/18	2/18	2/18	2/18	2/18	2/18
Total Face Area (ft^2)	18.8	18.8	20.5	20.5	20.5	20.5
HUMIDI-MIZER COIL						
Material	—	Cu/Al	—	Cu/Al	—	Cu/Al
Coil Type	—	3/8 in. RTPF	—	3/8 in. RTPF	—	3/8 in. RTPF
Rows/FPI	—	1/17	—	2/17	—	2/17
Total Face Area (ft^2)	—	5.2	—	5.2	—	5.2
EVAPORATOR FAN AND MOTOR						
Standard/Medium Static 1 Phase						
Motor Qty/Drive Type	1 / Direct	—	1 / Direct	—	1 / Direct	—
Maximum Cont Bhp	0.71	—	1.06	—	1.44	—
Rpm Range	219-2190	—	217-2170	—	239-2390	—
Fan Qty/Type	1 / Vane Axial	—	1 / Vane Axial	—	1 / Vane Axial	—
Fan Diameter (in.)	16.6 in.	—	16.6 in.	—	16.6 in.	—
High Static 1 Phase						
Motor Qty/Drive Type	1 / Direct	—	1 / Direct	—	1 / Direct	—
Maximum Cont Bhp	1.07	—	1.53	—	1.96	—
Rpm Range	249-2490	—	246-2460	—	266-2660	—
Fan Qty/Type	1 / Vane Axial	—	1 / Vane Axial	—	1 / Vane Axial	—
Fan Diameter (in.)	16.6 in.	—	16.6 in.	—	16.6 in.	—
Standard/Medium Static 3 Phase						
Motor Qty/Drive Type	1 / Direct	1 / Direct	1 / Direct	1 / Direct	1 / Direct	1 / Direct
Maximum Cont Bhp	0.71	0.71	1.06	1.06	1.44	1.44
Rpm Range	219-2190	219-2190	217-2170	217-2170	239-2390	239-2390
Fan Qty/Type	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial
Fan Diameter (in.)	16.6 in.	16.6 in.	16.6 in.	16.6 in.	16.6 in.	16.6 in.
High Static 3 Phase						
Motor Qty/Drive Type	1 / Direct	1 / Direct	1 / Direct	1 / Direct	1 / Direct	1 / Direct
Maximum Cont Bhp	1.07	1.07	1.96	1.96	2.43	2.43
Rpm Range	249-2490	249-2490	266-2660	266-2660	284-2836	284-2836
Fan Qty/Type	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial	1 / Vane Axial
Fan Diameter (in.)	16.6 in.	16.6 in.	16.6 in.	16.6 in.	16.6 in.	16.6 in.

Physical data (cont)

48QE 3 to 5 Ton Physical Data (cont)

48QE UNIT	48QE*M04	48QE*N04	48QE*M05	48QE*N05	48QE*M06	48QE*N06
CONDENSER FAN AND MOTOR						
Qty / Motor Drive Type	1 / Direct	1 / Direct	1 / Direct	1 / Direct	1 / Direct	1 / Direct
Motor HP/Rpm	1/3 / 1000/800	1/3 / 1000/800	1/4 / 1100/900	1/4 / 1100/900	1/4 / 1100/900	1/4 / 1100/900
Fan Diameter (in.)	23 in.	23 in.	23 in.	23 in.	23 in.	23 in.
FILTERS						
RA Filter Qty / Size (in.)	4 / 16 x 16 x 2	4 / 16 x 16 x 2	4 / 16 x 16 x 2	4 / 16 x 16 x 2	4 / 16 x 16 x 2	4 / 16 x 16 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	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

Physical data (cont)

48QE 3 to 5 Ton Gas Heat Data — 1-Phase Units

48QE UNIT	48QE**04	48QE**05	48QE**06
GAS CONNECTION			
No. of Gas Valves	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
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
HEAT ANTICIPATOR SETTING (AMPS)			
First Stage	0.14	0.14	0.14
Second Stage	0.14	0.14	0.14
NATURAL GAS HEAT			
LOW			
No. of Stages / No. of Burners (total)	1 / 2	1 / 2	1 / 2
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	25-55	20-55	15-55
MEDIUM			
No. of Stages / No. of Burners (total)	1 / 3	1 / 3	1 / 3
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	45-85	30-65	25-65
HIGH			
No. of Stages / No. of Burners (total)	—	1 / 3	1 / 3
Connection Size	—	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	—	195 / 115	195 / 115
Temperature Rise (°F)	—	45-80	35-80
LIQUID PROPANE HEAT			
LOW			
No. of Stages / No. of Burners (total)	1 / 2	1 / 2	1 / 2
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	25-55	20-55	15-55
MEDIUM			
No. of Stages / No. of Burners (total)	1 / 3	1 / 3	1 / 3
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	45-85	30-65	25-65
HIGH			
No. of Stages / No. of Burners (total)	—	1 / 3	1 / 3
Connection Size	—	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	—	195 / 115	195 / 115
Temperature Rise (°F)	—	45-80	35-80

Physical data (cont)

48QE 3 to 5 Ton Gas Heat Data — 3-Phase Units

48QE UNIT	48QE**04	48QE**05	48QE**06
GAS CONNECTION			
No. of Gas Valves	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
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
HEAT ANTICIPATOR SETTING (AMPS)			
First Stage	0.14	0.14	0.14
Second Stage	0.14	0.14	0.14
NATURAL GAS HEAT			
LOW			
No. of Stages / No. of Burners (total)	2 / 2	2 / 2	2 / 2
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	25-55	25-55	20-55
MEDIUM			
No. of Stages / No. of Burners (total)	2 / 3	2 / 3	2 / 3
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	50-85	35-65	30-65
HIGH			
No. of Stages / No. of Burners (total)	—	2 / 3	2 / 3
Connection Size	—	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	—	195 / 115	195 / 115
Temperature Rise (°F)	—	50-80	40-80
LIQUID PROPANE HEAT			
LOW			
No. of Stages / No. of Burners (total)	2 / 2	2 / 2	2 / 2
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	25-55	25-55	20-55
MEDIUM			
No. of Stages / No. of Burners (total)	2 / 3	2 / 3	2 / 3
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	195 / 115	195 / 115	195 / 115
Temperature Rise (°F)	50-85	35-65	30-65
HIGH			
No. of Stages / No. of Burners (total)	—	2 / 3	2 / 3
Connection Size	—	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	—	195 / 115	195 / 115
Temperature Rise (°F)	—	50-80	40-80

Physical data (cont)

48QE 3 to 5 Ton Ultra Low NOx Gas Heat Data — 1 and 3-Phase Units

48QE UNIT	48QE**04	48QE**05	48QE**06
GAS CONNECTION			
No. of Gas Valves	1	1	1
Natural Gas Supply Line Pressure (in. wg)/(psig)	5-13 / 0.18-0.47	5-13 / 0.18-0.47	5-13 / 0.18-0.47
HEAT ANTICIPATOR SETTING (AMPS)	0.14	0.14	0.14
NATURAL GAS HEAT			
LOW			
No. of Stages / No. of Burners (total)	1 / 1	1 / 1	1 / 1
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Burner Thermal Switch open / closes	350 / 301	350 / 301	350 / 301
Temperature Rise (°F)	20-50	20-50	15-45
MEDIUM			
No. of Stages / No. of Burners (total)	1 / 1	1 / 1	1 / 1
Connection Size	1/2 in. NPT	1/2 in. NPT	1/2 in. NPT
Rollout Switch Opens / Closes (°F)	350 / 301	350 / 301	350 / 301
Temperature Rise (°F)	20-60	20-60	20-60

Options and accessories

ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
GAS HEAT		
Low, Medium, or High Gas Heat — Stainless Steel Heat Exchanger	X	
Low NOx, Low Heat — Stainless Steel Heat Exchanger[a]	X	
Ultra Low NOx, Low or Medium Heat — Stainless Steel Heat Exchanger[a]	X	
Propane Conversion Kit[b]		X
High Altitude Conversion Kit[c]		X
Flue Discharge Deflector		X
Flue Shield		X
CABINET		
Thru-the-Base Electrical or Gas Line Connections	X	X
Hinged Access Panels	X	
MERV-8 Filters		X
MERV-13 Filters, 2 in.		X
MERV-13 Filters, 4 in.	X	
4 in. Filter Rack (filters not included)		X
COIL OPTIONS		
Cu/Cu Indoor and/or Outdoor Coils[d,e]	X	
Pre-coated Outdoor Coils[d]	X	
Premium, E-coated Indoor/ Outdoor Coils[d]	X	
HUMIDITY CONTROL		
Humidi-MiZer® Adaptive Dehumidification System[d]	X	
CONDENSER PROTECTION		
Condenser Coil Hail Guard (louvered design)[d]	X	X
CONTROLS		
Thermostats, Temperature Sensors, and Subbases		X
Smoke Detector (supply and/or return air)	X	X
Horn Strobe Annunciator[f]		X
Phase Monitor	X	X
Condensate Overflow Switch	X	X
ECONOMIZERS AND OUTDOOR AIR DAMPERS		
EconoMi$er® 2 for DDC Controls (Standard and Ultra Low Leak air damper models)[d,g]	X	X
Motorized Two-Position Outdoor-Air Damper[d]		X
Manual Outdoor-Air Damper (25% and 50%)		X
Barometric Relief[h]	X	X
Power Exhaust — Prop Design		X

ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
ECONOMIZER SENSORS AND IAQ DEVICES		
Single Dry Bulb Temperature Sensors[i]	X	X
Differential Dry Bulb Temperature Sensors[i]		X
Single Enthalpy Sensors[i]	X	X
Differential Enthalpy Sensors[i]		X
CO_2 Sensor (wall, duct, or unit mounted)[i]	X	X
INDOOR FAN MOTOR		
Optional Indoor Fan Motors	X	
Fan Filter Status Switch	X	X
LOW AMBIENT CONTROL		
Low Ambient Controller to 0°F (–18°C)[l]		X
POWER OPTIONS		
Convenience Outlet (powered)[d]	X	
Convenience Outlet (unpowered)	X	
Convenience Outlet, 20 amp (unpowered)		X
HACR Circuit Breaker[j]	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):

a. Not available for 575V units.
b. Not available for 48QE Ultra Low NOx units.
c. Not necessary for 48QE Ultra Low NOx units.
d. Not available as a factory-installed option on single phase (-3 voltage code) models.
e. Cu/Cu coils are only available with louvered hail guards.
f. Requires a field-supplied 24V transformer for each application. See price pages for details.
g. 48QE units are equipped with SystemVu controls (standard) which complies with California Title 24 Fault Detection and Diagnostic (FDD).
h. Included with economizer.
i. Sensors used to optimize economizer performance.
j. HACR circuit breaker cannot be used on 04-06 sizes when unit MOCP rating exceeds:
   208/230/1/60 = 60 amps
   208/230/3/60 = 50 amps
   460/3/60 = 20 amps
   575/3/60 = 15 amps
   Carrier RTUBuilder automatically selects the amps limitations.
k. Non-fused disconnect switch cannot be used when unit electrical rating exceeds 80 amps (all voltages).
   Carrier RTUBuilder automatically selects the amp limitations.
l. High SCCR (Short Circuit Current Rating) is not available on 575 volt units or units with factory-installed non-fused disconnect, phase loss monitor/protection, powered convenience outlet, HACR circuit breaker, low ambient controls or Humidi-MiZer system.

Options and accessories (cont)

Factory-installed options

Economizer (dry-bulb or enthalpy)

Economizers save money. They bring in fresh, outside air for ventilation; and provide cool, outside air to cool your building. This is the preferred method of low-ambient cooling. When coupled to CO_2 sensors, economizers can provide even more savings by coupling the ventilation air to only that amount required.

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

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

Unit mounted CO_2 sensor

The CO_2 sensor works with the economizer to intake only the correct amount of outside air for ventilation. As occupants fill your building, the CO_2 sensor detects their presence through increasing CO_2 levels and opens the economizer appropriately. When the occupants leave, the CO_2 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 WeatherMaster® 48QE 04-06 hybrid heat rooftop unit, with the exception of single phase voltage (208/230-1-60) units.

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

The Humidi-MiZer adaptive dehumidification system has 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 48QE 04-06 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 operates under its normal sequence of operation by cycling compressors to maintain comfort conditions.

Sub-cooling mode operates 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 connection

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 the 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. This option 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 the coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan. Only available with louvered hail guards.

E-coated (outdoor and indoor) coils

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.

Single enthalpy sensor

This sensor allows the economizer to account for both the humidity and temperature of outside air conditions, providing additional comfort.

Convenience outlet (powered or unpowered)

Reduce service and/or installation costs by including a convenience outlet in your specification. Carrier will install this service feature at our factory. 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.

Options and accessories (cont)

HACR Breaker

These manual reset devices provide overload and short circuit protection for the unit. Breakers are factory wired and mounted on the units, with an access cover to provide protection from the environment.

Non-fused disconnect

This OSHA-compliant, factory-installed safety switch allows a service technician to locally secure power to the rooftop. When selecting a factory-installed non-fused disconnect, note they are sized for the unit as ordered from the factory. The sizing does not accommodate field-installed items such as power exhaust devices, etc.

Condensate overflow switch

This sensor and related controller monitor 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 compressor and all indoor and outdoor fan motors. (A standard unit comes with 5 kA rating.)

This option is not available on 575-v units or units with a factory-installed non-fused disconnect, HACR circuit breaker, Humidi-MiZer system, phase loss monitor/protection, or powered convenience outlet.

Options and accessories (cont)

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 whether outside air is suitable for free cooling.

Wall or duct mounted CO_2 sensor

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

Propane conversion kit

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

NOTE: Not available for 48QE Ultra Low NOx units.

High altitude conversion kit

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 at altitudes above 2000 ft (610 m).

NOTE: Typical natural gas heating value ranges from 975 to 1050 Btu/ft^3 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.

NOTE: High altitude conversion kit is not necessary for 48QE Ultra Low NOx units. These units are factory-configured to operate up to 7,800 feet (2377 m). Use at altitudes above 7,800 feet (2377 m) is not permitted under any circumstances.

Flue discharge deflector

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.

4 in. filter rack kit

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

MERV-13 2 in. return air filters

This kit includes MERV-13 2 in. filters to accommodate unit filter rack size.

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 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.

Low ambient controller

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 for energy recovery from the exhaust air without supply air contamination.

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

Options and accessories (cont)

Options and Accessory Weights

OPTION / ACCESSORY NAME[a]	48QE UNIT WEIGHT					
	04		05		06	
	lb	kg	lb	kg	lb	kg
Humidi-MiZer Coil[b]	15	7	24	11	24	11
Power Exhaust	45	20	45	20	45	20
EconoMi$er® 2	51	23	51	23	51	23
Two-Position Damper	39	18	39	18	39	18
Manual Damper	12	5	12	5	12	5
High Gas Heat	—	—	63	29	63	29
Hail Guard (louvered)	17	8	17	8	17	8
Cu/Cu Condenser Coil	37	17	74	34	74	34
Cu/Cu Condenser and Evaporator Coils	75	34	112	51	112	51
Roof Curb (14 in. curb)	95	43	95	43	95	43
Roof Curb (24 in. curb)	150	68	150	68	150	68
CO_2 Sensor	2	1	2	1	2	1
Flue Discharge Deflector	7	3	7	3	7	3
Low Ambient Controller	9	4	9	4	9	4
Return Air Smoke Detector	7	3	7	3	7	3
Supply Air Smoke Detector	7	3	7	3	7	3
Fan Filter Switch	2	1	2	1	2	1
Non-Fused Disconnect	15	7	15	7	15	7
Powered Convenience Outlet[c]	36	16	36	16	36	16
Unpowered Convenience Outlet	4	2	4	2	4	2
Enthalpy Sensor	2	1	2	1	2	1
Differential Enthalpy Sensor	3	1	3	1	3	1

NOTE(S):

a. Where multiple variations are available, the heaviest combination is listed.
b. For Humidi-MiZer add Low Ambient controller.
c. Weight includes convenience outlet and convenience outlet transformer.

48QE**04-06 Base Unit Dimensions

NOTES:

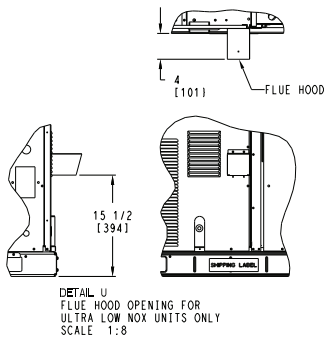
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE

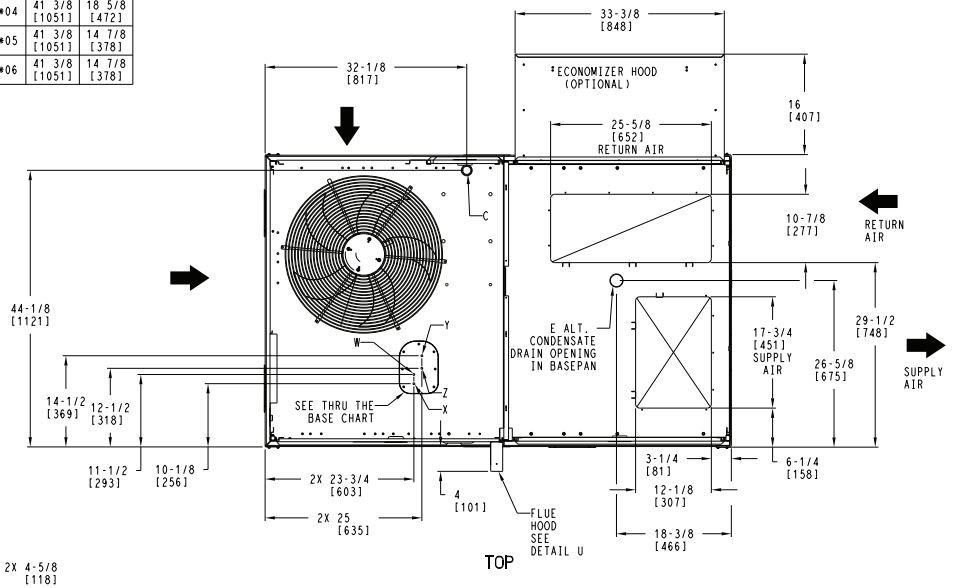
UNIT	J	K
48QE**04	41 3/8 [1051]	18 5/8 [472]
48QE**05	41 3/8 [1051]	14 7/8 [378]
48QE**06	41 3/8 [1051]	14 7/8 [378]

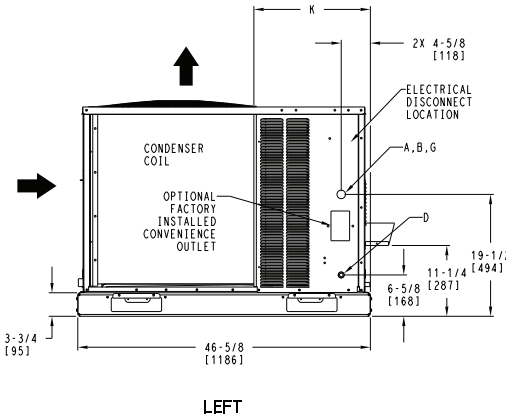
	CONNECTION SIZES
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2" [50] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	1/2"-14 NPT GAS CONNECTION
G	2 1/2" [64] DIA POWER SUPPLY KNOCK-OUT

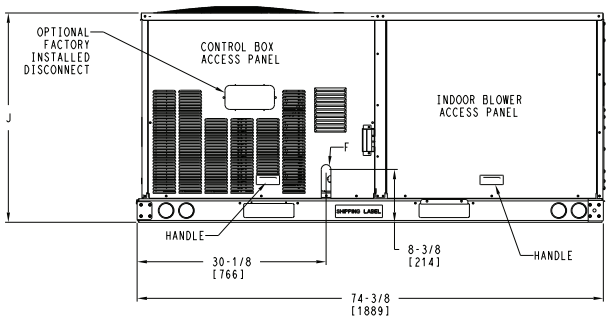
THRU-THE-BASE CHART
THESE HOLES REQUIRED FOR USE
CRBTMPWR008A00, 009A00

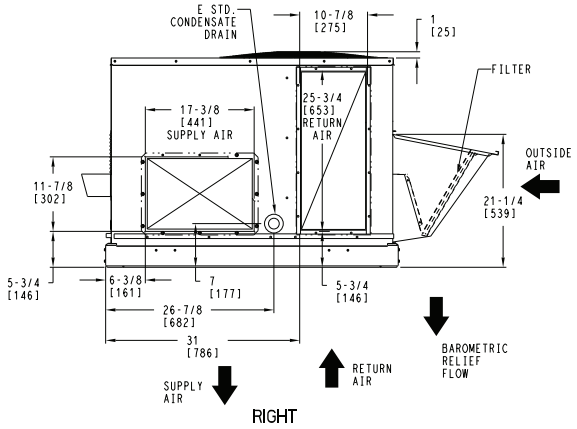
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	115V	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y*	3/4"	POWER	1-1/8" [28.6]
Z**	(009A00) 1/2" FPT	GAS	1-1/8" [28.6]
	FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED		
*	SELECT EITHER 3/4" OR 1/2" FOR POWER, DEPENDING ON WIRE SIZE		
**	(008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING		











ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	1 OF 3	8/4/25	3/27/25	48QE 04-06 SINGLE PACKAGE HEAT PUMP WITH GAS HEAT	48TC007622	A

48QE**04-06 Base Unit Dimensions (cont)

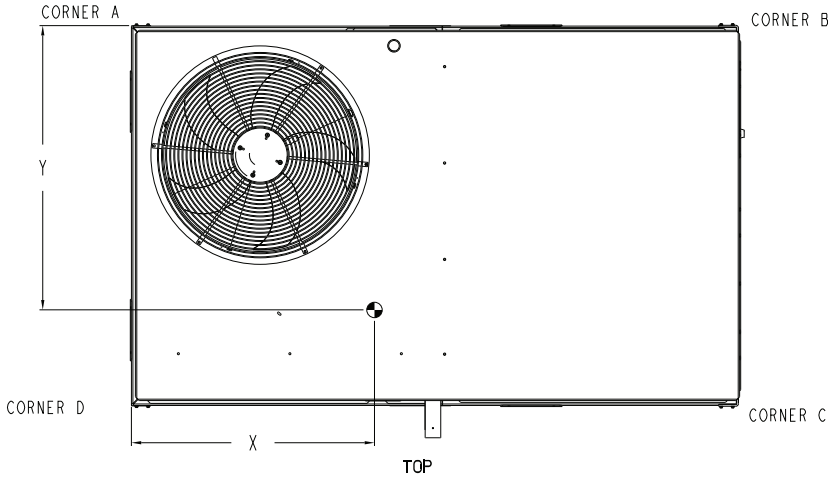
UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48QE**04	624	283	166	75	160	73	146	66	152	69	36 1/2 [927]	22 3/8 [568]	16 1/2 [419]
48QE**05	651	295	173	78	167	76	153	69	159	72	36 1/2 [927]	22 3/8 [568]	16 1/2 [419]
48QE**06	653	296	173	78	167	76	153	69	159	72	36 1/2 [927]	22 3/8 [568]	16 1/2 [419]

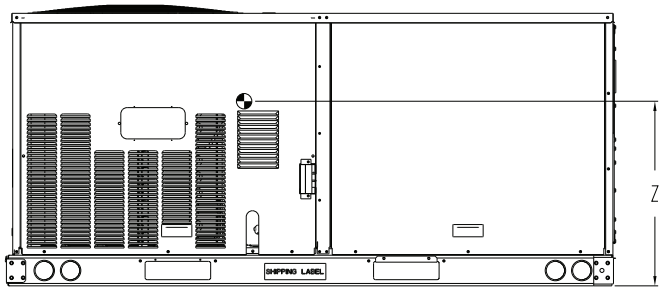
*- STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES REFER TO THE PRODUCT DATA CATALOG.

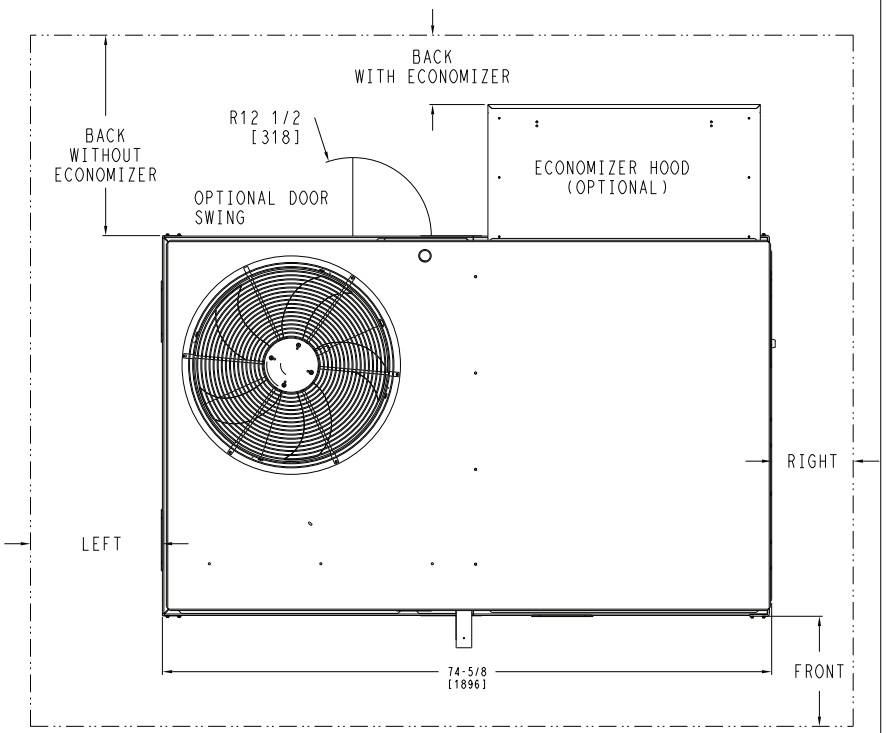
THIS TABLE IS FOR "ULTRA LOW NOX" UNITS ONLY

UNIT	STD. UNIT WEIGHT **		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48QEG*04	654	297	170	77	163	74	157	71	164	74	36 3/8 [923]	23 [583]	16 1/2 [419]
48QEG*05	681	309	177	80	170	77	163	74	171	78	36 3/8 [923]	23 [583]	16 1/2 [419]
48QEG*06	683	310	178	81	170	77	164	74	171	78	36 3/8 [923]	23 [583]	16 1/2 [419]

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







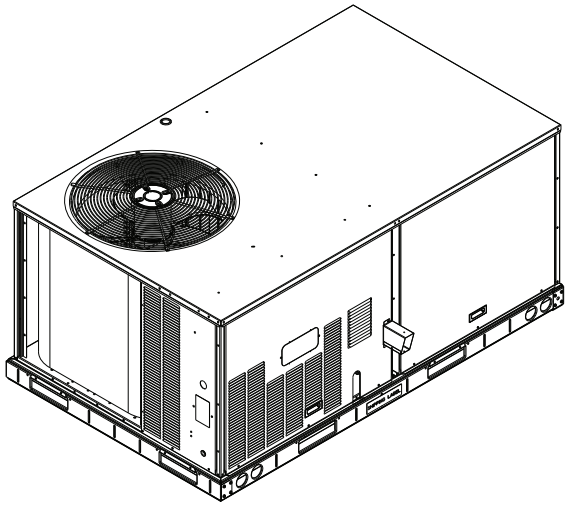
NOTES:

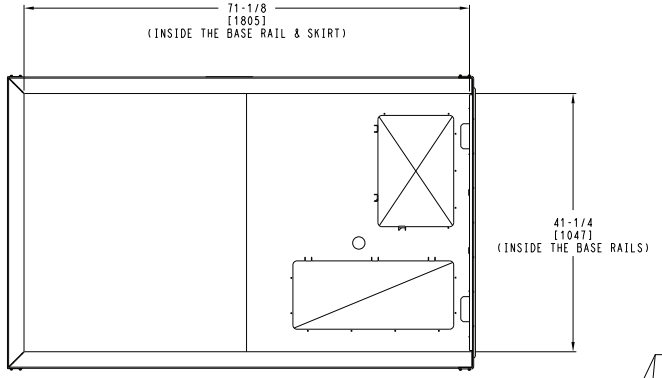
1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

	CLEARANCE		
	SERVICE WITH:	SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/O HOOD	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	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			REV
U.S. ECCN:NSR	2 OF 3	8/4/25	3/27/25	48QE 04-06 SINGLE PACKAGE HEAT PUMP WITH GAS HEAT	48TC007622	A

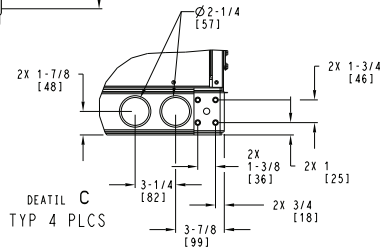
48QE**04-06 Base Unit Dimensions (cont)

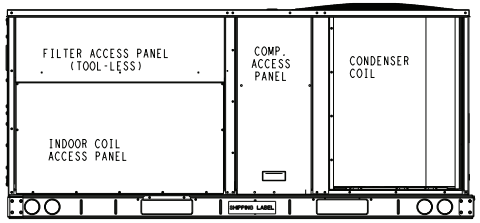




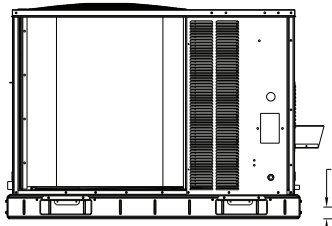
INSIDE BASERAIL DIMENSIONS

BOTTOM

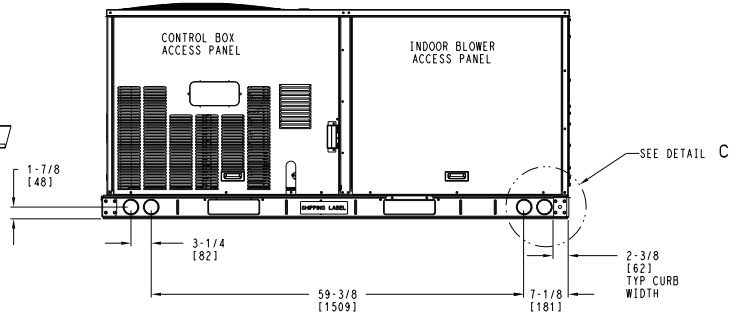




BACK



LEFT



FRONT

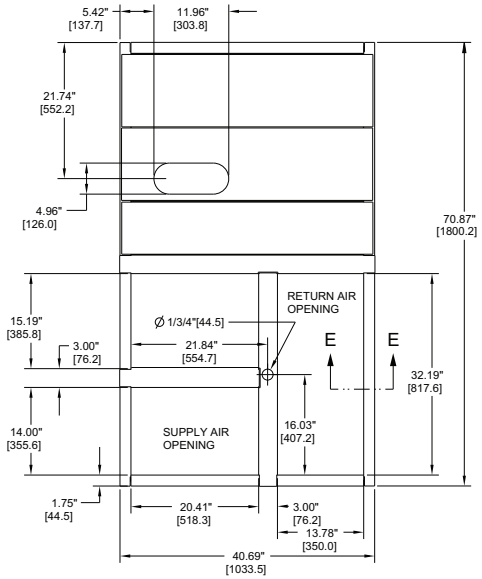
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	3 OF 3	8/4/25	3/27/25	48QE 04-06 SINGLE PACKAGE HEAT PUMP WITH GAS HEAT	48TC007622	A

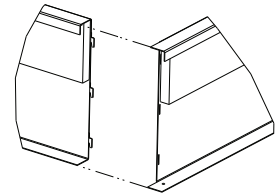
Roof Curb Dimensions — 48QE 04-06

ROOF CURB ACCESSORY #	A
CRRFCURB001A01	14" [356]
CRRFCURB002A01	24" [610]

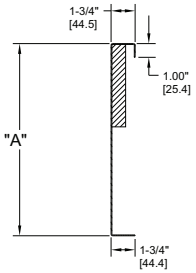
NOTES:
1. ROOFCURB ACCESSORY IS SHIPPED DISASSEMBLED.
2. INSULATED PANELS: 25.4 [1"] THK. POLYURETHANE FOAM, 44.5 [1-3/4] # DENSITY.
3. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
4. ROOFCURB: 18 GAUGE STEEL.
5. ATTACH DUCTWORK TO CURB. (FLANGES OF DUCT REST ON CURB).
6. SERVICE CLEARANCE 4 FEET ON EACH SIDE.
7. ▨ DIRECTION OF AIR FLOW.
8. CONNECTOR PACKAGE CRBTMPWR001A01 IS FOR THRU-THE-CURB GAS TYPE PACKAGE CRBTMPWR003A01 IS FOR THRU-THE-BOTTOM TYPE GAS CONNECTIONS.

