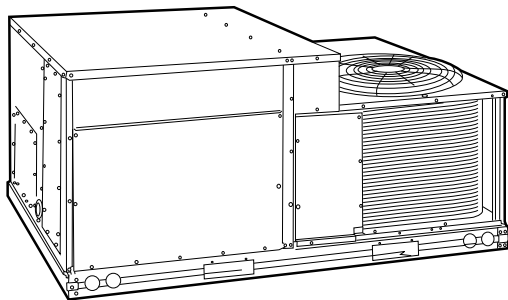




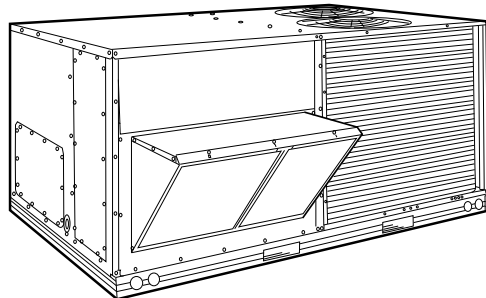
# Product Data

## 48TJ004-028 Single-Package Rooftop Units Electric Cooling/Gas Heating

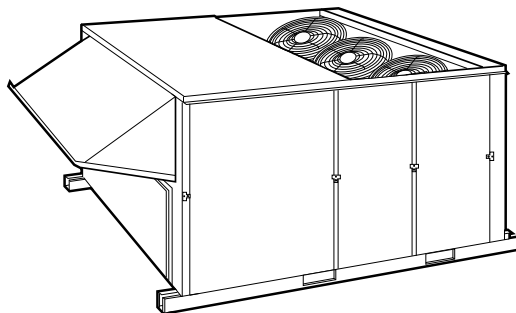
3 to 25 Nominal Tons



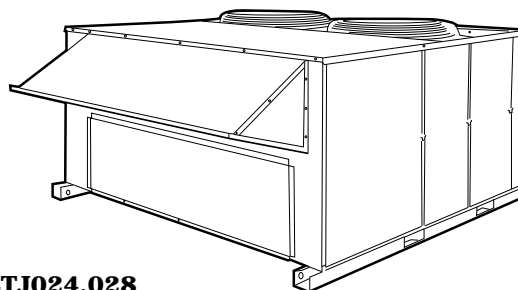
48TJ004-007



48TJ008-014



48TJ016,020



48TJ024,028

Single-Package Rooftop Units with:

- Alumagard™ heat exchanger coating
- Induced-draft fan for gas combustion
- Tubular heat exchangers
- Galvanized steel cabinet with weather-resistant coating
- Two-in. return-air filters
- Commercial strength base rails (full perimeter on 004-014)
- Exclusive tool-less filter access door (004-014)
- Corrosion-resistant sloped condensate pan
- Single power entry to unit
- Commercial duty motors with permanently lubricated bearings
- Standard cooling operation at outdoor ambient temperatures as low as 25 F
- Meets ASHRAE Standard 62 (IAQ)
- Exclusive integrated gas control board with diagnostics (004-014)

### Features/Benefits

**Compact, vertical discharge units convert to horizontal discharge (48TJ016-028 require accessory curb or adapter), combining installation flexibility with efficient performance and easy maintenance.**

#### Easy installation and conversion

All units are shipped in the vertical discharge configuration for fit-up to standard roof curbs. (Two different curb sizes fit unit sizes 004-007 and 008-014, respectively, and 2 curb sizes are offered for 016-028 units [one size for high-heat 024 and



028 units, and one size for all others[.]) The contractor can order and install the roof curb early in the construction stage, before decisions on size requirements are made.

All units feature roll-formed baserail design with forklift slots on 3 sides and rigging holes for easier maneuvering. The standard 48TJ004-006 units have operating weights under 500 lb and durable packaging protects all units during shipment and storage.

The units can be easily converted from a vertical to a horizontal discharge configuration either by interchanging the panels supplied with the unit (004-014) or by using one of the horizontal supply/return curbs or the horizontal adapter (016-028).

Convenient duct openings in the 48TJ016-028 unit basepans permit side-by-side or concentric duct connections (see Application data section on page 64) without requiring internal unit modification.

The non-corrosive sloped condensate pan permits either an external horizontal side condensate drain (outside the roof curb) or an internal vertical bottom drain (inside the roof curb). Both options require an external, field-supplied P-trap. Also, the condenser coil grille (available on the 004-014 units as a field-installed accessory or a factory-installed option) provides a metal plate as an alternate location for the field-supplied disconnect, if desired.

The 48TJ units were designed with service technicians in mind. The single-row condenser coils on the 48TJ004-006 and 008 units simplify the cleaning process. The efficient in-shot burners and all ignition components are contained in an easily removable, compact assembly.

The 48TJ004-014 units also have a standard filter access panel, which permits tool-less filter changes, even on units with horizontal economizers.

**Integrated gas unit controller (IGC) (004-014 only)**

All ignition components are contained in the compact IGC which is easily accessible for servicing. The IGC control board, designed and manufactured exclusively for Carrier rooftop units, provides built-in diagnostic capability. An LED (light-emitting diode) simplifies troubleshooting by

providing visual fault notification and system status confirmation.

The IGC also contains an exclusive anti-cycle protection for gas heat operation. After 4 continuous cycles on the unit high-temperature limit switch, the gas heat operation is disabled, and an error code is issued. This feature greatly improves reliability of the rooftop unit.

The IGC also contains burner control logic for accurate and dependable gas ignition. The LED is visible without removing the unit control box access panel. This LED fault-notification system reduces service person troubleshooting time and minimizes service costs. The IGC also maximizes heating efficiency by controlling evaporator-fan on and off delays.

**Simple electrical connections**

Terminal boards, located in the base unit control box, facilitate connections to room thermostat, outdoor thermostat(s), and economizer. Service panels are quickly removed, permitting easy servicing.

Thru-the-bottom service connection capability (004-014) and thru-the-curb service connections (016-028) allow power and control wiring to be routed through unit basepan (004-014 units) or curb (016-028 units), minimizing roof penetrations. Both power and control connections are made on the same side of the unit to simplify installation.

In addition, color-coded wires permit easy tracing and diagnostics.

**Proven compressor reliability**

Design techniques feature computer-programmed balance between compressor, condenser, and evaporator. Carrier-specified hermetic (004-014 units) and semi-hermetic (016-028 units) compressors are equipped with compressor overcurrent and overtemperature protection to ensure dependability. Crankcase heaters (016-028 units) prevent refrigerant dilution of oil during off cycles and ensure proper lubrication at start-up to prolong compressor life. Crankcase heaters are not necessary on 004-014 units due to high-side crankcase design (007,014) and low refrigerant charge levels (004-014).

The 48TJ016 unit (with factory-supplied unloading) is equipped with a thermostatic expansion valve to precisely adjust refrigerant flow during Stage 1 (unloaded) operation. All other 48TJ units have Carrier's exclusive Acutrol™ metering device which precisely controls refrigerant flow, preventing slugging and flood-back, while maintaining optimum unit performance.

**Durable, dependable construction**

Designed for durability in any climate, the weather-resistant cabinets are constructed of galvanized steel and bonderized, and all exterior panels are coated with a prepainted baked enamel finish. The paint finish is non-chalking, and is capable of withstanding Federal test method Standard No. 141 (Method 6061) 500-hour salt spray test. All internal

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# Features/Benefits (cont)



cabinet panels are primed, permitting longer life and a more attractive appearance for the entire unit.

In addition, the 48TJ008-014 units are designed with a single, continuous top piece to eliminate any possible leaks. Totally-enclosed condenser-fan motors and permanently-lubricated bearings provide additional unit dependability.

## **Integrated economizers and outdoor air**

During a first stage call for cooling, if the outdoor-air temperature is below the control changeover set point, the discharge-air sensor modulates the economizer outdoor-air damper open to achieve the changeover set point. When second-stage cooling is called for, the compressor is energized in addition to the economizer. If the outdoor-air temperature is above the changeover set point, the first stage of compression is activated and the economizer stays at vent position. Economizer operation is controlled by Accusensor™ I dry-bulb thermostat that senses outdoor-air temperature. Accessory upgrade kits include Accusensor II solid-state enthalpy control (004-014) and Accusensor III enthalpy sensor.

The Durablade economizer (option or accessory) on the 48TJ004-014 units has a reliable sliding plate damper which is easily adjusted for 100% outdoor air, 100% return air, or any proportions of mixed air.

The 48TJ004-014 units can also utilize the optional Parablade economizer. This economizer incorporates a parallel-opposed blade design with standard enthalpy controls. In addition, the Parablade economizer has a spring return built into the damper motor to provide reliable close-on-power-loss. The Parablade economizer comes equipped with up to 45% barometric relief capability for high outdoor airflow applications.

For units without economizer, year-round ventilation is enhanced by a manual outdoor-air damper (ordered as standard on 48TJ016-028; ordered as an accessory or an option on 48TJ004-014 units). The damper can be preset to admit up to 25% outdoor air (016-028) or 50% outdoor air (004-014).

In addition, the barometric relief damper or power exhaust accessory can be utilized to help maintain proper building pressure.

## **Quiet, efficient operation and dependable performance**

Compressors have vibration isolators for extremely quiet operation. Efficient fan and motor design permits operation at very low sound levels and all 48TJ004-014 units are mounted on independent mounting rails.

The 48TJ008-028 units offer high energy efficiency and lower utility costs through part-load operation using 2 stages of cooling.

Quiet and efficient operation is provided by belt-driven evaporator fans (standard on all units over 5 tons). The belt-driven evaporator-fan with variable-pitch pulleys allows adjustment to available static pressure to meet the job requirements of even the most demanding applications.

Increased operating efficiency is achieved through computer-designed coils featuring staggered copper tubes. Fins are ripple-edged for strength, lanced, and double waved for higher heat transfer.

Tubular, dimpled (004-014 units) gas heat exchangers optimize heat transfer for improved efficiency. The tubular design permits hot gases to make multiple passes across the path of the supply air. The dimpled design (004-014 units) creates a turbulent gas flow to maximize heating efficiency. The extra thick Alumagard™ heat exchanger coating provides corrosion resistance and ensures long life.

The unsightly appearance of flue stacks is eliminated and the effects of wind on heating operations are diminished by the induced draft combustion system. The inducer fan draws hot combustion gas through the heat exchanger at the optimum rate for the most effective heat transfer. The heat exchanger operates under negative pressure, preventing flue gas leakage into the indoor supply air.

During the heating mode, the evaporator-fan relay automatically starts the evaporator fan after the heat exchanger warms up to a suitable temperature. This prevents cold

air from entering the supply duct system when the conditioned space is calling for heat to maximize efficiency.

On the 48TJ004-014 units, the direct-spark ignition system saves operating expense when compared to pilot ignition systems. No crossover tube is required, therefore no sooting or pilot fouling problems can occur.

All 48TJ standard units are designed for natural gas, but an accessory LP (liquid propane) conversion kit is available for the if required.

## **Safety is built in**

The 48TJ016-028 units have an intermittent pilot ignition. Runaway gas conditions are prevented and safe operation is guaranteed. The pilot flame is proven at the burner farthest from the ignition source, instead of at the ignition source itself. The main gas valve will not open if the pilot flame malfunctions and fails to reach the sensor.

All 48TJ units have a flame rectification sensor to quickly sense the burner (48TJ004-014) or pilot (48TJ016-028) flame and ignite burners almost immediately. Fast shutdown is a certainty since the sensor reacts quickly to any flame outage or system failure. In the event of a shutdown, an error code is issued at the IGC board (004-014).

Safety is also assured due to the heating safety controls which will shut down the unit if there is a problem. If excessive temperatures develop, limit switches shut off the gas valve. After 4 continuous short cycles of the high-temperature limit switch, the IGC board locks out the gas heat cycle to prevent any further short cycles (004-014). This safety feature is provided exclusively on Carrier rooftop units. The rollout switch also deenergizes the gas valve in the event of a flame rollout. On the 48TJ016-028 units, the pressure switch shuts down the main gas valve in case of insufficient combustion air.

# Features/Benefits (cont)



## Carrier Apollo controls add reliability, efficiency, and simplification

The Apollo direct digital controls are ordered as a factory-installed option. Designed and manufactured exclusively by Carrier, the controls can be used to actively monitor and control all modes of operation, as well as to monitor evaporator-fan status, filter status, indoor-air quality (humidity and carbon dioxide), supply-air temperature, and outdoor-air temperature.

The Apollo communicating controls are factory-installed into the rooftop unit control box, and come equipped with built-in diagnostic capabilities. Light-emitting diodes (LEDs) simplify troubleshooting by indicating thermostat commands for both stages of

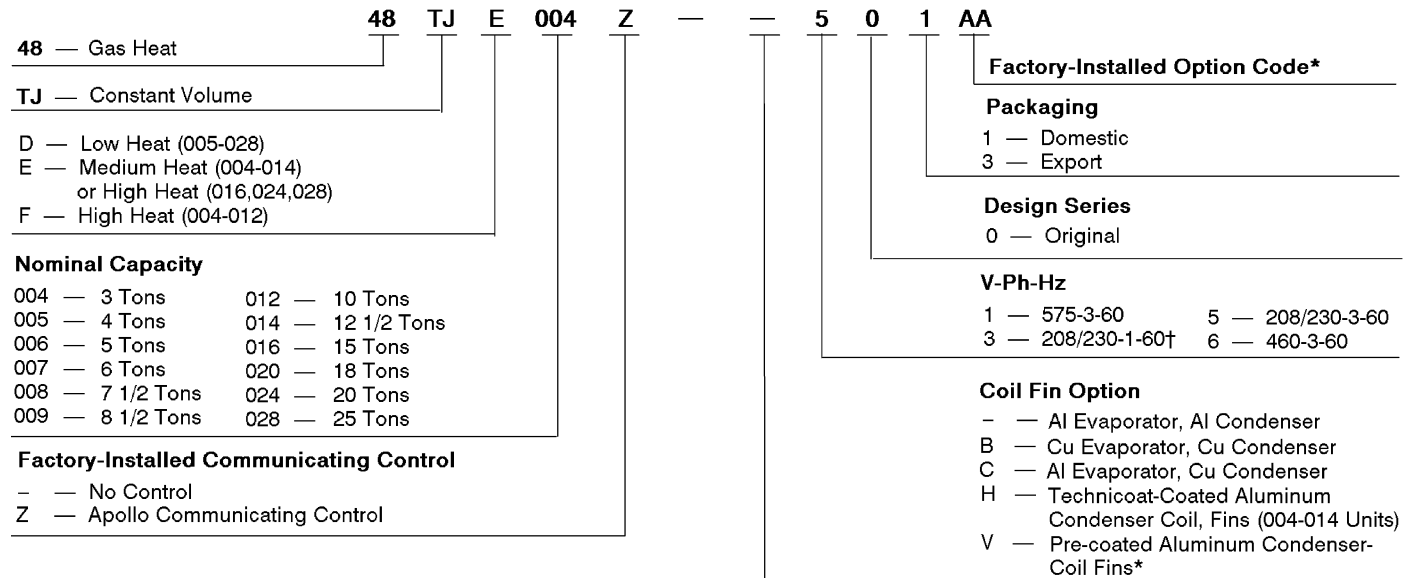
heating and cooling, evaporator fan operation, and economizer operation. The Apollo communicating controls are designed to work specifically with the Carrier TEMP and VVT® (variable volume and temperature) thermostats. The Apollo controls, combined with Carrier thermostats, incorporate a 5-minute recycle delay timer between modes of operation to prevent short cycling.

The standard rooftop control system is readily adaptable to all conventional and programmable thermostats. In addition, units are suitable for integration into building monitor control systems if required. This system gives the 48TJ units the flexibility to communicate with almost any thermostat or building control system.

## Indoor-air quality begins with Carrier rooftops

Sloped condensate pans minimize biological growth in rooftop units in accordance with ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) Standard 62. Two-in. filters with optional dirty filter indicator switch provide for greater particle reduction in the return air. The face-split evaporator coils improve the dehumidification capability of standard units, and standard enthalpy controls provided with the optional or accessory (004-014) economizers maximize building humidity control. The 48TJ004-014 units also have an accessory, 100% open, two-position damper to meet all your fresh outdoor air requirements.

## Model number nomenclature



- LEGEND**
- Al** — Aluminum
  - Cu** — Copper
  - FIOP** — Factory-Installed Option

\*Refer to 48TJ Price Pages for 48TJ FIOP code table or contact your local representative for more details.  
 †Single phase is available on 5-ton and smaller units.

### Quality Assurance



**Approvals:**  
 ISO 9002  
 EN 29002  
 BS5750 PART 2  
 ANS/ASQC Q92

Certificate No FM 22838  
**SIZES 004-014**

### Quality Assurance



**Approvals:**  
 ISO 9002  
 EN 29002  
 BS5750 PART 2  
 ANS/ASQC Q92

Certificate No FM 21837  
**SIZES 016-028**

# ARI\* capacity ratings



UNIT 48TJ	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITY (Btuh)	TOTAL kW	SEER†		EER	SOUND RATING (Bels)
					Belt Drive	Direct Drive		
004	3	1200	35,000	4.0	10.0	9.7	8.7	8.2
005	4	1600	47,000	5.5	10.0	9.7	8.6	8.2
006	5	2000	57,000	6.7	10.0	9.7	8.5	8.2

UNIT 48TJ	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITY (Btuh)	TOTAL kW	EER	SOUND RATING (Bels)	IPLV
007	6	2100	70,000	7.9	8.9	8.4	**
008	7½	2800	85,000	9.6	8.9	8.6	9.35
009	8½	3000	99,000	11.0	9.0	8.6	9.00
012	10	4000	117,000	13.0	9.0	8.8	9.35
014	12½	4500	145,000	15.8	9.2	8.8	9.65
016	15	5250	178,000	20.7	8.6	8.8	10.70
020	18	6000	190,000	21.3	8.9	9.0	9.20
024	20	6200	222,000	25.5	8.7	9.5	8.80
028	25	7200	268,000	31.4	8.5	9.5	8.40

### LEGEND

- Bels** — Sound Levels (1 bel = 10 decibels)
- db** — Dry Bulb
- EER** — Energy Efficiency Ratio
- IPLV** — Integrated Part-Load Values
- SEER** — Seasonal Energy Efficiency Ratio
- wb** — Wet Bulb

\*Air Conditioning and Refrigeration Institute.

†Applies only to units with capacity of 65,000 Btuh or less.

\*\*The IPLV applies only to two-stage cooling units.

### NOTES:

1. Rated in accordance with ARI Standards 210/240-89 (for 004-012) or 360-86 (for 014-024) and 270-84.
2. The 48TJ028 is beyond the scope of the ARI certification program.
3. Ratings are net values, reflecting the effects of circulating fan heat.
4. Ratings are based on:



**Cooling Standard:** 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.

**IPLV Standard:** 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

# ARI capacity ratings (cont)



## HEATING CAPACITIES AND EFFICIENCIES

UNIT 48TJ	HEATING INPUT (Btuh) Stage 2/Stage 1	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (F)	AFUE (%)	STEADY-STATE EFFICIENCY (%)	CALIFORNIA SEASONAL EFFICIENCY (%)
E004	—/ 72,000	59,200	25-55	80.0	80.0	77.2
F004	115,000/ 82,000	92,000	55-85	80.0	80.0	76.7
D005	—/ 72,000	59,200	25-55	80.0	80.0	77.2
E005	—/115,000	92,000	35-65	80.0	80.0	77.1
F005	150,000/120,000	120,000	50-80	80.0	80.0	76.9
D006	—/ 72,000	59,200	25-55	80.0	80.0	77.2
E006	—/115,000	92,000	35-65	80.0	80.0	77.1
F006	150,000/120,000	120,000	50-80	80.0	80.0	76.9
D007	—/ 72,000	59,200	25-55	80.0	80.0	77.2
E007	—/115,000	92,000	35-65	80.0	80.0	77.1
F007	150,000/120,000	120,000	50-80	80.0	80.0	76.9
D008	—/125,000	100,000	20-50	80.0	80.0	75.8
E008	180,000/120,000	144,000	35-65	80.0	80.0	77.1
F008	224,000/180,000	179,200	45-75	80.0	80.0	77.1
D009	—/125,000	100,000	20-50	80.0	80.0	75.8
E009	180,000/120,000	144,000	35-65	80.0	80.0	77.1
F009	224,000/180,000	179,200	45-75	80.0	80.0	77.1
D012	180,000/120,000	144,000	35-65	80.0	80.0	77.1
E012	224,000/180,000	179,200	35-65	80.0	80.0	77.1
F012	250,000/200,000	200,000	40-70	80.0	80.0	76.4
D014	224,000/180,000	179,200	35-65	80.0	80.0	77.1
E014	250,000/200,000	200,000	40-70	80.0	80.0	76.4

### LEGEND

AFUE — Annual Fuel Utilization Efficiency

NOTE: NO<sub>x</sub> levels are 40 nanograms/joule with the accessory NO<sub>x</sub> reduction kit (004-014).

## HEATING CAPACITIES AND EFFICIENCIES (cont)

UNIT 48TJ	HEATING INPUT (Btuh) Stage 2/Stage 1*	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (F)	STEADY-STATE EFFICIENCY (%)	MINIMUM HEATING CFM
D016	231,000/115,500	185,000	25-55	80.0	3057
E016	270,000/115,500	216,000	25-55	80.0	3520
D020,024	270,000/115,500	216,000	15-45	80.0	4364
E024	485,000/242,500	388,000	35-65	80.0	5427
D028	270,000/115,500	216,000	15-45	80.0	4364
E028	485,000/242,500	388,000	35-65	80.0	5427

\*All units are 2-stage heat.

NOTE: Minimum allowable temperature of mixed-air entering the heat exchanger during first-stage heating is 45 F. There is no minimum mixed-air temperature limitation during second-stage heating.

# Physical data — 48TJ004-007



UNIT SIZE		004E/F	005D/E/F	006D/E/F	007D/E/F
<b>NOMINAL CAPACITY (tons)</b>		3	4	5	6
<b>OPERATING WEIGHT (lb)</b>					
Unit					
Al/Al*		460	470	490	565
Al/Cu*		465	476	497	576
Cu/Cu*		468	482	505	587
Economizer					
Durablade		34	34	34	34
Parablade		42	42	42	42
Roof Curb†		115	115	115	115
<b>COMPRESSOR</b>					
Quantity		1	1	1	1
No. Cylinders (per Circuit)		2	2	2	2
Oil (oz)		50	50	50	54
<b>REFRIGERANT TYPE</b>					
Operating Charge (lb-oz)					
Circuit 1		3-6	4-11	5-13	7-10
Circuit 2		—	—	—	—
<b>CONDENSER COIL</b>					
Rows...Fins/in.		1...17	1...17	1...17	2...17
Total Face Area (sq ft)		7.36	11.39	13.19	10.42
<b>CONDENSER FAN</b>					
Nominal Cfm		3500	4000	4000	4000
Quantity...Diameter (in.)		1...22.0	1...22.0	1...22.0	1...22.0
Motor Hp...Rpm		¼...1100	¼...1100	¼...1100	¼...1100
Watts Input (Total)		325	325	325	325
<b>EVAPORATOR COIL</b>					
Expansion Device					
Rows...Fins/in.		2...15	2...15	3...15	4...15
Total Face Area (sq ft)		4.17	5.5	5.5	5.5
<b>EVAPORATOR FAN</b>					
Quantity...Size (in.)		1...10 x 10	1...10 x 10	1...11 x 10	1...10 x 10
Type Drive		1...10 x 10	1...10 x 10	1...10 x 10	—
Nominal Cfm		1200	1600	2000	2400
Motor Hp		—	—	—	—
Maximum Continuous Bhp		.34	.75	1.20	2.40
Motor Frame Size		48	48	48	56
Nominal Rpm High/Low		860/800	1075/970	1075/970	—
Fan Rpm Range		—	—	—	1070-1460
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100	2100
Motor Pulley Pitch Diameter Min/Max (in.)		—	—	—	2.8/3.8
Nominal Motor Shaft Diameter (in.)		1.9/2.9	1.9/2.9	2.4/3.4	—
Fan Pulley Pitch Diameter (in.)		½	½	½	¾
Nominal Fan Shaft Diameter (in.)		½	½	½	—
Belt, Quantity...Type...Length (in.)		—	—	—	4.5
Pulley Center Line Distance (in.)		4.5	4.0	4.5	—
Speed Change per Full Turn of Movable Pulley Flange (rpm)		—	—	—	—
Movable Pulley Maximum Full Turns From Closed Position		—	—	—	1...A...40
Factory Setting		1...A...34	1...A...34	1...A...39	—
Factory Speed Setting (rpm)		—	—	—	14.7-15.5
Fan Shaft Diameter at Pulley (in.)		10.0-12.4	10.0-12.4	14.7-15.5	—
		—	—	—	80
		48	70	80	—
		—	—	—	5
		5	5	5	—
		—	—	—	3
		3	3	3	—
		—	—	—	1225
		856	975	1060	—
		½	½	½	½

(See legend and notes on page 8.)

# Physical data — 48TJ004-007 (cont)



UNIT SIZE	004E/F	005D/E/F	006D/E/F	007D/E/F
<b>FURNACE SECTION</b>				
Rollout Switch Cutout Temp (F)	195	195	195	195
Burner Orifice Diameter (in. ...drill size)				
Natural Gas	.113...33	.113...33/.113...33/.129...30	.113...33/.113...33/.129...30	.113...33/.113...33/.129...30
Liquid Propane	.089...43	.089...43/.089...43/.102...38	.089...43/.089...43/.102...38	.089...43/.089...43/.102...38
Pilot Orifice Diameter (Quantity) in. ...drill size				
Natural Gas	—	—	—	—
Liquid Propane	—	—	—	—
Thermostat Heat Anticipator Setting (amps)				
208/230 v Stage 1	.14	.14	.14	.14
Stage 2	.14	.14	.14	.14
460 v Stage 1	.14	.14	.14	.14
Stage 2	.14	.14	.14	.14
Gas Input (Btuh) Stage 1	72,000/82,000	72,000/115,000/120,000	72,000/115,000/120,000	72,000/115,000/120,000
Stage 2	—/115,000	—/—/150,000	—/—/150,000	—/—/150,000
Efficiency (Steady State) (%)	80	80	80	80
Temperature Rise Range	25-55/55-85	25-55/35-65/50-80	25-55/35-65/50-80	25-55/35-65/50-80
Manifold Pressure (in. wg)				
Natural Gas	3.5	3.5	3.5	3.5
Liquid Propane	3.5	3.5	3.5	3.5
Gas Valve Quantity	1	1	1	1
Gas Valve Pressure Range				
Psig	0.180-0.487	0.180-0.487	0.180-0.487	0.180-0.487
in. wg	5.0-13.5	5.0-13.5	5.0-13.5	5.0-13.5
Field Gas Connection Size (in.)	1/2	1/2	1/2	1/2
<b>HIGH-PRESSURE SWITCH (psig)**</b>				
Standard Compressor		450 ± 50		500 ± 50
Internal Relief (Differential) Cutout		428		428
Reset (Auto.)		320		320
<b>LOW-PRESSURE SWITCH (psig)**</b>				
Cutout			7 ± 3	
Reset (Auto.)			22 ± 7	
<b>FREEZE PROTECTION THERMOSTAT (F)**</b>				
Opens			30 ± 5	
Closes			45 ± 5	
<b>OUTDOOR-AIR INLET SCREENS</b>				
Quantity...Size (in.)			Cleanable 1...20 x 24 x 1	
<b>RETURN-AIR FILTERS</b>				
Quantity...Size (in.)			Throwaway 2...16 x 25 x 2	

## LEGEND

- Al** — Aluminum
- Bhp** — Brake Horsepower
- Cu** — Copper
- TXV** — Thermostatic Expansion Valve

\*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details on coated fins.

†Weight of 14-in. roof curb.

\*\*Requires an optional or accessory controls upgrade kit.

††On 48TJ020-028 units, Circuit 1 consists of lower portion of condenser coil and lower portion of evaporator coil, and Circuit 2 is the upper portion of both coils.

|| Rollout switch is manual reset.

¶ An accessory liquid propane kit is available for 48TJD/E016, 48TJD020, 48TJD024, and 48TJD028 units. Refer to accessory literature for more details.

\*\*\*The 48TJ028 unit requires 2-in. industrial-grade filters capable of handling face velocities of up to 625 ft/min (such as American Air Filter no. 5700 or equivalent).

NOTE: The 48TJ004-014 units have a loss-of-charge/low-pressure switch (accessory or option) located in the liquid line. The 48TJ016-028 units have a low-pressure switch (standard) located on the suction side.



# Physical data — 48TJ008-014



UNIT SIZE		008D/E/F	009D/E/F	012D/E/F	014D/E
<b>NOMINAL CAPACITY (tons)</b>		7½	8½	10	12½
<b>OPERATING WEIGHT (lb)</b>					
Unit					
Al/Al*		870	880	1035	1050
Al/Cu*		881	896	1057	1077
Cu/Cu*		893	907	1080	1100
Economizer					
Durablade		44	44	44	44
Parablade		62	62	62	62
Roof Curb†		143	143	143	143
<b>COMPRESSOR</b>					
Quantity		2	2	2	2
No. Cylinders (per Circuit)		2	2	2	2
Oil (oz)		50 ea	50 ea	50 ea	54 ea
<b>REFRIGERANT TYPE</b>		R-22			
Operating Charge (lb-oz)					
Circuit 1		4-13	6-14	5-13	9-6
Circuit 2		4-14	6-3	5-14	9-0
<b>CONDENSER COIL</b>		Enhanced Copper Tubes, Aluminum Lanced Fins			
Rows...Fins/in.		1...17	2...17	2...17	2...17
Total Face Area (sq ft)		20.50	18.00	17.42	25.00
<b>CONDENSER FAN</b>		Propeller Type			
Nominal Cfm		6500	6500	7000	7000
Quantity...Diameter (in.)		2...22	2...22	2...22	2...22
Motor Hp...Rpm		¼...1100	¼...1100	¼...1100	¼...1100
Watts Input (Total)		600	600	600	600
<b>EVAPORATOR COIL</b>		Enhanced Copper Tubes, Aluminum Double-Wavy Fins			
Expansion Device		Acutrol™ Feed Device			
Rows...Fins/in.		3...15	3...15	3...15	4...15
Total Face Area (sq ft)		8.0	8.0	10.0	11.1
<b>EVAPORATOR FAN</b>		Centrifugal Type			
Quantity...Size (in.)		1...15 x 15	1...15 x 15	1...15 x 15	1...15 x 15
Type Drive		Std Alt	— Belt	1...15 x 15 Belt	1...15 x 15 Belt
Nominal Cfm		3000	3400	4000	5000
Motor Hp		—	—	—	—
Maximum Continuous Bhp		Std Alt	2.40 —	2.40 2.90	4.20 5.25
Motor Frame Size		Std Alt	56 —	56 56	56 56
Nominal Rpm High/Low		—	—	—	—
Fan Rpm Range		Std Alt	590-840 685-935	685-935 835-1085	860-1080 900-1260
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100	2100
Motor Pulley Pitch Diameter Min/Max (in.)		Std Alt	2.4/3.4 2.8/3.8	2.8/3.8 3.4/4.4	4.0/5.0 3.1/4.1
Nominal Motor Shaft Diameter (in.)		Std Alt	— ⅝	— ⅝	— ⅞
Fan Pulley Pitch Diameter (in.)		Std Alt	7.0 7.0	7.0 7.0	8.0 5.9
Nominal Fan Shaft Diameter (in.)		—	—	—	—
Belt, Quantity...Type...Length (in.)		Std Alt	1...A...49 —	1...A...49 —	1...A...52 1...BX...46
Pulley Center Line Distance (in.)		Std Alt	16.75-19.25 16.75-19.25	16.75-19.25 —	15.85-17.50 15.85-17.50
Speed Change per Full Turn of Movable Pulley Flange (rpm)		Std Alt	50 50	50 50	44 50
Movable Pulley Maximum Full Turns From Closed Position		Std Alt	5 5	5 5	5 6
Factory Setting		Std Alt	5 5	5 5	5 6
Factory Speed Setting (rpm)		Std Alt	590 685	685 685	860 860
Fan Shaft Diameter at Pulley (in.)		Std Alt	685 1	— 1	835 1

(See legend and notes on page 10.)

# Physical data — 48TJ008-014 (cont)



UNIT SIZE	008D/E/F	009D/E/F	012D/E/F	014D/E
<b>FURNACE SECTION</b>				
Rollout Switch Cutout Temp (F)	195	195	195	195
Burner Orifice Diameter (in. ...drill size)				
Natural Gas	.120...31	.120...31	.120...31/.120...31/.129...30	.120...31/.129...30
Liquid Propane	.096...41	.096...41	.096...41/.096...41/.102...38	.096...41/.102...38
Pilot Orifice Diameter (Quantity) in. ...drill size				
Natural Gas	—	—	—	—
Liquid Propane	—	—	—	—
Thermostat Heat Anticipator Setting (amps)				
208/230 v Stage 1	.14	.14	.14	.14
Stage 2	.20	.20	.20	.20
460 v Stage 1	.14	.14	.14	.14
Stage 2	.20	.20	.20	.20
Gas Input (Btuh) Stage 1	125,000/120,000/180,000	125,000/120,000/180,000	120,000/180,000/200,000	180,000/200,000
Stage 2	—/180,000/224,000	—/180,000/224,000	180,000/224,000/250,000	224,000/250,000
Efficiency (Steady State) (%)	80	80	80	80
Temperature Rise Range	20-50/35-65/45-75	20-50/35-65/45-75	35-65/35-65/40-70	35-65/40-70
Manifold Pressure (in. wg)				
Natural Gas	3.5	3.5	3.5	3.5
Liquid Propane	3.5	3.5	3.5	3.5
Gas Valve Quantity	1	1	1	1
Gas Valve Pressure Range				
Psig	0.180-0.487	0.180-0.487	0.180-0.487	0.180-0.487
in. wg	5.0-13.5	5.0-13.5	5.0-13.5	5.0-13.5
Field Gas Connection Size (in.)	1/2"/3/4"/3/4	1/2"/3/4"/3/4	3/4"/3/4"/3/4	3/4"/3/4
<b>HIGH-PRESSURE SWITCH (psig)**</b>		450 ± 50		500 ± 50
Standard Compressor				
Internal Relief (Differential)				
Cutout		428		428
Reset (Auto.)		320		320
<b>LOW-PRESSURE SWITCH (psig)**</b>				
Cutout			7 ± 3	
Reset (Auto.)			22 ± 7	
<b>FREEZE PROTECTION THERMOSTAT (F)**</b>				
Opens			30 ± 5	
Closes			45 ± 5	
<b>OUTDOOR-AIR INLET SCREENS</b>				
Quantity...Size (in.)			Cleanable 1...20 x 25 x 1 1...16 x 25 x 1	
<b>RETURN-AIR FILTERS</b>				
Quantity...Size (in.)	4...16 x 20 x 2	4...16 x 20 x 2	Throwaway 4...20 x 20 x 2	4...20 x 20 x 2

## LEGEND

- Al** — Aluminum
- Bhp** — Brake Horsepower
- Cu** — Copper
- TXV** — Thermostatic Expansion Valve

\*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details on coated fins.

†Weight of 14-in. roof curb.

\*\*Requires an optional or accessory controls upgrade kit.

††On 48TJ020-028 units, Circuit 1 consists of lower portion of condenser coil and lower portion of evaporator coil, and Circuit 2 is the upper portion of both coils.

|| Rollout switch is manual reset.