CONNECTOR PKG. ACC.	GAS CONNECTION TYPE	GAS FITTING	POWER WIRING FITTING	CONTROL WIRING FITTING	ACCESSORY CONVENIENCE OUTLET WIRING CONNECTOR
CRBTMPWR001A01	THRU THE CURB	3/4" [19] NPT	3/4" [19] NPT	1/2" [12.7] NPT	1/2" [12.7] NPT
CRBTMPWR003A01	THRU THE BOTTOM	1/2" [12.7] NPT			

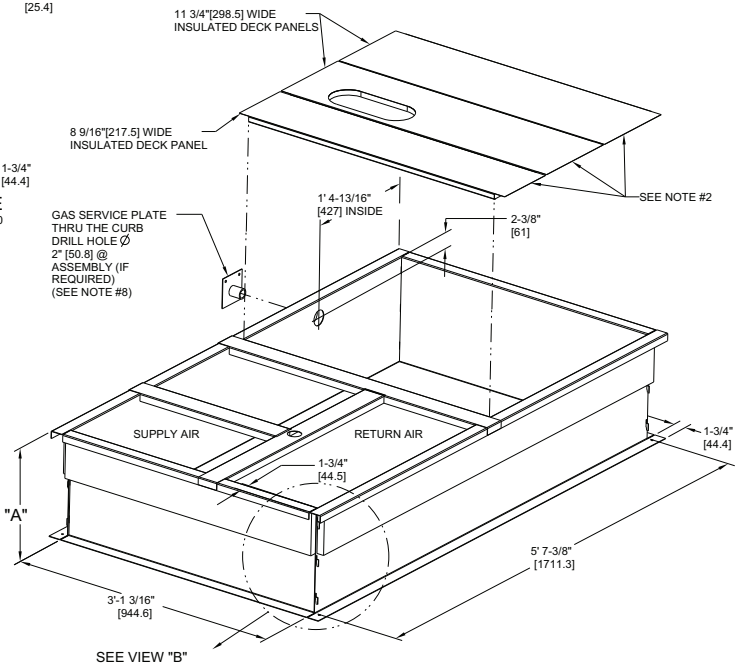




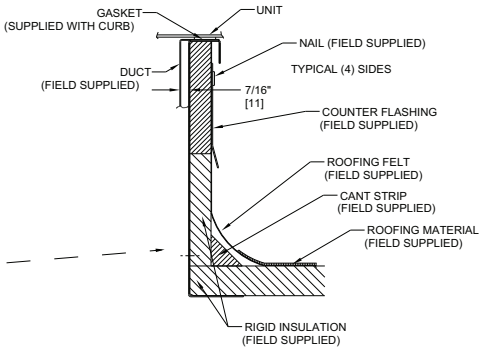
VIEW "B"
CORNER DETAIL

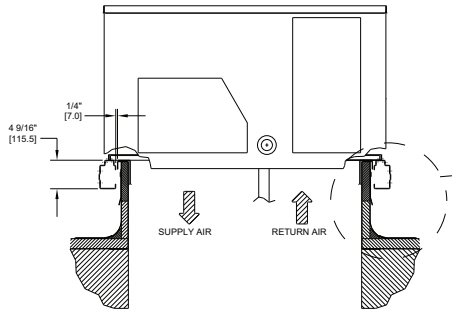


SECTION E-E
SCALE 0.250



SEE VIEW "B"





48TC400427

48QE*M04 High Stage Cooling Capacities[a,b]

48QE*M04				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
900 cfm	EA (wb)	58	TC	31.6	31.6	36.0	29.6	29.6	33.9	27.5	27.5	31.6	25.3	25.3	29.2	23.0	23.0	26.6
			SHC	27.2	31.6	36.0	25.4	29.6	33.9	23.5	27.5	31.6	21.5	25.3	29.2	19.3	23.0	26.6
		62	TC	33.6	33.6	34.2	31.2	31.2	32.6	28.7	28.7	31.1	26.0	26.0	29.4	23.6	23.6	26.7
			SHC	24.4	29.3	34.2	22.9	27.8	32.6	21.3	26.2	31.1	19.7	24.6	29.4	17.6	22.1	26.7
		67	TC	37.7	37.7	37.7	35.1	35.1	35.1	32.4	32.4	32.4	29.5	29.5	29.5	26.4	26.4	26.4
			SHC	20.0	24.9	29.8	18.5	23.4	28.2	16.9	21.8	26.6	15.3	20.2	25.0	13.6	18.5	23.3
		72	TC	42.1	42.1	42.1	39.4	39.4	39.4	36.5	36.5	36.5	33.3	33.3	33.3	30.0	30.0	30.0
			SHC	15.5	20.4	25.2	14.0	18.8	23.7	12.4	17.3	22.1	10.8	15.6	20.5	9.1	13.9	18.8
		76	TC	—	45.9	45.9	—	43.0	43.0	—	39.9	39.9	—	36.6	36.6	—	33.1	33.1
			SHC	—	16.7	21.4	—	15.1	19.9	—	13.6	18.4	—	11.9	16.7	—	10.2	15.1
1050 cfm	EA (wb)	58	TC	33.9	33.9	38.6	31.8	31.8	36.3	29.6	29.6	33.9	27.2	27.2	31.3	24.7	24.7	28.5
			SHC	29.2	33.9	38.6	27.3	31.8	36.3	25.3	29.6	33.9	23.1	27.2	31.3	20.8	24.7	28.5
		62	TC	35.0	35.0	38.1	32.5	32.5	36.5	30.3	30.3	33.7	27.2	27.2	32.7	24.7	24.7	29.9
			SHC	26.8	32.5	38.1	25.3	30.9	36.5	23.1	28.4	33.7	21.8	27.2	32.7	19.6	24.7	29.9
		67	TC	39.1	39.1	39.1	36.4	36.4	36.4	33.5	33.5	33.5	30.5	30.5	30.5	27.3	27.3	27.3
			SHC	21.6	27.2	32.9	20.0	25.7	31.3	18.4	24.1	29.7	16.8	22.4	28.1	15.1	20.7	26.4
		72	TC	43.5	43.5	43.5	40.7	40.7	40.7	37.6	37.6	37.6	34.4	34.4	34.4	30.9	30.9	30.9
			SHC	16.2	21.9	27.5	14.7	20.3	26.0	13.1	18.7	24.4	11.4	17.1	22.7	9.7	15.4	21.0
		76	TC	—	47.3	47.3	—	44.3	44.3	—	41.0	41.0	—	37.6	37.6	—	33.9	33.9
			SHC	—	17.5	23.1	—	16.0	21.5	—	14.4	19.9	—	12.7	18.3	—	11.0	16.6
1200 cfm	EA (wb)	58	TC	35.8	35.8	40.7	33.6	33.6	38.3	31.2	31.2	35.7	28.7	28.7	33.0	26.1	26.1	30.1
			SHC	30.9	35.8	40.7	28.9	33.6	38.3	26.7	31.2	35.7	24.5	28.7	33.0	22.1	26.1	30.1
		62	TC	36.2	36.2	41.8	34.3	34.3	38.1	31.3	31.3	37.3	28.8	28.8	34.5	26.1	26.1	31.5
			SHC	29.1	35.4	41.8	26.6	32.4	38.1	25.3	31.3	37.3	23.1	28.8	34.5	20.8	26.1	31.5
		67	TC	40.2	40.2	40.2	37.4	37.4	37.4	34.4	34.4	34.4	31.3	31.3	31.3	27.9	27.9	29.3
			SHC	23.1	29.5	35.9	21.5	27.9	34.3	19.9	26.3	32.7	18.2	24.6	31.0	16.5	22.9	29.3
		72	TC	44.6	44.6	44.6	41.6	41.6	41.6	38.5	38.5	38.5	35.1	35.1	35.1	31.5	31.5	31.5
			SHC	16.9	23.3	29.7	15.3	21.7	28.2	13.7	20.1	26.5	12.0	18.4	24.9	10.3	16.7	23.1
		76	TC	—	48.4	48.4	—	45.3	45.3	—	41.9	41.9	—	38.4	38.4	—	34.6	34.6
			SHC	—	18.3	24.6	—	16.7	23.0	—	15.1	21.4	—	13.4	19.8	—	11.6	18.0
1350 cfm	EA (wb)	58	TC	37.5	37.5	42.5	35.1	35.1	40.0	32.7	32.7	37.3	30.0	30.0	34.5	27.3	27.3	31.4
			SHC	32.4	37.5	42.5	30.2	35.1	40.0	28.0	32.7	37.3	25.6	30.0	34.5	23.1	27.3	31.4
		62	TC	37.5	37.5	44.3	35.2	35.2	41.7	32.7	32.7	38.9	30.1	30.1	36.0	27.3	27.3	32.8
			SHC	30.7	37.5	44.3	28.7	35.2	41.7	26.5	32.7	38.9	24.2	30.1	36.0	21.8	27.3	32.8
		67	TC	41.0	41.0	41.0	38.1	38.1	38.1	35.1	35.1	35.6	31.9	31.9	33.9	28.5	28.5	32.1
			SHC	24.5	31.7	38.9	22.9	30.1	37.2	21.2	28.4	35.6	19.5	26.7	33.9	17.8	25.0	32.1
		72	TC	45.4	45.4	45.4	42.4	42.4	42.4	39.1	39.1	39.1	35.7	35.7	35.7	32.0	32.0	32.0
			SHC	17.5	24.7	31.9	15.9	23.1	30.3	14.2	21.4	28.6	12.5	19.7	26.9	10.8	18.0	25.2
		76	TC	—	49.2	49.2	—	46.0	46.0	—	42.6	42.6	—	39.0	39.0	—	35.1	35.1
			SHC	—	18.9	26.0	—	17.4	24.5	—	15.7	22.9	—	14.0	21.2	—	12.3	19.4
1500 cfm	EA (wb)	58	TC	38.9	38.9	44.1	36.4	36.4	41.4	33.9	33.9	38.7	31.2	31.2	35.7	28.3	28.3	32.5
			SHC	33.6	38.9	44.1	31.4	36.4	41.4	29.1	33.9	38.7	26.6	31.2	35.7	24.0	28.3	32.5
		62	TC	38.9	38.9	45.9	36.5	36.5	43.2	33.9	33.9	40.3	31.2	31.2	37.3	28.3	28.3	34.0
			SHC	31.9	38.9	45.9	29.8	36.5	43.2	27.5	33.9	40.3	25.1	31.2	37.3	22.6	28.3	34.0
		67	TC	41.7	41.7	41.7	38.7	38.7	40.1	35.6	35.6	38.4	32.4	32.4	36.7	28.9	28.9	34.9
			SHC	25.8	33.8	41.7	24.2	32.2	40.1	22.6	30.5	38.4	20.9	28.8	36.7	19.1	27.0	34.9
		72	TC	46.1	46.1	46.1	43.0	43.0	43.0	39.7	39.7	39.7	36.2	36.2	36.2	32.4	32.4	32.4
			SHC	18.0	26.0	33.9	16.4	24.4	32.3	14.8	22.7	30.7	13.1	21.0	29.0	11.3	19.2	27.2
		76	TC	—	49.9	49.9	—	46.6	46.6	—	43.1	43.1	—	39.4	39.4	—	35.5	35.5
			SHC	—	19.6	27.4	—	18.0	25.9	—	16.3	24.2	—	14.6	22.5	—	12.9	20.8

NOTE(S):

a. See minimum-maximum airflow ratings on page 7.
b. Published capacity values are based on SEER2 static requirements.

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

Performance data (cont)

48QE*M04 Low Stage Cooling Capacities[a,b]

48QE*M04				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
750 cfm	EA (wb)	58	TC	23.4	23.4	26.6	22.0	22.0	25.0	20.5	20.5	23.3	18.9	18.9	21.6	17.1	17.1	19.7
			SHC	20.2	23.4	26.6	18.9	22.0	25.0	17.6	20.5	23.3	16.1	18.9	21.6	14.6	17.1	19.7
		62	TC	24.1	24.1	26.5	22.4	22.4	25.4	21.1	21.1	22.8	18.9	18.9	22.5	17.2	17.2	20.6
			SHC	18.7	22.6	26.5	17.7	21.5	25.4	16.0	19.4	22.8	15.2	18.9	22.5	13.7	17.2	20.6
		67	TC	26.9	26.9	26.9	25.0	25.0	25.0	23.0	23.0	23.0	21.0	21.0	21.0	18.8	18.8	18.8
			SHC	15.1	19.0	22.9	14.1	18.0	21.9	13.1	17.0	20.9	12.0	15.9	19.8	10.9	14.8	18.7
		72	TC	29.9	29.9	29.9	27.9	27.9	27.9	25.8	25.8	25.8	23.6	23.6	23.6	21.3	21.3	21.3
			SHC	11.4	15.3	19.2	10.4	14.3	18.2	9.4	13.3	17.2	8.3	12.2	16.1	7.2	11.1	15.0
		76	TC	—	32.5	32.5	—	30.4	30.4	—	28.2	28.2	—	25.9	25.9	—	23.4	23.4
			SHC	—	12.3	16.1	—	11.3	15.1	—	10.3	14.1	—	9.2	13.0	—	8.1	12.0
900 cfm	EA (wb)	58	TC	25.1	25.1	28.5	23.6	23.6	26.8	22.0	22.0	25.0	20.2	20.2	23.1	18.4	18.4	21.1
			SHC	21.8	25.1	28.5	20.4	23.6	26.8	18.9	22.0	25.0	17.3	20.2	23.1	15.7	18.4	21.1
		62	TC	25.2	25.2	29.7	23.6	23.6	27.9	22.0	22.0	26.1	20.3	20.3	24.1	18.4	18.4	22.0
			SHC	20.7	25.2	29.7	19.3	23.6	27.9	17.9	22.0	26.1	16.4	20.3	24.1	14.8	18.4	22.0
		67	TC	27.8	27.8	27.8	25.9	25.9	25.9	23.8	23.8	23.8	21.6	21.6	22.5	19.4	19.4	21.4
			SHC	16.5	21.1	25.7	15.4	20.1	24.7	14.4	19.0	23.6	13.3	17.9	22.5	12.2	16.8	21.4
		72	TC	30.9	30.9	30.9	28.8	28.8	28.8	26.6	26.6	26.6	24.3	24.3	24.3	21.9	21.9	21.9
			SHC	12.0	16.7	21.3	11.0	15.6	20.3	10.0	14.6	19.2	8.9	13.5	18.1	7.8	12.4	17.0
		76	TC	—	33.5	33.5	—	31.2	31.2	—	28.9	28.9	—	26.5	26.5	—	24.0	24.0
			SHC	—	13.0	17.5	—	12.0	16.5	—	10.9	15.5	—	9.9	14.4	—	8.8	13.3
1050 cfm	EA (wb)	58	TC	26.5	26.5	30.0	24.9	24.9	28.2	23.1	23.1	26.3	21.3	21.3	24.3	19.4	19.4	22.2
			SHC	23.0	26.5	30.0	21.5	24.9	28.2	19.9	23.1	26.3	18.3	21.3	24.3	16.6	19.4	22.2
		62	TC	26.5	26.5	31.2	24.9	24.9	29.4	23.2	23.2	27.4	21.3	21.3	25.4	19.4	19.4	23.2
			SHC	21.8	26.5	31.2	20.4	24.9	29.4	18.9	23.2	27.4	17.3	21.3	25.4	15.6	19.4	23.2
		67	TC	28.5	28.5	28.5	26.5	26.5	27.3	24.4	24.4	26.2	22.2	22.2	25.1	19.8	19.8	23.9
			SHC	17.8	23.1	28.4	16.7	22.0	27.3	15.6	20.9	26.2	14.5	19.8	25.1	13.3	18.6	23.9
		72	TC	31.5	31.5	31.5	29.4	29.4	29.4	27.1	27.1	27.1	24.8	24.8	24.8	22.3	22.3	22.3
			SHC	12.6	17.9	23.2	11.5	16.8	22.2	10.5	15.8	21.1	9.4	14.7	20.0	8.3	13.6	18.9
		76	TC	—	34.1	34.1	—	31.8	31.8	—	29.5	29.5	—	27.0	27.0	—	24.4	24.4
			SHC	—	13.6	18.8	—	12.6	17.8	—	11.5	16.8	—	10.5	15.7	—	9.4	14.6
1200 cfm	EA (wb)	58	TC	27.6	27.6	31.3	25.9	25.9	29.4	24.1	24.1	27.4	22.2	22.2	25.3	20.2	20.2	23.1
			SHC	24.0	27.6	31.3	22.4	25.9	29.4	20.8	24.1	27.4	19.1	22.2	25.3	17.3	20.2	23.1
		62	TC	27.7	27.7	32.5	25.9	25.9	30.6	24.1	24.1	28.6	22.2	22.2	26.4	20.2	20.2	24.1
			SHC	22.8	27.7	32.5	21.3	25.9	30.6	19.7	24.1	28.6	18.1	22.2	26.4	16.3	20.2	24.1
		67	TC	29.0	29.0	30.9	27.0	27.0	29.8	24.8	24.8	28.7	22.6	22.6	27.4	20.8	20.8	23.0
			SHC	18.9	24.9	30.9	17.9	23.9	29.8	16.8	22.7	28.7	15.6	21.5	27.4	13.2	18.1	23.0
		72	TC	32.1	32.1	32.1	29.8	29.8	29.8	27.5	27.5	27.5	25.1	25.1	25.1	22.6	22.6	22.6
			SHC	13.0	19.1	25.1	12.0	18.0	24.0	10.9	16.9	23.0	9.8	15.8	21.8	8.7	14.7	20.7
		76	TC	—	34.6	34.6	—	32.3	32.3	—	29.8	29.8	—	27.3	27.3	—	—	—
			SHC	—	14.2	20.1	—	13.2	19.1	—	12.1	18.0	—	11.0	17.0	—	—	—
1350 cfm	EA (wb)	58	TC	28.6	28.6	32.3	26.8	26.8	30.4	24.9	24.9	28.3	22.9	22.9	26.1	20.8	20.8	23.8
			SHC	24.8	28.6	32.3	23.2	26.8	30.4	21.5	24.9	28.3	19.7	22.9	26.1	17.9	20.8	23.8
		62	TC	28.6	28.6	33.6	26.8	26.8	31.6	24.9	24.9	29.5	23.0	23.0	27.2	20.9	20.9	24.9
			SHC	23.6	28.6	33.6	22.0	26.8	31.6	20.4	24.9	29.5	18.7	23.0	27.2	16.9	20.9	24.9
		67	TC	29.5	29.5	33.3	27.4	27.4	32.2	25.2	25.2	30.9	23.3	23.3	27.7	20.9	20.9	26.9
			SHC	20.1	26.7	33.3	19.0	25.6	32.2	17.8	24.4	30.9	15.9	21.8	27.7	14.9	20.9	26.9
		72	TC	32.5	32.5	32.5	30.2	30.2	30.2	27.8	27.8	27.8	25.4	25.4	25.4	22.8	22.8	22.8
			SHC	13.5	20.2	26.9	12.4	19.1	25.8	11.4	18.0	24.7	10.3	16.9	23.6	9.1	15.8	22.5
		76	TC	—	35.0	35.0	—	32.6	32.6	—	30.1	30.1	—	27.6	27.6	—	—	—
			SHC	—	14.7	21.3	—	13.7	20.3	—	12.6	19.2	—	11.5	18.2	—	—	—

NOTE(S):

a. See minimum-maximum airflow ratings on page 7.
b. Published capacity values are based on SEER2 static requirements.

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

Performance data (cont)

48QE*N04 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		900/0.01			1200 /0.02			1500/0.04		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	44.90	39.71	35.06	48.47	42.11	36.44	49.18	43.55	38.55
	SHC	15.83	21.31	26.83	18.56	26.88	31.60	21.47	29.63	36.96
	kW	2.02	2.00	1.98	2.04	1.99	2.00	2.04	2.02	2.01
85	TC	42.36	37.47	33.08	45.73	38.39	34.38	46.40	41.08	36.37
	SHC	14.93	20.10	25.31	17.51	23.96	29.81	20.26	27.95	34.87
	kW	2.24	2.23	2.20	2.27	2.19	2.22	2.27	2.25	2.23
95	TC	38.51	34.06	30.07	41.57	37.04	32.43	43.77	38.76	34.31
	SHC	13.58	18.27	23.01	15.92	22.40	28.12	19.11	26.37	32.90
	kW	2.49	2.47	2.45	2.52	2.49	2.47	2.52	2.50	2.48
105	TC	34.85	30.82	27.22	37.62	33.36	29.35	39.61	35.08	31.05
	SHC	12.29	16.54	20.83	14.41	19.78	25.45	17.29	23.86	29.77
	kW	2.74	2.72	2.69	2.77	2.79	2.71	2.78	2.75	2.73
115	TC	31.54	27.90	24.63	34.05	28.82	26.56	35.85	31.74	28.10
	SHC	11.12	14.97	18.85	13.04	17.00	23.03	15.65	21.60	26.94
	kW	3.02	2.99	2.96	3.05	3.13	2.98	3.05	3.02	3.00
125	TC	—	—	—	—	—	—	—	—	—
	SHC	—	—	—	—	—	—	—	—	—
	kW	—	—	—	—	—	—	—	—	—

48QE*N04 — 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								
		900	1200	1500	900	1200	1500	900	1200	1500
80	TC	0.33	12.05	12.58	9.98	13.23	12.71	9.91	11.33	12.84
	SHC	2.57	4.98	6.56	0.97	2.44	3.99	–0.34	–0.37	–0.38
	kW	1.91	1.90	1.90	1.32	2.00	1.90	1.93	1.92	1.90
75	TC	10.95	12.77	13.33	10.65	12.07	13.55	10.64	12.15	13.78
	SHC	2.73	5.29	6.98	1.20	2.73	5.00	0.18	1.29	2.35
	kW	1.92	1.91	1.90	1.93	1.92	1.91	1.95	1.93	1.91
70	TC	11.58	13.49	14.07	11.32	11.07	14.39	11.37	12.98	14.71
	SHC	2.88	5.60	7.40	1.43	3.48	2.43	0.72	0.71	2.56
	kW	1.93	1.91	1.91	2.55	1.83	1.92	1.96	1.94	1.92
60	TC	12.82	14.94	15.57	12.66	14.49	16.08	12.82	14.63	16.58
	SHC	3.20	6.22	8.25	1.89	1.80	3.24	1.78	1.79	2.82
	kW	1.94	1.92	1.91	3.78	2.16	1.93	1.98	1.97	1.95
50	TC	14.07	16.38	17.07	14.01	17.05	17.77	14.28	16.29	18.45
	SHC	3.51	6.85	9.09	2.36	4.37	4.06	2.85	2.86	3.28
	kW	1.96	1.93	1.92	5.00	1.99	1.95	2.01	1.99	1.97
40	TC	15.31	17.82	18.57	15.35	17.30	19.46	15.73	17.94	20.31
	SHC	3.82	7.47	9.93	2.82	6.48	4.87	3.91	3.94	3.96
	kW	1.98	1.94	1.92	6.23	2.06	1.96	2.03	2.01	2.00

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

Performance data (cont)

48QE*M05 High Stage Cooling Capacities[a,b]

48QE*M05				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
1200 cfm	EA (wb)	58	TC	41.7	41.7	47.7	39.0	39.0	44.7	36.2	36.2	41.7	33.2	33.2	38.4	30.0	30.0	35.0
			SHC	35.8	41.7	47.7	33.3	39.0	44.7	30.7	36.2	41.7	27.9	33.2	38.4	25.0	30.0	35.0
		62	TC	44.5	44.5	45.5	41.2	41.2	43.3	37.7	37.7	41.1	34.1	34.1	38.8	31.1	31.1	34.6
			SHC	32.3	38.9	45.5	30.1	36.7	43.3	27.9	34.5	41.1	25.6	32.2	38.8	22.5	28.6	34.6
		67	TC	50.3	50.3	50.3	46.8	46.8	46.8	43.1	43.1	43.1	39.2	39.2	39.2	35.1	35.1	35.1
			SHC	26.4	33.0	39.6	24.2	30.8	37.4	22.0	28.6	35.2	19.7	26.3	32.9	17.4	24.0	30.6
		72	TC	56.6	56.6	56.6	52.8	52.8	52.8	48.9	48.9	48.9	44.7	44.7	44.7	40.3	40.3	40.3
			SHC	20.4	27.0	33.6	18.3	24.9	31.5	16.0	22.6	29.2	13.7	20.3	26.9	11.3	17.9	24.5
		76	TC	—	61.9	61.9	—	58.0	58.0	—	53.7	53.7	—	49.3	49.3	—	44.6	44.6
			SHC	—	22.2	28.8	—	20.0	26.6	—	17.7	24.3	—	15.4	22.0	—	13.0	19.6
1400 cfm	EA (wb)	58	TC	45.1	45.1	51.4	42.1	42.1	48.2	39.1	39.1	44.9	35.9	35.9	41.5	32.5	32.5	37.8
			SHC	38.7	45.1	51.4	36.1	42.1	48.2	33.3	39.1	44.9	30.3	35.9	41.5	27.2	32.5	37.8
		62	TC	46.5	46.5	51.1	43.0	43.0	48.9	39.9	39.9	45.3	36.0	36.0	43.4	32.6	32.6	39.6
			SHC	35.7	43.4	51.1	33.5	41.2	48.9	30.7	38.0	45.3	28.5	36.0	43.4	25.5	32.6	39.6
		67	TC	52.4	52.4	52.4	48.7	48.7	48.7	44.8	44.8	44.8	40.7	40.7	40.7	36.4	36.4	36.4
			SHC	28.7	36.4	44.1	26.4	34.1	41.8	24.2	31.9	39.6	21.8	29.5	37.2	19.4	27.1	34.8
		72	TC	58.7	58.7	58.7	54.8	54.8	54.8	50.6	50.6	50.6	46.2	46.2	46.2	41.6	41.6	41.6
			SHC	21.5	29.2	36.9	19.3	27.0	34.7	17.0	24.7	32.4	14.6	22.3	30.0	12.2	19.9	27.6
		76	TC	—	64.1	64.1	—	60.0	60.0	—	55.6	55.6	—	50.9	50.9	—	46.0	46.0
			SHC	—	23.4	31.1	—	21.2	28.9	—	18.9	26.6	—	16.5	24.2	—	14.1	21.8
1600 cfm	EA (wb)	58	TC	47.8	47.8	54.5	44.8	44.8	51.2	41.6	41.6	47.7	38.2	38.2	44.0	34.6	34.6	40.1
			SHC	41.2	47.8	54.5	38.4	44.8	51.2	35.4	41.6	47.7	32.3	38.2	44.0	29.1	34.6	40.1
		62	TC	48.0	48.0	56.5	44.9	44.9	53.4	41.6	41.6	49.8	38.2	38.2	46.0	34.7	34.7	42.0
			SHC	39.0	47.8	56.5	36.3	44.9	53.4	33.5	41.6	49.8	30.5	38.2	46.0	27.3	34.7	42.0
		67	TC	54.0	54.0	54.0	50.1	50.1	50.1	46.0	46.0	46.0	41.8	41.8	41.8	37.3	37.3	39.0
			SHC	30.8	39.6	48.4	28.5	37.3	46.1	26.2	35.0	43.8	23.8	32.6	41.4	21.4	30.2	39.0
		72	TC	60.4	60.4	60.4	56.3	56.3	56.3	52.0	52.0	52.0	47.4	47.4	47.4	42.6	42.6	42.6
			SHC	22.5	31.3	40.1	20.2	29.0	37.8	17.9	26.7	35.5	15.5	24.3	33.1	13.0	21.8	30.6
		76	TC	—	65.8	65.8	—	61.5	61.5	—	56.9	56.9	—	52.1	52.1	—	47.0	47.0
			SHC	—	24.5	33.3	—	22.3	31.1	—	19.9	28.7	—	17.5	26.3	—	15.0	23.8
1800 cfm	EA (wb)	58	TC	50.3	50.3	57.2	47.0	47.0	53.7	43.7	43.7	50.0	40.1	40.1	46.1	36.4	36.4	42.1
			SHC	43.4	50.3	57.2	40.4	47.0	53.7	37.3	43.7	50.0	34.1	40.1	46.1	30.7	36.4	42.1
		62	TC	50.3	50.3	59.6	47.1	47.1	56.0	43.7	43.7	52.2	40.2	40.2	48.2	36.4	36.4	44.0
			SHC	41.1	50.3	59.6	38.3	47.1	56.0	35.3	43.7	52.2	32.1	40.2	48.2	28.8	36.4	44.0
		67	TC	55.2	55.2	55.2	51.3	51.3	51.3	47.0	47.0	48.0	42.7	42.7	45.6	38.1	38.1	43.2
			SHC	32.8	42.7	52.6	30.5	40.4	50.3	28.2	38.1	48.0	25.8	35.7	45.6	23.4	33.3	43.2
		72	TC	61.7	61.7	61.7	57.5	57.5	57.5	53.0	53.0	53.0	48.3	48.3	48.3	43.4	43.4	43.4
			SHC	23.3	33.2	43.1	21.0	30.9	40.8	18.7	28.6	38.5	16.3	26.2	36.1	13.8	23.7	33.6
		76	TC	—	67.1	67.1	—	62.7	62.7	—	58.0	58.0	—	53.0	53.0	—	47.8	47.8
			SHC	—	25.5	35.4	—	23.2	33.1	—	20.9	30.8	—	18.4	28.3	—	15.9	25.8
2000 cfm	EA (wb)	58	TC	52.3	52.3	59.5	49.0	49.0	55.8	45.5	45.5	52.0	41.8	41.8	48.0	37.9	37.9	43.7
			SHC	45.2	52.3	59.5	42.1	49.0	55.8	38.9	45.5	52.0	35.5	41.8	48.0	32.0	37.9	43.7
		62	TC	52.4	52.4	61.9	49.1	49.1	58.2	45.5	45.5	54.3	41.8	41.8	50.1	37.9	37.9	45.8
			SHC	42.9	52.4	61.9	39.9	49.1	58.2	36.8	45.5	54.3	33.5	41.8	50.1	30.1	37.9	45.8
		67	TC	56.2	56.2	56.8	52.2	52.2	54.5	47.9	47.9	52.1	43.4	43.4	49.7	38.7	38.7	47.3
			SHC	34.8	45.8	56.8	32.5	43.5	54.5	30.2	41.2	52.1	27.8	38.7	49.7	25.3	36.3	47.3
		72	TC	62.7	62.7	62.7	58.4	58.4	58.4	53.8	53.8	53.8	49.0	49.0	49.0	44.0	44.0	44.0
			SHC	24.1	35.1	46.1	21.8	32.8	43.8	19.4	30.4	41.4	17.0	28.0	39.0	14.5	25.5	36.5
		76	TC	—	68.2	68.2	—	63.6	63.6	—	58.8	58.8	—	53.8	53.8	—	—	—
			SHC	—	26.5	37.5	—	24.2	35.2	—	21.8	32.8	—	19.3	30.3	—	—	—

NOTE(S):

a. See minimum-maximum airflow ratings on page 7.
b. Published capacity values are based on SEER2 static requirements.