¶ An accessory liquid propane kit is available for 48TJD/E016, 48TJD020, 48TJD024, and 48TJD028 units. Refer to accessory literature for more details.

\*\*\*The 48TJ028 unit requires 2-in. industrial-grade filters capable of handling face velocities of up to 625 ft/min (such as American Air Filter no. 5700 or equivalent).

NOTE: The 48TJ004-014 units have a loss-of-charge/low-pressure switch (accessory or option) located in the liquid line. The 48TJ016-028 units have a low-pressure switch (standard) located on the suction side.

# Physical data — 48TJ016-028



UNIT SIZE	016D/E		020D	024D/E	028D/E
	208/230,460 v	575 v			
NOMINAL CAPACITY (tons)	15		18	20	25
OPERATING WEIGHT (lb)					
Unit					
Al/Al*	1650/1650		2150	2200/2400	2234/2413
Al/Cu*	1800/1800		2280	2330/2530	2364/2543
Cu/Cu*	1930/1930		2390	2440/2640	2474/2653
Economizer	110		110	110	110
Roof Curb†	200		200	200/213	200/213
COMPRESSOR	Semi-Hermetic				
Quantity	1		2	2	2
No. Cylinders (per Circuit)	6		6	6	6
Oil (oz)	115		115, 88	115 ea	128 ea
REFRIGERANT TYPE	R-22				
Operating Charge (lb-oz)					
Circuit 1††	19-4		13-4	12-13	16-12
Circuit 2	—		11-0	12-13	15-12
CONDENSER COIL	Enhanced Copper Tubes, Aluminum Lanced or Copper Fins				
Rows...Fins/in.	2...17		3...15	3...15	4...15
Total Face Area (sq ft)	17.9		22.2	22.2	22.2
CONDENSER FAN	Propeller Type				
Nominal Cfm	10,500		10,500	14,200	14,200
Quantity...Diameter (in.)	3...22		3...22	2...30	2...30
Motor Hp...Rpm	½...1050		½...1050	1...1075	1...1075
Watts Input (Total)	1100		1100	3400	3400
EVAPORATOR COIL	Copper Tubes, Aluminum or Copper Plate Fins				
Expansion Device	TXV			Acutrol™ Feed Device	
Rows...Fins/in.	2...17		3...17	4...15	4...15
Total Face Area (sq ft)	17.9		17.9	17.9	17.9
EVAPORATOR FAN	Centrifugal Type				
Quantity...Size (in.)	2...10 x 10	2...10 x 10	2...12 x 12	2...12 x 12	2...12 x 12
Type Drive	Belt	Belt	Belt	Belt	Belt
Nominal Cfm	6000	6000	7200	8000	10,000
Motor Hp	3.7	3.0	5	7½	10
Maximum Continuous Bhp	4.25	3.45	5.90	8.7 [208/230,575 v]	10.2 [208/230,575 v]
Motor Frame Size	56H	56H	184T	213T	215T
Fan Rpm Range	1227-1559	1201-1462	1047-1251	1238-1494	1323-1579
Motor Bearing Type	Ball	Ball	Ball	Ball	Ball
Maximum Allowable Rpm	1559	1550	1550	1550	1550
Motor Pulley Pitch Diameter Min/Max (in.)	3.7/4.7	4.3/5.3	4.9/5.9	5.4/6.4	5.8/7.0
Nominal Motor Shaft Diameter (in.)	7/8	7/8	1½	1¾	1¾
Fan Pulley Pitch Diameter (in.)	5.2	6.4	8.4	7.9	7.9
Nominal Fan Shaft Diameter (in.)	1¾/16	1¾/16	17/16	17/16	17/16
Belt, Quantity...Type...Length (in.)	1...BX...42	1...BX...45	1...BX...50	1...BX...50	1...BX...51
Pulley Center Line Distance (in.)	13.5-15.5	13.5-15.5	13.3-14.8	14.6-15.4	14.6-15.4
Speed Change per Full Turn of Movable Pulley Flange (rpm)	66	52	34	43	43
Movable Pulley Maximum Full Turns From Closed Position	5	5	6	6	6
Factory Setting	4	3.5	3	3	3
Factory Speed Setting (rpm)	1293	1279	1149	1366	1451
Fan Shaft Diameter at Pulley (in.)	1¾/16	1¾/16	17/16	17/16	17/16

## LEGEND

- Al — Aluminum
- Bhp — Brake Horsepower
- Cu — Copper
- TXV — Thermostatic Expansion Valve

\*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details on coated fins.

†Weight of 14-in. roof curb.

\*\*Requires an optional or accessory controls upgrade kit.

††On 48TJ020-028 units, Circuit 1 consists of lower portion of condenser coil and lower portion of evaporator coil, and Circuit 2 is the upper portion of both coils.

|| Rollout switch is manual reset.

¶ An accessory liquid propane kit is available for 48TJD/E016, 48TJD020, 48TJD028 units. Refer to accessory literature for more details.

\*\*\*The 48TJ028 unit requires 2-in. industrial-grade filters capable of handling face velocities of up to 625 ft/min (such as American Air Filter no. 5700 or equivalent).

NOTE: The 48TJ004-014 units have a loss-of-charge/low-pressure switch (accessory or option) located in the liquid line. The 48TJ016-028 units have a low-pressure switch (standard) located on the suction side.

# Physical data — 48TJ016-028 (cont)



UNIT SIZE	016D/E	020D	024D/E	028D/E
<b>FURNACE SECTION</b>				
Rollout Switch Cutout Temp (F)¶	190	190	190	190
Burner Orifice Diameter (in. ...drill size)				
Natural Gas	Std .113...33	.113...33	.113...33	.113...33
Liquid Propane	Alt ¶	¶	¶	¶
Pilot Orifice Diameter (Quantity) in. ...drill size				
Natural Gas	Std (1) .055...54/ (1) .055...54, (1) .041...59	(1) .055...54 (1) .041...59	(1) .055...54, (1) .041...59/ (2) .070...50	(1) .055...54, (1) .041...59/ (2) .070...50
Liquid Propane	Alt ¶	¶	¶	¶
Thermostat Heat Anticipator Setting (amps)				
Stage 1	1.20/1.20	1.20	1.20	1.20
Stage 2	0.60/—	0.60	0.60	0.60
Gas Input (Btuh) Stage 1	115,500/115,500	115,500	115,500/242,500	115,500/242,500
Stage 2	231,000/270,000	270,000	270,000/485,000	270,000/485,000
Efficiency (Steady State) (%)	80	80	80	80
Temperature Rise Range	25-55/25-55	15-45	15-45/35-65	15-45/35-65
Manifold Pressure (in. wg)				
Natural Gas	Std 3.5	3.5	3.5	3.5
Liquid Propane	Alt —	—	—	—
Gas Valve Quantity	2	2	2	2
Gas Valve Pressure Range				
Psig	0.180-0.487	0.180-0.487	0.180-0.487	0.180-0.487
in. wg	5.0-13.5	5.0-13.5	5.0-13.5	5.0-13.5
Field Gas Connection Size (in.)	¾	¾	¾	¾
<b>HIGH-PRESSURE SWITCH (psig)</b>	—			
Standard Compressor Internal Relief (Differential) Cutout	426 ± 7			
Reset (Auto.)	320 ± 7			
<b>LOW-PRESSURE SWITCH (psig)</b>	7			
Cutout	22			
Reset (Auto.)				
<b>FREEZE PROTECTION THERMOSTAT (F)</b>				
Opens	30 ± 5			
Closes	45 ± 5			
<b>OUTDOOR-AIR INLET SCREENS</b>				
Quantity...Size (in.)	Cleanable 2...20 x 25 x 1 1...20 x 20 x 1			
<b>RETURN-AIR FILTERS</b>				
Quantity...Size (in.)	Throwaway*** 4...20 x 20 x 2 4...16 x 20 x 2			

## LEGEND

- Al** — Aluminum
- Bhp** — Brake Horsepower
- Cu** — Copper
- TXV** — Thermostatic Expansion Valve

\*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details on coated fins.

†Weight of 14-in. roof curb.

\*\*Requires an optional or accessory controls upgrade kit.

††On 48TJ020-028 units, Circuit 1 consists of lower portion of condenser coil and lower portion of evaporator coil, and Circuit 2 is the upper portion of both coils.

¶ Rollout switch is manual reset.

¶ An accessory liquid propane kit is available for 48TJD/E016, 48TJD020, 48TJD024, and 48TJD028 units. Refer to accessory literature for more details.

\*\*\*The 48TJ028 unit requires 2-in. industrial-grade filters capable of handling face velocities of up to 625 ft/min (such as American Air Filter no. 5700 or equivalent).

NOTE: The 48TJ004-014 units have a loss-of-charge/low-pressure switch (accessory or option) located in the liquid line. The 48TJ016-028 units have a low-pressure switch (standard) located on the suction side.

# Options and accessories



ITEM	OPTION*	ACCESSORY†
Apollo Direct Digital Communicating Controls	X	
Parablude Economizer (004-014 only)	X	
Parablude Economizer with Power Exhaust (004-014)		X
Integrated Economizer (016-028)	X	X
Durablude Integrated Economizer (004-014; Includes Hood)	X	X
Manual Outdoor-Air Damper (ordered as standard on 016-028 units without optional economizer)	X	X
Controls Upgrade Kit (004-014)**	X	X
Condenser Coil Grille (004-014)	X	X
Alternate Drive (008)	X	
Alternate Motor and Drive (004-006, 012,014)	X	
LP (Liquid Propane) Conversion Kit††		X
Electronic Programmable Thermostat		X
25% Open Two-Position Damper		X
100% Open Two-Position Damper (004-014)		X
Barometric Relief Damper (016-028)		X
Roof Curbs (Vertical and Horizontal Discharge)		X
Horizontal Adapter (016-028)		X
Remote Control Panel		X
Thermostats and Subbases		X
Power Exhaust (016-028)		X
Low-Ambient Kits (016-028)		X
Winter Start Time-Delay Relay (020-028)		X
Motormaster® Head Pressure Control (Speed Control) (004-014)		X
Motormaster II Head Pressure Control (Cycle Control) (004-014)		X
Motormaster III Head Pressure Control (Speed Control) (020-028)		X
Time Guard® II Control Circuit		X
Thru-the-Bottom Service Connections (004-014)		X
Accusensor™ II Enthalpy Control (004-014)		X
Accusensor III Enthalpy Sensor		X
Condenser Coil Hail Guard Assembly (004-014)		X
Flue Shield (004-014)		X
NO <sub>x</sub> Reduction Kit (004-014)		X
Flue Discharge Deflector (004-014)		X
Fan/Filter Status (004-014)		X
Salt Spray Protection Grille (008-014)		X

\*Factory installed.

††For 004-016, D020, D024, and D028 units.

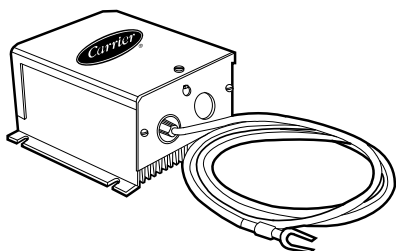
†Field installed.

\*\*Includes high-pressure, low-pressure/loss-of-charge, and freeze protection switches.

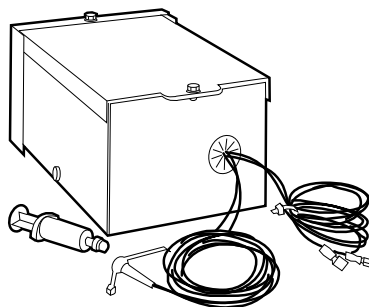
NOTE: Refer to 48/50TJ price pages or contact your local representative for accessory/and option package information.

## HEAD PRESSURE CONTROL

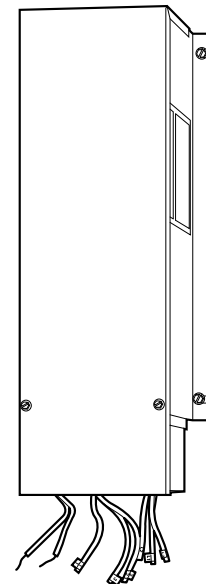
The 48TJ004-014 and 024 standard units are designed to operate in cooling at outdoor temperatures down to 25 F, the standard 48TJ016 unit operates down to 40 F, the standard 48TJ020 unit operates down to 35 F; and the standard 48TJ028 unit operates down to 48 F. With accessory Motormaster (48TJ004-014) control (condenser-fan speed modulation), Motormaster II control (condenser-fan cycling for units sizes 004-014), -20 F low-ambient kit (condenser fan sequencing for 48TJ016), or Motormaster III (48TJ020-028) control (condenser fan speed modulation) units can operate at outdoor temperatures down to -20 F. The head pressure controls, which mount in the condenser section, control the condenser-fan motor to maintain correct condensing temperature. Refer to Price Pages or contact your local Carrier representative for appropriate accessory combinations for desired outdoor ambient temperature operation.



Motormaster Control  
(004-014)



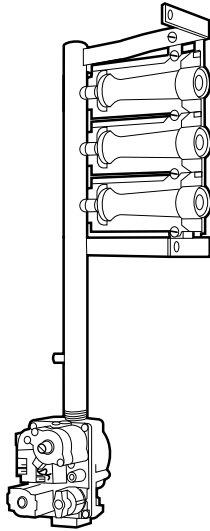
Motormaster II Control  
(004-014)



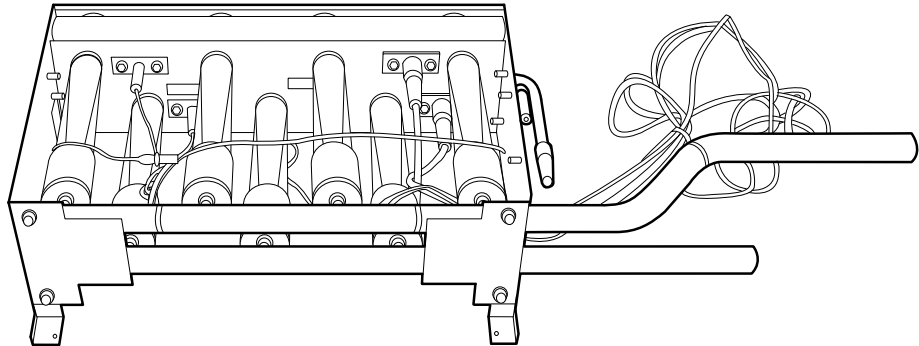
Motormaster III Control  
(020-028)

## LIQUID PROPANE (LP) CONVERSION KITS

004-007 SHOWN



016-028 SHOWN



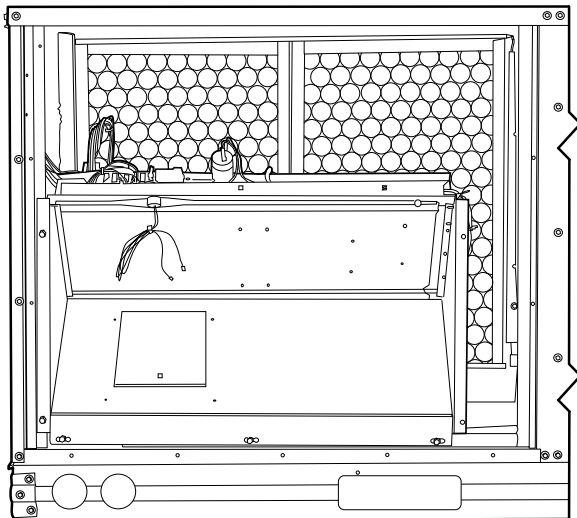
The LP (liquid propane) conversion kit is available for 48TJD/E016, 48TJD020, 48TJD024, and 48TJD028 units, and permits the unit to be converted from natural gas to LP gas use. The kit contains a fully factory-preassembled modular LP burner assembly, and completely replaces the entire natural gas burner assembly. The conversion is a slide-out, slide-in process.

The LP conversion kit (004-014) allows the unit to utilize a liquid propane fuel supply in areas where natural gas is unavailable.

### TIME GUARD® II CONTROL

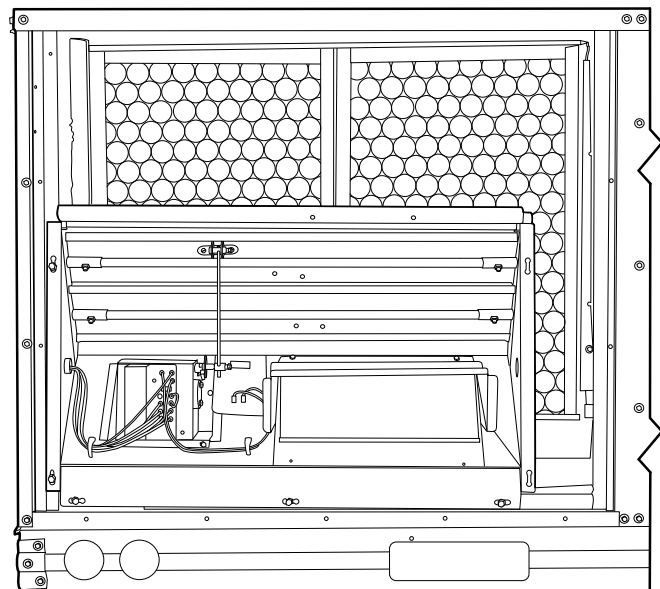
Time Guard II control automatically prevents compressor from re-starting for at least 5 minutes after a shutdown. Accessory prevents short cycling of compressor if thermostat is changed rapidly. Time Guard II control mounts in the control compartment of unit.

### DURABLADE ECONOMIZER (004-014)



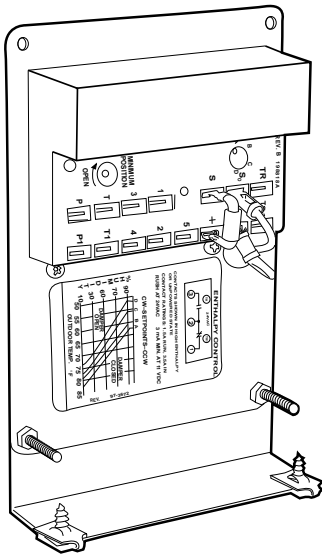
Exclusive Durablade economizer damper design saves energy while providing economical and reliable cooling. A sliding plate on the face of the economizer controls the amount of outdoor air entering the system. Closed, it provides a leakproof seal which prevents ambient air from seeping in or conditioned air from seeping out. It can be adjusted easily for 100% outdoor air or any proportions of mixed air. Like the base unit, the economizer is converted easily for horizontal discharge applications.

### PARABLADE ECONOMIZER (004-014)

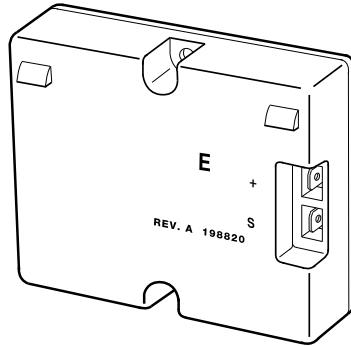


The unique design of the Parablade economizer saves energy while providing economical and reliable cooling. The design uses a parallel-opposed blade damper. The economizer also has built-in spring return for reliable close-on-power-loss. The Parablade design incorporates standard enthalpy controls and up to 45% barometric relief capability for additional flexibility in high outdoor airflow applications.

**ACCUSENSOR™ II  
(004-014 Only)**

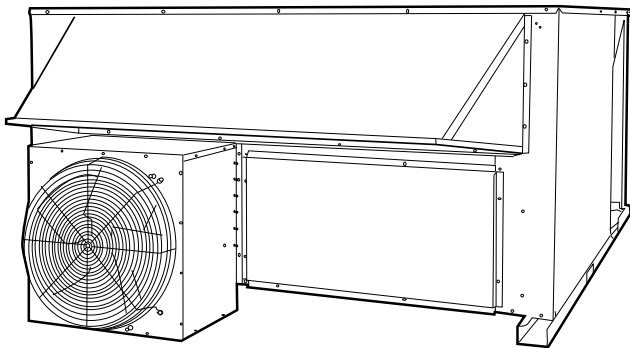


**ACCUSENSOR III**



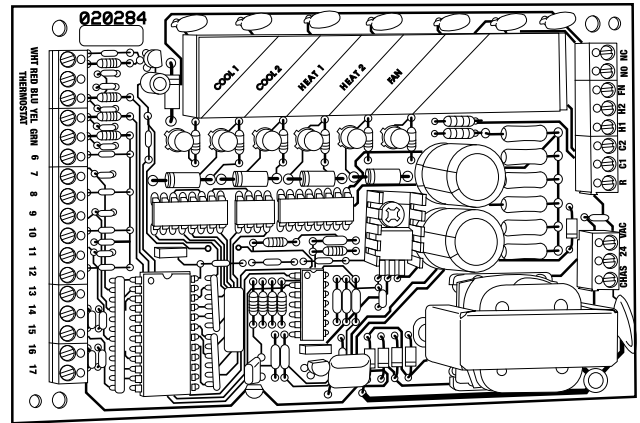
Accusensor economizer controls help provide efficient, economical economizer operation. Accusensor II solid-state enthalpy control includes the logic and one sensor to calculate both dry- and wet-bulb of the outdoor air to provide an accurate enthalpy reading on 004-014 units. It then decides when to energize the economizer based on this reading. The 016-028 unit economizer provides the decision-making function internally, and requires one Accusensor III sensor for solid-state enthalpy sensing. A second Accusensor III sensor (required for all units for differential enthalpy sensing) compares outdoor temperature and humidity to return-air temperature and humidity and determines the most economical mixture of air (purchased in addition to enthalpy control [004-014] or to first solid-state enthalpy sensor [016-028] for differential enthalpy sensing).

**POWER EXHAUST (016-028 SHOWN)**



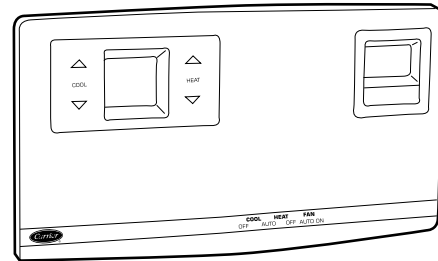
When used with accessory/optional economizer, the power exhaust accessory helps to relieve building over-pressurization.

**FACTORY-INSTALLED APOLLO COMMUNICATING CONTROLS**



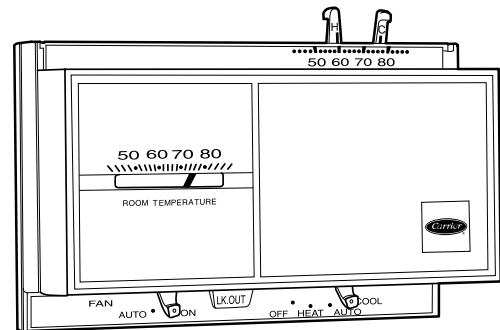
The Apollo direct digital controls are designed exclusively by Carrier, and are used to actively monitor and control all modes of operation as well as to monitor evaporator-fan status, filter status, supply-air temperature, outdoor-air temperature, and indoor-air quality. They are designed to work in conjunction with Carrier TEMP and VVT® (variable volume/variable temperature) system thermostats.

**ELECTRONIC PROGRAMMABLE THERMOSTAT**



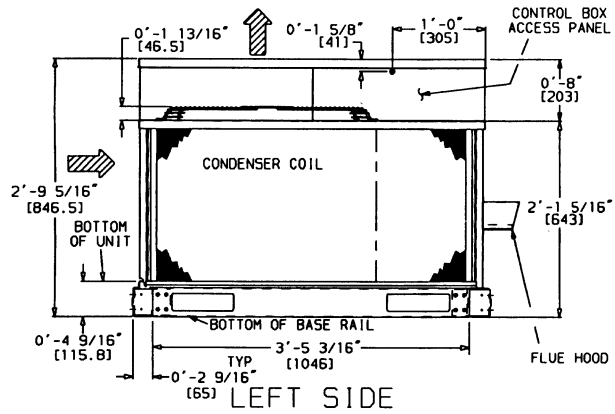
Carrier's electronic programmable thermostat provides efficient temperature control by allowing you to program heating and cooling setbacks and setups with provisions for weekends and holidays. Accessory remote sensing package is also available to provide tamperproof control in high traffic spaces. Used in conjunction with factory-installed Apollo control, this thermostat provides a 5-minute recycle timer between modes of operation for short-cycle protection.

**THERMOSTAT**



Zone thermostat (24 v) provides one- or 2-stage cooling for control of unit. Matching subbases are available with or without tamperproof switches and automatic changeover.

# Base unit dimensions — 48TJ004-007



UNIT 48TJ	CORNER WEIGHT*							
	A		B		C		D	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg
E/F004	140	63.5	105	47.6	159	72.1	56	25.4
D/E/F005	142	64.4	106	48.1	162	73.5	60	27.2
D/E/F006	150	68.0	115	52.2	160	72.6	65	29.5
D/E/F007	165	74.8	136	61.7	200	90.7	64	29.0

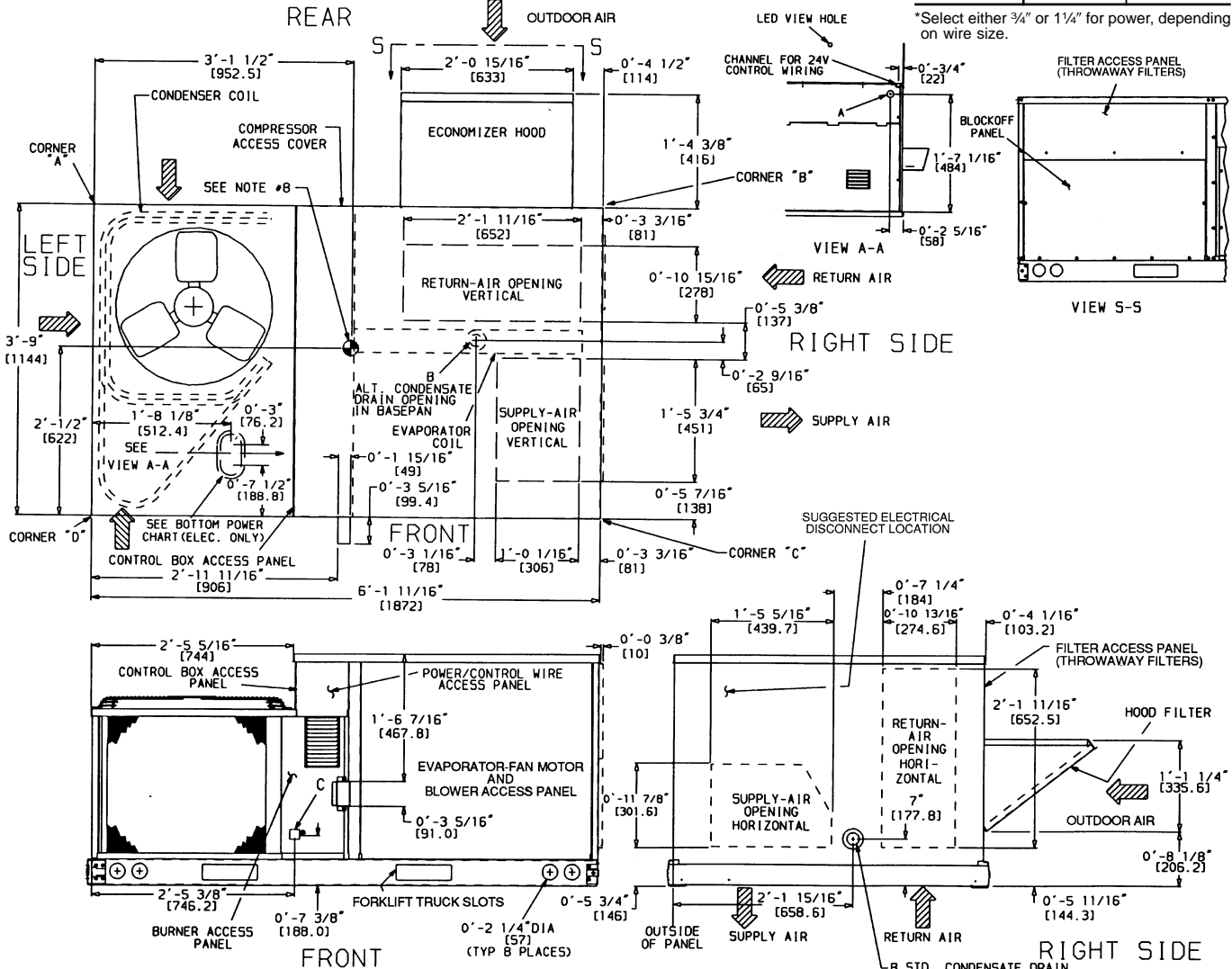
\*Weights are for unit only (aluminum plate fins) and do not include options or crating).

CONNECTION SIZES	
A	1 1/16" Dia. [27] Field Power Supply Hole
B	3/4" — 14 NPT Condensate Drain
C	1/2" — 14 NPT Gas Connection

BOTTOM POWER CHART, THESE HOLES REQUIRED FOR USE WITH ACCESSORY PACKAGES — CRBTMPWR001A00 (1/2", 3/4") CRBTMPWR002A00 (1/2", 1/4")

THREADED CONDUIT SIZE	WIRE SIZE	REQUIRED HOLE SIZES (MAX)
1/2"	24 V Power*	7/8" [22.2]
3/4"	Power*	1 1/8" [28.4]
1 1/4"	Power*	1 3/4" [44.4]

\*Select either 3/4" or 1 1/4" for power, depending on wire size.



**NOTES:**

- Dimensions in [ ] are in millimeters.
- Center of gravity.
- Direction of airflow.
- On vertical discharge units, ductwork to be attached to accessory roof curb only. For horizontal discharge units, field-supplied flanges should be attached to horizontal discharge openings, and all ductwork should be attached to the flanges.
- Minimum clearance (local codes or jurisdiction may prevail):
  - Between unit, flue side and combustible surfaces, 36 inches.
  - Bottom of unit to combustible surfaces (when not using curb), 1 inch. Bottom of base rail to combustible surfaces (when not using curb) 0 inches.
- Condenser coil, for proper airflow, 36 in. one side, 12 in. the other. The side getting the greater clearance is optional.
- Overhead, 60 in. to assure proper condenser fan operation.
- Between units, control box side, 42 in. per NEC (National Electrical Code).
- Between unit and ungrounded surfaces, control box side, 36 in. per NEC.
- Between unit and block or concrete walls and other grounded surfaces, control box side, 42 in. per NEC.
- Horizontal supply and return end, 0 inches.
- With the exception of the clearance for the condenser coil and combustion side as stated in Notes 5a, b, and c. A removable fence or barricade requires no clearance.
- Units may be installed on combustible floors made from wood or Class A, B, or C roof covering material if set on baserail.
- The vertical center of gravity is 1'-6" [457] up from the bottom of the base rail. Horizontal center of gravity is shown.



# Base unit dimensions — 48TJ008-014

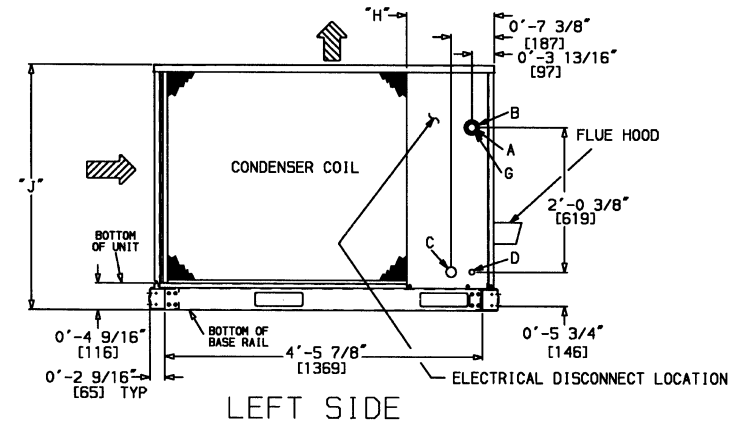


UNIT 48TJ	CORNER WEIGHT*								DIMENSIONS								CONNECTION SIZES				
	A		B		C		D		"H"		"J"		"K"		"L"		A	B	C	D	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm					
D/E/F008	189	86	161	73	239	109	280	127	1-2 <sup>7</sup> / <sub>8</sub>	378	3-5 <sup>1</sup> / <sub>16</sub>	1050	2-9 <sup>11</sup> / <sub>16</sub>	856	2- 2 <sup>7</sup> / <sub>16</sub>	672	1 <sup>3</sup> / <sub>8"</sub> Dia [35]	2 <sup>1</sup> / <sub>2"</sub> Dia [64]	1 <sup>3</sup> / <sub>4"</sub> Dia [44]	7 <sup>8</sup> / <sub>16"</sub> Dia [22]	3 <sup>4</sup> / <sub>4"</sub> -14 NPT
D/E/F009	191	87	163	74	242	110	284	129	3-3 <sup>7</sup> / <sub>8</sub>	1013	3-5 <sup>1</sup> / <sub>16</sub>	1050	2-9 <sup>11</sup> / <sub>16</sub>	856	2- 2 <sup>7</sup> / <sub>16</sub>	672	1 <sup>3</sup> / <sub>8"</sub> Dia [35]	2 <sup>1</sup> / <sub>2"</sub> Dia [64]	1 <sup>3</sup> / <sub>4"</sub> Dia [44]	7 <sup>8</sup> / <sub>16"</sub> Dia [22]	3 <sup>4</sup> / <sub>4"</sub> -14 NPT
D/E/F012	225	102	192	87	285	129	333	151	2-5 <sup>7</sup> / <sub>8</sub>	759	4-1 <sup>1</sup> / <sub>16</sub>	1253	3-0 <sup>3</sup> / <sub>8</sub>	924	2-10 <sup>7</sup> / <sub>16</sub>	875	1 <sup>3</sup> / <sub>8"</sub> Dia [35]	2 <sup>1</sup> / <sub>2"</sub> Dia [64]	1 <sup>3</sup> / <sub>4"</sub> Dia [44]	7 <sup>8</sup> / <sub>16"</sub> Dia [22]	3 <sup>4</sup> / <sub>4"</sub> -14 NPT
D/E014	228	103	195	88	289	131	338	153	1-2 <sup>7</sup> / <sub>8</sub>	378	4-1 <sup>1</sup> / <sub>16</sub>	1253	3-0 <sup>3</sup> / <sub>8</sub>	924	2-10 <sup>7</sup> / <sub>16</sub>	875	1 <sup>3</sup> / <sub>8"</sub> Dia [35]	2 <sup>1</sup> / <sub>2"</sub> Dia [64]	1 <sup>3</sup> / <sub>4"</sub> Dia [44]	7 <sup>8</sup> / <sub>16"</sub> Dia [22]	3 <sup>4</sup> / <sub>4"</sub> -14 NPT

\*Weights are for units only (aluminum plate fins) and do not include options or crating.