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

Performance data (cont)

48QE*M05 Low Stage Cooling Capacities[a,b]

48QE*M05				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
1000 cfm	EA (wb)	58	TC	31.2	31.2	35.5	29.0	29.0	33.1	26.6	26.6	30.5	24.2	24.2	27.9	21.7	21.7	25.1
			SHC	26.9	31.2	35.5	24.9	29.0	33.1	22.7	26.6	30.5	20.5	24.2	27.9	18.3	21.7	25.1
		62	TC	31.8	31.8	36.1	29.2	29.2	34.3	26.7	26.7	31.9	24.2	24.2	29.2	21.7	21.7	26.3
			SHC	25.1	30.6	36.1	23.4	28.8	34.3	21.5	26.7	31.9	19.3	24.2	29.2	17.1	21.7	26.3
		67	TC	36.2	36.2	36.2	33.4	33.4	33.4	30.5	30.5	30.5	27.4	27.4	27.4	24.2	24.2	24.8
			SHC	20.3	25.8	31.3	18.7	24.2	29.7	17.1	22.6	28.1	15.5	21.0	26.5	13.8	19.3	24.8
		72	TC	41.0	41.0	41.0	38.2	38.2	38.2	35.3	35.3	35.3	32.3	32.3	32.3	29.1	29.1	29.1
			SHC	15.4	20.9	26.4	13.9	19.4	24.9	12.4	17.9	23.4	10.8	16.3	21.8	9.2	14.7	20.2
		76	TC	—	45.0	45.0	—	42.2	42.2	—	39.4	39.4	—	36.4	36.4	—	33.3	33.3
			SHC	—	16.8	22.3	—	15.4	20.9	—	13.9	19.4	—	12.4	17.9	—	10.9	16.4
1200 cfm	EA (wb)	58	TC	33.9	33.9	38.5	31.6	31.6	36.0	29.1	29.1	33.3	26.6	26.6	30.5	24.0	24.0	27.7
			SHC	29.3	33.9	38.5	27.2	31.6	36.0	25.0	29.1	33.3	22.6	26.6	30.5	20.3	24.0	27.7
		62	TC	34.0	34.0	40.2	31.6	31.6	37.6	29.2	29.2	34.8	26.7	26.7	32.0	24.0	24.0	29.0
			SHC	27.8	34.0	40.2	25.7	31.6	37.6	23.6	29.2	34.8	21.4	26.7	32.0	19.1	24.0	29.0
		67	TC	37.7	37.7	37.7	34.9	34.9	34.9	31.8	31.8	32.4	28.7	28.7	30.8	25.4	25.4	29.1
			SHC	22.4	29.0	35.6	20.9	27.4	34.0	19.2	25.8	32.4	17.6	24.2	30.8	15.9	22.5	29.1
		72	TC	42.6	42.6	42.6	39.7	39.7	39.7	36.7	36.7	36.7	33.6	33.6	33.6	30.4	30.4	30.4
			SHC	16.3	22.9	29.5	14.8	21.4	28.0	13.3	19.9	26.5	11.7	18.3	24.9	10.1	16.7	23.3
		76	TC	—	46.6	46.6	—	43.8	43.8	—	40.9	40.9	—	37.9	37.9	—	34.6	34.6
			SHC	—	18.0	24.6	—	16.5	23.1	—	15.1	21.7	—	13.6	20.2	—	12.0	18.6
1400 cfm	EA (wb)	58	TC	36.1	36.1	41.0	33.7	33.7	38.4	31.2	31.2	35.6	28.6	28.6	32.8	25.9	25.9	29.8
			SHC	31.3	36.1	41.0	29.1	33.7	38.4	26.8	31.2	35.6	24.4	28.6	32.8	21.9	25.9	29.8
		62	TC	36.2	36.2	42.7	33.8	33.8	40.0	31.3	31.3	37.2	28.7	28.7	34.3	25.9	25.9	31.2
			SHC	29.7	36.2	42.7	27.6	33.8	40.0	25.3	31.3	37.2	23.1	28.7	34.3	20.7	25.9	31.2
		67	TC	38.8	38.8	39.8	35.9	35.9	38.2	32.8	32.8	36.6	29.6	29.6	34.9	26.3	26.3	33.2
			SHC	24.4	32.1	39.8	22.9	30.5	38.2	21.2	28.9	36.6	19.6	27.3	34.9	17.9	25.5	33.2
		72	TC	43.7	43.7	43.7	40.8	40.8	40.8	37.8	37.8	37.8	34.6	34.6	34.6	31.3	31.3	31.3
			SHC	17.2	24.9	32.6	15.7	23.4	31.0	14.2	21.9	29.6	12.6	20.3	28.0	11.0	18.7	26.4
		76	TC	—	47.7	47.7	—	44.9	44.9	—	42.0	42.0	—	—	—	—	—	—
			SHC	—	19.0	26.7	—	17.5	25.2	—	16.1	23.8	—	—	—	—	—	—
1600 cfm	EA (wb)	58	TC	38.0	38.0	43.1	35.5	35.5	40.4	32.9	32.9	37.6	30.3	30.3	34.7	27.5	27.5	31.6
			SHC	32.9	38.0	43.1	30.6	35.5	40.4	28.3	32.9	37.6	25.9	30.3	34.7	23.4	27.5	31.6
		62	TC	38.1	38.1	44.9	35.6	35.6	42.1	33.0	33.0	39.2	30.3	30.3	36.2	27.5	27.5	33.0
			SHC	31.2	38.1	44.9	29.1	35.6	42.1	26.8	33.0	39.2	24.4	30.3	36.2	22.0	27.5	33.0
		67	TC	39.7	39.7	43.9	36.7	36.7	42.3	33.6	33.6	40.7	30.5	30.5	38.9	27.6	27.6	35.8
			SHC	26.4	35.1	43.9	24.8	33.6	42.3	23.2	31.9	40.7	21.5	30.2	38.9	19.3	27.6	35.8
		72	TC	44.5	44.5	44.5	41.6	41.6	41.6	38.6	38.6	38.6	35.4	35.4	35.4	32.0	32.0	32.0
			SHC	18.0	26.8	35.6	16.5	25.3	34.1	14.9	23.7	32.5	13.4	22.2	31.0	11.8	20.6	29.4
		76	TC	—	48.6	48.6	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	19.9	28.7	—	—	—	—	—	—	—	—	—	—	—	—
1800 cfm	EA (wb)	58	TC	39.6	39.6	44.8	37.0	37.0	42.1	34.4	34.4	39.2	31.7	31.7	36.2	28.8	28.8	33.1
			SHC	34.3	39.6	44.8	32.0	37.0	42.1	29.6	34.4	39.2	27.1	31.7	36.2	24.6	28.8	33.1
		62	TC	39.6	39.6	46.7	37.1	37.1	43.8	34.4	34.4	40.9	31.7	31.7	37.8	28.9	28.9	34.6
			SHC	32.6	39.6	46.7	30.3	37.1	43.8	28.0	34.4	40.9	25.6	31.7	37.8	23.1	28.9	34.6
		67	TC	40.4	40.4	47.9	37.4	37.4	46.3	34.5	34.5	44.1	31.8	31.8	40.9	28.9	28.9	37.5
			SHC	28.3	38.1	47.9	26.7	36.5	46.3	24.9	34.5	44.1	22.7	31.8	40.9	20.4	28.9	37.5
		72	TC	45.2	45.2	45.2	42.2	42.2	42.2	39.2	39.2	39.2	36.0	36.0	36.0	32.5	32.5	32.5
			SHC	18.7	28.6	38.5	17.2	27.1	37.0	15.7	25.6	35.5	14.1	24.0	33.9	12.5	22.4	32.3
		76	TC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTE(S):

a. See minimum-maximum airflow ratings on page 7.
b. Published capacity values are based on SEER2 static requirements.

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

Performance data (cont)

48QE*N05 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		1200/0.04			1600 /0.07			2000/0.10		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	60.45	53.90	48.09	66.10	56.89	50.77	66.45	60.90	54.72
	SHC	20.87	28.34	35.70	25.47	35.34	43.00	27.88	40.54	51.79
	kW	2.76	2.73	2.70	2.77	2.94	2.68	2.81	2.76	2.72
85	TC	57.03	50.85	45.36	62.35	54.37	47.89	62.69	57.45	51.63
	SHC	19.69	26.73	33.68	24.03	33.29	40.57	26.30	38.24	48.86
	kW	3.07	3.04	3.00	3.08	3.07	2.98	3.12	3.06	3.02
95	TC	51.84	46.22	41.24	56.69	49.45	45.18	59.14	54.20	48.70
	SHC	17.90	24.30	30.62	21.84	29.76	38.27	24.81	36.08	46.10
	kW	3.41	3.37	3.33	3.43	3.43	3.31	3.47	3.40	3.36
105	TC	46.92	41.83	37.32	51.30	46.92	40.89	53.52	49.05	44.08
	SHC	16.20	22.00	27.71	19.77	26.97	34.64	22.45	32.65	41.72
	kW	3.75	3.71	3.67	3.77	3.77	3.64	3.82	3.74	3.70
115	TC	42.46	37.86	33.78	46.43	38.52	37.01	48.44	44.39	39.89
	SHC	14.66	19.91	25.08	17.89	20.42	31.35	20.32	29.55	37.75
	kW	4.12	4.08	4.03	4.14	4.22	4.00	4.20	4.12	4.07
125	TC	—	—	—	—	—	—	—	—	—
	SHC	—	—	—	—	—	—	—	—	—
	kW	—	—	—	—	—	—	—	—	—

48QE*N05 — 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								
		1200	1600	2000	1200	1600	2000	1200	1600	2000
80	TC	16.38	19.52	21.91	17.57	19.20	20.43	18.61	18.91	19.14
	SHC	0.01	0.01	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01
	kW	2.75	2.64	2.56	2.38	2.68	2.60	2.83	2.72	2.64
75	TC	16.15	20.11	23.10	17.30	19.85	21.78	18.29	19.63	20.64
	SHC	0.04	0.04	0.04	0.02	0.02	0.02	0.01	0.01	0.01
	kW	2.76	2.66	2.58	2.42	2.70	2.62	2.84	2.74	2.66
70	TC	15.92	20.69	24.29	17.02	20.50	23.13	17.97	20.34	22.13
	SHC	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04
	kW	2.77	2.67	2.60	2.45	2.72	2.64	2.86	2.76	2.68
60	TC	15.47	21.85	26.68	16.47	21.81	25.84	17.34	21.76	25.12
	SHC	0.11	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
	kW	2.79	2.70	2.64	2.53	2.75	2.69	2.88	2.80	2.73
50	TC	15.02	23.02	29.07	15.92	23.11	28.55	16.70	23.19	28.10
	SHC	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15
	kW	2.81	2.74	2.68	2.60	2.79	2.73	2.91	2.83	2.78
40	TC	14.57	24.18	31.46	15.37	24.41	31.26	16.07	24.62	31.09
	SHC	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	kW	2.82	2.77	2.72	2.68	2.82	2.78	2.93	2.87	2.83

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

Performance data (cont)

48QE*M06 High Stage Cooling Capacities[a,b]

48QE*M06				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
1500 cfm	EA (wb)	58	TC	54.3	54.3	61.4	51.8	51.8	58.7	49.1	49.1	55.6	46.1	46.1	52.3	42.9	42.9	48.7
			SHC	47.2	54.3	61.4	45.0	51.8	58.7	42.5	49.1	55.6	39.9	46.1	52.3	37.0	42.9	48.7
		62	TC	56.7	56.7	59.2	53.5	53.5	57.5	50.1	50.1	55.7	46.5	46.5	53.7	42.9	42.9	50.8
			SHC	42.9	51.1	59.2	41.2	49.4	57.5	39.4	47.6	55.7	37.5	45.6	53.7	35.1	42.9	50.8
		67	TC	62.7	62.7	62.7	59.3	59.3	59.3	55.5	55.5	55.5	51.5	51.5	51.5	47.2	47.2	47.2
			SHC	35.0	43.2	51.4	33.3	41.5	49.7	31.5	39.7	47.9	29.6	37.8	45.9	27.6	35.8	44.0
		72	TC	69.3	69.3	69.3	65.5	65.5	65.5	61.5	61.5	61.5	57.1	57.1	57.1	52.4	52.4	52.4
			SHC	27.0	35.2	43.4	25.2	33.4	41.7	23.4	31.6	39.8	21.5	29.7	37.9	19.5	27.7	35.9
		76	TC	—	74.9	74.9	—	70.9	70.9	—	66.5	66.5	—	61.8	61.8	—	56.9	56.9
			SHC	—	28.6	36.8	—	26.9	35.1	—	25.0	33.3	—	23.1	31.4	—	21.1	29.4
1750 cfm	EA (wb)	58	TC	57.7	57.7	65.3	55.0	55.0	62.2	52.1	52.1	59.0	48.8	48.8	55.4	45.3	45.3	51.5
			SHC	50.2	57.7	65.3	47.8	55.0	62.2	45.1	52.1	59.0	42.3	48.8	55.4	39.2	45.3	51.5
		62	TC	58.8	58.8	65.7	55.5	55.5	63.9	52.1	52.1	61.4	48.9	48.9	57.7	45.4	45.4	53.6
			SHC	46.8	56.3	65.7	45.0	54.5	63.9	42.9	52.1	61.4	40.1	48.9	57.7	37.2	45.4	53.6
		67	TC	64.8	64.8	64.8	61.1	61.1	61.1	57.2	57.2	57.2	53.0	53.0	53.0	48.5	48.5	49.0
			SHC	37.5	47.1	56.6	35.8	45.3	54.8	33.9	43.5	53.0	32.0	41.5	51.0	30.0	39.5	49.0
		72	TC	71.4	71.4	71.4	67.4	67.4	67.4	63.2	63.2	63.2	58.6	58.6	58.6	53.7	53.7	53.7
			SHC	28.0	37.6	47.1	26.2	35.8	45.4	24.4	34.0	43.5	22.5	32.0	41.6	20.4	30.0	39.5
		76	TC	—	77.1	77.1	—	72.8	72.8	—	68.3	68.3	—	63.4	63.4	—	58.2	58.2
			SHC	—	29.8	39.5	—	28.1	37.7	—	26.2	35.9	—	24.3	33.9	—	22.3	31.9
2000 cfm	EA (wb)	58	TC	60.6	60.6	68.5	57.7	57.7	65.2	54.5	54.5	61.7	51.1	51.1	57.9	47.4	47.4	53.8
			SHC	52.8	60.6	68.5	50.2	57.7	65.2	47.4	54.5	61.7	44.3	51.1	57.9	41.0	47.4	53.8
		62	TC	60.7	60.7	71.2	57.8	57.8	67.9	54.6	54.6	64.2	51.2	51.2	60.3	47.5	47.5	56.0
			SHC	50.2	60.7	71.2	47.7	57.8	67.9	45.0	54.6	64.2	42.1	51.2	60.3	38.9	47.5	56.0
		67	TC	66.3	66.3	66.3	62.5	62.5	62.5	58.5	58.5	58.5	54.1	54.1	56.0	49.5	49.5	54.0
			SHC	39.9	50.8	61.6	38.2	49.0	59.9	36.3	47.2	58.0	34.4	45.2	56.0	32.4	43.2	54.0
		72	TC	73.1	73.1	73.1	68.9	68.9	68.9	64.5	64.5	64.5	59.7	59.7	59.7	54.7	54.7	54.7
			SHC	29.0	39.9	50.8	27.2	38.1	49.0	25.3	36.2	47.1	23.4	34.2	45.1	21.3	32.2	43.1
		76	TC	—	78.8	78.8	—	74.3	74.3	—	69.6	69.6	—	64.5	64.5	—	59.2	59.2
			SHC	—	31.0	42.0	—	29.2	40.2	—	27.4	38.4	—	25.4	36.4	—	23.3	34.3
2250 cfm	EA (wb)	58	TC	63.1	63.1	71.3	60.0	60.0	67.8	56.7	56.7	64.1	53.1	53.1	60.1	49.2	49.2	55.8
			SHC	55.0	63.1	71.3	52.2	60.0	67.8	49.2	56.7	64.1	46.0	53.1	60.1	42.6	49.2	55.8
		62	TC	63.2	63.2	74.1	60.1	60.1	70.5	56.8	56.8	66.7	53.1	53.1	62.5	49.2	49.2	58.1
			SHC	52.3	63.2	74.1	49.7	60.1	70.5	46.8	56.8	66.7	43.7	53.1	62.5	40.4	49.2	58.1
		67	TC	67.6	67.6	67.6	63.7	63.7	64.8	59.5	59.5	62.9	55.0	55.0	60.9	50.3	50.3	58.8
			SHC	42.3	54.4	66.6	40.5	52.7	64.8	38.7	50.8	62.9	36.7	48.8	60.9	34.7	46.7	58.8
		72	TC	74.4	74.4	74.4	70.1	70.1	70.1	65.6	65.6	65.6	60.7	60.7	60.7	55.5	55.5	55.5
			SHC	29.9	42.1	54.3	28.1	40.3	52.5	26.2	38.4	50.6	24.2	36.4	48.6	22.2	34.4	46.6
		76	TC	—	80.1	80.1	—	75.6	75.6	—	70.7	70.7	—	65.5	65.5	—	60.1	60.1
			SHC	—	32.0	44.4	—	30.2	42.5	—	28.3	40.6	—	26.3	38.6	—	24.3	36.6
2500 cfm	EA (wb)	58	TC	65.3	65.3	73.7	62.0	62.0	70.1	58.5	58.5	66.2	54.8	54.8	62.0	50.7	50.7	57.5
			SHC	56.9	65.3	73.7	54.0	62.0	70.1	50.9	58.5	66.2	47.5	54.8	62.0	44.0	50.7	57.5
		62	TC	65.3	65.3	76.6	62.1	62.1	72.8	58.6	58.6	68.8	54.8	54.8	64.5	50.8	50.8	59.8
			SHC	54.1	65.3	76.6	51.4	62.1	72.8	48.4	58.6	68.8	45.2	54.8	64.5	41.7	50.8	59.8
		67	TC	68.7	68.7	71.5	64.7	64.7	69.7	60.4	60.4	67.7	55.9	55.9	65.6	51.6	51.6	61.1
			SHC	44.6	58.1	71.5	42.8	56.2	69.7	41.0	54.3	67.7	39.0	52.3	65.6	36.0	48.5	61.1
		72	TC	75.5	75.5	75.5	71.1	71.1	71.1	66.5	66.5	66.5	61.5	61.5	61.5	56.2	56.2	56.2
			SHC	30.7	44.2	57.8	28.9	42.4	55.9	27.0	40.5	54.1	25.0	38.6	52.1	23.0	36.5	50.0
		76	TC	—	81.2	81.2	—	76.6	76.6	—	71.7	71.7	—	66.3	66.3	—	60.8	60.8
			SHC	—	33.0	46.6	—	31.1	44.8	—	29.2	42.9	—	27.2	40.9	—	25.2	38.8

NOTE(S):

a. See minimum-maximum airflow ratings on page 7.
b. Published capacity values are based on SEER2 static requirements.

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

Performance data (cont)

48QE*M06 Low Stage Cooling Capacities[a,b]

48QE*M06				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
1250 cfm	EA (wb)	58	TC	39.7	39.7	44.8	37.7	37.7	42.6	35.5	35.5	40.2	33.0	33.0	37.4	30.3	30.3	34.3
			SHC	34.5	39.7	44.8	32.8	37.7	42.6	30.8	35.5	40.2	28.6	33.0	37.4	26.2	30.3	34.3
		62	TC	40.0	40.0	46.1	37.8	37.8	44.4	35.6	35.6	41.8	33.1	33.1	39.0	30.3	30.3	35.7
			SHC	32.6	39.4	46.1	31.2	37.8	44.4	29.3	35.6	41.8	27.2	33.1	39.0	24.9	30.3	35.7
		67	TC	44.5	44.5	44.5	41.8	41.8	41.8	38.9	38.9	38.9	35.6	35.6	35.9	32.0	32.0	34.3
			SHC	26.3	33.1	39.9	25.1	31.9	38.7	23.8	30.6	37.3	22.3	29.1	35.9	20.8	27.5	34.3
		72	TC	49.6	49.6	49.6	46.7	46.7	46.7	43.6	43.6	43.6	40.1	40.1	40.1	36.1	36.1	36.1
			SHC	19.8	26.6	33.4	18.6	25.4	32.2	17.3	24.1	30.9	15.8	22.7	29.5	14.3	21.1	27.9
		76	TC	—	53.9	53.9	—	51.0	51.0	—	47.6	47.6	—	43.9	43.9	—	39.8	39.8
			SHC	—	21.3	28.2	—	20.1	27.0	—	18.8	25.7	—	17.4	24.3	—	15.9	22.8
1500 cfm	EA (wb)	58	TC	42.5	42.5	47.9	40.3	40.3	45.6	37.9	37.9	42.9	35.3	35.3	39.9	32.2	32.2	36.6
			SHC	37.0	42.5	47.9	35.1	40.3	45.6	33.0	37.9	42.9	30.6	35.3	39.9	27.9	32.2	36.6
		62	TC	42.5	42.5	49.8	40.4	40.4	47.4	38.0	38.0	44.6	35.3	35.3	41.5	32.3	32.3	38.0
			SHC	35.2	42.5	49.8	33.4	40.4	47.4	31.4	38.0	44.6	29.1	35.3	41.5	26.5	32.3	38.0
		67	TC	46.0	46.0	46.0	43.2	43.2	43.7	40.1	40.1	42.3	36.7	36.7	40.8	33.0	33.0	39.1
			SHC	28.7	36.8	44.9	27.4	35.6	43.7	26.1	34.2	42.3	24.6	32.7	40.8	23.1	31.1	39.1
		72	TC	51.1	51.1	51.1	48.2	48.2	48.2	44.9	44.9	44.9	41.2	41.2	41.2	37.1	37.1	37.1
			SHC	20.8	28.9	37.1	19.6	27.7	35.9	18.2	26.4	34.5	16.8	24.9	33.1	15.2	23.4	31.5
		76	TC	—	55.6	55.6	—	52.5	52.5	—	49.0	49.0	—	45.1	45.1	—	40.8	40.8
			SHC	—	22.5	30.8	—	21.3	29.6	—	20.0	28.2	—	18.6	26.8	—	17.0	25.2
1750 cfm	EA (wb)	58	TC	44.7	44.7	50.5	42.5	42.5	48.0	39.9	39.9	45.1	37.1	37.1	41.9	33.9	33.9	38.4
			SHC	39.0	44.7	50.5	37.0	42.5	48.0	34.7	39.9	45.1	32.2	37.1	41.9	29.4	33.9	38.4
		62	TC	44.8	44.8	52.5	42.5	42.5	49.8	40.0	40.0	46.9	37.1	37.1	43.6	33.9	33.9	39.9
			SHC	37.1	44.8	52.5	35.2	42.5	49.8	33.0	40.0	46.9	30.6	37.1	43.6	27.9	33.9	39.9
		67	TC	47.1	47.1	49.8	44.3	44.3	48.5	41.1	41.1	47.1	37.6	37.6	45.5	34.3	34.3	41.5
			SHC	31.0	40.4	49.8	29.7	39.1	48.5	28.4	37.7	47.1	26.9	36.2	45.5	24.4	32.9	41.5
		72	TC	52.3	52.3	52.3	49.3	49.3	49.3	45.9	45.9	45.9	42.0	42.0	42.0	37.8	37.8	37.8
			SHC	21.7	31.2	40.6	20.5	29.9	39.4	19.1	28.6	38.1	17.7	27.1	36.6	16.1	25.6	35.1
		76	TC	—	56.8	56.8	—	53.6	53.6	—	50.0	50.0	—	46.0	46.0	—	—	—
			SHC	—	23.6	33.2	—	22.4	32.0	—	21.1	30.6	—	19.6	29.2	—	—	—
2000 cfm	EA (wb)	58	TC	46.6	46.6	52.6	44.2	44.2	49.9	41.5	41.5	46.9	38.6	38.6	43.6	35.2	35.2	39.8
			SHC	40.6	46.6	52.6	38.5	44.2	49.9	36.1	41.5	46.9	33.5	38.6	43.6	30.5	35.2	39.8
		62	TC	46.7	46.7	54.7	44.3	44.3	51.9	41.6	41.6	48.8	38.6	38.6	45.3	35.2	35.2	41.4
			SHC	38.7	46.7	54.7	36.7	44.3	51.9	34.4	41.6	48.8	31.9	38.6	45.3	29.0	35.2	41.4
		67	TC	48.1	48.1	54.5	45.1	45.1	53.1	41.9	41.9	51.6	38.9	38.9	47.7	35.3	35.3	44.6
			SHC	33.2	43.9	54.5	31.9	42.5	53.1	30.5	41.0	51.6	28.1	37.9	47.7	26.0	35.3	44.6
		72	TC	53.2	53.2	53.2	50.1	50.1	50.1	46.6	46.6	46.6	42.7	42.7	42.7	38.3	38.3	38.5
			SHC	22.5	33.3	44.1	21.3	32.1	42.9	20.0	30.7	41.5	18.5	29.3	40.1	17.0	27.7	38.5
		76	TC	—	57.8	57.8	—	54.5	54.5	—	50.8	50.8	—	—	—	—	—	—
			SHC	—	24.6	35.5	—	23.4	34.3	—	22.1	32.9	—	—	—	—	—	—
2250 cfm	EA (wb)	58	TC	48.2	48.2	54.4	45.8	45.8	51.6	42.9	42.9	48.5	39.8	39.8	45.0	36.3	36.3	41.1
			SHC	42.1	48.2	54.4	39.9	45.8	51.6	37.4	42.9	48.5	34.6	39.8	45.0	31.6	36.3	41.1
		62	TC	48.3	48.3	56.5	45.8	45.8	53.7	43.0	43.0	50.4	39.9	39.9	46.8	36.4	36.4	42.8
			SHC	40.0	48.3	56.5	37.9	45.8	53.7	35.6	43.0	50.4	32.9	39.9	46.8	30.0	36.4	42.8
		67	TC	48.9	48.9	58.9	46.2	46.2	56.3	43.2	43.2	53.5	39.9	39.9	50.3	36.4	36.4	46.0
			SHC	35.3	47.1	58.9	33.6	44.9	56.3	31.7	42.6	53.5	29.5	39.9	50.3	26.8	36.4	46.0
		72	TC	53.9	53.9	53.9	50.7	50.7	50.7	47.2	47.2	47.2	43.2	43.2	43.4	38.8	38.8	41.8
			SHC	23.3	35.4	47.5	22.1	34.2	46.2	20.8	32.8	44.9	19.4	31.4	43.4	17.8	29.8	41.8
		76	TC	—	58.5	58.5	—	55.2	55.2	—	—	—	—	—	—	—	—	—
			SHC	—	25.6	37.7	—	24.3	36.5	—	—	—	—	—	—	—	—	—

NOTE(S):

a. See minimum-maximum airflow ratings on page 7.
b. Published capacity values are based on SEER2 static requirements.

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

Performance data (cont)

48QE*N06 — Unit With Humidi-MiZer® System in Subcooling Mode — Cooling Capacities

TEMP (°F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF (80°F db)								
		1500/0.04			2000 /0.07			2500/0.10		
		Air Entering Evaporator — Ewb (°F)								
		72	67	62	72	67	62	72	67	62
75	TC	69.3	62.1	56.6	75.8	66.5	59.1	77.6	69.0	61.3
	SHC	22.1	31.7	41.4	26.9	40.2	48.2	29.1	44.7	56.0
	kW	3.43	3.33	3.27	3.41	3.65	3.36	3.44	3.41	3.36
85	TC	65.4	58.6	53.4	71.5	63.4	55.8	73.2	65.1	57.8
	SHC	20.8	29.9	39.1	25.4	37.4	45.4	27.5	42.2	52.9
	kW	3.81	3.70	3.64	3.79	3.77	3.73	3.82	3.79	3.73
95	TC	59.5	53.3	48.6	65.0	58.7	52.6	69.1	61.4	54.6
	SHC	18.9	27.2	35.5	23.1	33.9	42.9	25.9	39.8	49.9
	kW	4.23	4.11	4.04	4.21	4.17	4.14	4.24	4.21	4.14
105	TC	53.8	48.2	43.9	58.8	53.4	47.6	62.5	55.5	49.4
	SHC	17.1	24.6	32.2	20.9	30.5	38.8	23.4	36.0	45.1
	kW	4.66	4.52	4.45	4.63	4.69	4.56	4.67	4.63	4.56
115	TC	48.7	43.6	38.9	53.3	47.8	43.1	56.3	49.6	44.7
	SHC	15.5	22.3	29.1	18.9	26.8	35.1	21.2	32.6	40.8
	kW	5.12	4.98	4.89	5.10	5.28	5.01	5.13	5.09	5.01
125	TC	—	—	—	—	—	—	—	—	—
	SHC	—	—	—	—	—	—	—	—	—
	kW	—	—	—	—	—	—	—	—	—

48QE*N06 — 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								
		1500	2000	2500	1500	2000	2500	1500	2000	2500
80	TC	17.54	19.87	21.68	18.20	20.60	22.46	18.78	21.22	23.12
	SHC	0.93	0.93	0.93	3.84	3.84	3.84	6.37	6.37	6.37
	kW	3.64	3.54	3.50	3.55	3.46	3.41	3.49	3.39	3.34
75	TC	18.29	20.53	22.27	18.95	21.25	23.04	19.53	21.88	23.70
	SHC	0.75	0.75	0.75	3.48	3.48	3.48	5.85	5.85	5.85
	kW	3.60	3.52	3.47	3.53	3.45	3.40	3.48	3.38	3.34
70	TC	19.03	21.18	22.85	19.70	21.91	23.62	20.28	22.53	24.28
	SHC	0.58	0.58	0.58	3.13	3.13	3.13	5.33	5.33	5.33
	kW	3.57	3.49	3.44	3.51	3.43	3.38	3.46	3.37	3.33
60	TC	20.52	22.49	24.02	21.20	23.22	24.78	21.78	23.84	25.45
	SHC	0.23	0.23	0.23	2.41	2.41	2.41	4.30	4.30	4.30
	kW	3.50	3.43	3.39	3.46	3.39	3.35	3.43	3.35	3.31
50	TC	22.01	23.80	25.19	22.69	24.52	25.95	23.28	25.15	26.61
	SHC	–0.11	–0.11	–0.11	1.70	1.70	1.70	3.26	3.26	3.26
	kW	3.43	3.37	3.34	3.41	3.35	3.32	3.40	3.33	3.30
40	TC	23.50	25.11	26.35	24.19	25.83	27.11	24.78	26.46	27.77
	SHC	–0.46	–0.46	–0.46	0.98	0.98	0.98	2.23	2.23	2.23
	kW	3.36	3.31	3.28	3.36	3.31	3.28	3.37	3.31	3.28

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

Performance data (cont)

48QE*M04 Heating Capacities

48QE*M04 (3 Tons)

Return Air (°F db)	CFM (Standard Air)		Temperature Air Entering Outdoor Coil (°F db at 70% rh)								
			–10	0	10	17	30	40	47	50	60
55	900	Capacity	—	12.0	15.6	19.1	24.1	28.0	35.1	36.8	42.8
		Int. Cap.	—	11.1	14.3	17.4	21.1	28.0	35.1	36.8	42.8
	1200	Capacity	—	12.6	15.2	19.4	24.0	27.4	36.4	38.5	43.5
		Int. Cap.	—	11.6	13.9	17.6	21.1	27.4	36.4	38.5	43.5
	1500	Capacity	—	12.9	14.7	19.4	22.2	23.3	37.1	38.8	44.2
		Int. Cap.	—	11.8	13.5	17.7	19.4	23.3	37.1	38.8	44.2
70	900	Capacity	—	9.8	13.9	17.0	22.4	26.2	31.8	33.7	40.0
		Int. Cap.	—	9.0	12.8	15.5	19.6	26.2	31.8	33.7	40.0
	1200	Capacity	—	10.4	14.3	17.8	22.6	26.0	33.8	35.6	41.1
		Int. Cap.	—	9.6	13.1	16.3	19.8	26.0	33.8	35.6	41.1
	1500	Capacity	7.1	11.0	14.4	18.3	22.5	23.6	35.4	36.6	42.0
		Int. Cap.	6.5	10.1	13.2	16.7	19.7	23.6	35.4	36.6	42.0
80	900	Capacity	4.6	8.3	12.4	15.5	21.2	25.0	29.7	31.5	37.7
		Int. Cap.	4.2	7.6	11.4	14.1	18.6	25.0	29.7	31.5	37.7
	1200	Capacity	5.1	9.0	13.1	16.4	21.7	24.9	31.5	33.5	39.7
		Int. Cap.	4.7	8.2	12.0	14.9	19.0	24.9	31.5	33.5	39.7
	1500	Capacity	5.5	9.5	13.5	17.0	21.8	23.9	32.8	34.7	40.2
		Int. Cap.	5.1	8.7	12.4	15.5	19.1	23.9	32.8	34.7	40.2