**NOTES:**

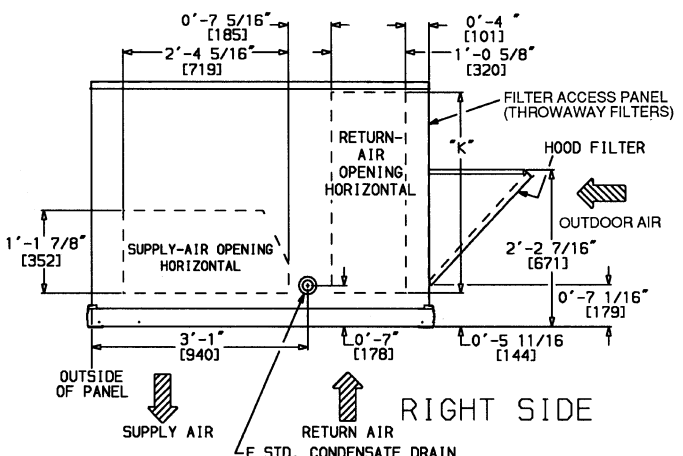
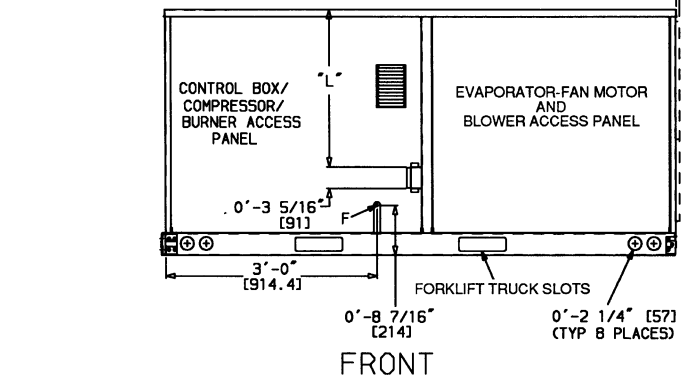
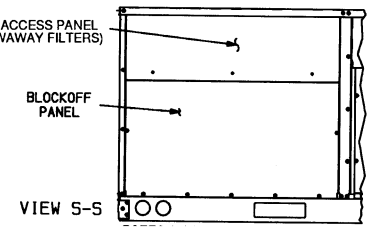
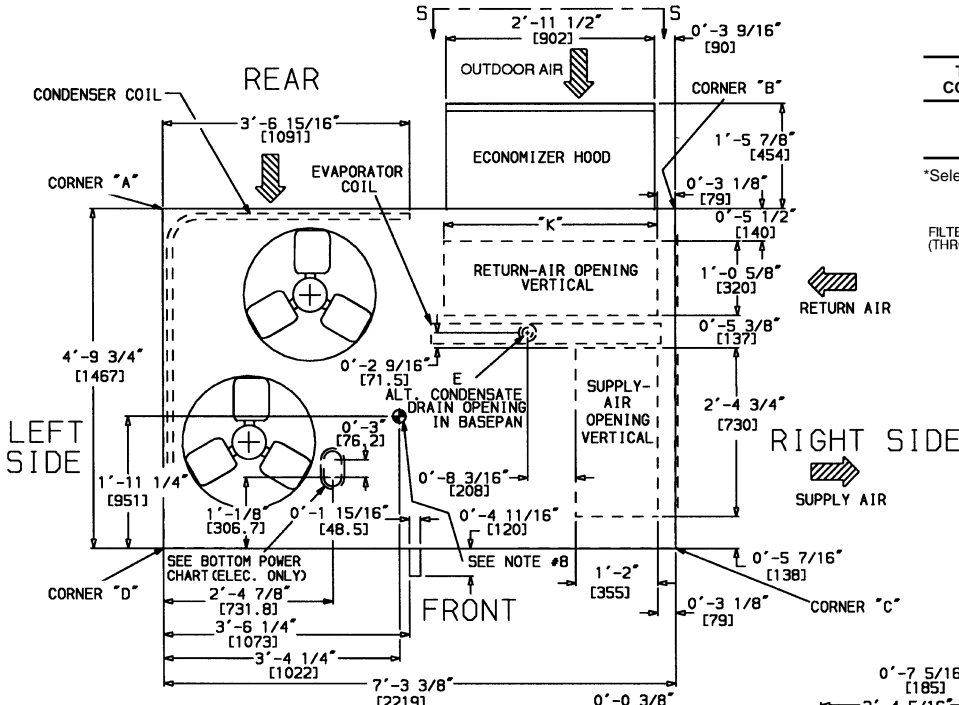
- Dimensions in [ ] are in millimeters.
- Center of gravity.
- Direction of airflow.
- On vertical discharge units, ductwork to be attached to accessory roof curb only. For horizontal discharge units field-supplied flanges should be attached to horizontal discharge openings, and all ductwork should be attached to the flanges.
- Minimum clearance (local codes or jurisdiction may prevail):
  - Between unit (flue side) and combustible surfaces, 48 inches.
  - Bottom of unit to combustible surfaces (when not using curb) 1 inch.
  - Bottom of base rail to combustible surfaces (when not using curb) 0 inches.
  - Condenser coil, for proper airflow, 36 in. one side, 12 in. the other. The side getting the greater clearance is optional.
  - Overhead, 60 in. to assure proper condenser fan operation.
  - Between units, control box side, 42 in. per NEC (National Electrical Code).
  - Between unit and ungrounded surfaces, control box side, 36 in. per NEC.
  - Between unit and block or concrete walls and other grounded surfaces, control box side, 42 in. per NEC.
  - Horizontal supply and return end, 0 inches.
- With the exception of the clearance for the condenser coil and combustion side as stated in Notes 5a, b, and c, a removable fence or barricade requires no clearance.
- Units may be installed on combustible floors made from wood or Class A, B, or C roof covering material if set on base rail.
- The vertical center of gravity is 1'-7" [483] up from the bottom of the base rail. Horizontal center of gravity is shown.



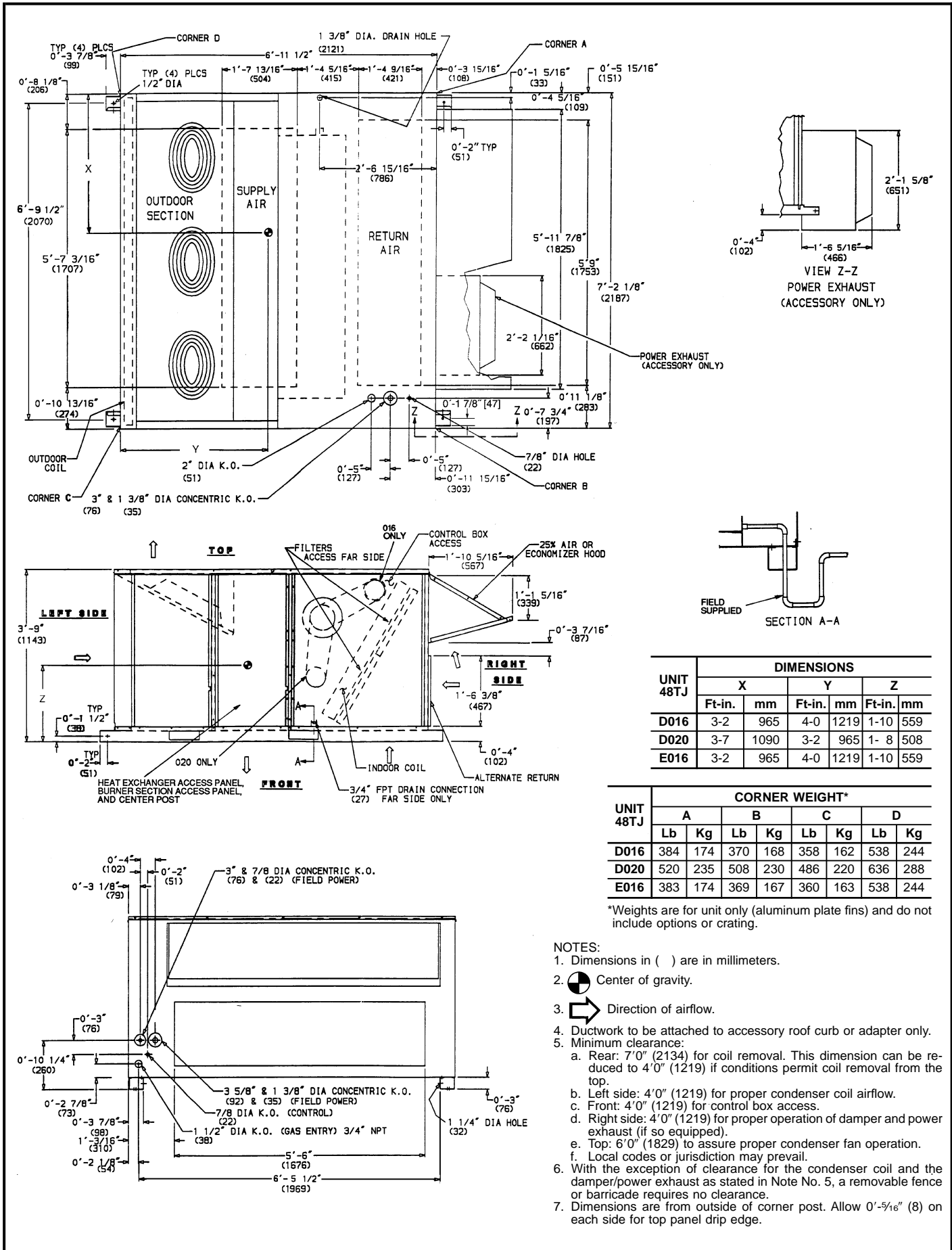
BOTTOM POWER CHART, THESE HOLES REQUIRED FOR USE WITH ACCESSORY PACKAGES — CRBTMPWR001A00 (1/2", 3/4") OR CRBTMPWR002A00 (1/2", 1 1/4")

THREADED CONDUIT SIZE	WIRE SIZE	REQUIRED HOLE SIZES (MAX)
1/2"	24 V Power*	7/8" [22.2]
3/4"	Power*	1 1/8" [28.4]
1 1/4"	Power*	1 3/4" [44.4]

\*Select either 3/4" or 1 1/4" for power, depending on wire size.



# Base unit dimensions — 48TJ016,020



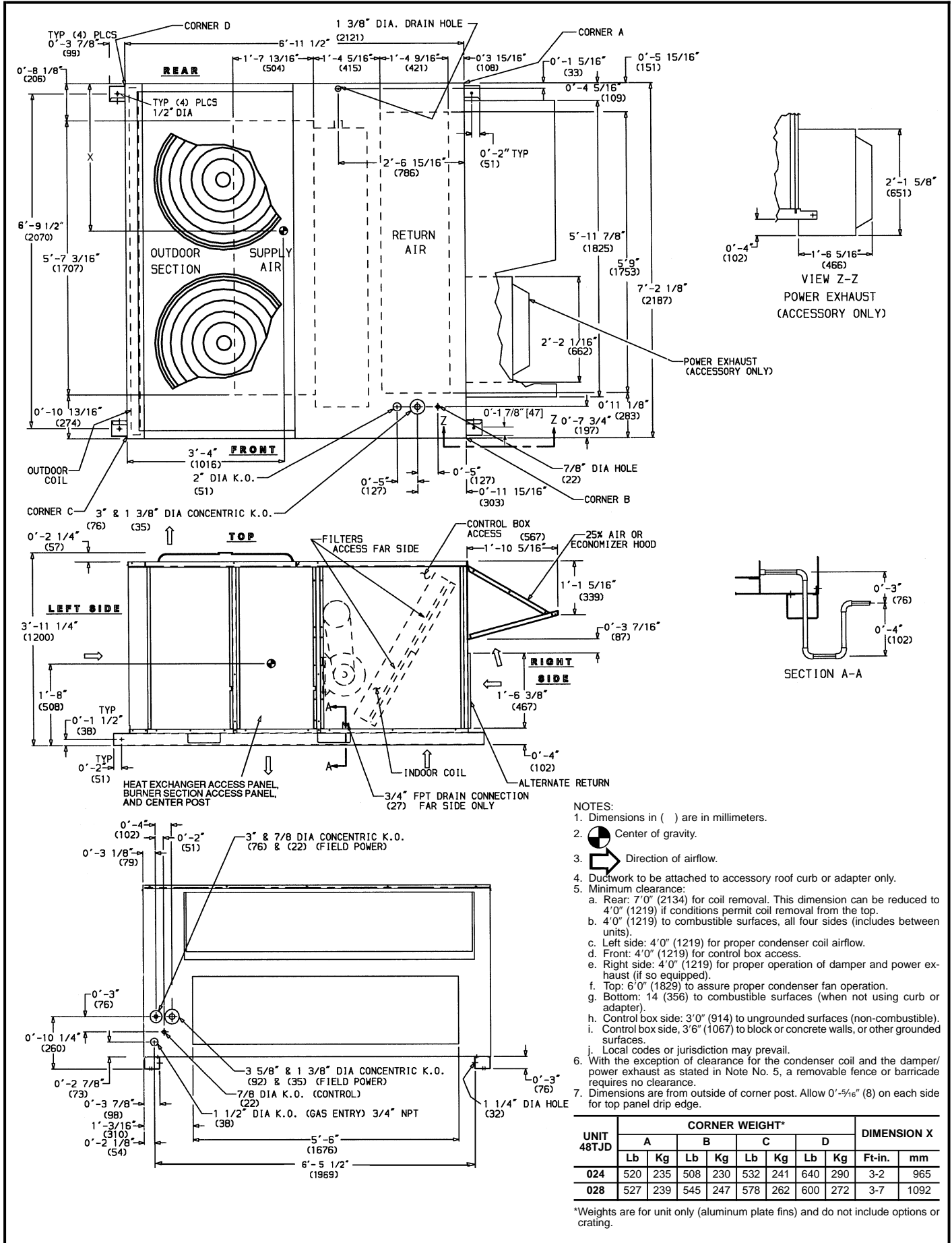
UNIT 48TJ	DIMENSIONS					
	X		Y		Z	
	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm
D016	3-2	965	4-0	1219	1-10	559
D020	3-7	1090	3-2	965	1- 8	508
E016	3-2	965	4-0	1219	1-10	559

UNIT 48TJ	CORNER WEIGHT*							
	A		B		C		D	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg
D016	384	174	370	168	358	162	538	244
D020	520	235	508	230	486	220	636	288
E016	383	174	369	167	360	163	538	244

\*Weights are for unit only (aluminum plate fins) and do not include options or crating.

- NOTES:**
- Dimensions in ( ) are in millimeters.
  - Center of gravity.
  - Direction of airflow.
  - Ductwork to be attached to accessory roof curb or adapter only.
  - Minimum clearance:
    - Rear: 7'0" (2134) for coil removal. This dimension can be reduced to 4'0" (1219) if conditions permit coil removal from the top.
    - Left side: 4'0" (1219) for proper condenser coil airflow.
    - Front: 4'0" (1219) for control box access.
    - Right side: 4'0" (1219) for proper operation of damper and power exhaust (if so equipped).
    - Top: 6'0" (1829) to assure proper condenser fan operation.
    - Local codes or jurisdiction may prevail.
  - With the exception of clearance for the condenser coil and the damper/power exhaust as stated in Note No. 5, a removable fence or barricade requires no clearance.
  - Dimensions are from outside of corner post. Allow 0'-5/16" (8) on each side for top panel drip edge.

# Base unit dimensions — 48TJD024,028

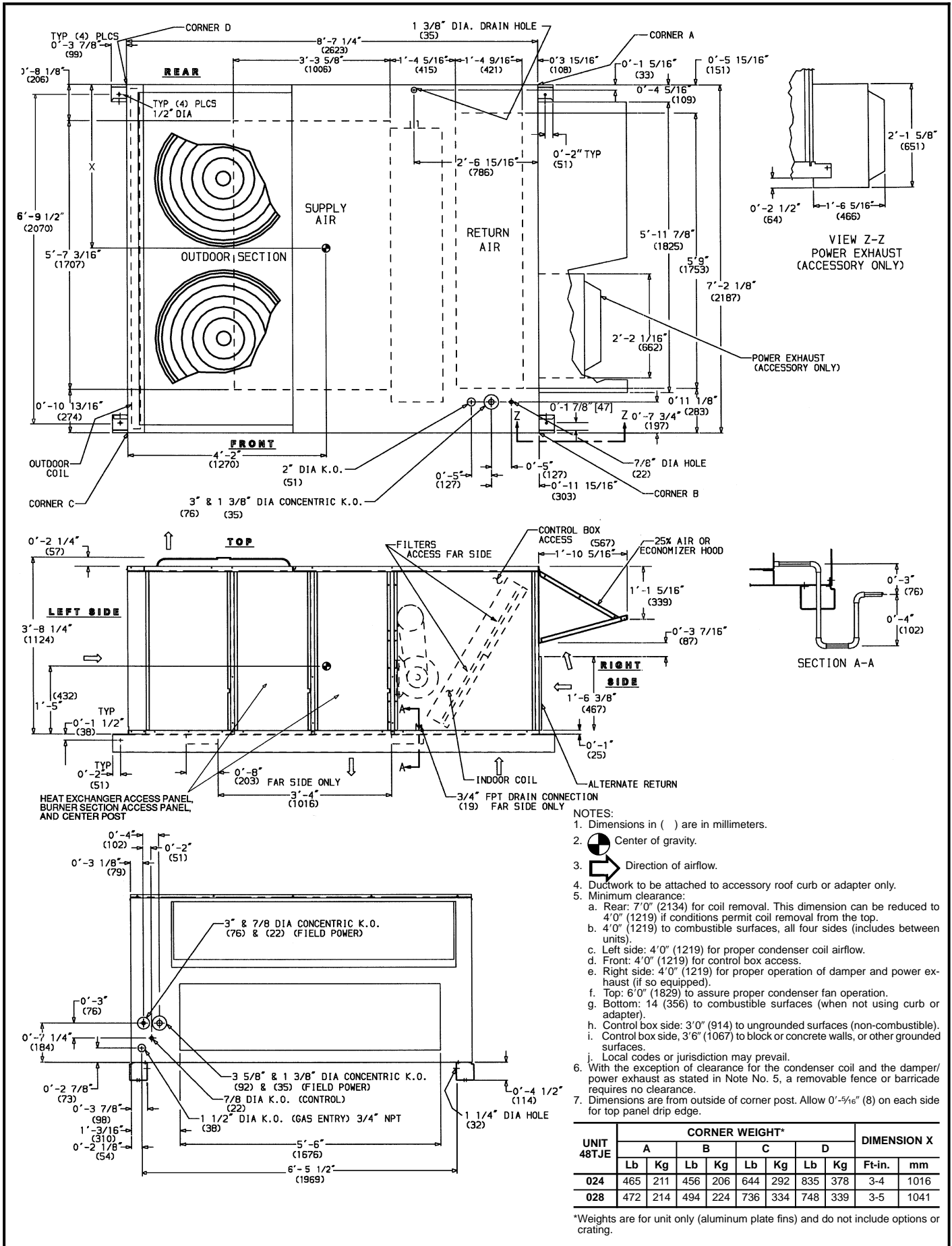


- NOTES:**
1. Dimensions in ( ) are in millimeters.
  2. Center of gravity.
  3. Direction of airflow.
  4. Ductwork to be attached to accessory roof curb or adapter only.
  5. Minimum clearance:
    - a. Rear: 7'0" (2134) for coil removal. This dimension can be reduced to 4'0" (1219) if conditions permit coil removal from the top.
    - b. 4'0" (1219) to combustible surfaces, all four sides (includes between units).
    - c. Left side: 4'0" (1219) for proper condenser coil airflow.
    - d. Front: 4'0" (1219) for control box access.
    - e. Right side: 4'0" (1219) for proper operation of damper and power exhaust (if so equipped).
    - f. Top: 6'0" (1829) to assure proper condenser fan operation.
    - g. Bottom: 14 (356) to combustible surfaces (when not using curb or adapter).
    - h. Control box side: 3'0" (914) to ungrounded surfaces (non-combustible).
    - i. Control box side, 3'6" (1067) to block or concrete walls, or other grounded surfaces.
    - j. Local codes or jurisdiction may prevail.
  6. With the exception of clearance for the condenser coil and the damper/power exhaust as stated in Note No. 5, a removable fence or barricade requires no clearance.
  7. Dimensions are from outside of corner post. Allow 0'-5/16" (8) on each side for top panel drip edge.

UNIT 48TJD	CORNER WEIGHT*								DIMENSION X	
	A		B		C		D		Ft-in.	mm
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg		
024	520	235	508	230	532	241	640	290	3-2	965
028	527	239	545	247	578	262	600	272	3-7	1092

\*Weights are for unit only (aluminum plate fins) and do not include options or crating.

# Base unit dimensions — 48TJE024,028



- NOTES:**
- Dimensions in ( ) are in millimeters.
  - Center of gravity.
  - Direction of airflow.
  - Ductwork to be attached to accessory roof curb or adapter only.
  - Minimum clearance:
    - Rear: 7'0" (2134) for coil removal. This dimension can be reduced to 4'0" (1219) if conditions permit coil removal from the top.
    - 4'0" (1219) to combustible surfaces, all four sides (includes between units).
    - Left side: 4'0" (1219) for proper condenser coil airflow.
    - Front: 4'0" (1219) for control box access.
    - Right side: 4'0" (1219) for proper operation of damper and power exhaust (if so equipped).
    - Top: 6'0" (1829) to assure proper condenser fan operation.
    - Bottom: 14 (356) to combustible surfaces (when not using curb or adapter).
    - Control box side: 3'0" (914) to ungrounded surfaces (non-combustible).
    - Control box side, 3'6" (1067) to block or concrete walls, or other grounded surfaces.
    - Local codes or jurisdiction may prevail.
  - With the exception of clearance for the condenser coil and the damper/power exhaust as stated in Note No. 5, a removable fence or barricade requires no clearance.
  - Dimensions are from outside of corner post. Allow 0'-5/16" (8) on each side for top panel drip edge.

UNIT 48TJE	CORNER WEIGHT*								DIMENSION X	
	A		B		C		D		Ft-in.	mm
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg		
024	465	211	456	206	644	292	835	378	3-4	1016
028	472	214	494	224	736	334	748	339	3-5	1041

\*Weights are for unit only (aluminum plate fins) and do not include options or crating.

# Accessory dimensions



## ROOF CURB — 48TJ004-007

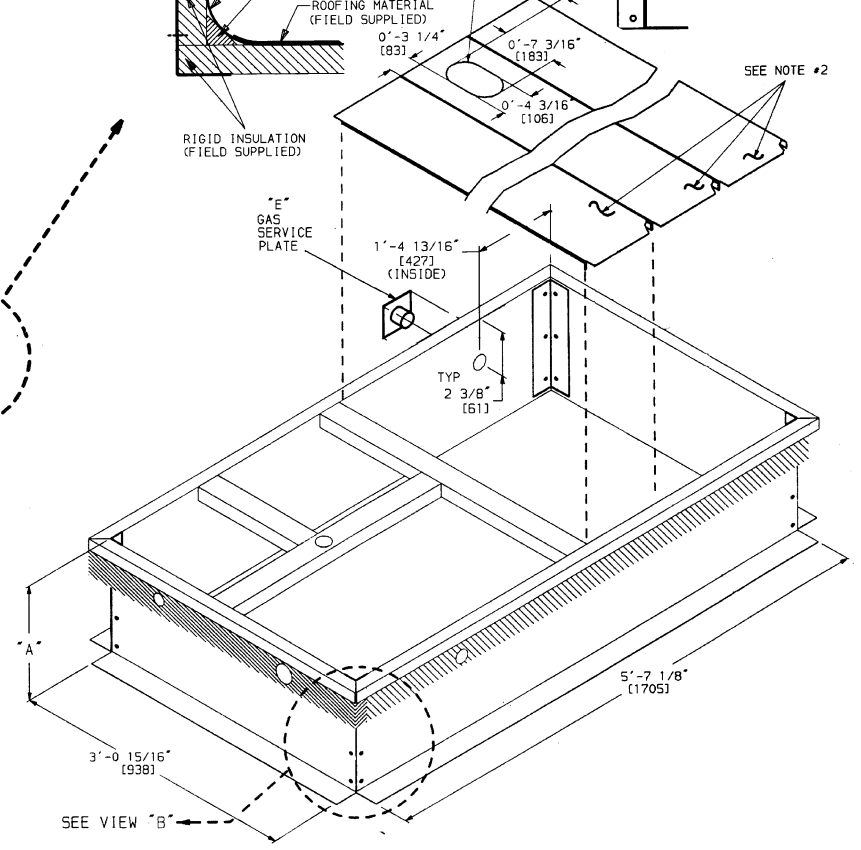
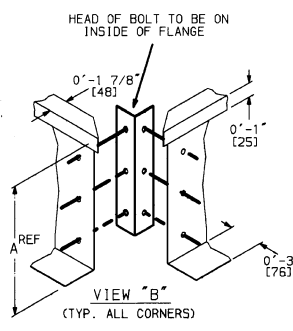
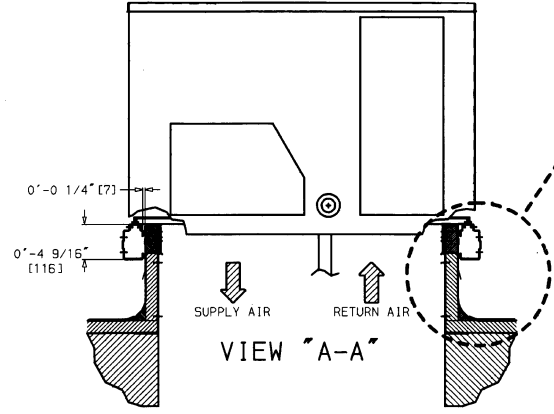
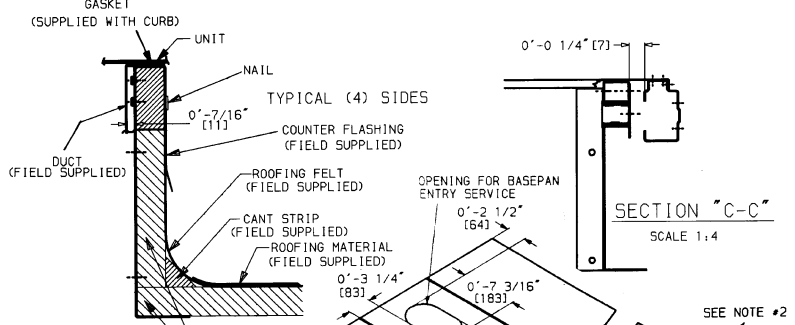
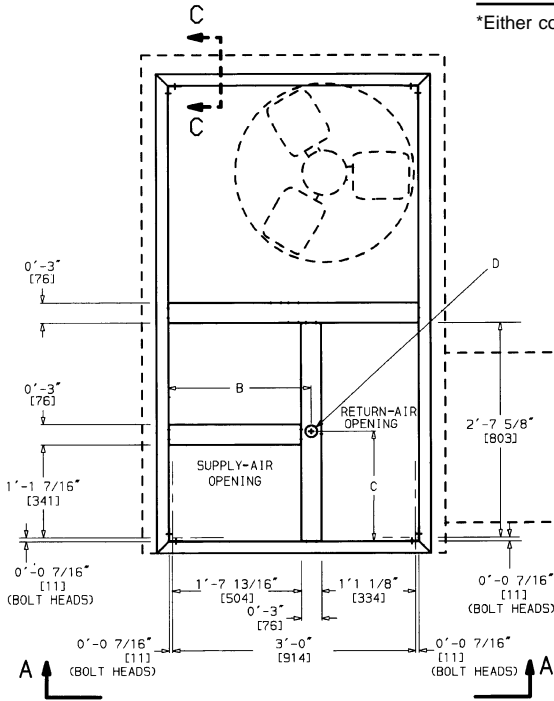
ROOF CURB ACCESSORY	"A"	UNIT SIZE 48TJ
CRRFCURB001A00	1'-2" [356]	004-007
CRRFCURB002A00	2'-0" [610]	

UNIT SIZE 48TJ	"B"	"C"	"D" ALT DRAIN HOLE	"E" GAS	POWER	CONTROL	CONNECTOR PACKAGE ACCESSORY
004-007	1-9 1/16" [551]	1-4" [406]	1-3/4" [45]	3/4" NPT	3/4" NPT	1/2" NPT	CRBTMPWR001A00* (THRU-THE-BOTTOM CONNECTIONS)
				3/4" NPT	1 1/4" NPT	1/2" NPT	CRBTMPWR002A00* (THRU-THE-BOTTOM CONNECTIONS)

\*Either connector package available for either roof curb.

### NOTES:

1. Roof curb accessory is shipped unassembled.
2. Insulated panels.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb. (Flanges of duct rest on curb.)
6. Service clearance 4 ft on each side.
7. Direction of airflow.



# Accessory dimensions (cont)



## ROOF CURB — 48TJ008-014

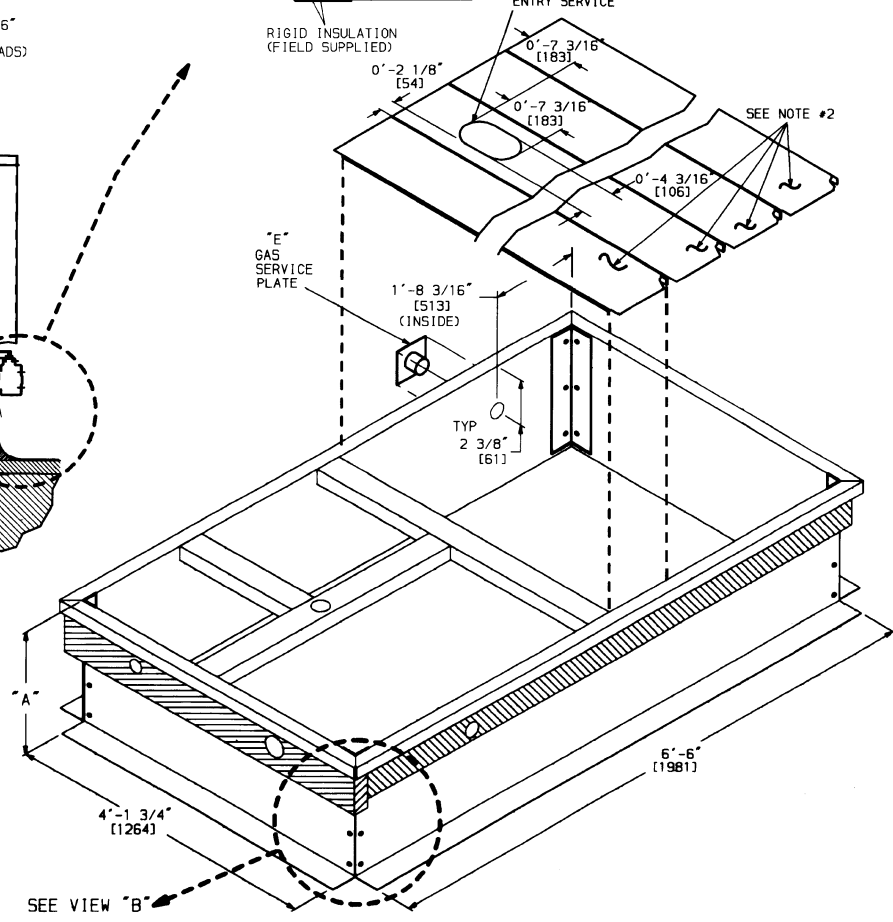
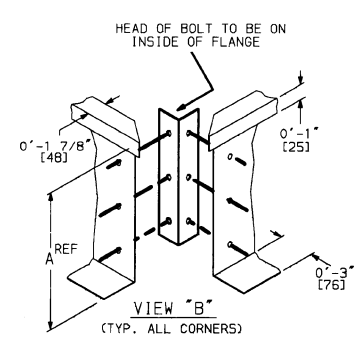
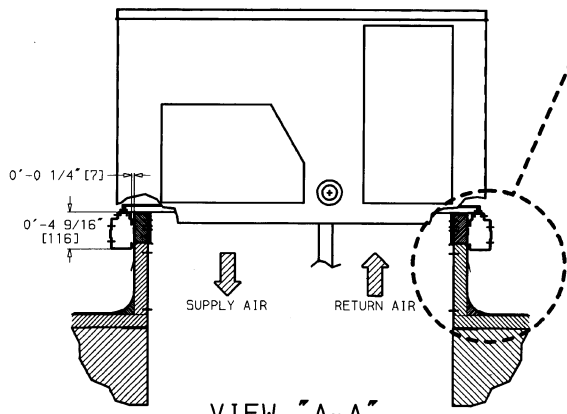
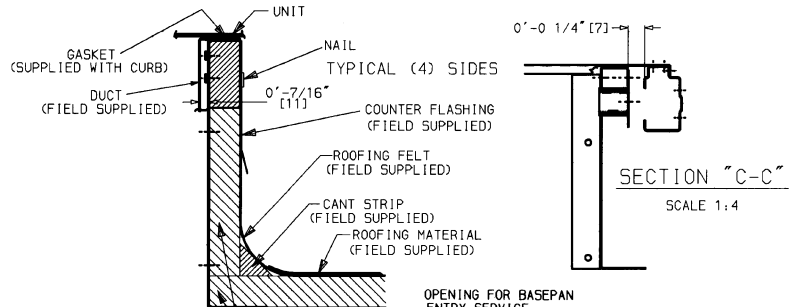
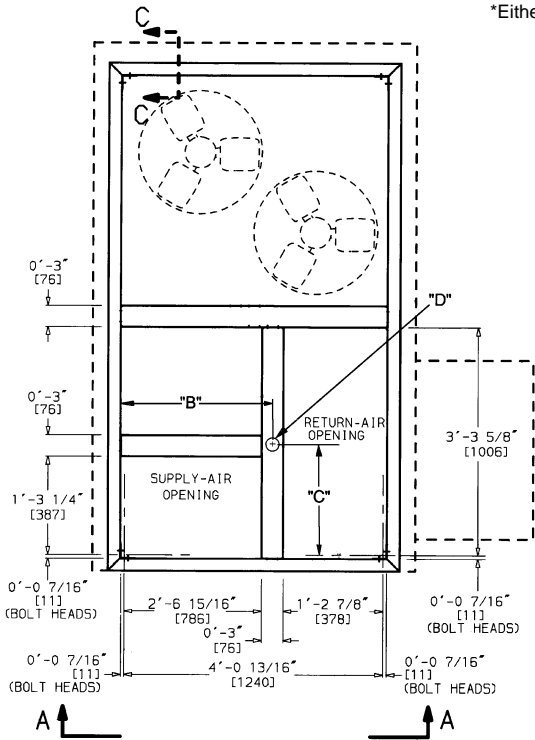
ROOF CURB ACCESSORY	"A"	UNIT SIZE 48TJ
CRRFCURB003A00	1'-2" [356]	008-014
CRRFCURB004A00	2'-0" [610]	

UNIT SIZE 48TJ	"B"	"C"	"D" ALT DRAIN HOLE	"E" GAS	POWER	CONTROL	CONNECTOR PACKAGE ACCESSORY
008-014	2'-8 <sup>7</sup> / <sub>16</sub> " [827]	1'-10 <sup>5</sup> / <sub>16</sub> " [583]	1 <sup>3</sup> / <sub>4</sub> " [45]	3/4" NPT	3/4" NPT	1/2" NPT	CRBTMPWR001A00* (THRU-THE-BOTTOM CONNECTIONS)
				3/4" NPT	1 1/4" NPT	1/2" NPT	CRBTMPWR002A00* (THRU-THE-BOTTOM CONNECTIONS)