LEGEND

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

48QE*M05 Heating Capacities

48QE*M05 (4 Tons)

Return Air (°F db)	CFM (Standard Air)		Temperature Air Entering Outdoor Coil (°F db at 70% rh)								
			–10	0	10	17	30	40	47	50	60
55	1200	Capacity	—	18.2	23.0	27.1	35.1	40.2	45.6	47.7	55.5
		Int. Cap.	—	16.8	21.1	24.7	30.8	40.2	45.6	47.7	55.5
	1600	Capacity	—	19.1	23.0	27.8	32.3	42.0	47.7	49.6	56.9
		Int. Cap.	—	17.6	21.1	25.4	28.3	42.0	47.7	49.6	56.9
	2000	Capacity	—	19.3	21.2	26.5	29.3	43.3	48.6	50.4	57.1
		Int. Cap.	—	17.7	19.5	24.2	25.7	43.3	48.6	50.4	57.1
70	1200	Capacity	11.1	15.5	20.7	24.7	32.8	37.8	42.8	44.9	52.6
		Int. Cap.	10.2	14.3	19.0	22.5	28.7	37.8	42.8	44.9	52.6
	1600	Capacity	11.9	16.7	21.7	25.8	31.8	39.4	44.8	46.9	54.3
		Int. Cap.	11.0	15.4	19.9	23.5	27.8	39.4	44.8	46.9	54.3
	2000	Capacity	12.5	17.4	21.0	25.8	29.8	40.6	46.1	48.0	55.0
		Int. Cap.	11.6	16.0	19.3	23.5	26.1	40.6	46.1	48.0	55.0
80	1200	Capacity	9.3	13.8	19.3	23.4	31.2	36.1	41.0	43.2	50.7
		Int. Cap.	8.6	12.7	17.7	21.4	27.3	36.1	41.0	43.2	50.7
	1600	Capacity	10.1	14.7	20.2	24.3	31.1	37.7	42.9	45.0	52.5
		Int. Cap.	9.3	13.5	18.6	22.2	27.3	37.7	42.9	45.0	52.5
	2000	Capacity	10.7	15.4	20.8	25.1	29.4	39.0	44.4	46.4	53.4
		Int. Cap.	9.9	14.2	19.1	22.9	25.8	39.0	44.4	46.4	53.4

LEGEND

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

Performance data (cont)

48QE*M06 Heating Capacities

48QE*M06 (5 Tons)											
Return Air (°F db)	CFM (Standard Air)		Temperature Air Entering Outdoor Coil (°F db at 70% rh)								
			–10	0	10	17	30	40	47	50	60
55	1500	Capacity	13.7	20.1	26.4	32.8	41.3	49.1	55.6	57.4	65.1
		Int. Cap.	12.7	18.5	24.2	29.9	36.2	49.1	55.6	57.4	65.1
	2000	Capacity	14.9	21.4	26.5	33.9	42.0	51.5	57.0	58.7	66.5
		Int. Cap.	13.8	19.7	24.3	30.9	36.8	51.5	57.0	58.7	66.5
	2500	Capacity	16.1	22.1	24.9	34.7	42.1	52.8	58.2	59.8	67.5
		Int. Cap.	14.9	20.4	22.9	31.6	36.8	52.8	58.2	59.8	67.5
70	1500	Capacity	10.3	16.6	23.6	29.2	38.6	45.8	51.8	54.1	62.5
		Int. Cap.	9.5	15.2	21.7	26.7	33.8	45.8	51.8	54.1	62.5
	2000	Capacity	11.4	17.9	24.6	31.0	39.6	47.8	54.5	56.5	64.1
		Int. Cap.	10.6	16.5	22.6	28.2	34.7	47.8	54.5	56.5	64.1
	2500	Capacity	12.6	19.2	25.2	32.5	40.1	49.7	56.1	57.8	65.3
		Int. Cap.	11.7	17.7	23.1	29.6	35.2	49.7	56.1	57.8	65.3
80	1500	Capacity	8.0	14.3	21.0	27.0	37.2	43.7	49.3	51.4	60.3
		Int. Cap.	7.4	13.2	19.3	24.6	32.6	43.7	49.3	51.4	60.3
	2000	Capacity	9.1	15.6	22.6	28.6	37.9	45.7	51.7	54.0	62.5
		Int. Cap.	8.4	14.4	20.8	26.1	33.2	45.7	51.7	54.0	62.5
	2500	Capacity	10.3	16.9	24.0	30.2	38.8	47.4	53.9	56.1	63.8
		Int. Cap.	9.5	15.6	22.0	27.5	34.0	47.4	53.9	56.1	63.8

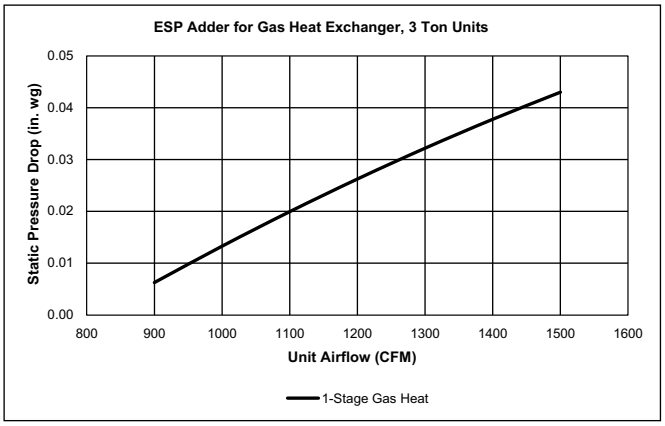
LEGEND

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

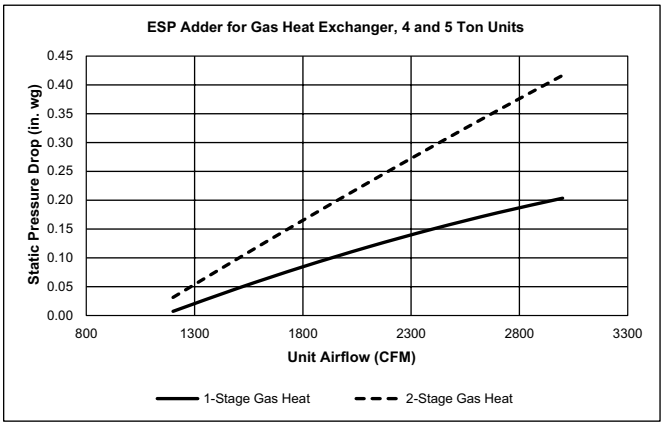
Performance data (cont)

External Static Pressure Adders for Gas Heat Exchanger

3 Ton Units — 1-Stage Heat

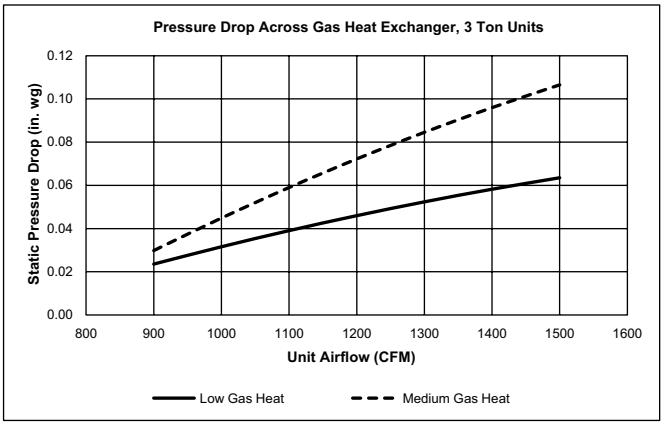


4 and 5 Ton Units — 1 and 2 Stage Heat

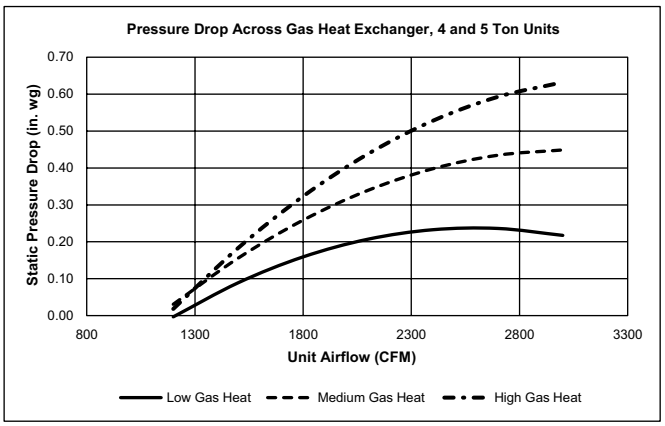


Pressure Drop Across Gas Heat Exchanger

3 Ton Units — Low and Medium Gas Heat



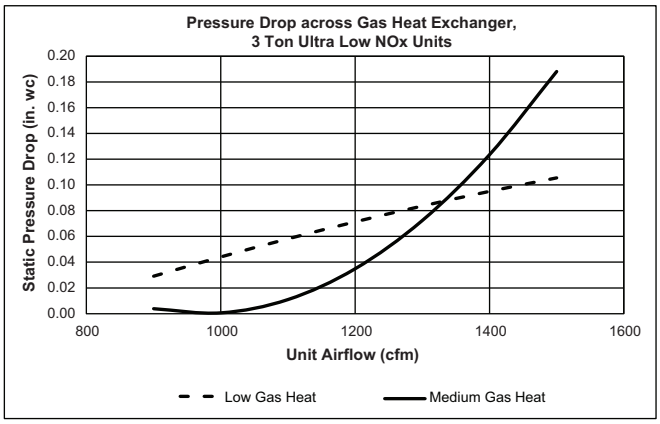
4 and 5 Ton Units — Low, Medium, and High Gas Heat



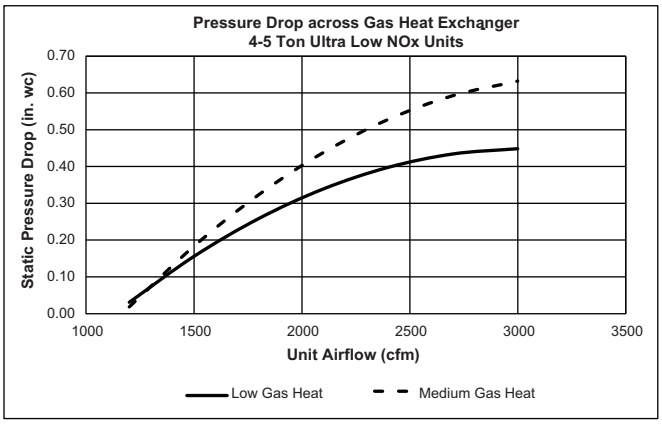
Performance data (cont)

Pressure Drops for Gas Heat Exchanger for 48QE Ultra Low NOx 3 to 5 Ton Units

Pressure Drop across Gas Heat Exchanger, 48QE Ultra Low NOx — 3 Ton Units

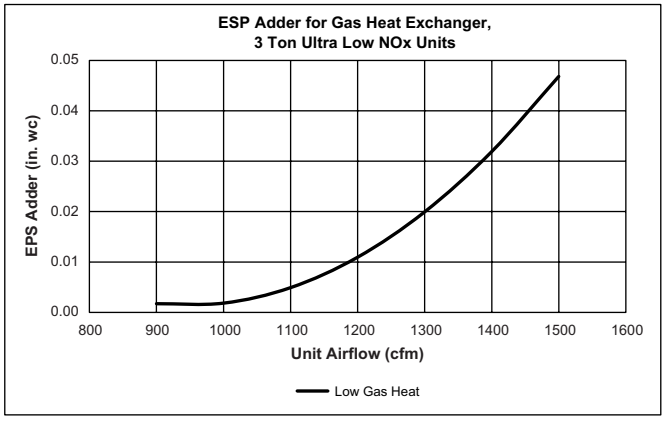


Pressure Drop across Gas Heat Exchanger, 48QE Ultra Low NOx — 4 and 5 Ton Units

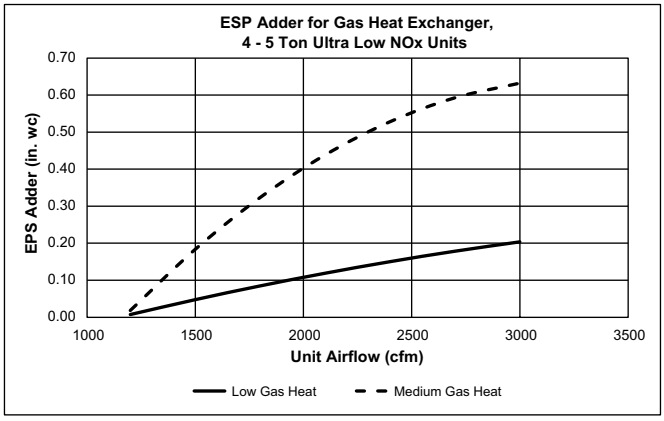


External Static Pressure Adders Gas Heat Exchanger for 48QE Ultra Low NOx 3 to 5 Ton Units

ESP Adder for Gas Heat Exchanger, 48QE Ultra Low NOx — 3 Ton Units



ESP Adder for Gas Heat Exchanger, 48QE Ultra Low NOx — 4 and 5 Ton Units



Performance data (cont)

Single Phase Gas Heat Stages

UNIT SIZE	HEAT SIZE		
1 Phase	Low	Med	High
04	1	1	—
05	1	1	1
06	1	1	1

Three Phase Gas Heat Stages

UNIT SIZE	HEAT SIZE		
3 Phase	Low	Med	High
04	2	2	—
05	2	2	2
06	2	2	2

Gas Heat Stages for 48GE Ultra Low NOx — 3 to 5 Ton Units

UNIT SIZE	HEAT SIZE
1 Phase	Low or Medium
04	1
05	1
06	1

Gas Heat Static Pressure Deductions (in. wg) — 3 Ton Units[a]

CFM	900	1000	1100	1200	1300	1400	1500
Low Gas Heat	0.63	0.58	0.53	0.47	0.40	0.33	0.26

NOTE(S):

a. Values also apply to 48QE Ultra Low NOx units.

Gas Heat Static Pressure Deductions (in. wg) — 4 to 5 Ton Units[a]

CFM	1200	1500	1800	2100	2400	2700	3000
Medium Gas Heat	0.03	0.10	0.17	0.23	0.29	0.36	0.42
Low Gas Heat	0.02	0.18	0.32	0.44	0.53	0.59	0.63

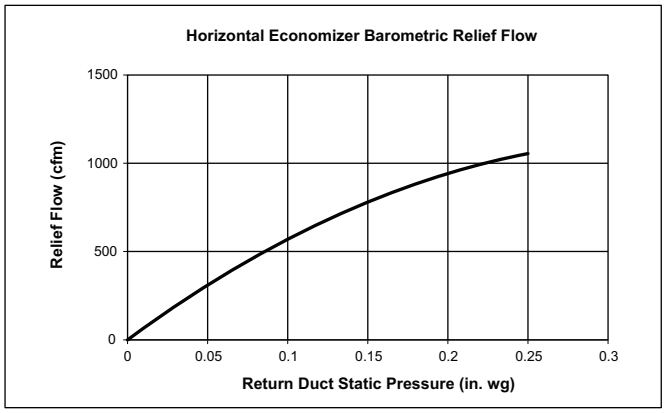
NOTE(S):

a. Values also apply to 48QE Ultra Low NOx units.

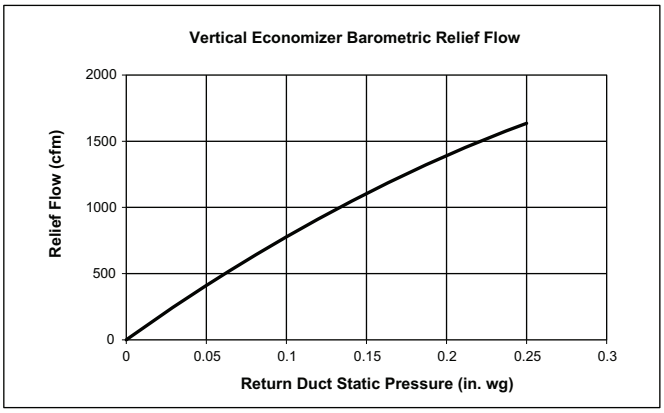
Performance data (cont)

Economizer Barometric Relief and Static Pressure

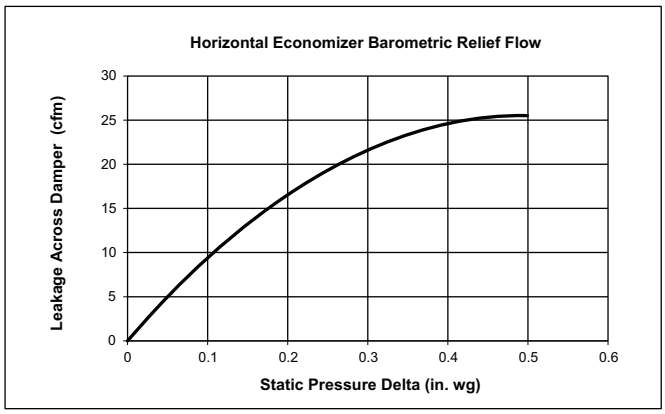
Horizontal Economizer Barometric Relief



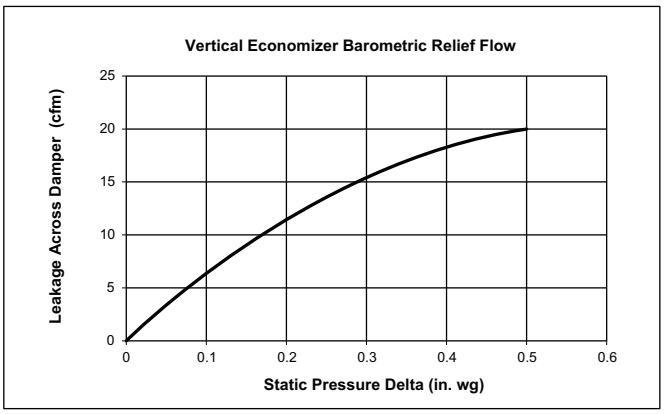
Vertical Economizer Barometric Relief



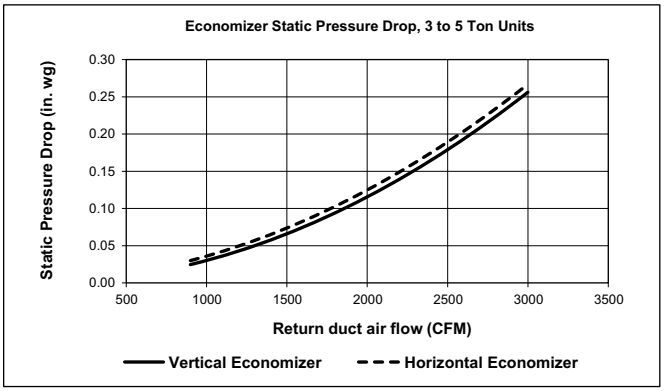
Horizontal Economizer Damper Leakage



Vertical Economizer Damper Leakage

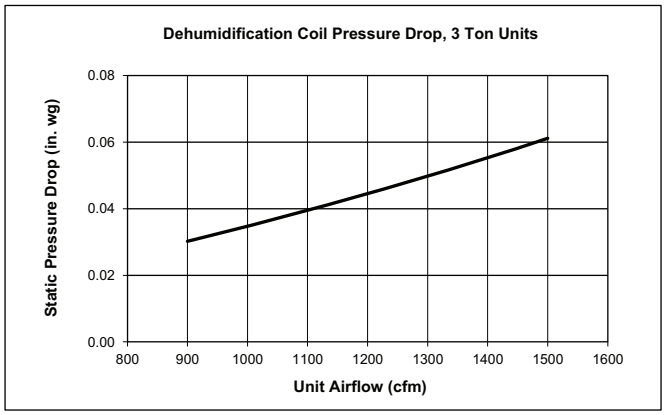


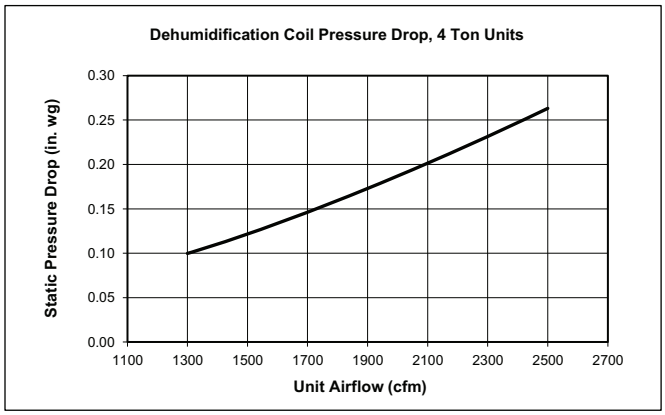
Accessory Static Pressure Drop — Economizer

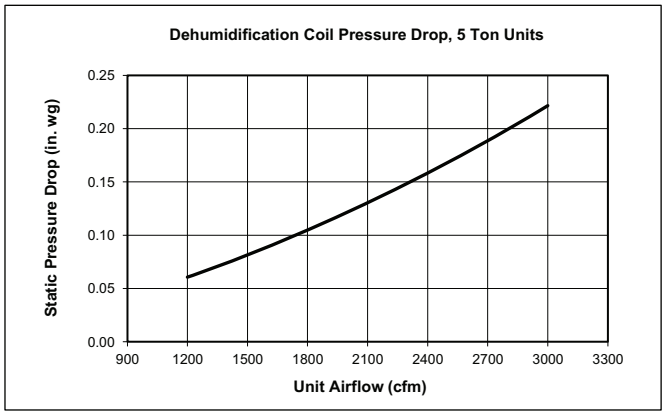


Performance data (cont)

Humidi-MiZer® Coil Pressure Drops







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 recommendations. In cases when 2 motors would work, Carrier recommends the lower horsepower option.
6. Fan tables include highest gas heat. Utilize static pressure deduction tables on page 36 for lower gas heat capacities.
7. For information on the electrical properties of Carrier motors, please see the Electrical information section of this book.
8. For more information on the performance limits of Carrier 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.

Fan data (cont)

48QE*M04 Single Phase — 3 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
900	1092	0.09	1317	0.16	1503	0.24	1666	0.32	1812	0.41
975	1140	0.10	1361	0.18	1543	0.26	1703	0.34	1847	0.44
1050	1190	0.12	1405	0.19	1584	0.28	1741	0.37	1884	0.47
1125	1241	0.13	1450	0.21	1626	0.30	1781	0.39	1922	0.49
1200	1294	0.15	1497	0.23	1670	0.32	1822	0.42	1961	0.53
1275	1348	0.17	1544	0.26	1714	0.35	1864	0.45	2001	0.56
1350	1404	0.19	1593	0.28	1759	0.38	1907	0.48	2042	0.59
1425	1460	0.22	1642	0.31	1805	0.41	1951	0.52	2084	0.63
1500	1517	0.24	1693	0.34	1852	0.44	1996	0.55	2127	0.67

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
900	1947	0.51	2072	0.62	2190	0.73	2301	0.85	2406	0.97
975	1980	0.54	2104	0.65	2221	0.76	2331	0.88	2436	1.01
1050	2015	0.57	2138	0.68	2253	0.80	2362	0.92	2466	1.04
1125	2051	0.60	2172	0.71	2286	0.83	2395	0.96	—	—
1200	2088	0.63	2208	0.75	2321	0.87	2428	1.00	—	—
1275	2127	0.67	2245	0.79	2357	0.91	2463	1.04	—	—
1350	2167	0.71	2283	0.83	2394	0.96	—	—	—	—
1425	2207	0.75	2323	0.87	2432	1.00	—	—	—	—
1500	2249	0.79	2363	0.92	2471	1.05	—	—	—	—

Standard/Medium Static 1092-2190 rpm, 0.71 max bhp

High Static 1092-2490 rpm, 1.07 max bhp

48QE*M04 Single Phase — Standard/Medium Static — 3 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
900	1092	5.0	1317	6.0	1503	6.9	1666	7.6	1812	8.3
975	1140	5.2	1361	6.2	1543	7.0	1703	7.8	1847	8.4
1050	1190	5.4	1405	6.4	1584	7.2	1741	7.9	1884	8.6
1125	1241	5.7	1450	6.6	1626	7.4	1781	8.1	1922	8.8
1200	1294	5.9	1497	6.8	1670	7.6	1822	8.3	1961	9.0
1275	1348	6.2	1544	7.1	1714	7.8	1864	8.5	2001	9.1
1350	1404	6.4	1593	7.3	1759	8.0	1907	8.7	2042	9.3
1425	1460	6.7	1642	7.5	1805	8.2	1951	8.9	2084	9.5
1500	1517	6.9	1693	7.7	1852	8.5	1996	9.1	2127	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
900	1947	8.9	2072	9.5	2190	10.0	—	—	—	—
975	1980	9.0	2104	9.6	—	—	—	—	—	—
1050	2015	9.2	2138	9.8	—	—	—	—	—	—
1125	2051	9.4	2172	9.9	—	—	—	—	—	—
1200	2088	9.5	—	—	—	—	—	—	—	—
1275	2127	9.7	—	—	—	—	—	—	—	—
1350	2167	9.9	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1092-2190 rpm

Fan data (cont)

48QE*M04 Single Phase — High Static — 3 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
900	1092	4.4	1317	5.3	1503	6.0	1666	6.7	1812	7.3
975	1140	4.6	1361	5.5	1543	6.2	1703	6.8	1847	7.4
1050	1190	4.8	1405	5.6	1584	6.4	1741	7.0	1884	7.6
1125	1241	5.0	1450	5.8	1626	6.5	1781	7.2	1922	7.7
1200	1294	5.2	1497	6.0	1670	6.7	1822	7.3	1961	7.9
1275	1348	5.4	1544	6.2	1714	6.9	1864	7.5	2001	8.0
1350	1404	5.6	1593	6.4	1759	7.1	1907	7.7	2042	8.2
1425	1460	5.9	1642	6.6	1805	7.2	1951	7.8	2084	8.4
1500	1517	6.1	1693	6.8	1852	7.4	1996	8.0	2127	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
900	1947	7.8	2072	8.3	2190	8.8	2301	9.2	2406	9.7
975	1980	8.0	2104	8.4	2221	8.9	2331	9.4	2436	9.8
1050	2015	8.1	2138	8.6	2253	9.0	2362	9.5	2466	9.9
1125	2051	8.2	2172	8.7	2286	9.2	2395	9.6	—	—
1200	2088	8.4	2208	8.9	2321	9.3	2428	9.8	—	—
1275	2127	8.5	2245	9.0	2357	9.5	2463	9.9	—	—
1350	2167	8.7	2283	9.2	2394	9.6	—	—	—	—
1425	2207	8.9	2323	9.3	2432	9.8	—	—	—	—
1500	2249	9.0	2363	9.5	2471	9.9	—	—	—	—

High Static 1092-2490 rpm

Fan data (cont)

48QE*M04 Three Phase — 3 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
900	1092	0.09	1317	0.16	1503	0.24	1666	0.32	1812	0.41
975	1140	0.10	1361	0.18	1543	0.26	1703	0.34	1847	0.44
1050	1190	0.12	1405	0.19	1584	0.28	1741	0.37	1884	0.47
1125	1241	0.13	1450	0.21	1626	0.30	1781	0.39	1922	0.49
1200	1294	0.15	1497	0.23	1670	0.32	1822	0.42	1961	0.53
1275	1348	0.17	1544	0.26	1714	0.35	1864	0.45	2001	0.56
1350	1404	0.19	1593	0.28	1759	0.38	1907	0.48	2042	0.59
1425	1460	0.22	1642	0.31	1805	0.41	1951	0.52	2084	0.63
1500	1517	0.24	1693	0.34	1852	0.44	1996	0.55	2127	0.67

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
900	1947	0.51	2072	0.62	2190	0.73	2301	0.85	2406	0.97
975	1980	0.54	2104	0.65	2221	0.76	2331	0.88	2436	1.01
1050	2015	0.57	2138	0.68	2253	0.80	2362	0.92	2466	1.04
1125	2051	0.60	2172	0.71	2286	0.83	2395	0.96	—	—
1200	2088	0.63	2208	0.75	2321	0.87	2428	1.00	—	—
1275	2127	0.67	2245	0.79	2357	0.91	2463	1.04	—	—
1350	2167	0.71	2283	0.83	2394	0.96	—	—	—	—
1425	2207	0.75	2323	0.87	2432	1.00	—	—	—	—
1500	2249	0.79	2363	0.92	2471	1.05	—	—	—	—

Standard/Medium Static 1092-2190 rpm, 0.71 max bhp

High Static 1092-2490 rpm, 1.07 max bhp

48QE*M04 Three Phase — Standard/Medium Static — 3 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
900	1092	5.0	1317	6.0	1503	6.9	1666	7.6	1812	8.3
975	1140	5.2	1361	6.2	1543	7.0	1703	7.8	1847	8.4
1050	1190	5.4	1405	6.4	1584	7.2	1741	7.9	1884	8.6
1125	1241	5.7	1450	6.6	1626	7.4	1781	8.1	1922	8.8
1200	1294	5.9	1497	6.8	1670	7.6	1822	8.3	1961	9.0
1275	1348	6.2	1544	7.1	1714	7.8	1864	8.5	2001	9.1
1350	1404	6.4	1593	7.3	1759	8.0	1907	8.7	2042	9.3
1425	1460	6.7	1642	7.5	1805	8.2	1951	8.9	2084	9.5
1500	1517	6.9	1693	7.7	1852	8.5	1996	9.1	2127	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
900	1947	8.9	2072	9.5	2190	10.0	—	—	—	—
975	1980	9.0	2104	9.6	—	—	—	—	—	—
1050	2015	9.2	2138	9.8	—	—	—	—	—	—
1125	2051	9.4	2172	9.9	—	—	—	—	—	—
1200	2088	9.5	—	—	—	—	—	—	—	—
1275	2127	9.7	—	—	—	—	—	—	—	—
1350	2167	9.9	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1092-2190 rpm

Fan data (cont)

48QE*M04 Three Phase — High Static — 3 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
900	1092	4.4	1317	5.3	1503	6.0	1666	6.7	1812	7.3
975	1140	4.6	1361	5.5	1543	6.2	1703	6.8	1847	7.4
1050	1190	4.8	1405	5.6	1584	6.4	1741	7.0	1884	7.6
1125	1241	5.0	1450	5.8	1626	6.5	1781	7.2	1922	7.7
1200	1294	5.2	1497	6.0	1670	6.7	1822	7.3	1961	7.9
1275	1348	5.4	1544	6.2	1714	6.9	1864	7.5	2001	8.0
1350	1404	5.6	1593	6.4	1759	7.1	1907	7.7	2042	8.2
1425	1460	5.9	1642	6.6	1805	7.2	1951	7.8	2084	8.4
1500	1517	6.1	1693	6.8	1852	7.4	1996	8.0	2127	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
900	1947	7.8	2072	8.3	2190	8.8	2301	9.2	2406	9.7
975	1980	8.0	2104	8.4	2221	8.9	2331	9.4	2436	9.8
1050	2015	8.1	2138	8.6	2253	9.0	2362	9.5	2466	9.9
1125	2051	8.2	2172	8.7	2286	9.2	2395	9.6	—	—
1200	2088	8.4	2208	8.9	2321	9.3	2428	9.8	—	—
1275	2127	8.5	2245	9.0	2357	9.5	2463	9.9	—	—
1350	2167	8.7	2283	9.2	2394	9.6	—	—	—	—
1425	2207	8.9	2323	9.3	2432	9.8	—	—	—	—
1500	2249	9.0	2363	9.5	2471	9.9	—	—	—	—

High Static 1092-2490 rpm

Fan data (cont)

48QE*M05 Single Phase — 4 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
1200	1191	0.18	1384	0.28	1544	0.39	1685	0.51	1814	0.63
1300	1255	0.21	1442	0.32	1599	0.43	1737	0.55	1863	0.68
1400	1321	0.24	1500	0.36	1655	0.48	1791	0.61	1914	0.74
1500	1388	0.28	1561	0.40	1711	0.53	1845	0.66	1967	0.80
1600	1456	0.33	1622	0.45	1770	0.59	1901	0.73	2021	0.87
1700	1525	0.37	1685	0.51	1829	0.65	1958	0.79	2075	0.94
1800	1596	0.43	1749	0.56	1889	0.71	2016	0.87	2131	1.02
1900	1668	0.49	1814	0.63	1950	0.78	2074	0.94	2188	1.11
2000	1740	0.56	1881	0.70	2012	0.86	2134	1.03	2246	1.20

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
1200	1933	0.77	2045	0.91	2151	1.06	2253	1.21	2351	1.38
1300	1980	0.82	2089	0.96	2194	1.12	2293	1.28	2389	1.44
1400	2029	0.88	2136	1.03	2238	1.19	2336	1.35	2430	1.52
1500	2079	0.95	2185	1.10	2285	1.26	2381	1.43	—	—
1600	2132	1.02	2236	1.18	2334	1.34	2428	1.51	—	—
1700	2185	1.10	2288	1.26	2385	1.43	—	—	—	—
1800	2239	1.19	2340	1.35	2436	1.53	—	—	—	—
1900	2295	1.28	2394	1.45	—	—	—	—	—	—
2000	2351	1.37	2449	1.55	—	—	—	—	—	—

Standard/Medium Static 1191-2170 rpm, 1.06 max bhp

High Static 1191-2460 rpm, 1.53 max bhp

48QE*M05 Single Phase — Standard/Medium Static — 4 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
1200	1190	5.5	1383	6.4	1544	7.1	1685	7.8	1814	8.4
1300	1255	5.8	1441	6.6	1599	7.4	1737	8.0	1863	8.6
1400	1320	6.1	1500	6.9	1654	7.6	1791	8.3	1914	8.8
1500	1388	6.4	1561	7.2	1711	7.9	1845	8.5	1967	9.1
1600	1456	6.7	1623	7.5	1770	8.2	1901	8.8	2020	9.3
1700	1526	7.0	1685	7.8	1829	8.4	1958	9.0	2075	9.6
1800	1596	7.4	1749	8.1	1889	8.7	2016	9.3	2131	9.8
1900	1668	7.7	1814	8.4	1950	9.0	2074	9.6	—	—
2000	1741	8.0	1881	8.7	2012	9.3	2134	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
1200	1933	8.9	2045	9.4	2151	9.9	—	—	—	—
1300	1980	9.1	2089	9.6	—	—	—	—	—	—
1400	2029	9.4	2136	9.8	—	—	—	—	—	—
1500	2080	9.6	—	—	—	—	—	—	—	—
1600	2131	9.8	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1191-2170 rpm

Fan data (cont)

48QE*M05 Single Phase — High Static — 4 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
1200	1191	4.5	1384	5.2	1544	5.8	1685	6.3	1814	6.8
1300	1255	4.7	1442	5.4	1599	6.0	1737	6.5	1863	7.0
1400	1321	5.0	1500	5.6	1655	6.2	1791	6.7	1914	7.2
1500	1388	5.2	1561	5.9	1711	6.4	1845	6.9	1967	7.4
1600	1456	5.5	1622	6.1	1770	6.7	1901	7.1	2021	7.6
1700	1525	5.7	1685	6.3	1829	6.9	1958	7.4	2075	7.8
1800	1596	6.0	1749	6.6	1889	7.1	2016	7.6	2131	8.0
1900	1668	6.3	1814	6.8	1950	7.3	2074	7.8	2188	8.2
2000	1740	6.5	1881	7.1	2012	7.6	2134	8.0	2246	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
1200	1933	7.3	2045	7.7	2151	8.1	2253	8.5	2351	8.8
1300	1980	7.4	2089	7.9	2194	8.2	2293	8.6	2389	9.0
1400	2029	7.6	2136	8.0	2238	8.4	2336	8.8	2430	9.1
1500	2079	7.8	2185	8.2	2285	8.6	2381	9.0	—	—
1600	2132	8.0	2236	8.4	2334	8.8	2428	9.1	—	—
1700	2185	8.2	2288	8.6	2385	9.0	—	—	—	—
1800	2239	8.4	2340	8.8	2436	9.2	—	—	—	—
1900	2295	8.6	2394	9.0	—	—	—	—	—	—
2000	2351	8.8	2449	9.2	—	—	—	—	—	—

High Static 1191-2460 rpm

Fan data (cont)

48QE*M05 Three Phase — 4 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
1200	1191	0.18	1384	0.28	1544	0.39	1685	0.51	1814	0.63
1300	1255	0.21	1442	0.32	1599	0.43	1737	0.55	1863	0.68
1400	1321	0.24	1500	0.36	1655	0.48	1791	0.61	1914	0.74
1500	1388	0.28	1561	0.40	1711	0.53	1845	0.66	1967	0.80
1600	1456	0.33	1622	0.45	1770	0.59	1901	0.73	2021	0.87
1700	1525	0.37	1685	0.51	1829	0.65	1958	0.79	2075	0.94
1800	1596	0.43	1749	0.56	1889	0.71	2016	0.87	2131	1.02
1900	1668	0.49	1814	0.63	1950	0.78	2074	0.94	2188	1.11
2000	1740	0.56	1881	0.70	2012	0.86	2134	1.03	2246	1.20

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
1200	1933	0.77	2045	0.91	2151	1.06	2253	1.21	2351	1.38
1300	1980	0.82	2089	0.96	2194	1.12	2293	1.28	2389	1.44
1400	2029	0.88	2136	1.03	2238	1.19	2336	1.35	2430	1.52
1500	2079	0.95	2185	1.10	2285	1.26	2381	1.43	2473	1.60
1600	2132	1.02	2236	1.18	2334	1.34	2428	1.51	2519	1.69
1700	2185	1.10	2288	1.26	2385	1.43	2477	1.60	2566	1.78
1800	2239	1.19	2340	1.35	2436	1.53	2528	1.71	2615	1.89
1900	2295	1.28	2394	1.45	2489	1.63	2579	1.81	—	—
2000	2351	1.37	2449	1.55	2543	1.74	2632	1.93	—	—

Standard/Medium Static 1191-2170 rpm, 1.06 max bhp

High Static 1191-2660 rpm, 1.96 max bhp

48QE*M05 Three Phase — Standard/Medium Static — 4 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
1200	1190	5.5	1383	6.4	1544	7.1	1685	7.8	1814	8.4
1300	1255	5.8	1441	6.6	1599	7.4	1737	8.0	1863	8.6
1400	1320	6.1	1500	6.9	1654	7.6	1791	8.3	1914	8.8
1500	1388	6.4	1561	7.2	1711	7.9	1845	8.5	1967	9.1
1600	1456	6.7	1623	7.5	1770	8.2	1901	8.8	2020	9.3
1700	1526	7.0	1685	7.8	1829	8.4	1958	9.0	2075	9.6
1800	1596	7.4	1749	8.1	1889	8.7	2016	9.3	2131	9.8
1900	1668	7.7	1814	8.4	1950	9.0	2074	9.6	—	—
2000	1741	8.0	1881	8.7	2012	9.3	2134	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
1200	1933	8.9	2045	9.4	2151	9.9	—	—	—	—
1300	1980	9.1	2089	9.6	—	—	—	—	—	—
1400	2029	9.4	2136	9.8	—	—	—	—	—	—
1500	2080	9.6	—	—	—	—	—	—	—	—
1600	2131	9.8	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1191-2170 rpm

Fan data (cont)

48QE*M05 Three Phase — High Static — 4 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
1200	1191	4.5	1384	5.2	1544	5.8	1685	6.3	1814	6.8
1300	1255	4.7	1442	5.4	1599	6.0	1737	6.5	1863	7.0
1400	1321	5.0	1500	5.6	1655	6.2	1791	6.7	1914	7.2
1500	1388	5.2	1561	5.9	1711	6.4	1845	6.9	1967	7.4
1600	1456	5.5	1622	6.1	1770	6.7	1901	7.1	2021	7.6
1700	1525	5.7	1685	6.3	1829	6.9	1958	7.4	2075	7.8
1800	1596	6.0	1749	6.6	1889	7.1	2016	7.6	2131	8.0
1900	1668	6.3	1814	6.8	1950	7.3	2074	7.8	2188	8.2
2000	1740	6.5	1881	7.1	2012	7.6	2134	8.0	2246	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
1200	1933	7.3	2045	7.7	2151	8.1	2253	8.5	2351	8.8
1300	1980	7.4	2089	7.9	2194	8.2	2293	8.6	2389	9.0
1400	2029	7.6	2136	8.0	2238	8.4	2336	8.8	2430	9.1
1500	2079	7.8	2185	8.2	2285	8.6	2381	9.0	2473	9.3
1600	2132	8.0	2236	8.4	2334	8.8	2428	9.1	2519	9.5
1700	2185	8.2	2288	8.6	2385	9.0	2477	9.3	2566	9.6
1800	2239	8.4	2340	8.8	2436	9.2	2528	9.5	2615	9.8
1900	2295	8.6	2394	9.0	2489	9.4	2579	9.7	—	—
2000	2351	8.8	2449	9.2	2543	9.6	2632	9.9	—	—

High Static 1191-2660 rpm

Fan data (cont)

48QE*M06 Single Phase — 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
1500	1387	0.28	1561	0.40	1711	0.53	1845	0.66	1967	0.80
1625	1473	0.34	1638	0.46	1784	0.60	1914	0.74	2034	0.89
1750	1561	0.40	1718	0.54	1859	0.68	1987	0.83	2103	0.98
1875	1650	0.47	1798	0.61	1935	0.77	2060	0.92	2174	1.08
2000	1741	0.56	1880	0.70	2012	0.86	2134	1.03	2246	1.20
2125	1832	0.65	1965	0.80	2092	0.97	2210	1.14	2320	1.32
2250	1925	0.75	2050	0.91	2172	1.08	2287	1.26	2394	1.45
2375	2018	0.87	2137	1.03	2254	1.21	2365	1.40	2470	1.59
2500	2113	1.00	2225	1.16	2337	1.35	2444	1.54	2547	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
1500	2079	0.95	2185	1.10	2285	1.26	2381	1.43	2473	1.60
1625	2145	1.04	2249	1.20	2347	1.37	2440	1.53	2530	1.71
1750	2212	1.14	2314	1.31	2410	1.48	2502	1.65	2590	1.84
1875	2280	1.25	2381	1.43	2476	1.60	2566	1.78	2653	1.97
2000	2351	1.37	2449	1.55	2543	1.74	2632	1.93	—	—
2125	2422	1.50	2519	1.69	2611	1.88	—	—	—	—
2250	2495	1.64	2591	1.84	—	—	—	—	—	—
2375	2569	1.79	—	—	—	—	—	—	—	—
2500	2644	1.95	—	—	—	—	—	—	—	—

Standard/Medium Static 1387-2390 rpm, 1.44 max bhp

High Static 1387-2660 rpm, 1.96 max bhp

48QE*M06 Single Phase — Standard/Medium Static — 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
1500	1387	5.8	1561	6.5	1711	7.2	1845	7.7	1967	8.2
1625	1473	6.2	1638	6.9	1784	7.5	1914	8.0	2034	8.5
1750	1561	6.5	1718	7.2	1859	7.8	1987	8.3	2103	8.8
1875	1650	6.9	1798	7.5	1935	8.1	2060	8.6	2174	9.1
2000	1741	7.3	1880	7.9	2012	8.4	2134	8.9	2246	9.4
2125	1832	7.7	1965	8.2	2092	8.8	2210	9.2	2320	9.7
2250	1925	8.1	2050	8.6	2172	9.1	2287	9.6	—	—
2375	2018	8.4	2137	8.9	2254	9.4	2365	9.9	—	—
2500	2113	8.8	2225	9.3	2337	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
1500	2079	8.7	2185	9.1	2285	9.6	2381	10.0	—	—
1625	2145	9.0	2249	9.4	2347	9.8	—	—	—	—
1750	2212	9.3	2314	9.7	—	—	—	—	—	—
1875	2280	9.5	2381	10.0	—	—	—	—	—	—
2000	2351	9.8	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1387-2390 rpm

Fan data (cont)

48QE*M06 Single Phase — High Static — 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
1500	1387	4.9	1561	5.5	1711	6.0	1845	6.5	1967	6.9
1625	1473	5.2	1638	5.8	1784	6.3	1914	6.7	2034	7.2
1750	1561	5.5	1718	6.1	1859	6.6	1987	7.0	2103	7.4
1875	1650	5.8	1798	6.3	1935	6.8	2060	7.3	2174	7.7
2000	1741	6.1	1880	6.6	2012	7.1	2134	7.5	2246	7.9
2125	1832	6.5	1965	6.9	2092	7.4	2210	7.8	2320	8.2
2250	1925	6.8	2050	7.2	2172	7.7	2287	8.1	2394	8.4
2375	2018	7.1	2137	7.5	2254	7.9	2365	8.3	2470	8.7
2500	2113	7.5	2225	7.8	2337	8.2	2444	8.6	2547	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
1500	2079	7.3	2185	7.7	2285	8.1	2381	8.4	2473	8.7
1625	2145	7.6	2249	7.9	2347	8.3	2440	8.6	2530	8.9
1750	2212	7.8	2314	8.2	2410	8.5	2502	8.8	2590	9.1
1875	2280	8.0	2381	8.4	2476	8.7	2566	9.0	2653	9.4
2000	2351	8.3	2449	8.6	2543	9.0	2632	9.3	—	—
2125	2422	8.5	2519	8.9	2611	9.2	—	—	—	—
2250	2495	8.8	2591	9.1	—	—	—	—	—	—
2375	2569	9.1	—	—	—	—	—	—	—	—
2500	2644	9.3	—	—	—	—	—	—	—	—

High Static 1387-2660 rpm

Fan data (cont)

48QE*M06 Three Phase — 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
1500	1387	0.28	1561	0.40	1711	0.53	1845	0.66	1967	0.80
1625	1473	0.34	1638	0.46	1784	0.60	1914	0.74	2034	0.89
1750	1561	0.40	1718	0.54	1859	0.68	1987	0.83	2103	0.98
1875	1650	0.47	1798	0.61	1935	0.77	2060	0.92	2174	1.08
2000	1741	0.56	1880	0.70	2012	0.86	2134	1.03	2246	1.20
2125	1832	0.65	1965	0.80	2092	0.97	2210	1.14	2320	1.32
2250	1925	0.75	2050	0.91	2172	1.08	2287	1.26	2394	1.45
2375	2018	0.87	2137	1.03	2254	1.21	2365	1.40	2470	1.59
2500	2113	1.00	2225	1.16	2337	1.35	2444	1.54	2547	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
1500	2079	0.95	2185	1.10	2285	1.26	2381	1.43	2473	1.60
1625	2145	1.04	2249	1.20	2347	1.37	2440	1.53	2530	1.71
1750	2212	1.14	2314	1.31	2410	1.48	2502	1.65	2590	1.84
1875	2280	1.25	2381	1.43	2476	1.60	2566	1.78	2653	1.97
2000	2351	1.37	2449	1.55	2543	1.74	2632	1.93	2717	2.12
2125	2422	1.50	2519	1.69	2611	1.88	2699	2.08	2783	2.28
2250	2495	1.64	2591	1.84	2681	2.04	2767	2.24	—	—
2375	2569	1.79	2663	2.00	2752	2.20	—	—	—	—
2500	2644	1.95	2736	2.17	2824	2.38	—	—	—	—

Standard/Medium Static 1387-2390 rpm, 1.44 max bhp

High Static 1387-2836 rpm, 2.43 max bhp

48QE*M06 Three Phase — Standard/Medium Static — 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
1500	1387	5.8	1561	6.5	1711	7.2	1845	7.7	1967	8.2
1625	1473	6.2	1638	6.9	1784	7.5	1914	8.0	2034	8.5
1750	1561	6.5	1718	7.2	1859	7.8	1987	8.3	2103	8.8
1875	1650	6.9	1798	7.5	1935	8.1	2060	8.6	2174	9.1
2000	1741	7.3	1880	7.9	2012	8.4	2134	8.9	2246	9.4
2125	1832	7.7	1965	8.2	2092	8.8	2210	9.2	2320	9.7
2250	1925	8.1	2050	8.6	2172	9.1	2287	9.6	—	—
2375	2018	8.4	2137	8.9	2254	9.4	2365	9.9	—	—
2500	2113	8.8	2225	9.3	2337	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
1500	2079	8.7	2185	9.1	2285	9.6	2381	10.0	—	—
1625	2145	9.0	2249	9.4	2347	9.8	—	—	—	—
1750	2212	9.3	2314	9.7	—	—	—	—	—	—
1875	2280	9.5	2381	10.0	—	—	—	—	—	—
2000	2351	9.8	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1387-2390 rpm

Fan data (cont)

48QE*M06 Three Phase — High Static — 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
1500	1387	4.9	1561	5.5	1711	6.0	1845	6.5	1967	6.9
1625	1473	5.2	1638	5.8	1784	6.3	1914	6.7	2034	7.2
1750	1561	5.5	1718	6.1	1859	6.6	1987	7.0	2103	7.4
1875	1650	5.8	1798	6.3	1935	6.8	2060	7.3	2174	7.7
2000	1741	6.1	1880	6.6	2012	7.1	2134	7.5	2246	7.9
2125	1832	6.5	1965	6.9	2092	7.4	2210	7.8	2320	8.2
2250	1925	6.8	2050	7.2	2172	7.7	2287	8.1	2394	8.4
2375	2018	7.1	2137	7.5	2254	7.9	2365	8.3	2470	8.7
2500	2113	7.5	2225	7.8	2337	8.2	2444	8.6	2547	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
1500	2079	7.3	2185	7.7	2285	8.1	2381	8.4	2473	8.7
1625	2145	7.6	2249	7.9	2347	8.3	2440	8.6	2530	8.9
1750	2212	7.8	2314	8.2	2410	8.5	2502	8.8	2590	9.1
1875	2280	8.0	2381	8.4	2476	8.7	2566	9.0	2653	9.4
2000	2351	8.3	2449	8.6	2543	9.0	2632	9.3	2717	9.6
2125	2422	8.5	2519	8.9	2611	9.2	2699	9.5	2783	9.8
2250	2495	8.8	2591	9.1	2681	9.5	2767	9.8	—	—
2375	2569	9.1	2663	9.4	2752	9.7	—	—	—	—
2500	2644	9.3	2736	9.6	2824	10.0	—	—	—	—

High Static 1387-2836 rpm

Fan data (cont)

48QE*M04 Single Phase — 3 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
900	1060	0.08	1292	0.15	1483	0.23	1650	0.31	1798	0.40
975	1106	0.09	1331	0.16	1519	0.24	1683	0.33	1831	0.43
1050	1154	0.11	1371	0.18	1556	0.26	1718	0.35	1864	0.45
1125	1204	0.12	1413	0.20	1594	0.28	1753	0.38	1898	0.48
1200	1255	0.14	1456	0.21	1633	0.30	1790	0.40	1933	0.50
1275	1308	0.16	1500	0.24	1673	0.33	1828	0.43	1969	0.53
1350	1361	0.18	1546	0.26	1715	0.35	1867	0.45	2006	0.56
1425	1416	0.20	1594	0.28	1757	0.38	1907	0.48	2043	0.59
1500	1472	0.22	1642	0.31	1801	0.41	1947	0.51	2082	0.63

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
900	1933	0.50	2058	0.61	2175	0.72	2285	0.83	2390	0.95
975	1965	0.53	2089	0.63	2206	0.75	2315	0.86	2419	0.99
1050	1998	0.56	2121	0.66	2237	0.78	2346	0.90	2450	1.02
1125	2030	0.58	2154	0.70	2269	0.81	2377	0.94	2480	1.06
1200	2064	0.61	2186	0.73	2301	0.85	2409	0.97	—	—
1275	2099	0.64	2220	0.76	2333	0.88	2441	1.01	—	—
1350	2134	0.68	2254	0.80	2367	0.92	2474	1.05	—	—
1425	2170	0.71	2289	0.84	2401	0.96	—	—	—	—
1500	2208	0.75	2325	0.88	2436	1.01	—	—	—	—

Standard/Medium Static 1060-2190 rpm, 0.71 max bhp

High Static 1060-2490 rpm, 1.07 max bhp

48QE*M04 Single Phase — Standard/Medium Static — 3 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
900	1060	4.8	1292	5.9	1483	6.8	1650	7.5	1798	8.2
975	1106	5.1	1331	6.1	1519	6.9	1683	7.7	1831	8.4
1050	1154	5.3	1371	6.3	1556	7.1	1718	7.8	1864	8.5
1125	1204	5.5	1413	6.5	1594	7.3	1753	8.0	1898	8.7
1200	1255	5.7	1456	6.6	1633	7.5	1790	8.2	1933	8.8
1275	1308	6.0	1500	6.8	1673	7.6	1828	8.3	1969	9.0
1350	1361	6.2	1546	7.1	1715	7.8	1867	8.5	2006	9.2
1425	1416	6.5	1594	7.3	1757	8.0	1907	8.7	2043	9.3
1500	1472	6.7	1642	7.5	1801	8.2	1947	8.9	2082	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
900	1933	8.8	2058	9.4	2175	9.9	—	—	—	—
975	1965	9.0	2089	9.5	—	—	—	—	—	—
1050	1998	9.1	2121	9.7	—	—	—	—	—	—
1125	2030	9.3	2154	9.8	—	—	—	—	—	—
1200	2064	9.4	2186	10.0	—	—	—	—	—	—
1275	2099	9.6	—	—	—	—	—	—	—	—
1350	2134	9.7	—	—	—	—	—	—	—	—
1425	2170	9.9	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1060-2190 rpm

Fan data (cont)

48QE*M04 Single Phase — High Static — 3 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
900	1060	4.3	1292	5.2	1483	6.0	1650	6.6	1798	7.2
975	1106	4.4	1331	5.3	1519	6.1	1683	6.8	1831	7.4
1050	1154	4.6	1371	5.5	1556	6.2	1718	6.9	1864	7.5
1125	1204	4.8	1413	5.7	1594	6.4	1753	7.0	1898	7.6
1200	1255	5.0	1456	5.8	1633	6.6	1790	7.2	1933	7.8
1275	1308	5.3	1500	6.0	1673	6.7	1828	7.3	1969	7.9
1350	1361	5.5	1546	6.2	1715	6.9	1867	7.5	2006	8.1
1425	1416	5.7	1594	6.4	1757	7.1	1907	7.7	2043	8.2
1500	1472	5.9	1642	6.6	1801	7.2	1947	7.8	2082	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
900	1933	7.8	2058	8.3	2175	8.7	2285	9.2	2390	9.6
975	1965	7.9	2089	8.4	2206	8.9	2315	9.3	2419	9.7
1050	1998	8.0	2121	8.5	2237	9.0	2346	9.4	2450	9.8
1125	2030	8.2	2154	8.7	2269	9.1	2377	9.5	2480	10.0
1200	2064	8.3	2186	8.8	2301	9.2	2409	9.7	—	—
1275	2099	8.4	2220	8.9	2333	9.4	2441	9.8	—	—
1350	2134	8.6	2254	9.1	2367	9.5	2474	9.9	—	—
1425	2170	8.7	2289	9.2	2401	9.6	—	—	—	—
1500	2208	8.9	2325	9.3	2436	9.8	—	—	—	—

High Static 1060-2490 rpm

Fan data (cont)

48QE*M04 Three Phase — 3 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
900	1060	0.08	1292	0.15	1483	0.23	1650	0.31	1798	0.40
975	1106	0.09	1331	0.16	1519	0.24	1683	0.33	1831	0.43
1050	1154	0.11	1371	0.18	1556	0.26	1718	0.35	1864	0.45
1125	1204	0.12	1413	0.20	1594	0.28	1753	0.38	1898	0.48
1200	1255	0.14	1456	0.21	1633	0.30	1790	0.40	1933	0.50
1275	1308	0.16	1500	0.24	1673	0.33	1828	0.43	1969	0.53
1350	1361	0.18	1546	0.26	1715	0.35	1867	0.45	2006	0.56
1425	1416	0.20	1594	0.28	1757	0.38	1907	0.48	2043	0.59
1500	1472	0.22	1642	0.31	1801	0.41	1947	0.51	2082	0.63

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
900	1933	0.50	2058	0.61	2175	0.72	2285	0.83	2390	0.95
975	1965	0.53	2089	0.63	2206	0.75	2315	0.86	2419	0.99
1050	1998	0.56	2121	0.66	2237	0.78	2346	0.90	2450	1.02
1125	2030	0.58	2154	0.70	2269	0.81	2377	0.94	2480	1.06
1200	2064	0.61	2186	0.73	2301	0.85	2409	0.97	—	—
1275	2099	0.64	2220	0.76	2333	0.88	2441	1.01	—	—
1350	2134	0.68	2254	0.80	2367	0.92	2474	1.05	—	—
1425	2170	0.71	2289	0.84	2401	0.96	—	—	—	—
1500	2208	0.75	2325	0.88	2436	1.01	—	—	—	—

Standard/Medium Static 1060-2190 rpm, 0.71 max bhp

High Static 1060-2490 rpm, 1.07 max bhp

48QE*M04 Three Phase — Standard/Medium Static — 3 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
900	1060	4.8	1292	5.9	1483	6.8	1650	7.5	1798	8.2
975	1106	5.1	1331	6.1	1519	6.9	1683	7.7	1831	8.4
1050	1154	5.3	1371	6.3	1556	7.1	1718	7.8	1864	8.5
1125	1204	5.5	1413	6.5	1594	7.3	1753	8.0	1898	8.7
1200	1255	5.7	1456	6.6	1633	7.5	1790	8.2	1933	8.8
1275	1308	6.0	1500	6.8	1673	7.6	1828	8.3	1969	9.0
1350	1361	6.2	1546	7.1	1715	7.8	1867	8.5	2006	9.2
1425	1416	6.5	1594	7.3	1757	8.0	1907	8.7	2043	9.3
1500	1472	6.7	1642	7.5	1801	8.2	1947	8.9	2082	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
900	1933	8.8	2058	9.4	2175	9.9	—	—	—	—
975	1965	9.0	2089	9.5	—	—	—	—	—	—
1050	1998	9.1	2121	9.7	—	—	—	—	—	—
1125	2030	9.3	2154	9.8	—	—	—	—	—	—
1200	2064	9.4	2186	10.0	—	—	—	—	—	—
1275	2099	9.6	—	—	—	—	—	—	—	—
1350	2134	9.7	—	—	—	—	—	—	—	—
1425	2170	9.9	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1060-2190 rpm

Fan data (cont)

48QE*M04 Three Phase — High Static — 3 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
900	1060	4.3	1292	5.2	1483	6.0	1650	6.6	1798	7.2
975	1106	4.4	1331	5.3	1519	6.1	1683	6.8	1831	7.4
1050	1154	4.6	1371	5.5	1556	6.2	1718	6.9	1864	7.5
1125	1204	4.8	1413	5.7	1594	6.4	1753	7.0	1898	7.6
1200	1255	5.0	1456	5.8	1633	6.6	1790	7.2	1933	7.8
1275	1308	5.3	1500	6.0	1673	6.7	1828	7.3	1969	7.9
1350	1361	5.5	1546	6.2	1715	6.9	1867	7.5	2006	8.1
1425	1416	5.7	1594	6.4	1757	7.1	1907	7.7	2043	8.2
1500	1472	5.9	1642	6.6	1801	7.2	1947	7.8	2082	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
900	1933	7.8	2058	8.3	2175	8.7	2285	9.2	2390	9.6
975	1965	7.9	2089	8.4	2206	8.9	2315	9.3	2419	9.7
1050	1998	8.0	2121	8.5	2237	9.0	2346	9.4	2450	9.8
1125	2030	8.2	2154	8.7	2269	9.1	2377	9.5	2480	10.0
1200	2064	8.3	2186	8.8	2301	9.2	2409	9.7	—	—
1275	2099	8.4	2220	8.9	2333	9.4	2441	9.8	—	—
1350	2134	8.6	2254	9.1	2367	9.5	2474	9.9	—	—
1425	2170	8.7	2289	9.2	2401	9.6	—	—	—	—
1500	2208	8.9	2325	9.3	2436	9.8	—	—	—	—

High Static 1060-2490 rpm

Fan data (cont)

48QE*M05 Single Phase — 4 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
1200	1148	0.16	1343	0.26	1507	0.37	1651	0.48	1781	0.60
1300	1209	0.19	1397	0.29	1557	0.40	1698	0.52	1826	0.65
1400	1271	0.22	1452	0.33	1608	0.44	1747	0.57	1873	0.70
1500	1335	0.25	1508	0.36	1661	0.49	1797	0.62	1921	0.75
1600	1401	0.29	1565	0.41	1714	0.53	1848	0.67	1971	0.81
1700	1468	0.33	1624	0.45	1769	0.59	1900	0.73	2020	0.87
1800	1537	0.38	1685	0.51	1825	0.64	1953	0.79	2072	0.94
1900	1606	0.44	1747	0.56	1882	0.70	2008	0.85	2124	1.01
2000	1676	0.50	1810	0.63	1940	0.77	2063	0.93	2177	1.09

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
1200	1902	0.73	2015	0.87	2122	1.02	2223	1.17	2320	1.33
1300	1945	0.78	2056	0.93	2161	1.07	2261	1.23	2356	1.39
1400	1990	0.84	2099	0.98	2202	1.13	2300	1.29	2395	1.46
1500	2036	0.89	2143	1.04	2245	1.20	2342	1.36	2435	1.53
1600	2084	0.96	2190	1.11	2290	1.27	2385	1.44	—	—
1700	2132	1.02	2237	1.18	2336	1.35	2430	1.52	—	—
1800	2182	1.10	2285	1.26	2383	1.43	—	—	—	—
1900	2232	1.17	2334	1.34	2431	1.52	—	—	—	—
2000	2284	1.26	2385	1.43	—	—	—	—	—	—

Standard/Medium Static 1148-2170 rpm, 1.06 max bhp

High Static 1148-2460 rpm, 1.53 max bhp

48QE*M05 Single Phase — Standard/Medium Static — 4 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
1200	1148	5.3	1343	6.2	1507	6.9	1651	7.6	1781	8.2
1300	1209	5.6	1397	6.4	1557	7.2	1698	7.8	1826	8.4
1400	1271	5.9	1452	6.7	1608	7.4	1747	8.1	1873	8.6
1500	1335	6.2	1508	6.9	1661	7.7	1797	8.3	1921	8.9
1600	1401	6.5	1565	7.2	1714	7.9	1848	8.5	1971	9.1
1700	1468	6.8	1624	7.5	1769	8.2	1900	8.8	2020	9.3
1800	1537	7.1	1685	7.8	1825	8.4	1953	9.0	2072	9.5
1900	1606	7.4	1747	8.1	1882	8.7	2008	9.3	2124	9.8
2000	1676	7.7	1810	8.3	1940	8.9	2063	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
900	1902	8.8	2015	9.3	2122	9.8	—	—	—	—
975	1945	9.0	2056	9.5	2161	10.0	—	—	—	—
1050	1990	9.2	2099	9.7	—	—	—	—	—	—
1125	2036	9.4	2143	9.9	—	—	—	—	—	—
1200	2084	9.6	—	—	—	—	—	—	—	—
1275	2132	9.8	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1148-2170 rpm