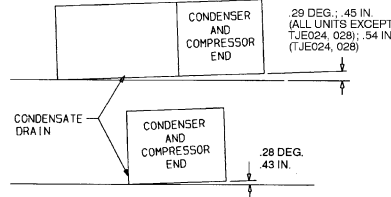
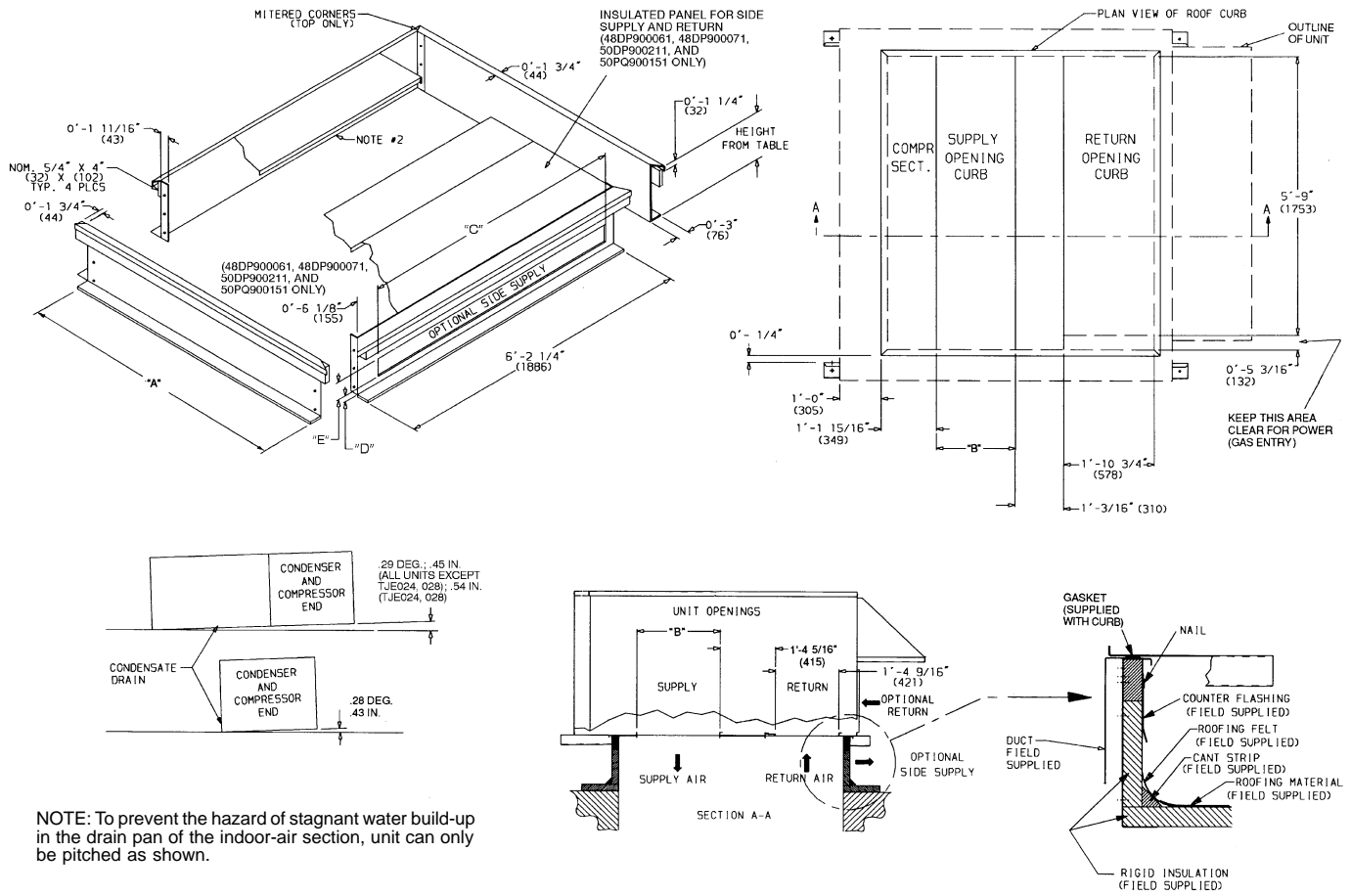
\*Either connector package available for either roof curb.

### NOTES:

1. Roof curb accessory is shipped unassembled.
2. Insulated panels.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb. (Flanges of duct rest on curb.)
6. Service clearance 4 ft on each side.
7. Direction of airflow.



## HORIZONTAL AND VERTICAL ROOF CURBS AND HORIZONTAL ADAPTER 48TJ016-028



NOTE: To prevent the hazard of stagnant water build-up in the drain pan in the indoor-air section, unit can only be pitched as shown.

### LEGEND

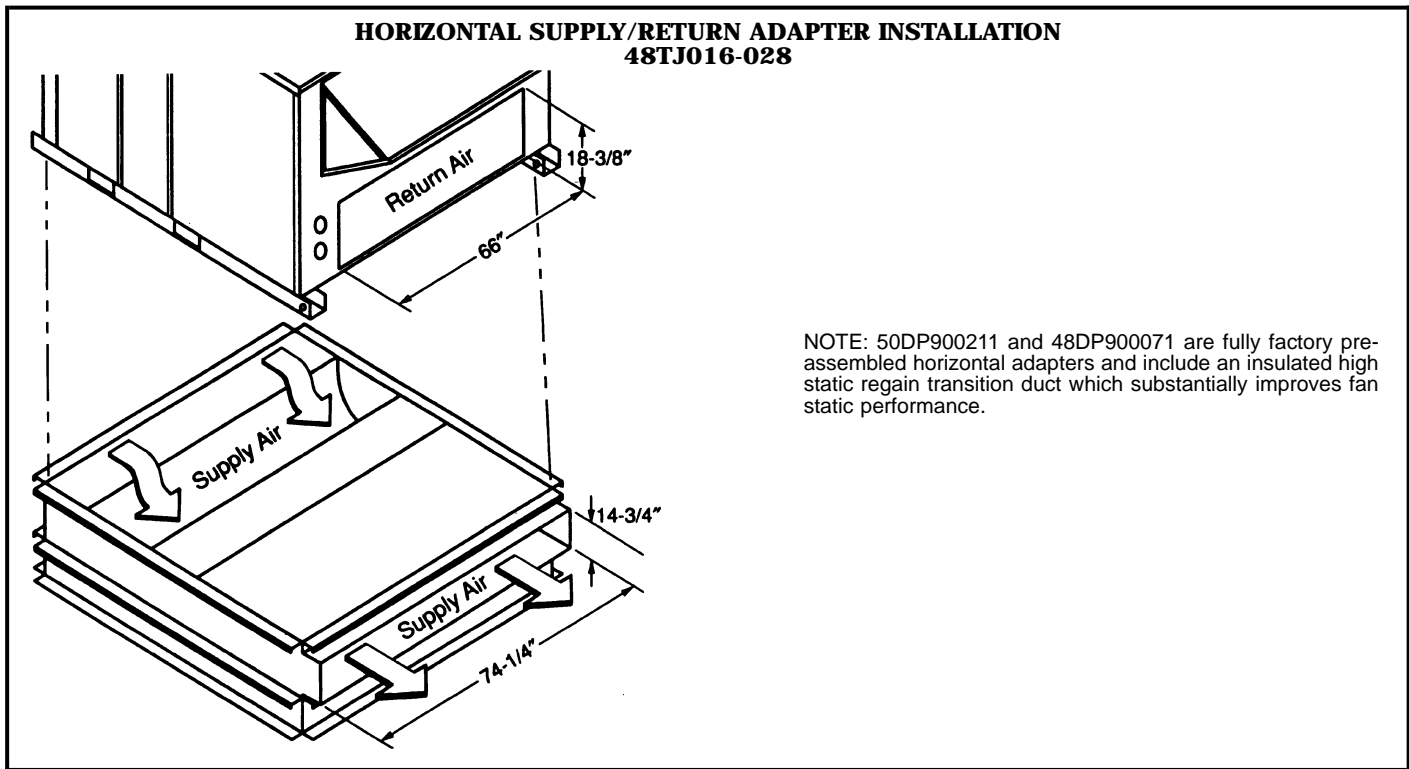
**COMPR SECT.** — Compressor Section

### NOTES:

1. Roof curb accessory is shipped unassembled.
2. Insulated panels, 1/2-in. thick neoprene-coated, 2 lb density.
3. Dimensions in ( ) are in millimeters.
4. Direction of airflow.
5. Roof curb: 18 gage steel.
6. Attach all ductwork to roof curb.
7. Field installation of sidewall insulation is mandatory.

ACCESSORY PACKAGE NO.	CURB HEIGHT	DESCRIPTION	"A"	"B"	"C"	"D"	"E"
50PQ900221	1'- 2" (355)	Standard Curb — 14" High	5'-7 <sup>1</sup> / <sub>16</sub> " (1703)	1'-7 <sup>1</sup> / <sub>16</sub> " (503)	—	—	—
50PQ900141	2'- 0" (610)	Standard Curb for Units Requiring High Installation	5'-7 <sup>1</sup> / <sub>16</sub> " (1703)	1'-7 <sup>1</sup> / <sub>16</sub> " (503)	—	—	—
50PQ900151	2'- 0" (610)	Horizontal Supply and Return Curb	5'-7 <sup>1</sup> / <sub>16</sub> " (1703)	1'-7 <sup>1</sup> / <sub>16</sub> " (503)	5'-6" (1676)	0'-2 <sup>1</sup> / <sub>2</sub> " (64)	1'-6" (457)
50DP900211	1'-11" (584)	Pre-Assembled, High-Static, Horizontal Adapter	5'-7 <sup>1</sup> / <sub>16</sub> " (1703)	1'-7 <sup>1</sup> / <sub>16</sub> " (503)	6'-2" (1880)	0'-6 <sup>1</sup> / <sub>4</sub> " (159)	1'-2 <sup>5</sup> / <sub>8</sub> " (371)
48DP900041*	1'- 2" (355)	Standard Curb — 14" High	7'-2 <sup>1</sup> / <sub>16</sub> " (2205)	3'-3 <sup>5</sup> / <sub>8</sub> " (1006)	—	—	—
48DP900051*	2'- 0" (610)	Standard Curb for Units Requiring High Installation	7'-2 <sup>1</sup> / <sub>16</sub> " (2205)	3'-3 <sup>5</sup> / <sub>8</sub> " (1006)	—	—	—
48DP900061*	2'- 0" (610)	Horizontal Supply and Return Curb	7'-2 <sup>1</sup> / <sub>16</sub> " (2205)	3'-3 <sup>5</sup> / <sub>8</sub> " (1006)	5'-6" (1676)	0'-2 <sup>1</sup> / <sub>2</sub> " (64)	1'-6" (457)
48DP900071*	1'-11" (584)	Pre-Assembled, High-Static, Horizontal Adapter	7'-2 <sup>1</sup> / <sub>16</sub> " (2205)	3'-3 <sup>5</sup> / <sub>8</sub> " (1006)	6'-2" (1880)	0'-6 <sup>1</sup> / <sub>4</sub> " (159)	1'-2 <sup>5</sup> / <sub>8</sub> " (371)

\*For high-heat 024,028 applications.



## Selection procedure (with 48TJE016 example)

### I Determine cooling and heating requirements at design conditions.

Given:

Required Cooling Capacity ..... 170,000 Btuh  
 Sensible Heat Capacity ..... 114,000 Btuh  
 Required Heating Capacity ..... 200,000 Btuh  
 Condenser Entering Air Temp ..... 95 F (Summer)  
 Evaporator Entering Air Temp ..... 80 F edb,  
 67 F ewb

Evaporator Air Quantity ..... 4,500 cfm  
 External Static Pressure ..... 0.6 in. wg  
 Electrical Characteristics (V-Ph-Hz) ..... 460-3-60  
 Vertical discharge unit with optional economizer required.

edb — Entering dry-bulb  
 ewb — Entering wet-bulb

### II Select unit based on required cooling capacity.

Enter Cooling Capacities table for 48TJ016 (page 27) at condenser entering temperature 95 F, evaporator air entering at 4,500 cfm and 67 F wb. The 48TJE016 unit will provide a total cooling capacity of 180,000 Btuh and a sensible heating capacity of 120,000 Btuh. For air entering evaporator at temperatures other than 80 F edb, calculate sensible heat capacity correction as required using the formula in the notes following the Cooling Capacities tables.

NOTE: Unit ratings are gross capacities and do not include the effect of evaporator-fan motor heat. To calculate net capacities, see Step V.

### III Select heating capacity of unit to provide design condition requirements.

In the Heating Capacities and Efficiencies table (page 6) note that the 48TJE016 will provide an output capacity of 216,000 Btuh, which is adequate for the given application.

### IV Determine fan speed and power requirements at design conditions.

Before entering the Fan Performance tables, calculate the total static pressure required based on unit components. From the given and the Accessory/FIOP Economizer Static Pressure table on page 49 find:

External static pressure	0.60 in. wg
Economizer static pressure	0.04 in. wg
Total static pressure	0.64 in. wg

Enter the Fan Performance table 48TJ016 (page 45) at 4,500 cfm and 0.64 in. wg external static pressure. By interpolation, find that the rpm is 988 and the watts are 1334.

### V Determine net cooling capacity.

Cooling capacities are gross capacities and do not include indoor (evaporator) fan motor (IFM) heat. Use the watts input power to the motor calculated in Section IV above.

IFM Watts = 1334

Determine net cooling capacity using the following formula:

$$\begin{aligned} \text{Net capacity} &= \text{Gross capacity} - \text{IFM heat} \\ &= 180,000 \text{ Btuh} - 1334 \text{ Watts} \\ & \qquad \qquad \qquad (3.412 \frac{\text{Btuh}}{\text{Watt}}) \\ &= 180,000 \text{ Btuh} - 4552 \text{ Btuh} \\ &= 175,448 \text{ Btuh} \end{aligned}$$

$$\begin{aligned} \text{Net sensible capacity} &= 120,000 \text{ Btuh} - 4552 \text{ Btuh} \\ &= 115,448 \text{ Btuh} \end{aligned}$$

The calculations show that a 48TJE016 unit with the standard motor and a field-supplied drive is the correct selection for the given conditions.



# Performance data



## COOLING CAPACITIES

48TJ004 (3 TONS)										
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		900/0.11			1200/0.14			1500/0.17		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	42.8	38.9	35.0	44.8	40.8	37.0	45.8	41.9	38.2
	SHC	20.0	24.5	28.7	21.8	27.5	32.8	23.0	30.0	36.0
	kW	2.91	2.81	2.70	2.99	2.88	2.78	3.02	2.92	2.82
85	TC	40.8	36.9	33.3	42.5	38.7	35.0	43.6	39.9	36.1
	SHC	19.4	23.7	27.9	21.0	26.8	31.8	22.6	29.7	35.1
	kW	3.14	3.01	2.90	3.20	3.08	2.97	3.24	3.14	3.02
95	TC	38.7	34.9	31.4	40.4	36.6	33.0	41.4	37.6	34.1
	SHC	18.6	22.9	27.0	20.3	26.0	30.9	22.0	28.8	34.0
	kW	3.35	3.21	3.09	3.42	3.29	3.16	3.47	3.35	3.22
105	TC	36.5	32.8	29.2	38.1	34.3	30.9	39.0	35.2	32.4
	SHC	17.8	22.1	25.9	19.6	25.2	29.8	21.2	28.0	32.3
	kW	3.55	3.41	3.27	3.63	3.49	3.35	3.68	3.54	3.43
115	TC	34.3	30.7	26.9	35.7	32.1	28.8	36.5	32.9	30.6
	SHC	17.0	21.3	24.8	19.0	24.4	28.8	20.5	27.1	30.6
	kW	3.76	3.60	3.45	3.84	3.68	3.54	3.88	3.74	3.64

48TJ006 (5 TONS)										
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		1500/0.07			2000/0.09			2500/0.12		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	71.0	63.8	55.4	74.5	67.2	59.2	76.5	69.7	62.1
	SHC	33.9	41.5	47.9	37.4	47.4	55.8	40.6	52.8	61.8
	kW	5.04	4.82	4.62	5.20	4.97	4.76	5.29	5.06	4.87
85	TC	69.2	61.0	54.2	72.9	65.6	57.2	75.2	68.1	61.5
	SHC	33.4	40.5	47.3	37.0	46.9	54.9	40.1	52.3	61.3
	kW	5.50	5.27	5.02	5.66	5.41	5.18	5.75	5.50	5.29
95	TC	65.5	56.6	50.4	69.4	60.9	53.1	71.2	63.3	57.8
	SHC	32.1	38.8	45.6	35.8	45.3	52.6	39.1	50.9	57.8
	kW	5.88	5.62	5.37	6.01	5.76	5.53	6.12	5.87	5.67
105	TC	61.9	53.1	47.1	65.4	56.6	50.5	67.1	58.8	54.5
	SHC	30.8	37.5	44.1	34.5	43.7	50.2	37.9	49.3	54.5
	kW	6.25	5.99	5.72	6.38	6.13	5.91	6.50	6.23	6.06
115	TC	58.2	49.7	43.7	61.4	52.3	47.8	63.0	54.3	51.2
	SHC	29.5	36.1	42.5	33.2	42.1	47.8	36.7	47.6	51.2
	kW	6.63	6.35	6.08	6.75	6.49	6.29	6.88	6.59	6.46

48TJ005 (4 TONS)										
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		1200/0.12			1600/0.15			2000/0.18		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	57.9	53.1	48.3	60.4	55.9	51.3	62.2	57.3	52.9
	SHC	27.2	33.3	39.2	29.4	37.2	44.8	31.4	40.3	49.1
	kW	4.07	3.93	3.79	4.17	4.03	3.90	4.24	4.08	3.96
85	TC	55.7	50.8	45.3	57.7	53.4	48.5	59.4	55.0	50.2
	SHC	26.4	32.5	37.8	28.4	36.7	43.6	30.5	40.3	47.9
	kW	4.40	4.24	4.08	4.47	4.35	4.20	4.54	4.42	4.25
95	TC	52.9	48.1	42.5	55.2	50.5	45.7	56.7	52.0	47.4
	SHC	25.5	31.5	36.4	27.6	35.6	42.2	29.7	39.2	46.7
	kW	4.70	4.54	4.36	4.78	4.63	4.47	4.87	4.70	4.56
105	TC	50.1	45.3	39.8	52.3	47.6	42.8	53.6	48.9	44.9
	SHC	24.4	30.3	35.1	26.7	34.5	40.7	28.8	38.1	44.6
	kW	5.00	4.81	4.62	5.10	4.91	4.73	5.17	4.99	4.84
115	TC	47.3	42.6	37.2	49.3	44.6	40.0	50.5	45.9	42.4
	SHC	23.4	29.2	33.7	25.9	33.3	39.3	27.8	37.1	42.4
	kW	5.30	5.07	4.88	5.42	5.19	4.99	5.48	5.28	5.12