Fan data (cont)

48QE*M05 Single Phase — High Static — 4 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
1200	1148	4.3	1343	5.0	1507	5.7	1651	6.2	1781	6.7
1300	1209	4.5	1397	5.3	1557	5.9	1698	6.4	1826	6.9
1400	1271	4.8	1452	5.5	1608	6.0	1747	6.6	1873	7.0
1500	1335	5.0	1508	5.7	1661	6.2	1797	6.8	1921	7.2
1600	1401	5.3	1565	5.9	1714	6.4	1848	6.9	1971	7.4
1700	1468	5.5	1624	6.1	1769	6.7	1900	7.1	2020	7.6
1800	1537	5.8	1685	6.3	1825	6.9	1953	7.3	2072	7.8
1900	1606	6.0	1747	6.6	1882	7.1	2008	7.5	2124	8.0
2000	1676	6.3	1810	6.8	1940	7.3	2063	7.8	2177	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
1200	1902	7.2	2015	7.6	2122	8.0	2223	8.4	2320	8.7
1300	1945	7.3	2056	7.7	2161	8.1	2261	8.5	2356	8.9
1400	1990	7.5	2099	7.9	2202	8.3	2300	8.6	2395	9.0
1500	2036	7.7	2143	8.1	2245	8.4	2342	8.8	2435	9.2
1600	2084	7.8	2190	8.2	2290	8.6	2385	9.0	—	—
1700	2132	8.0	2237	8.4	2336	8.8	2430	9.1	—	—
1800	2182	8.2	2285	8.6	2383	9.0	—	—	—	—
1900	2232	8.4	2334	8.8	2431	9.1	—	—	—	—
2000	2284	8.6	2385	9.0	—	—	—	—	—	—

High Static 1148-2460 rpm

Fan data (cont)

48QE*M05 Three Phase — 4 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
1200	1148	0.16	1343	0.26	1507	0.37	1651	0.48	1781	0.60
1300	1209	0.19	1397	0.29	1557	0.40	1698	0.52	1826	0.65
1400	1271	0.22	1452	0.33	1608	0.44	1747	0.57	1873	0.70
1500	1335	0.25	1508	0.36	1661	0.49	1797	0.62	1921	0.75
1600	1401	0.29	1565	0.41	1714	0.53	1848	0.67	1971	0.81
1700	1468	0.33	1624	0.45	1769	0.59	1900	0.73	2020	0.87
1800	1537	0.38	1685	0.51	1825	0.64	1953	0.79	2072	0.94
1900	1606	0.44	1747	0.56	1882	0.70	2008	0.85	2124	1.01
2000	1676	0.50	1810	0.63	1940	0.77	2063	0.93	2177	1.09

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
1200	1902	0.73	2015	0.87	2122	1.02	2223	1.17	2320	1.33
1300	1945	0.78	2056	0.93	2161	1.07	2261	1.23	2356	1.39
1400	1990	0.84	2099	0.98	2202	1.13	2300	1.29	2395	1.46
1500	2036	0.89	2143	1.04	2245	1.20	2342	1.36	2435	1.53
1600	2084	0.96	2190	1.11	2290	1.27	2385	1.44	2477	1.61
1700	2132	1.02	2237	1.18	2336	1.35	2430	1.52	2520	1.69
1800	2182	1.10	2285	1.26	2383	1.43	2476	1.60	2565	1.78
1900	2232	1.17	2334	1.34	2431	1.52	2523	1.70	2611	1.88
2000	2284	1.26	2385	1.43	2480	1.61	2571	1.79	2658	1.98

Standard/Medium Static 1148-2170 rpm, 1.06 max bhp

High Static 1148-2660 rpm, 1.96 max bhp

48QE*M05 Three Phase — Standard/Medium Static — 4 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
1200	1148	5.3	1343	6.2	1507	6.9	1651	7.6	1781	8.2
1300	1209	5.6	1397	6.4	1557	7.2	1698	7.8	1826	8.4
1400	1271	5.9	1452	6.7	1608	7.4	1747	8.1	1873	8.6
1500	1335	6.2	1508	6.9	1661	7.7	1797	8.3	1921	8.9
1600	1401	6.5	1565	7.2	1714	7.9	1848	8.5	1971	9.1
1700	1468	6.8	1624	7.5	1769	8.2	1900	8.8	2020	9.3
1800	1537	7.1	1685	7.8	1825	8.4	1953	9.0	2072	9.5
1900	1606	7.4	1747	8.1	1882	8.7	2008	9.3	2124	9.8
2000	1676	7.7	1810	8.3	1940	8.9	2063	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
1200	1902	8.8	2015	9.3	2122	9.8	—	—	—	—
1300	1945	9.0	2056	9.5	2161	10.0	—	—	—	—
1400	1990	9.2	2099	9.7	—	—	—	—	—	—
1500	2036	9.4	2143	9.9	—	—	—	—	—	—
1600	2084	9.6	—	—	—	—	—	—	—	—
1700	2132	9.8	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1148-2170 rpm

Fan data (cont)

48QE*M05 Three Phase — High Static — 4 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
1200	1148	4.3	1343	5.0	1507	5.7	1651	6.2	1781	6.7
1300	1209	4.5	1397	5.3	1557	5.9	1698	6.4	1826	6.9
1400	1271	4.8	1452	5.5	1608	6.0	1747	6.6	1873	7.0
1500	1335	5.0	1508	5.7	1661	6.2	1797	6.8	1921	7.2
1600	1401	5.3	1565	5.9	1714	6.4	1848	6.9	1971	7.4
1700	1468	5.5	1624	6.1	1769	6.7	1900	7.1	2020	7.6
1800	1537	5.8	1685	6.3	1825	6.9	1953	7.3	2072	7.8
1900	1606	6.0	1747	6.6	1882	7.1	2008	7.5	2124	8.0
2000	1676	6.3	1810	6.8	1940	7.3	2063	7.8	2177	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
1200	1902	7.2	2015	7.6	2122	8.0	2223	8.4	2320	8.7
1300	1945	7.3	2056	7.7	2161	8.1	2261	8.5	2356	8.9
1400	1990	7.5	2099	7.9	2202	8.3	2300	8.6	2395	9.0
1500	2036	7.7	2143	8.1	2245	8.4	2342	8.8	2435	9.2
1600	2084	7.8	2190	8.2	2290	8.6	2385	9.0	2477	9.3
1700	2132	8.0	2237	8.4	2336	8.8	2430	9.1	2520	9.5
1800	2182	8.2	2285	8.6	2383	9.0	2476	9.3	2565	9.6
1900	2232	8.4	2334	8.8	2431	9.1	2523	9.5	2611	9.8
2000	2284	8.6	2385	9.0	2480	9.3	2571	9.7	2658	10.0

High Static 1148-2660 rpm

Fan data (cont)

48QE*M06 Single Phase — 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
1500	1335	0.25	1507	0.36	1660	0.49	1797	0.62	1921	0.75
1625	1418	0.30	1580	0.42	1727	0.55	1861	0.68	1983	0.83
1750	1502	0.36	1655	0.48	1796	0.61	1926	0.76	2046	0.91
1875	1589	0.42	1731	0.55	1867	0.69	1994	0.84	2111	0.99
2000	1677	0.50	1810	0.63	1941	0.77	2063	0.93	2177	1.09
2125	1766	0.58	1891	0.71	2015	0.86	2133	1.02	2245	1.19
2250	1855	0.67	1973	0.81	2091	0.96	2206	1.13	2314	1.31
2375	1946	0.78	2057	0.92	2169	1.07	2280	1.25	2385	1.43
2500	2037	0.89	2142	1.03	2249	1.20	2355	1.37	2457	1.56

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
1500	2036	0.89	2143	1.04	2245	1.20	2342	1.36	2435	1.53
1625	2096	0.97	2201	1.13	2301	1.29	2396	1.46	2488	1.63
1750	2157	1.06	2261	1.22	2359	1.39	2453	1.56	2542	1.74
1875	2220	1.16	2322	1.32	2419	1.49	2511	1.67	2599	1.85
2000	2284	1.26	2385	1.43	2480	1.61	2571	1.79	2658	1.98
2125	2350	1.37	2449	1.55	2543	1.73	2633	1.92	—	—
2250	2417	1.49	2514	1.67	2607	1.87	—	—	—	—
2375	2485	1.62	2581	1.81	—	—	—	—	—	—
2500	2555	1.76	2649	1.96	—	—	—	—	—	—

Standard/Medium Static 1335-2390 rpm, 1.44 max bhp

High Static 1335-2660 rpm, 1.96 max bhp

48QE*M06 Single Phase — Standard/Medium Static — 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
1500	1335	5.6	1507	6.3	1660	6.9	1797	7.5	1921	8.0
1625	1418	5.9	1580	6.6	1727	7.2	1861	7.8	1983	8.3
1750	1502	6.3	1655	6.9	1796	7.5	1926	8.1	2046	8.6
1875	1589	6.6	1731	7.2	1867	7.8	1994	8.3	2111	8.8
2000	1677	7.0	1810	7.6	1941	8.1	2063	8.6	2177	9.1
2125	1766	7.4	1891	7.9	2015	8.4	2133	8.9	2245	9.4
2250	1855	7.8	1973	8.3	2091	8.7	2206	9.2	2314	9.7
2375	1946	8.1	2057	8.6	2169	9.1	2280	9.5	2385	10.0
2500	2037	8.5	2142	9.0	2249	9.4	2355	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
1500	2036	8.5	2143	9.0	2245	9.4	2342	9.8	—	—
1625	2096	8.8	2201	9.2	2301	9.6	—	—	—	—
1750	2157	9.0	2261	9.5	2359	9.9	—	—	—	—
1875	2220	9.3	2322	9.7	—	—	—	—	—	—
2000	2284	9.6	2385	10.0	—	—	—	—	—	—
2125	2350	9.8	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1335-2390 rpm

Fan data (cont)

48QE*M06 Single Phase — High Static — 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
1500	1335	4.7	1507	5.3	1660	5.9	1797	6.3	1921	6.8
1625	1418	5.0	1580	5.6	1727	6.1	1861	6.6	1983	7.0
1750	1502	5.3	1655	5.8	1796	6.3	1926	6.8	2046	7.2
1875	1589	5.6	1731	6.1	1867	6.6	1994	7.0	2111	7.4
2000	1677	5.9	1810	6.4	1941	6.8	2063	7.3	2177	7.7
2125	1766	6.2	1891	6.7	2015	7.1	2133	7.5	2245	7.9
2250	1855	6.5	1973	7.0	2091	7.4	2206	7.8	2314	8.2
2375	1946	6.9	2057	7.3	2169	7.6	2280	8.0	2385	8.4
2500	2037	7.2	2142	7.6	2249	7.9	2355	8.3	2457	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
1500	2036	7.2	2143	7.6	2245	7.9	2342	8.3	2435	8.6
1625	2096	7.4	2201	7.8	2301	8.1	2396	8.4	2488	8.8
1750	2157	7.6	2261	8.0	2359	8.3	2453	8.6	2542	9.0
1875	2220	7.8	2322	8.2	2419	8.5	2511	8.9	2599	9.2
2000	2284	8.1	2385	8.4	2480	8.7	2571	9.1	2658	9.4
2125	2350	8.3	2449	8.6	2543	9.0	2633	9.3	—	—
2250	2417	8.5	2514	8.9	2607	9.2	—	—	—	—
2375	2485	8.8	2581	9.1	—	—	—	—	—	—
2500	2555	9.0	2649	9.3	—	—	—	—	—	—

High Static 1335-2660 rpm

Fan data (cont)

48QE*M06 Three Phase — 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
1500	1335	0.25	1507	0.36	1660	0.49	1797	0.62	1921	0.75
1625	1418	0.30	1580	0.42	1727	0.55	1861	0.68	1983	0.83
1750	1502	0.36	1655	0.48	1796	0.61	1926	0.76	2046	0.91
1875	1589	0.42	1731	0.55	1867	0.69	1994	0.84	2111	0.99
2000	1677	0.50	1810	0.63	1941	0.77	2063	0.93	2177	1.09
2125	1766	0.58	1891	0.71	2015	0.86	2133	1.02	2245	1.19
2250	1855	0.67	1973	0.81	2091	0.96	2206	1.13	2314	1.31
2375	1946	0.78	2057	0.92	2169	1.07	2280	1.25	2385	1.43
2500	2037	0.89	2142	1.03	2249	1.20	2355	1.37	2457	1.56

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
1500	2036	0.89	2143	1.04	2245	1.20	2342	1.36	2435	1.53
1625	2096	0.97	2201	1.13	2301	1.29	2396	1.46	2488	1.63
1750	2157	1.06	2261	1.22	2359	1.39	2453	1.56	2542	1.74
1875	2220	1.16	2322	1.32	2419	1.49	2511	1.67	2599	1.85
2000	2284	1.26	2385	1.43	2480	1.61	2571	1.79	2658	1.98
2125	2350	1.37	2449	1.55	2543	1.73	2633	1.92	2719	2.12
2250	2417	1.49	2514	1.67	2607	1.87	2695	2.06	2780	2.26
2375	2485	1.62	2581	1.81	2672	2.01	2759	2.21	—	—
2500	2555	1.76	2649	1.96	2738	2.16	2824	2.37	—	—

Standard/Medium Static 1335-2390 rpm, 1.44 max bhp

High Static 1335-2836 rpm, 1.96 max bhp

48QE*M06 Three Phase — Standard/Medium Static — 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
1500	1335	5.6	1507	6.3	1660	6.9	1797	7.5	1921	8.0
1625	1418	5.9	1580	6.6	1727	7.2	1861	7.8	1983	8.3
1750	1502	6.3	1655	6.9	1796	7.5	1926	8.1	2046	8.6
1875	1589	6.6	1731	7.2	1867	7.8	1994	8.3	2111	8.8
2000	1677	7.0	1810	7.6	1941	8.1	2063	8.6	2177	9.1
2125	1766	7.4	1891	7.9	2015	8.4	2133	8.9	2245	9.4
2250	1855	7.8	1973	8.3	2091	8.7	2206	9.2	2314	9.7
2375	1946	8.1	2057	8.6	2169	9.1	2280	9.5	2385	10.0
2500	2037	8.5	2142	9.0	2249	9.4	2355	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
1500	2036	8.5	2143	9.0	2245	9.4	2342	9.8	—	—
1625	2096	8.8	2201	9.2	2301	9.6	—	—	—	—
1750	2157	9.0	2261	9.5	2359	9.9	—	—	—	—
1875	2220	9.3	2322	9.7	—	—	—	—	—	—
2000	2284	9.6	2385	10.0	—	—	—	—	—	—
2125	2350	9.8	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard/Medium Static 1335-2390 rpm

Fan data (cont)

48QE*M06 Three Phase — High Static — 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
1500	1335	4.7	1507	5.3	1660	5.9	1797	6.3	1921	6.8
1625	1418	5.0	1580	5.6	1727	6.1	1861	6.6	1983	7.0
1750	1502	5.3	1655	5.8	1796	6.3	1926	6.8	2046	7.2
1875	1589	5.6	1731	6.1	1867	6.6	1994	7.0	2111	7.4
2000	1677	5.9	1810	6.4	1941	6.8	2063	7.3	2177	7.7
2125	1766	6.2	1891	6.7	2015	7.1	2133	7.5	2245	7.9
2250	1855	6.5	1973	7.0	2091	7.4	2206	7.8	2314	8.2
2375	1946	6.9	2057	7.3	2169	7.6	2280	8.0	2385	8.4
2500	2037	7.2	2142	7.6	2249	7.9	2355	8.3	2457	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
1500	2036	7.2	2143	7.6	2245	7.9	2342	8.3	2435	8.6
1625	2096	7.4	2201	7.8	2301	8.1	2396	8.4	2488	8.8
1750	2157	7.6	2261	8.0	2359	8.3	2453	8.6	2542	9.0
1875	2220	7.8	2322	8.2	2419	8.5	2511	8.9	2599	9.2
2000	2284	8.1	2385	8.4	2480	8.7	2571	9.1	2658	9.4
2125	2350	8.3	2449	8.6	2543	9.0	2633	9.3	2719	9.6
2250	2417	8.5	2514	8.9	2607	9.2	2695	9.5	2780	9.8
2375	2485	8.8	2581	9.1	2672	9.4	2759	9.7	—	—
2500	2555	9.0	2649	9.3	2738	9.7	2824	10.0	—	—

High Static 1335-2836 rpm

Legend and Notes

Applicable for Electrical Data Tables on pages 65-69

LEGEND

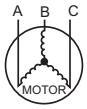
BRKR — Circuit Breaker
CO — Convenience Outlet
FLA — Full Load Amps
IFM — Indoor Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
PE — Power Exhaust
Pwrd fr/unit — Powered From Unit
PWRD CO — Powered Convenience Outlet
RLA — Rated Load Amps
UNPWR CO — Unpowered Convenience Outlet

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.

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

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

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

Electrical data (cont)

48QE**04-06 Cooling Electrical Data[a]

UNIT SIZE	V-Ph-Hz	UNIT VOLTAGE Range		COMPRESSOR		OFM (EA)		STD SCCR kA	HIGH SCCR kA[b]	IFM			COMBUSTION FAN MOTOR	POWER EXHAUST	
		Min	Max	RLA	LRA	WATTS	FLA			Type	Efficiency at Full Load	FLA	FLA	Kit Qty	FLA (Each Kit)
48QE*M04	208-1-60	197	253	16.5	90	275	2.6	5	10	STD/MED	84%	5.1	0.48	1	1.9
										HIGH	85%	7.3			
	230-1-60	197	253	16.5	90	275	2.6	5	10	STD/MED	84%	5.1	0.48	1	1.9
										HIGH	85%	7.3			
	208-3-60	187	253	11.2	82	275	2.6	5	10	STD/MED	84%	5.1	0.48	1	1.9
										HIGH	85%	7.3			
	230-3-60	187	253	11.2	82	275	2.6	5	10	STD/MED	84%	5.1	0.48	1	1.9
										HIGH	85%	7.3			
	460-3-60	414	506	4.9	44	275	1.4	5	10	STD/MED	85%	1.2	0.25	1	1.0
										HIGH	84%	1.7			
	575-3-60	518	633	3.6	29	275	2.6	5	—	STD/MED	84%	1.1	0.24	1	1.9
										HIGH	85%	1.5			
48QE*M05	208-1-60	197	253	24	138	275	1.3	5	10	STD/MED	86%	7.1	0.48	1	1.9
										HIGH	84%	9.2			
	230-1-60	197	253	24	138	275	1.3	5	10	STD/MED	86%	7.1	0.48	1	1.9
										HIGH	84%	9.2			
	208-3-60	187	253	15.6	112	275	1.3	5	10	STD/MED	86%	7.1	0.48	1	1.9
										HIGH	85%	5.5			
	230-3-60	187	253	15.6	112	275	1.3	5	10	STD/MED	86%	7.1	0.48	1	1.9
										HIGH	85%	5.5			
	460-3-60	414	506	8.1	62	275	0.8	5	10	STD/MED	86%	1.7	0.25	1	1.0
										HIGH	88%	2.6			
	575-3-60	518	633	5.7	39	275	0.6	5	—	STD/MED	85%	1.5	0.24	1	1.9
										HIGH	88%	2.3			
48QE*M06	208-1-60	197	253	24.6	149	275	1.3	5	10	STD/MED	84%	9.2	0.48	1	1.9
										HIGH	87%	11.7			
	230-1-60	197	253	24.6	149	275	1.3	5	10	STD/MED	84%	9.2	0.48	1	1.9
										HIGH	87%	11.7			
	208-3-60	187	253	15.4	150	275	1.3	5	10	STD/MED	84%	9.2	0.48	1	1.9
										HIGH	84%	6.5			
	230-3-60	187	253	15.4	150	275	1.3	5	10	STD/MED	84%	9.2	0.48	1	1.9
										HIGH	84%	6.5			
	460-3-60	414	506	6.3	58	275	0.8	5	10	STD/MED	86%	2.1	0.25	1	1.0
										HIGH	88%	3.1			
	575-3-60	518	633	5.8	48	275	0.6	5	—	STD/MED	85%	2.0	0.24	1	1.9
										HIGH	87%	2.7			

NOTE(S):

a. 48QE Ultra Low NOx units are not available for 575-v units.
b. High SCCR (Short Circuit Current Rating) is not available on the following: units with Humidi-MiZer system, phase loss monitor, non-fused disconnect, HACR circuit breaker, powered convenience outlet, and 575V models.

Electrical data (cont)

48QE**04-06 Unit Wire/Fuse Sizing Electrical Data[a]

48QE UNIT	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	HIGH SCCR kA[b]	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
48QE*M04	208/230-1-60	STD/MED	5	10	29	45	28	103	31	45	31	105
		HIGH			31	45	31	106	33	45	33	108
	208/230-3-60	STD/MED	5	10	23	30	22	95	25	30	24	97
		HIGH			25	30	25	98	27	30	27	100
	460-3-60	STD/MED	5	10	9	15	9	49	10	15	10	50
		HIGH			10	15	9	49	11	15	11	50
	575-3-60	STD/MED	5	—	9	15	9	36	11	15	11	38
		HIGH			9	15	9	36	11	15	11	38
48QE*M05	208/230-1-60	STD/MED	5	10	39	60	38	153	41	60	40	155
		HIGH			41	60	40	156	43	60	42	158
	208/230-3-60	STD/MED	5	10	29	40	28	127	31	45	30	129
		HIGH			27	40	26	125	29	40	28	127
	460-3-60	STD/MED	5	10	13	20	12	67	14	20	14	68
		HIGH			14	20	14	69	15	20	15	70
	575-3-60	STD/MED	5	—	10	15	9	43	12	15	11	45
		HIGH			11	15	10	44	13	15	12	46
48QE*M06	208/230-1-60	STD/MED	5	10	42	60	41	167	44	60	43	169
		HIGH			45	60	44	170	47	60	46	172
	208/230-3-60	STD/MED	5	10	31	45	30	168	33	45	33	170
		HIGH			28	40	27	164	30	40	29	166
	460-3-60	STD/MED	5	10	11	15	11	64	12	15	12	65
		HIGH			12	15	12	65	13	15	13	66
	575-3-60	STD/MED	5	—	11	15	10	53	12	15	12	55
		HIGH			11	15	11	54	13	15	13	56

NOTE(S):

a. 48QE Ultra Low NOx units are not available for 575-v units.
b. High SCCR (Short Circuit Current Rating) is not available on the following: units with Humidi-MiZer system, phase loss monitor, non-fused disconnect, HACR breaker, Humidi-MiZer system, and 575V models.

Electrical data (cont)

48QE**04-06 Unit Wire/Fuse Sizing Electrical Data (cont)[a]

48QE 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
48QE*M04	208/230-1-60	STD/MED	5	34	50	34	108	36	50	36	110
		HIGH		36	50	36	111	38	50	39	113
	208/230-3-60	STD/MED	5	27	30	28	100	29	40	30	102
		HIGH		30	40	30	103	32	40	33	105
	460-3-60	STD/MED	5	12	15	11	51	13	15	13	52
		HIGH		12	15	12	51	13	15	13	52
	575-3-60	STD/MED	5	11	15	11	38	12	15	13	40
		HIGH		11	15	11	38	13	15	13	40
48QE*M05	208/230-1-60	STD/MED	5	44	60	43	158	46	60	46	160
		HIGH		46	60	46	161	48	60	48	163
	208/230-3-60	STD/MED	5	34	45	34	132	36	50	36	134
		HIGH		32	45	32	130	34	45	34	132
	460-3-60	STD/MED	5	16	20	15	69	17	20	16	70
		HIGH		16	20	16	71	17	25	17	72
	575-3-60	STD/MED	5	12	15	11	45	14	15	13	47
		HIGH		12	15	12	46	14	20	14	48
48QE*M06	208/230-1-60	STD/MED	5	47	60	46	172	49	60	49	174
		HIGH		49	60	49	175	51	60	51	177
	208/230-3-60	STD/MED	5	35	50	36	173	37	50	38	175
		HIGH		33	45	33	169	35	45	35	171
	460-3-60	STD/MED	5	14	15	13	66	15	20	15	67
		HIGH		15	20	15	67	16	20	16	68
	575-3-60	STD/MED	5	12	15	12	55	14	20	14	57
		HIGH		13	15	13	56	15	20	15	58

NOTE(S):

a. 48QE Ultra Low NOx units are not available for 575-v units.

Electrical data (cont)

48QE**04-06 Unit HACR Sizing Electrical Data[a]

48QE UNIT	NOM. V-Ph-Hz	IFM TYPE	STD SCCR kA	NO CONVENIENCE OUTLET OR UNPOWERED CONVENIENCE OUTLET							
				No Power Exhaust				With Power Exhaust (powered from unit)			
				MCA	HACR Breaker	Disconnect Size		MCA	HACR Breaker	Disconnect Size	
						FLA	LRA			FLA	LRA
48QE*M04	208/230-1-60	STD/MED	5	29	45	28	103	31	45	31	105
		HIGH		31	45	31	106	33	45	33	108
	208/230-3-60	STD/MED	5	23	30	22	95	25	30	24	97
		HIGH		25	30	25	98	27	30	27	100
	460-3-60	STD/MED	5	9	15	9	49	10	15	10	50
		HIGH		10	15	9	49	11	15	11	50
	575-3-60	STD/MED	5	9	15	9	36	11	15	11	38
		HIGH		9	15	9	36	11	15	11	38
48QE*M05	208/230-1-60	STD/MED	5	39	60	38	153	41	60	40	155
		HIGH		41	60	40	156	43	60	42	158
	208/230-3-60	STD/MED	5	29	40	28	127	31	45	30	129
		HIGH		27	40	26	125	29	40	28	127
	460-3-60	STD/MED	5	13	20	12	67	14	20	14	68
		HIGH		14	20	14	69	15	20	15	70
	575-3-60	STD/MED	5	10	15	9	43	12	15	11	45
		HIGH		11	15	10	44	13	15	12	46
48QE*M06	208/230-1-60	STD/MED	5	42	60	41	167	44	60	43	169
		HIGH		45	60	44	170	47	60	46	172
	208/230-3-60	STD/MED	5	31	45	30	168	33	45	33	170
		HIGH		28	40	27	164	30	40	29	166
	460-3-60	STD/MED	5	11	15	11	64	12	15	12	65
		HIGH		12	15	12	65	13	15	13	66
	575-3-60	STD/MED	5	11	15	10	53	12	15	12	55
		HIGH		11	15	11	54	13	15	13	56

NOTE(S):

a. 48QE Ultra Low NOx units are not available for 575-v units.

Electrical data (cont)

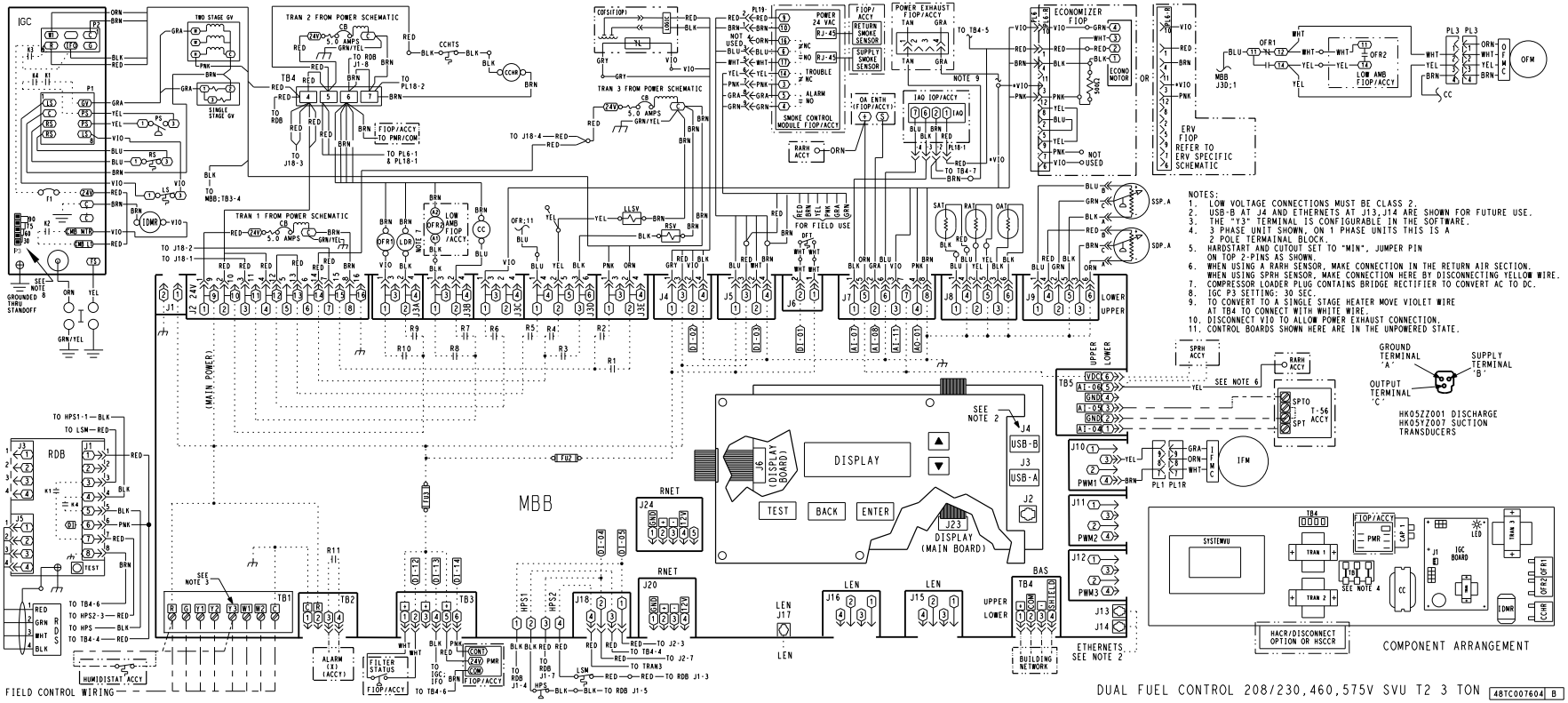
48QE**04-06 Unit HACR Sizing Electrical Data (cont)[a]

48QE 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	HACR Breaker	Disconnect Size		MCA	HACR Breaker	Disconnect Size	
						FLA	LRA			FLA	LRA
48QE*M04	208/230-1-60	STD/MED	5	34	50	34	108	36	50	36	110
		HIGH		36	50	36	111	38	50	39	113
	208/230-3-60	STD/MED	5	27	30	28	100	29	40	30	102
		HIGH		30	40	30	103	32	40	33	105
	460-3-60	STD/MED	5	12	15	11	51	13	15	13	52
		HIGH		12	15	12	51	13	15	13	52
	575-3-60	STD/MED	5	11	15	11	38	12	15	13	40
		HIGH		11	15	11	38	13	15	13	40
48QE*M05	208/230-1-60	STD/MED	5	44	60	43	158	46	60	46	160
		HIGH		46	60	46	161	48	60	48	163
	208/230-3-60	STD/MED	5	34	45	34	132	36	50	36	134
		HIGH		32	45	32	130	34	45	34	132
	460-3-60	STD/MED	5	16	20	15	69	17	20	16	70
		HIGH		16	20	16	71	17	25	17	72
	575-3-60	STD/MED	5	12	15	11	45	14	15	13	47
		HIGH		12	15	12	46	14	20	14	48
48QE*M06	208/230-1-60	STD/MED	5	47	60	46	172	49	60	49	174
		HIGH		49	60	49	175	51	60	51	177
	208/230-3-60	STD/MED	5	35	50	36	173	37	50	38	175
		HIGH		33	45	33	169	35	45	35	171
	460-3-60	STD/MED	5	14	15	13	66	15	20	15	67
		HIGH		15	20	15	67	16	20	16	68
	575-3-60	STD/MED	5	12	15	12	55	14	20	14	57
		HIGH		13	15	13	56	15	20	15	58

NOTE(S):

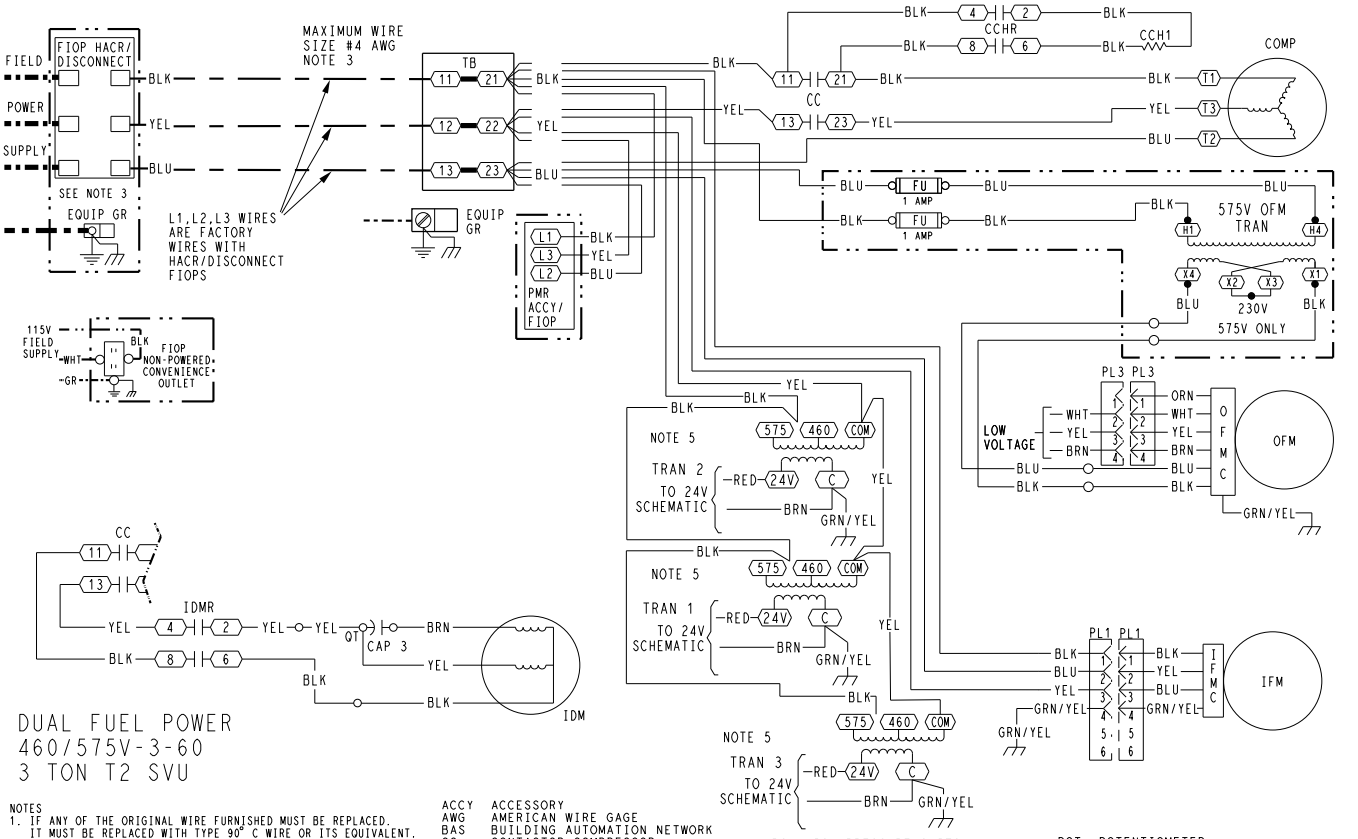
a. 48QE Ultra Low NOx units are not available for 575-v units.

Typical Control Wiring Diagram, SystemVu Controller — 48QE 04 Units



Typical wiring diagrams (cont)

Typical Power Wiring Diagram, SystemVu Controller — 48QE 04 460/575-3-60 Units Shown



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.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC.

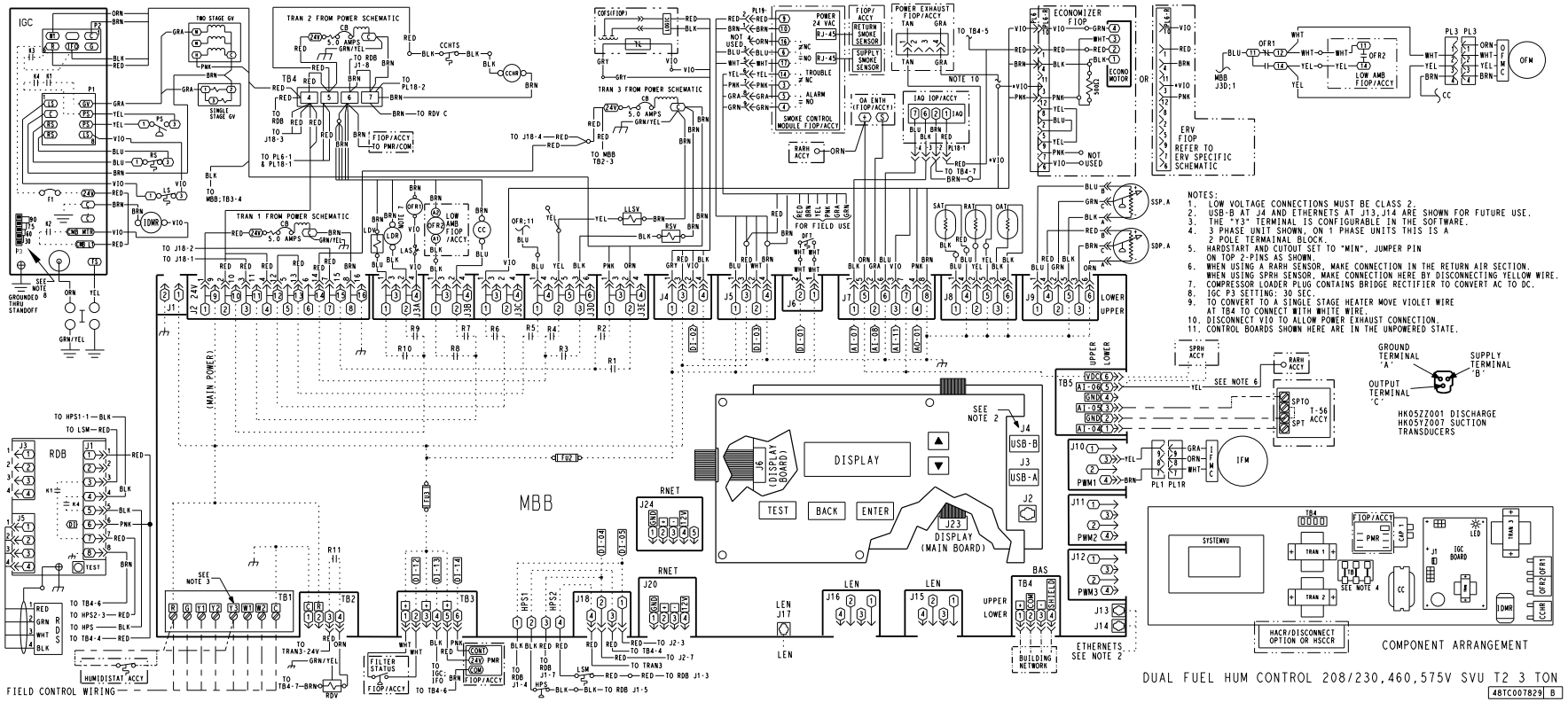
LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IDM	INDUCED DRAFT MOTOR
IDMR	INDUCED DRAFT MOTOR RELAY
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OFO	OUTDOOR FAN ON RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SENSOR
RDB	REFRIGERANT DISSIPATION BOARD
RDS	REFRIGERANT DISSIPATION SENSOR
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

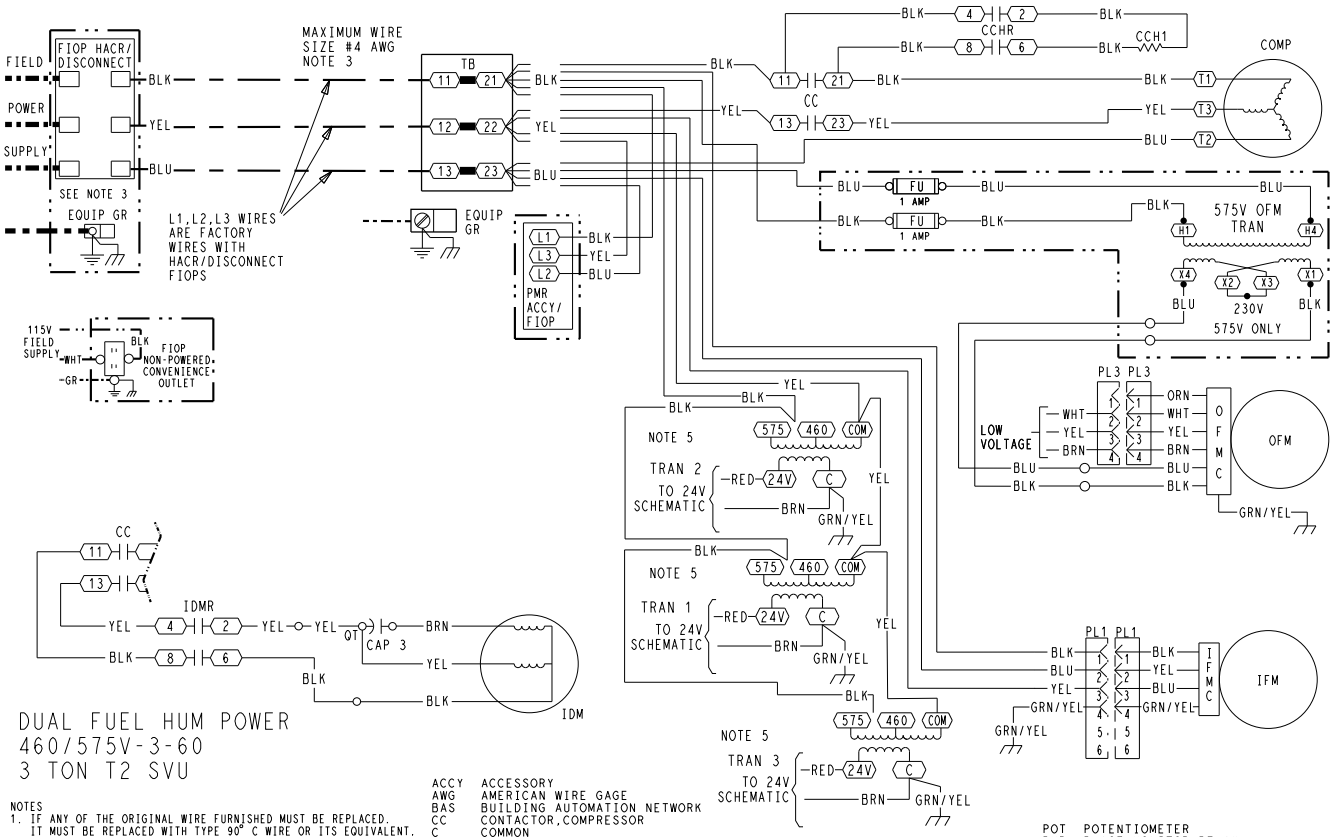
48TC007605 -

Typical Control Wiring Diagram, SystemVu Controller with Humidi-MiZer System — 48QE 04 Units



Typical wiring diagrams (cont)

Typical Power Wiring Diagram, SystemVu Controller with Humidi-MiZer System — 48QE 04 460/575-3-60 Units Shown



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.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC.

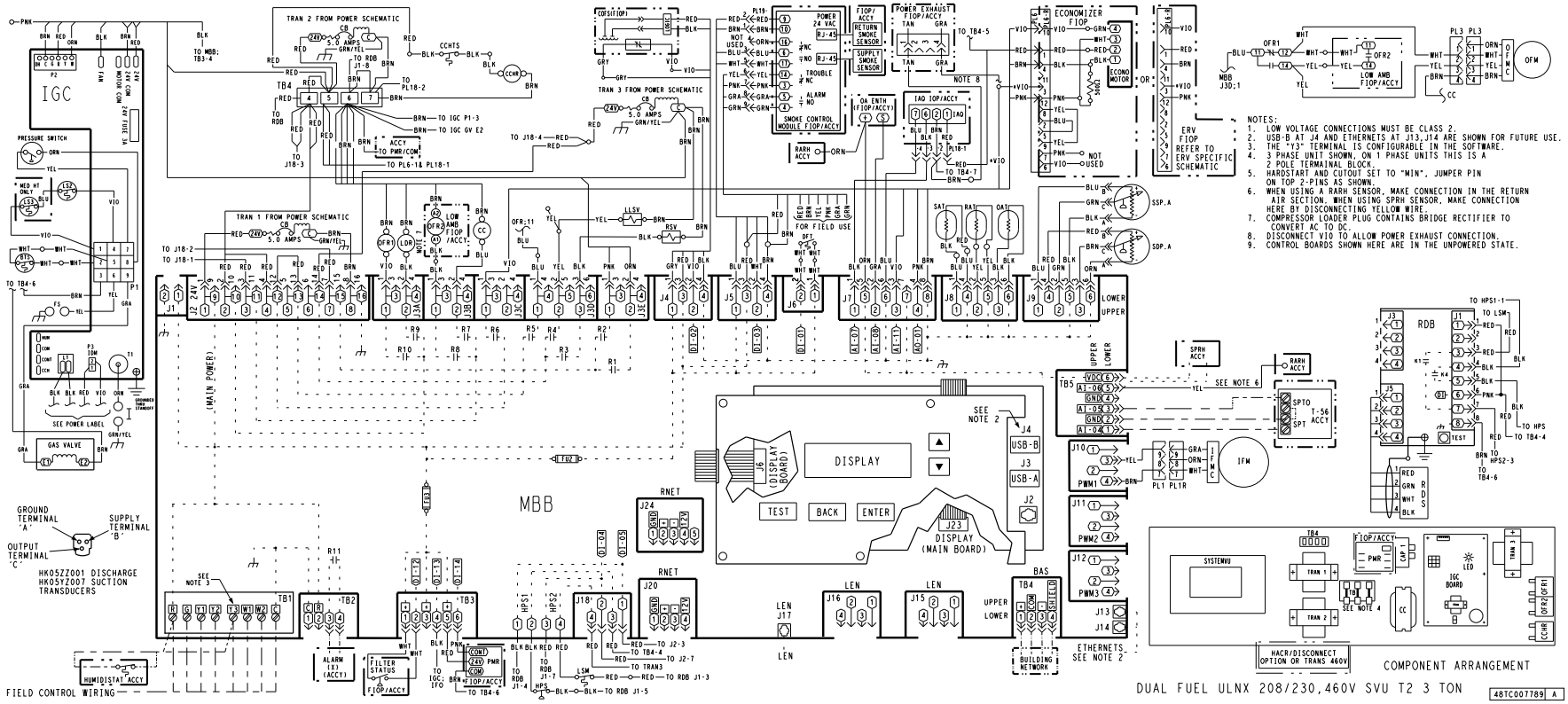
LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HHPR	HUMIDIMIZER HEAT PUMP RELAY
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LDV	LIQUID DIVERTER VALVE
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OFO	OUTDOOR FAN ON RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SENSOR
RDB	REFRIGERANT DISSIPATION BOARD
RDS	REFRIGERANT DISSIPATION SENSOR
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

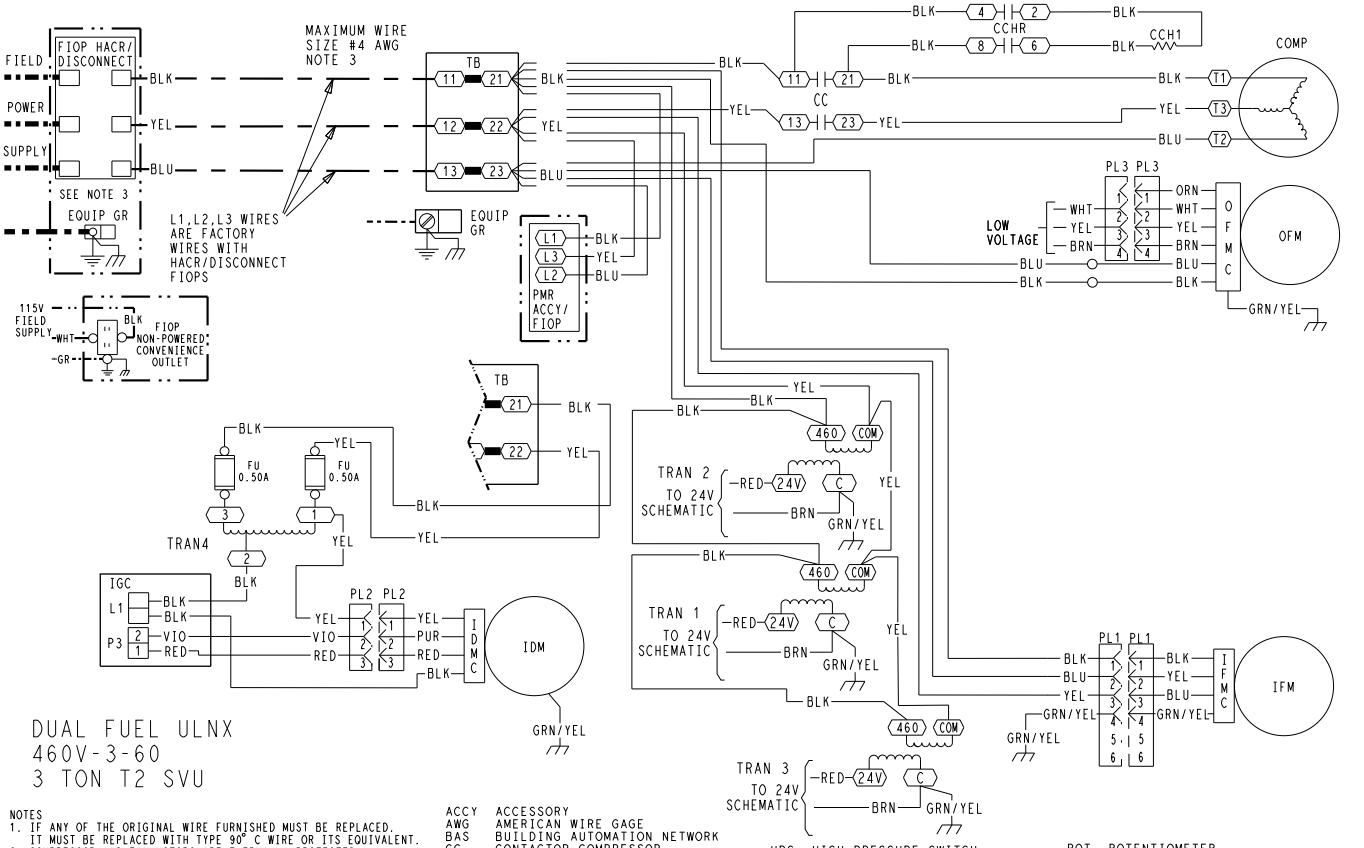
48TC007836 | -

Typical Control Wiring Diagram, SystemVu Controller — 48QE(G/H) 04 Units



Typical wiring diagrams (cont)

Typical Power Wiring Diagram, SystemVu Controller — 48QE(G/H) 04 460-3-60 Units Shown



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.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.

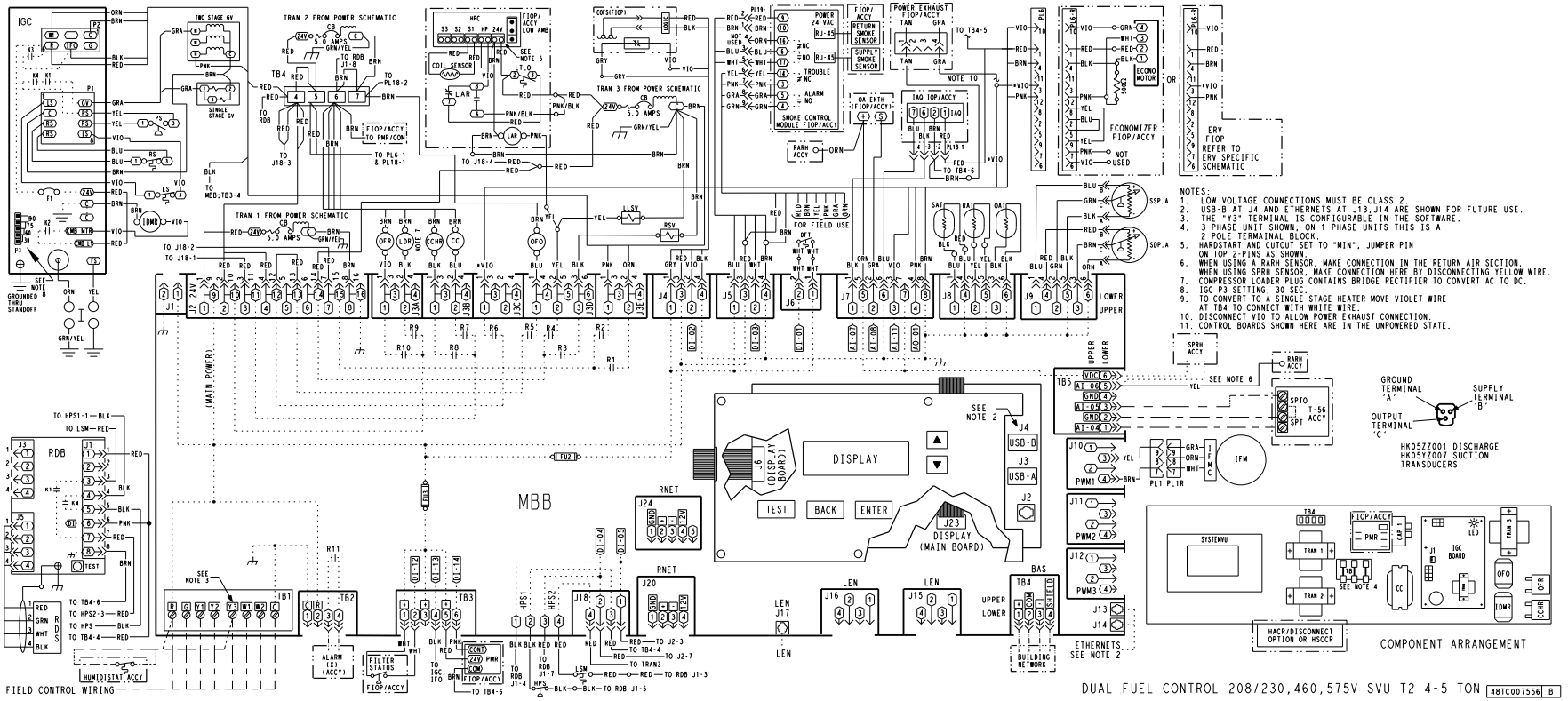
LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IDM	INDUCED DRAFT MOTOR
IDMR	INDUCED DRAFT MOTOR RELAY
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OFO	OUTDOOR FAN ON RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SENSOR
RDB	REFRIGERANT DISSIPATION BOARD
RDS	REFRIGERANT DISSIPATION SENSOR
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

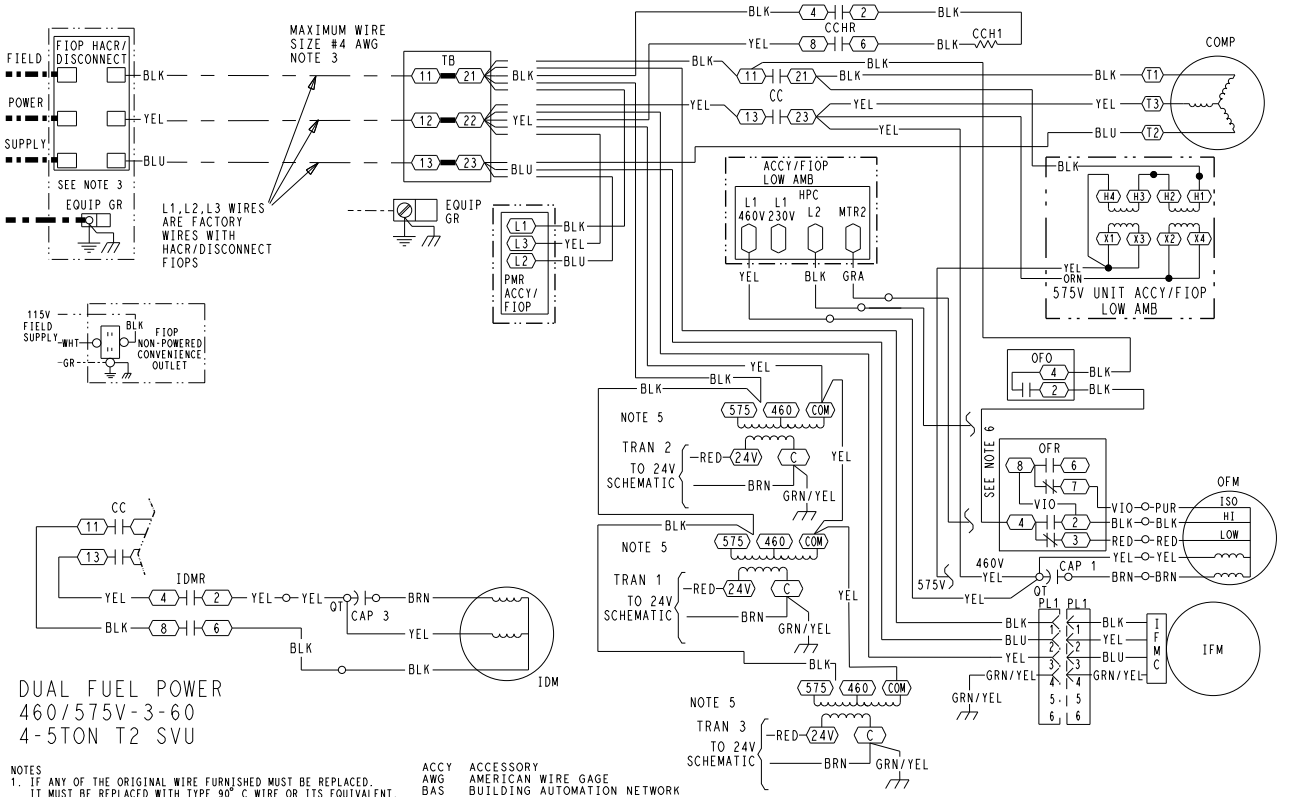
48TC007814 -

Typical Control Wiring Diagram, SystemVu Controller — 48QE 05-06 Units



Typical wiring diagrams (cont)

Typical Power Wiring Diagram, SystemVu Controller — 48QE 05-06 460/575-3-60 Units Shown



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.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC.
6. THIS WIRE NOT USED WITH LOW AMBIENT FIOP/ACCY.

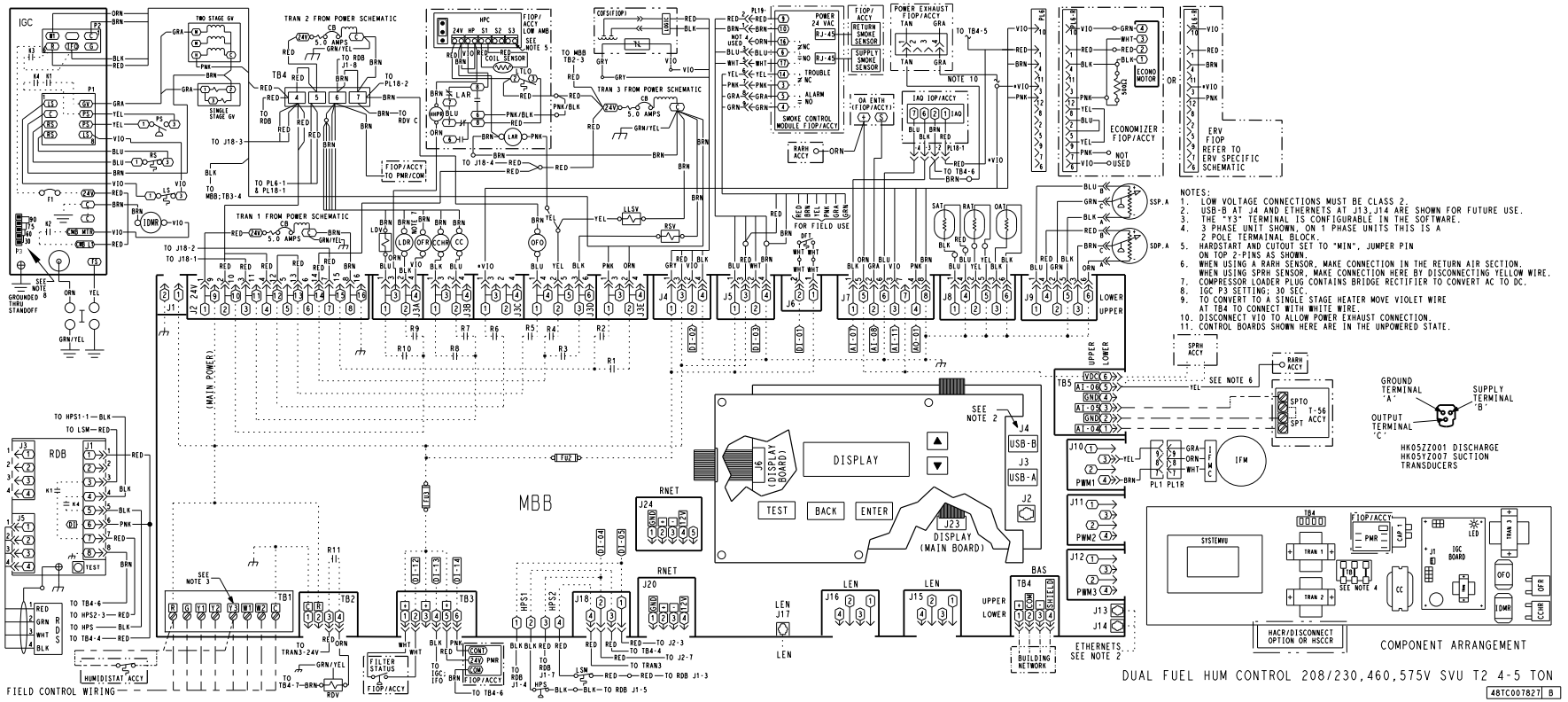
LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IDM	INDUCED DRAFT MOTOR
IDMR	INDUCED DRAFT MOTOR RELAY
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OFO	OUTDOOR FAN ON RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SENSOR
RDB	REFRIGERANT DISSIPATION BOARD
RDS	REFRIGERANT DISSIPATION SENSOR
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

48TC007557 | A

Typical Control Wiring Diagram, SystemVu Controller with Humidi-MiZer System — 48QE 05-06 Units

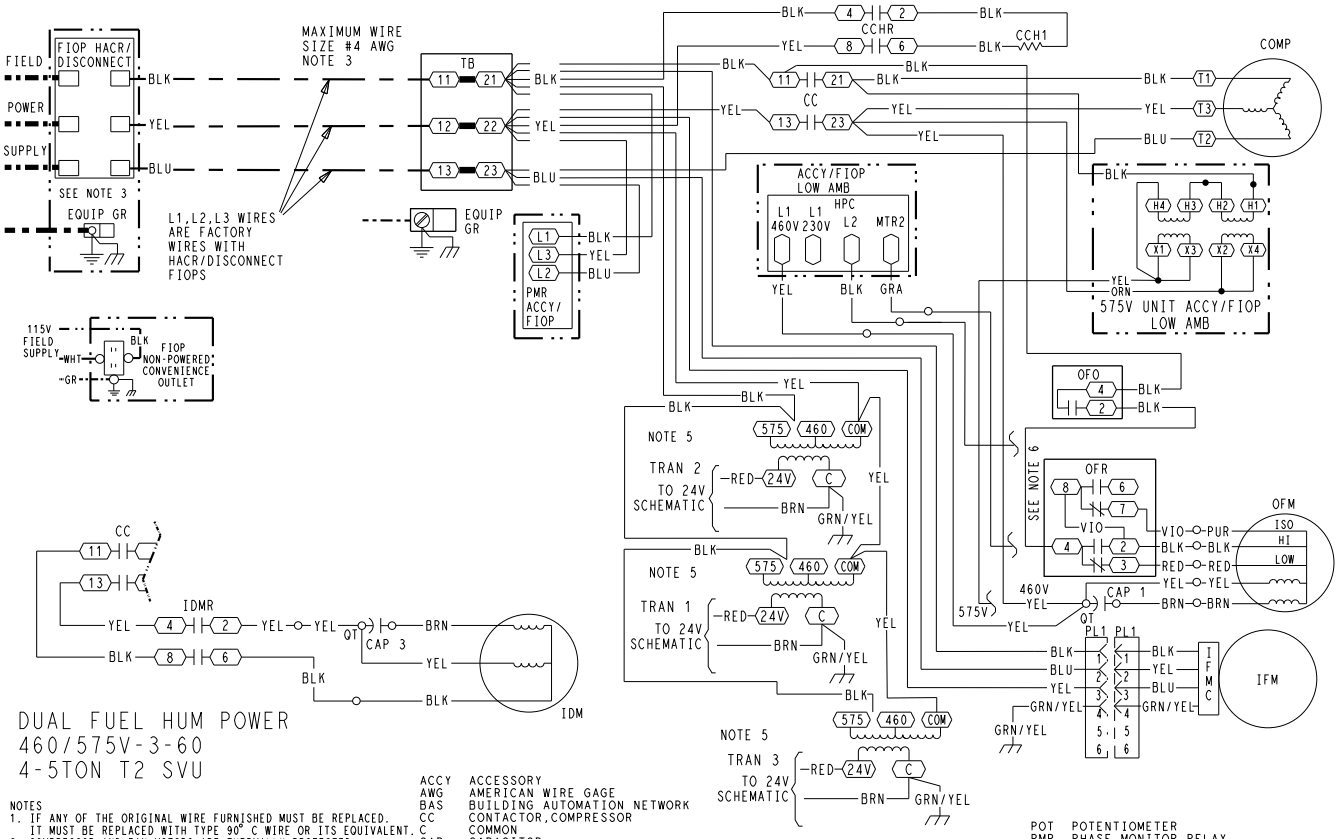


DUAL FUEL HUM CONTROL 208/230,460,575V SVU T2 4-5 TON

48TC007827 B

Typical wiring diagrams (cont)

Typical Power Wiring Diagram, SystemVu Controller with Humidi-MiZer System — 48QE 05-06 460/575-3-60 Units Shown



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.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC.
6. THIS WIRE NOT USED WITH LOW AMBIENT FIOP/ACCY.

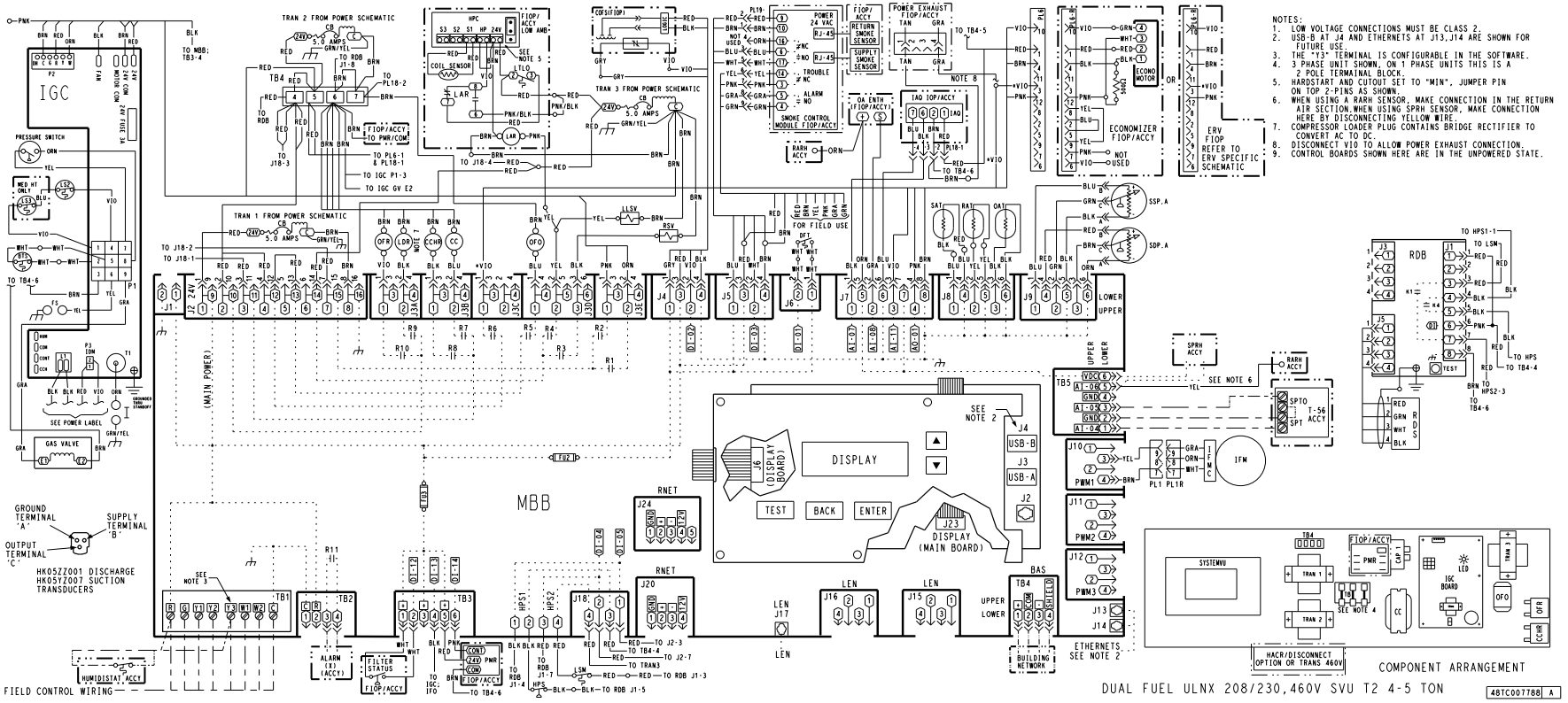
LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HHPR	HUMIDIMIZER HEAT PUMP RELAY
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LDV	LIQUID DIVERTER VALVE
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OFO	OUTDOOR FAN ON RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SENSOR
RDB	REFRIGERANT DISSIPATION BOARD
RDS	REFRIGERANT DISSIPATION SENSOR
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

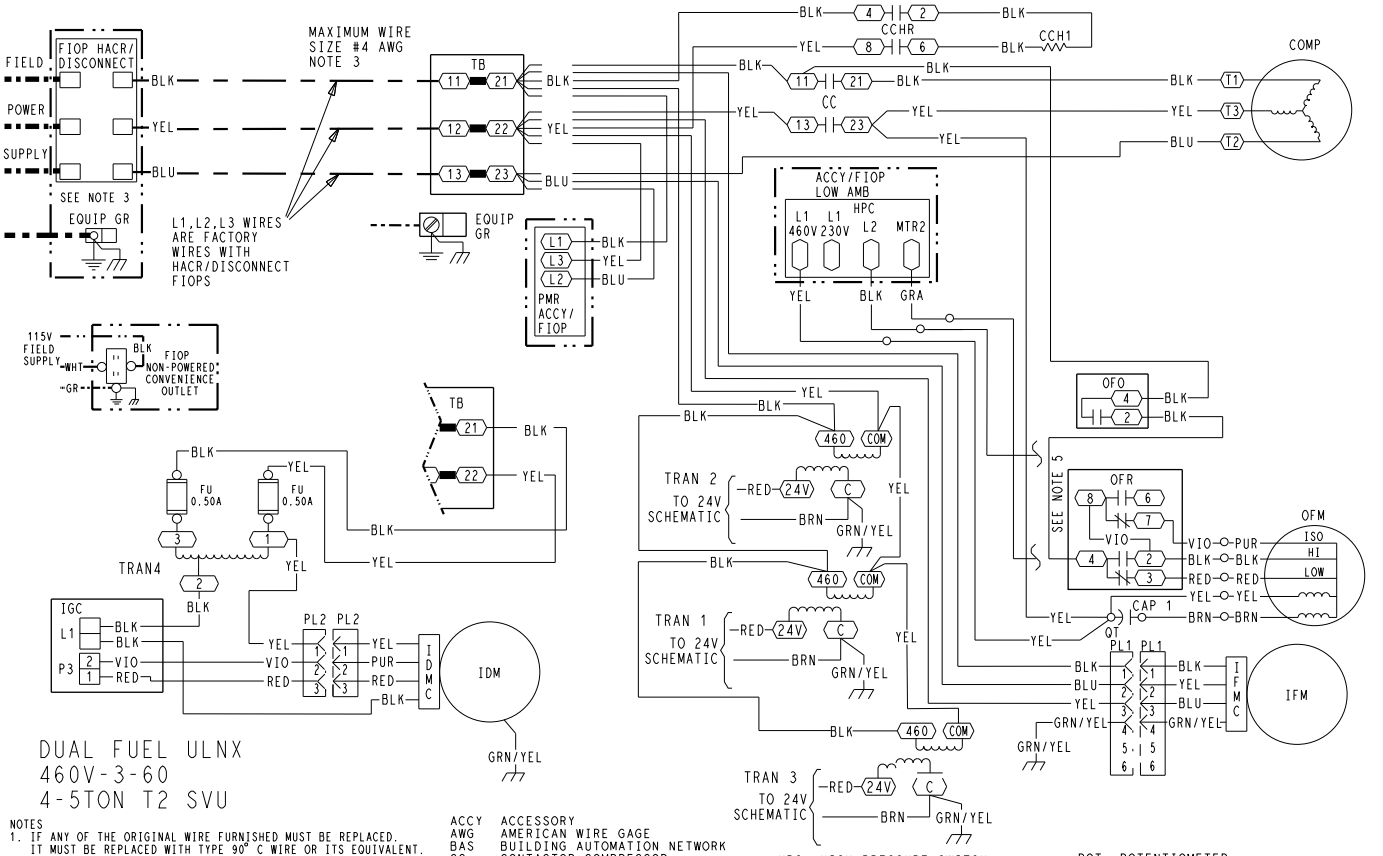
48TC007832 -

Typical Control Wiring Diagram, SystemVu Controller — 48QE(G/H) 05-06 Units



Typical wiring diagrams (cont

Typical Power Wiring Diagram, SystemVu Controller — 48QE(G/H) 05-06 460-3-60 Units Shown



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.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. THIS WIRE NOT USED WITH LOW AMBIENT FIOP/ACCY.

LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IDM	INDUCED DRAFT MOTOR
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OFO	OUTDOOR FAN ON RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SENSOR
RDB	REFRIGERANT DISSIPATION BOARD
RDS	REFRIGERANT DISSIPATION SENSOR
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

48TC007811 -

Sequence of operation

General

The SystemVu controller is standard on all 48QE units. The sequence below describes the sequence of operation for 48QE units with and without a factory-installed economizer. For more information regarding the SystemVu controller, see the FEQ/GEQ/QE Series Single Package Rooftop Heat Pump and Hybrid Heat Units with SystemVu Controller Controls, Start-Up, Operation and Troubleshooting manual.

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.

Cooling without economizer

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 75% of the user set fan speed.

If additional cooling is needed, the thermostat will add the call for Y2. This will increase the indoor fan speed to the user set fan speed and energize the compressor loader for full compressor capacity. The outdoor fan runs at different speeds for Y1 and Y2 depending on unit size.

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 compressor loader 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 SystemVu controller will adjust the fan motor speed to provide 75% of the total cfm established for the unit.

Cooling with economizer

For detailed information on free cooling operation for 48QE units with factory-installed economizer see the FEQ/GEQ/QE Series Single Package Rooftop Heat Pump and Hybrid Heat Units with SystemVu Controller Controls, Start-Up, Operation and Troubleshooting manual.

Defrost

When the temperature of the outdoor coil drops below 28°F (–2°C) as sensed by the defrost switch and the defrost timer is at the end of a timed period (adjustable between 30 and 120 minutes), the reversing valve solenoid (RVS) is energized and the outdoor fan is de-energized. This switches the position of the reversing valve and shuts off the outdoor fan. Gas heating will be energized.

Heating, unit with economizer

Upon a request for heating from the space thermostat terminal, W1 will be energized with 24V. The indoor fan will run at high speed, the outdoor fan and C1 compressor will be energized in heating. The reversing valve is de-energized and switch positions. The economizer is set to minimum position (ventilation position). If the space temperature continues to fall with W1 energized, W2 will bring on gas heat. As the space temperature rises the W2 will de-energize and the compressor will continue to operate, until the thermostat set point is achieved de-energizing W1. If the thermostat is set to Auto, the indoor fan will de-energize and the economizer will close. If the indoor fan is set to On, the indoor fan will continue to operate and the economizer will remain at minimum position (vent position). On units equipped for 2 stages of heat, when additional heat is needed, second stage of gas heat energized through W2. The economizer damper moves to the minimum position. When the thermostat is satisfied, the damper moves to the fully closed position.

Heating, unit without economizer

Upon a request for heating from the space thermostat, terminal W1 will be energized with 24V. The indoor fan, outdoor fans, and compressor are energized and reversing valves are deenergized and switch position. If the space temperature continues to fall while W1 is energized, W2 will be energized with 24V, and gas heat will be energized. When the space thermostat is satisfied, W2 will be de-energized first, and gas heating will be de-energized. Upon a further rise in space temperature, W1 will be de-energized.

Gas heating

NOTE: WeatherMaster® units can 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, 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, as well as the flame sensor. 45 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, 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. 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, the indoor-fan motor will continue to operate for an additional 45 seconds then stop. An LED indicator is provided on the IGC to monitor operation.

Hybrid heating

48QE units can run mechanical heating and gas heating simultaneously. When the thermostat calls for heating, terminals G and W1 are energized. The indoor fan will run at

the user set fan speed. The C1 compressor contactor (CC) is energized causing the compressor and outdoor fan to run. The W1 call runs mechanical heating only.

If additional heating is needed, the thermostat will add the call for W2. This enables the unit to run both mechanical heating and adds one stage of gas heating. The first stage of gas heating energizes depending on the supply air temperature of the unit. The second stage of gas heating is enabled when the first stage of gas heating has been running for 30 minutes and the outdoor air temperature is lower than the 3 stage maximum temperature.

If the supply air temperature is below the Maximum SAT Lower Level (***LOWER MAX SET***), the unit will run the first stage of gas heating on top of mechanical heating. Both mechanical and the first stage of gas heat run simultaneously until the supply air temperature reaches the Maximum SAT Upper Level (***UPPER MAX SAT***). When the upper max supply air temperature is reached, one stage of gas heating is removed. Gas heat cycles on and off within the range of the lower max supply air temperature and upper max supply air temperature.

When the thermostat removes the call for W2 but leaves the W1, gas heat staging will be removed and the unit runs mechanical heating only. When the thermostat removes the call for W1, the compressor contactors will de-energize shutting down the compressors and the outdoor fans. When the thermostat removes the call for G, the indoor fan will turn off after the specific fan off delay.

If the outside air temperature is below the mechanical heat lockout temperature [30°F (–1°C) as a default from the factory, but adjustable between –30°F and 40°F (–34°C and –5°C)], the unit will follow the same heat sequencing as outlined in the gas heating section. The mechanical heat lockout temperature is adjustable to ensure building owners can customize operation to their building's needs.

NOTE: Temperatures specified are for default configuration.

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, and a small reheat condenser coil downstream of the evaporator on the air side. Select units have a head pressure controller for variable speed operation of the outdoor fan(s). 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.

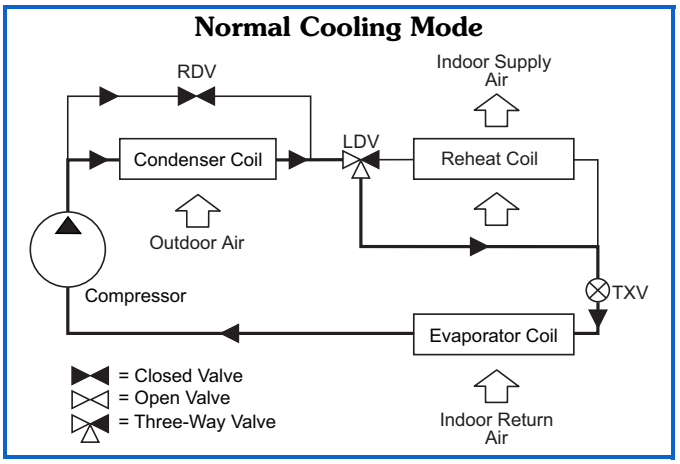
Cool — provides a normal ratio of sensible and latent cooling effect from the evaporator coil.

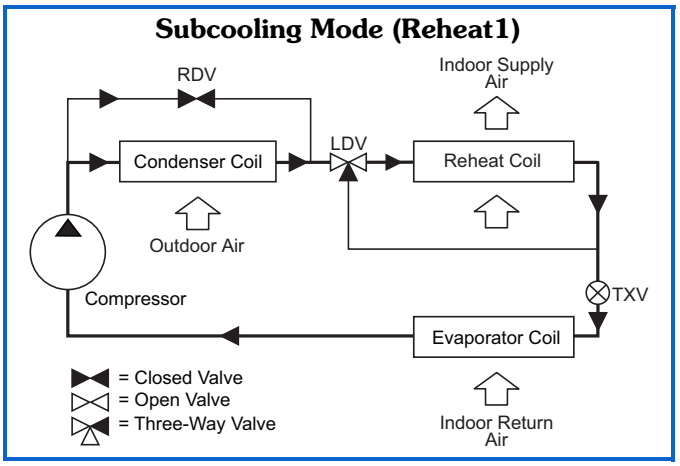
Subcooling Mode (Reheat1) — provides increased latent cooling while slightly reducing the sensible cooling effect.

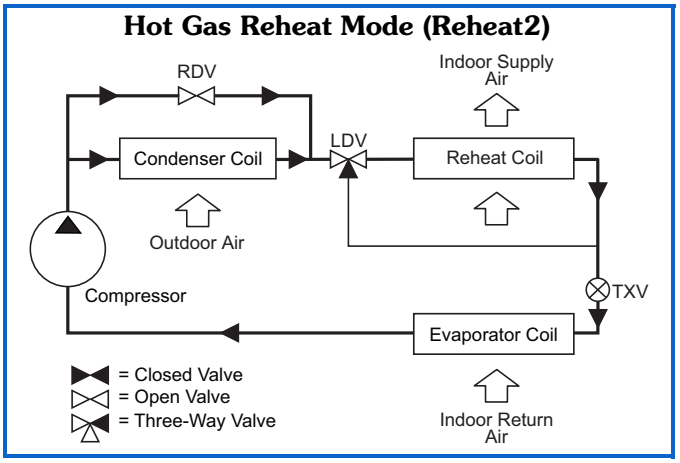
Hot Gas Reheat Mode (Reheat2) — provides normal latent cooling but with null or minimum sensible cooling effect delivered to the space.

The Reheat1 and Reheat2 modes are available when the unit is not in a heating mode and when the system has not locked out reheat in colder ambient conditions.

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







LEGEND

LDV — Liquid Diverter Valve
RDV — Reheat Discharge Valve
TXV — Thermostatic Expansion Valve

SystemVu controller manual

For detailed information on operating the 48QE unit's SystemVu controller refer to FEQ/GEQ/QE Series Single Package Rooftop Heat Pump and Hybrid Heat Units with SystemVu Controller Controls, Start-Up, Operation and Troubleshooting manual.

Application data

Minimum operating ambient temperature (cooling)

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

Maximum operating ambient temperature (cooling)

The maximum operating ambient temperature for cooling mode is 125°F (52°C). While cooling operation above 125°F (52°C) may be possible, it could cause 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

The stainless steel heat exchanger provides the tubular heat exchanger be 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). The stainless steel heat exchanger is standard on all 48QE units.

Minimum mixed air temperature

Using the factory settings, the minimum temperatures for the 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

STAINLESS STEEL HEAT EXCHANGER
40°F (4°C) Continuous
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 7 and the maximum value is the LOWER of the cooling and heating minimum values published on page 7.

Heating-to-cooling changeover

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

Airflow

All units are draw-though in cooling mode and blow-through in heating mode.

Outdoor air application strategies

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

Motor limits, brake horsepower (bhp)

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

Propane heating

Propane has different physical qualities than natural gas. As a result, propane requires 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.

NOTE: Not available for 48QE Ultra Low NOx units.

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 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/ft^3 at sea level nationally. The heating value goes down approximately 1.7% per every thousand feet elevation. Standard factory orifices can typically be used up to 2000 ft (610 m) elevation without any operational issues.

NOTE: Ultra Low NOx units can operate at altitudes of 0 to 7,800 feet standard. A high altitude conversion kit is not necessary. Operation above 7,800 feet (2377 m) is not allowed. For every 1,000 feet above 2,000 feet, apply the following derate values for Ultra Low NOx units based on unit heat size:

ULTRA LOW NOx UNIT HEAT SIZE	DERATE VALUE
60,000 BTU/hr	2.9%
82,000 BTU/hr	2.7%

Sizing a rooftop

Bigger is not necessarily better. While an air conditioner needs to have enough capacity to meet the design loads, it

does not need excess capacity. In fact, excess capacity typically results in very poor part load performance and humidity control.

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

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

Low ambient applications

The optional Carrier economizer can adequately cool your space by bringing in fresh, cool outside air. In fact, when a unit is equipped with an economizer, an 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.

Two-stage cooling operation

Use an appropriate 2-stage thermostat to achieve the unit's optimum design comfort and overall operating performance.

Guide specifications

Note about this specification:
This specification is in the “Masterformat” as published by the Construction Specification Institute. Please feel free to copy this specification directly into your building spec.

Puron ADVANCE™

Hybrid Heat Packaged Rooftop

HVAC Guide Specifications

Size Range: **3 to 5 Nominal Tons**

Carrier Model Number: **48QE**04-06**

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. be heat pump design and include capability for occupancy scheduling.

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

4.01 (23 09 23.13) Decentralized, Rooftop Units:

A. (23 09 23.13.A.) SystemVu™ intelligent integrated Direct Digital Control (DDC) shall provide:

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

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

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®[1], terminal block and RJ style modular jack connections.
13. 365 day real time clock, 20 holiday schedules along with occupied and unoccupied scheduling.
14. Auto-Recognition for easy installation and commissioning of devices like economizers, space sensors etc.
15. A 5°F (3°C) temperature difference between cooling and heating setpoints to meet the latest ASHRAE 90.1 Energy Standard.
16. Contain 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-install 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 75 VA capability.
   2. Shall utilize color-coded wiring.
   3. Shall include a unit control board (SystemVu controller main base 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.
   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.
   6. Shall include integrated defrost system to prevent excessive frost accumulation during heating duty, and shall be controlled as follows:
      a. Defrost shall be initiated on the basis of time and coil temperature.
      b. A 30 to 120 minute timer shall activate the defrost cycle only if the coil temperature is low enough to indicate a heavy frost condition.
      c. Defrost cycle shall terminate when defrost thermostat is satisfied and shall have a positive termination time of 10 minutes.

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. Automatic Reset, Motor Thermal Overload Protector.
   5. Heating section shall be provided with the following minimum protections:
      a. High temperature limit switches.

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

b. Induced draft motor speed sensor.
c. Flame rollout switch.
d. Flame proving controls.

6. A2L Refrigerant Leak Dissipation System:
   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 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 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 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 compressor(s) for cooling duty and gas combustion for heating duty.
      2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
      3. Unit shall use 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 210/240.
      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 Standards 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 125°F (52°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 at ±10% voltage.
2. Compressor with standard controls shall be capable of operation down to 40°F (4°C) ambient outdoor temperatures.
3. Compressor with standard controls shall be capable of operation down to –10°F (–23°C) ambient outdoor temperatures or lower in heat pump heating mode.
4. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
5. Unit shall be factory configured for vertical supply and return configurations.
6. Unit shall be field convertible from vertical to horizontal airflow on all models. No special kit required.
7. 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 210/240 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 all sizes.
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.
    d. Mechanical heating cutoff temperature (i.e., the outdoor air temperature the unit disables mechanical compression heating and enables exclusive gas heating) shall be adjustable through SystemVu controller.
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. 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 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.
4. Optional Low NOx Heat Exchanger Construction:
    a. Low NOx reduction shall be provided to reduce nitrous oxide emissions to be 40 nanograms per joule or less.
    b. Primary tubes and vestibule plates on low NOx units shall be 409 stainless steel. Other components shall be aluminized steel.
5. Standard Stainless Steel Heat Exchanger construction – Ultra Low NOx Burner Box:
    a. Burners shall be of premixed type constructed of stainless steel.
    b. Shall 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 stainless steel 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. Stainless Steel natural gas burner box and heat exchanger assembly shall provide Ultra Low NOx gas emissions of 14 nanograms/joule (ng/J).
6. 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 (3-phase models only):
   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 (3-phase models only):
   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 (3-phase models only):
   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.
   e. Suction line accumulator to provide protection in all operating modes from cooling, heating and reverse cycle switching.
2. There shall be gauge line access port in the skin of the rooftop, covered by a black, removable plug.
   a. The plug shall be easy to remove and replace.
   b. When the plug is removed, the gauge access port shall enable maintenance personnel to route their pressure gauge lines.
   c. This gauge access port shall facilitate correct and accurate condenser pressure readings by enabling the reading with the compressor access panel on.
   d. The plug shall be made of a leak proof, UV-resistant, composite material.
3. Compressors:
   a. Unit shall use a fully hermetic scroll compressor.
   b. Compressor motors shall be cooled by refrigerant gas passing through motor windings.

c. Compressors shall be internally protected from high discharge temperature conditions.
d. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.
e. Compressor shall be factory mounted on rubber grommets.
f. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.
g. Crankcase heaters shall not be required for normal operating range, unless required by compressor manufacturer due to refrigerant charge limits.
h. Compressor on 04-06 models shall be of a 2 stage cooling capacity design.

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 set up via SystemVu™ controller 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 through SystemVu controller.
b. Shall provide 2 stage cooling capacity control, the indoor fan speed is automatically controlled to meet the code-compliant <75% 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 an aluminum stator or 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 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 2 screw removal.
3. Shall include an easily accessible SystemVu main base 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.

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 constructed of high impact composite material.
b. Shall have high impact composite blades completely formed into one piece without blade fasteners or connectors and shall be dynamically balanced.

N. (23 81 19.13.N.) Special Features Options and Accessories:
1. Integrated 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 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.
h. Shall be capable of introducing up to 100% outdoor air.
i. 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.
j. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
k. 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.
l. 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%.
m. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
n. Dampers shall be completely closed when the unit is in the unoccupied mode.
o. Economizer controller shall accept a 0 to 10 vdc CO_2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.
p. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.

2. Integrated EconoMi$er 2 Ultra Low Leak Rate Models.
   a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
   b. Independent modules for vertical or horizontal return configuration shall be available. Vertical return modules shall be available as a factory-installed option.
   c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
   d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below set points.
   e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
   f. Ultra Low Leak design meets California Title 24 section 140.4 and ASHRAE 90.1 requirements for 4 cfm per sq ft on the outside air dampers and 10 cfm per sq ft on the return dampers.
   g. Economizer controller on EconoMi$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.
   h. Shall be capable of introducing up to 100% outdoor air.
   i. 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.
   j. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
   k. 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.
   l. 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%.
   m. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
   n. Dampers shall be completely closed when the unit is in the unoccupied mode.
   o. Economizer controller shall accept a 0 to 10 vdc CO_2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.

p. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.

3. 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.
4. Manual Damper (field-installed only):

   Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25% or 50% outdoor air for year round ventilation.
5. Humidi-MiZer® Adaptive Dehumidification system (3-phase models only):
   a. The Humidi-MiZer Adaptive Dehumidification System shall be factory installed and shall provide greater dehumidification of the occupied space be 2 modes of dehumidification operations in addition to its normal design cooling mode:
      1) Subcooling mode further sub cools the hot liquid refrigerant leaving the condenser coil when both temperature and humidity in the space are not satisfied.
      2) Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to creates a 2-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.
6. Low Ambient Control Package (field-installed only):
   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 0°F (–18°C).
7. Propane Conversion Kit (Not available for Ultra Low NOx 14 ng/J units):
   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.
8. Flue Shield:

   Flue shield shall provide protection from the hot sides of the gas flue hood.
9. Condenser Coil Hail Guard Assembly (Factory-installed on 3-phase models only. Field-installed on all 3 and 1-phase models.)
   a. Shall protect against damage from hail.
   b. Shall be louvered type.
10. Unit-Mounted, Non-Fused Disconnect Switch (Available on units with MOCPs of 80 amps or less):
    a. Switch shall be factory installed, internally mounted.
    b. National Electric Code (NEC) and UL approved non-fused switch shall provide unit power shutoff.
    c. Shall be accessible from outside the unit.
    d. Shall provide local shutdown and lockout capability.
    e. Sized **only** for the unit as ordered from the factory. Does not accommodate field-installed devices.
11. HACR Breaker:
    a. These manual reset devices provide overload and short circuit protection for the unit. Factory wired and mounted with the units, with access cover to help provide environmental protection. On 575-v applications, HACR breaker can only be used with WYE power distribution systems. Use on Delta power distribution systems is prohibited.
    b. 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. (3-phase models only)
       1) Outlet shall be powered from main line power to the rooftop unit.
       2) Outlet shall be powered from line side or load side of disconnect by installing contractor, as required by code. If outlet is powered from load side of disconnect, unit electrical ratings shall be UL certified and rated for additional outlet amperage.

3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
5) Voltage required to operate convenience outlet shall be provided by a factory installed step-down transformer.
6) Outlet shall be accessible from outside the unit.
7) Outlet shall include a field installed "Wet in Use" cover.

b. Factory-Installed Non-Powered Convenience Outlet.
1) Outlet shall be powered from a separate 115/120-v power source.
2) A transformer shall not be included.
3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
5) Outlet shall be accessible from outside the unit.
6) Outlet shall include a field installed "Wet in Use" cover.

c. Field-Installed Non-Powered Convenience Outlet.
1) Outlet shall be powered from a separate 115/120-v power source.
2) A transformer shall not be included.
3) Outlet shall be field-installed and internally mounted with easily accessible 115-v female receptacle.
4) Outlet shall include 20 amp GFI receptacles. This kit provides a flexible installation method which allows code compliance for height requirements of the GFCI outlet from the finished roof surface as well as the capability to relocate the outlet to a more convenient location.
5) Outlet shall be accessible from outside the unit.
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. 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. 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 is shall be mounted in return ductwork.
d. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0 to 100% adjustable setpoint on the economizer control.

16. 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.

17. High Altitude Gas Conversion Kit (Not necessary on Ultra Low NOx 14 ng/J units):
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.

18. 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.

19. 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.

20. Indoor Air Quality (CO_2) 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.

21. 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 shutdown applications.

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 compressor(s) operation when condensate plug is detected, but still allows fans to run for economizer.
24. Foil Faced Insulation:
    Throughout unit cabinet air stream, non-fibrous and cleanable foil faced insulation is used.
25. 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.
    d. Shall not be compatible with units equipped with Humidi-MiZer system option or single phase units.
26. 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.
27. 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.
    c. Shall not be compatible with units equipped with Humidi-MiZer system option or single phase units
28. 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.
29. 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.
30. 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.
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 on Ultra Low NOx units or units with factory-installed Humidi-MiZer, powered convenience outlet, non-fused disconnect, HACR breaker, phase loss monitor/protection, or 575-v models.

Pg 98 Catalog No. 04-52480167-01 Printed in U.S.A. Form 48QE-4-6-02PD
Replaces: 48QE-4-6-01PD