Standard Ratings

### LEGEND

- BF — Bypass Factor
- Edb — Entering Dry-Bulb
- Ewb — Entering Wet-Bulb
- kW — Compressor Motor Power Input
- Ldb — Leaving Dry-Bulb
- Lwb — Leaving Wet-Bulb
- SHC — Sensible Heat Capacity (1000 Btuh) Gross
- TC — Total Capacity (1000 Btuh) Gross

### NOTES:

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

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

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

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

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

3. The SHC is based on 80 F edb temperature of air entering evaporator coil.

Below 80 F edb, subtract (corr factor x cfm) from SHC.  
Above 80 F edb, add (corr factor x cfm) to SHC.

$$\text{Correction Factor} = 1.10 \times (1 - \text{BF}) \times (\text{edb} - 80).$$

48TJ007 (6 TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		1800/0.06			2100/0.08			2400/0.09			3000/0.11		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	86.6	80.0	73.6	87.8	80.3	77.8	90.8	84.1	77.2	93.2	86.6	79.7
	SHC	42.2	52.3	62.2	43.0	53.9	63.0	46.5	59.6	71.6	50.1	66.4	78.7
	kW	5.48	5.33	5.21	5.69	5.50	5.69	5.59	5.44	5.29	5.66	5.51	5.35
85	TC	84.1	77.4	71.0	84.0	77.2	74.0	87.8	81.2	74.5	90.1	83.5	77.3
	SHC	41.4	51.3	61.1	41.7	53.1	61.7	45.5	58.6	70.3	49.4	65.4	76.7
	kW	6.17	6.00	5.85	6.21	6.04	6.21	6.27	6.11	5.94	6.35	6.19	6.02
95	TC	81.6	74.7	68.5	81.0	73.5	71.0	84.8	78.2	71.8	87.0	80.4	74.8
	SHC	40.6	50.3	60.0	40.8	51.8	60.8	44.6	57.6	69.1	48.7	64.5	74.7
	kW	6.86	6.67	6.49	6.78	6.54	6.78	6.95	6.77	6.59	7.03	6.86	6.69
105	TC	78.4	71.8	65.6	76.8	69.7	66.8	81.6	74.9	68.9	83.3	76.9	72.1
	SHC	39.4	49.2	58.7	39.4	50.3	59.4	43.5	56.4	67.4	47.4	63.1	72.0
	kW	7.60	7.39	7.20	7.30	7.05	7.30	7.72	7.50	7.31	7.77	7.59	7.41
115	TC	75.1	68.7	62.5	72.5	65.5	62.5	78.0	71.5	66.1	79.5	73.3	69.3
	SHC	38.1	47.9	57.2	37.9	48.7	57.9	42.3	55.1	65.5	46.3	61.6	69.2
	kW	8.36	8.14	7.93	7.81	7.53	7.81	8.49	8.25	8.06	8.55	8.33	8.18

# Performance data (cont)



## COOLING CAPACITIES (cont)

48TJ008 (7½ TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		2250/0.07			2800/0.09			3000/0.10			3750/0.12		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	102.8	94.8	86.2	105.8	98.2	90.0	106.4	99.0	90.8	109.2	101.6	93.6
	SHC	49.4	61.8	73.2	52.6	67.8	81.6	53.6	69.8	84.0	58.2	77.4	92.2
	kW	7.14	6.82	6.50	7.28	6.98	6.68	7.32	7.04	6.72	7.46	7.18	6.86
85	TC	98.2	90.2	81.6	101.8	93.6	85.2	102.6	94.4	86.0	104.6	96.8	89.6
	SHC	48.0	60.2	71.2	51.6	66.4	79.6	52.8	68.6	82.0	56.8	76.0	89.4
	kW	7.66	7.34	7.00	7.82	7.50	7.18	7.86	7.54	7.22	7.98	7.68	7.40
95	TC	93.8	85.2	76.6	97.0	88.4	80.0	97.6	89.0	81.2	99.4	91.2	85.2
	SHC	46.4	58.2	68.8	50.2	64.6	77.2	51.4	66.8	79.0	55.6	74.4	85.2
	kW	8.18	7.84	7.48	8.36	8.00	7.64	8.40	8.04	7.70	8.50	8.16	7.92
105	TC	88.4	79.8	70.8	91.0	82.8	74.6	91.6	83.4	76.0	93.8	85.4	80.6
	SHC	44.6	56.2	66.0	48.2	62.6	74.2	49.4	64.8	75.6	54.2	72.4	80.6
	kW	8.68	8.30	7.98	8.80	8.46	8.14	8.86	8.50	8.20	8.98	8.64	8.42
115	TC	82.8	73.8	66.0	85.2	76.8	69.6	85.6	77.4	71.0	87.6	79.4	76.0
	SHC	42.6	53.8	63.2	46.4	60.4	69.6	47.8	62.6	71.0	52.8	70.4	75.8
	kW	9.16	8.78	8.42	9.30	8.92	8.64	9.34	8.96	8.72	9.48	9.10	8.94

48TJ009 (8½ TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		2550/0.08			3000/0.10			3400/0.11			4250/0.135		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	116.6	108.4	99.0	119.2	111.3	101.8	120.1	112.8	103.6	122.3	114.8	106.3
	SHC	71.9	61.9	75.9	75.2	65.1	81.4	80.5	68.0	85.6	32.7	73.9	94.4
	kW	7.77	7.57	7.38	7.86	10.68	7.44	7.89	6.72	7.51	7.97	7.80	7.60
85	TC	113.3	104.2	94.0	115.7	106.9	97.0	117.2	108.7	98.8	120.1	111.0	101.8
	SHC	54.0	67.7	80.4	56.3	72.5	87.1	58.2	76.4	92.5	62.9	84.2	101.0
	kW	8.46	8.22	7.96	5.54	8.31	8.04	8.60	8.38	8.12	8.72	8.48	8.23
95	TC	109.1	99.3	87.3	111.2	102.0	91.4	112.5	103.6	93.7	115.3	105.8	107.4
	SHC	52.6	65.9	77.4	55.0	70.9	84.9	57.1	75.1	90.3	62.2	83.2	97.3
	kW	8.90	8.97	8.68	8.99	9.06	8.79	9.06	9.12	8.86	4.76	9.24	9.00
105	TC	103.3	94.0	81.4	105.9	96.3	84.6	107.4	97.7	87.9	109.4	99.9	92.8
	SHC	50.5	54.0	74.5	53.5	69.1	81.4	55.8	73.1	86.6	60.4	81.4	92.8
	kW	9.74	9.43	9.08	9.85	9.54	9.21	9.92	9.60	9.29	10.03	9.72	9.48
115	TC	97.7	87.9	75.9	99.9	90.4	78.8	101.3	91.8	82.4	102.9	93.8	88.3
	SHC	48.7	61.7	71.9	51.8	66.9	78.1	54.0	71.2	82.3	58.5	79.4	88.2
	kW	10.33	9.97	9.61	10.46	10.10	9.75	10.54	10.18	9.88	10.61	10.30	10.10

48TJ012 (10 TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		3000/0.095			4000/0.125			5000/0.15					
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	135.8	124.8	112.0	142.4	130.6	119.8	146.5	134.2	123.7			
	SHC	66.8	82.6	97.4	73.2	93.4	112.7	79.7	104.4	123.1			
	kW	9.76	9.41	9.10	10.00	9.61	9.27	10.17	9.75	9.41			
85	TC	130.0	119.6	104.0	136.0	125.0	114.5	140.0	127.9	118.8			
	SHC	64.3	80.5	93.8	71.1	91.7	110.2	77.5	101.8	118.7			
	kW	10.41	10.07	9.74	10.67	10.28	9.94	10.84	10.41	10.09			
95	TC	124.1	113.7	96.7	129.5	118.9	106.9	132.8	122.0	114.1			
	SHC	62.2	78.4	90.0	69.1	89.8	105.9	74.9	100.1	114.0			
	kW	11.13	10.78	10.40	11.38	10.99	10.63	11.52	11.14	10.83			
105	TC	118.1	104.6	87.9	122.7	111.8	98.5	126.0	115.1	108.0			
	SHC	60.4	74.9	85.2	66.9	87.7	98.5	73.1	98.3	108.0			
	kW	11.93	11.52	11.10	12.13	11.74	11.41	12.27	11.89	11.65			
115	TC	115.0	98.0	84.2	120.0	103.8	93.4	122.6	109.8	102.8			
	SHC	59.4	72.4	83.4	66.4	84.8	93.4	72.8	96.9	102.8			
	kW	12.26	11.82	11.40	12.48	12.06	11.78	12.60	12.20	12.00			

Standard Ratings

### LEGEND

- BF — Bypass Factor
- Edb — Entering Dry-Bulb
- Ewb — Entering Wet-Bulb
- kW — Compressor Motor Power Input
- Ldb — Leaving Dry-Bulb
- Lwb — Leaving Wet-Bulb
- SHC — Sensible Heat Capacity (1000 Btuh) Gross
- TC — Total Capacity (1000 Btuh) Gross

### NOTES:

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

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

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

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

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

3. The SHC is based on 80 F edb temperature of air entering evaporator coil.  
Below 80 F edb, subtract (corr factor x cfm) from SHC.  
Above 80 F edb, add (corr factor x cfm) to SHC.  
Correction Factor =  $1.10 \times (1 - BF) \times (edb - 80)$ .



**COOLING CAPACITIES (cont)**

48TJ014 (12½ TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		3750/0.08			4500/0.09			5000/0.10			6250/0.12		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	175.6	162.2	149.2	181.0	167.5	154.2	182.9	170.2	156.4	187.2	174.7	161.8
	SHC	85.7	107.3	128.0	91.4	116.2	140.3	94.2	122.2	146.5	102.1	135.3	160.7
	KW	11.16	10.85	10.57	11.32	11.00	10.69	11.37	11.07	10.73	11.49	11.19	10.87
85	TC	169.3	155.7	140.6	174.2	160.7	147.0	176.9	163.0	149.7	181.5	167.3	155.8
	SHC	83.9	104.8	124.0	89.6	113.9	137.0	92.7	119.7	143.6	100.9	133.4	155.6
	KW	12.15	11.78	11.42	12.31	11.94	11.58	12.39	12.01	11.63	12.53	12.14	11.82
95	TC	161.9	148.9	132.0	166.8	153.5	139.1	169.5	155.7	142.8	173.2	159.5	149.6
	SHC	81.4	102.0	119.8	87.0	111.1	133.2	90.7	117.3	140.2	98.3	130.8	149.6
	KW	13.12	12.72	12.28	13.30	12.89	12.46	13.40	12.97	12.56	13.54	13.11	12.78
105	TC	154.9	141.3	123.0	158.8	145.4	130.2	160.9	147.6	135.0	165.3	151.2	143.2
	SHC	79.0	99.2	115.5	84.5	108.2	128.1	87.8	114.3	134.9	96.6	127.8	143.1
	KW	14.16	13.66	13.17	14.31	13.82	13.35	14.38	13.91	13.48	14.58	14.07	13.77
115	TC	146.2	132.2	113.1	150.5	137.0	122.4	152.3	139.4	127.8	155.2	142.7	136.0
	SHC	76.1	95.7	110.3	81.7	105.2	122.3	85.0	111.6	127.7	92.9	125.0	135.8
	KW	15.09	14.57	14.07	15.30	14.76	14.25	15.37	14.87	14.43	15.49	15.02	14.73

48TJ016 (15 TONS)																
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF														
		4500/0.08			5250/0.10			6000/0.11			6750/0.12			7500/0.14		
		Air Entering Evaporator — Ewb (F)														
		72	67	62	72	67	62	72	67	62	72	67	62	72	67	62
75	TC	212.0	195.0	179.0	216.0	200.0	183.0	219.0	204.0	187.0	223.0	205.0	189.0	224.0	207.0	193.0
	SHC	101.0	126.0	148.0	105.0	133.0	161.0	109.0	141.0	170.0	115.0	152.0	179.0	118.0	157.0	187.0
	KW	15.20	14.70	14.20	15.40	14.90	14.40	15.50	15.10	14.60	15.70	15.10	14.70	15.70	15.20	14.80
85	TC	205.0	188.0	171.0	210.0	193.0	176.0	212.0	196.0	179.0	215.0	199.0	182.0	216.0	199.0	185.0
	SHC	98.5	123.0	145.0	103.0	131.0	156.0	108.0	138.0	167.0	113.0	145.0	176.0	116.0	154.0	184.0
	KW	16.60	16.10	15.50	16.80	16.30	15.70	16.90	16.40	15.90	17.10	16.50	16.00	17.10	16.60	16.10
95	TC	197.0	180.0	162.0	202.0	184.0	167.0	205.0	188.0	171.0	206.0	191.0	174.0	209.0	193.0	178.0
	SHC	95.8	120.0	141.0	101.0	128.0	152.0	105.0	136.0	164.0	110.0	143.0	172.0	115.0	150.0	178.0
	KW	18.00	17.40	16.70	18.20	17.60	16.90	18.40	17.80	17.10	18.40	17.90	17.30	18.60	18.00	17.50
105	TC	190.0	172.0	152.0	194.0	176.0	157.0	197.0	179.0	161.0	199.0	182.0	166.0	200.0	183.0	171.0
	SHC	93.3	117.0	136.0	98.0	125.0	148.0	103.0	133.0	158.0	107.0	140.0	166.0	112.0	148.0	171.0
	KW	19.40	18.70	17.90	19.60	18.90	18.10	19.80	19.10	18.40	19.90	19.20	18.60	20.00	19.30	18.80
115	TC	180.0	161.0	142.0	185.0	166.0	146.0	187.0	170.0	151.0	190.0	172.0	158.0	191.0	173.0	163.0
	SHC	90.0	112.0	131.0	95.4	121.0	142.0	100.0	130.0	151.0	105.0	137.0	158.0	109.0	144.0	163.0
	KW	20.80	19.90	19.10	21.00	20.10	19.30	21.20	20.30	19.60	21.40	20.50	19.90	21.50	20.60	20.10

48TJ020 (18 TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		5400/0.06			6000/0.07			7200/0.08			9000/0.09		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	242.0	219.6	197.3	242.0	221.1	198.4	241.0	221.0	201.8	238.0	218.8	203.3
	SHC	121.6	151.8	176.3	125.7	157.4	184.1	135.8	167.7	196.6	143.5	182.4	203.0
	KW	14.72	14.78	14.71	14.91	15.00	14.97	15.35	15.43	15.50	15.94	16.03	16.19
85	TC	231.0	208.6	187.3	232.0	209.3	188.1	231.0	209.5	191.5	227.0	208.3	194.5
	SHC	116.8	146.3	171.5	121.1	152.7	179.6	128.0	162.9	189.5	142.8	177.5	193.4
	KW	16.27	16.29	16.26	16.59	16.56	16.50	17.02	17.05	17.10	17.63	17.72	17.91
95	TC	218.5	196.4	176.0	220.1	197.1	178.2	219.1	198.2	181.2	215.3	196.1	185.2
	SHC	112.5	141.3	165.6	116.4	147.1	172.7	122.4	157.6	181.2	131.8	170.2	183.9
	KW	17.83	17.79	17.73	18.15	18.12	18.08	18.64	18.71	18.76	19.37	19.36	19.71
105	TC	204.3	187.2	169.4	203.1	187.2	170.9	203.4	186.5	172.8	199.8	184.3	174.4
	SHC	105.1	135.0	158.6	108.1	139.0	165.4	115.6	149.2	172.4	124.9	162.2	174.2
	KW	17.75	17.88	17.93	17.96	18.12	18.27	18.45	18.62	18.87	19.17	19.37	19.68
115	TC	193.1	175.6	159.4	190.9	176.0	160.4	191.6	175.3	162.7	188.1	173.3	165.1
	SHC	101.1	129.9	153.0	102.7	134.1	158.4	110.6	143.7	162.6	111.6	155.4	164.7
	KW	19.26	19.41	19.44	19.47	19.72	19.75	20.07	20.25	20.48	20.81	21.02	21.47
125	TC	178.4	163.8	148.3	179.4	163.9	150.2	177.7	163.9	152.7	174.5	160.6	154.5
	SHC	96.1	124.1	145.8	99.5	128.6	150.1	103.7	138.5	152.6	110.8	147.5	154.1
	KW	20.73	20.86	20.85	21.04	21.17	21.33	21.52	21.82	22.08	22.29	22.50	23.10

# Performance data (cont)



## COOLING CAPACITIES (cont)

48TJ024 (20 TONS)		Air Entering Evaporator — Cfm/BF														
Temp (F) Air Entering Condenser (Edb)		6000/0.06			7000/0.07			8000/0.08			9000/0.09			10,000/0.10		
		Air Entering Evaporator — Ewb (F)														
		72	67	62	72	67	62	72	67	62	72	67	62	72	67	62
75	TC	274.0	250.0	226.0	280.0	256.0	232.0	284.0	260.0	236.0	288.0	264.0	242.0	292.0	268.0	246.0
	SHC kW	130.4 16.92	163.6 16.40	194.4 15.90	136.4 17.04	175.0 16.58	210.0 16.12	144.4 17.22	186.8 16.72	224.0 16.22	151.8 17.32	197.0 16.84	236.0 16.36	157.4 17.42	208.0 16.92	246.0 16.50
85	TC	264.0	240.0	216.0	270.0	244.0	222.0	276.0	250.0	226.0	278.0	254.0	232.0	282.0	256.0	238.0
	SHC kW	127.6 18.54	159.8 18.00	189.8 17.36	138.2 18.72	172.2 18.18	206.0 17.60	141.8 18.96	183.4 18.34	220.0 17.74	147.8 19.04	194.6 18.46	232.0 17.94	154.6 19.14	204.0 18.56	236.0 18.08
95	TC	252.0	228.0	204.0	258.0	234.0	210.0	262.0	238.0	216.0	266.0	240.0	222.0	270.0	242.0	228.0
	SHC kW	124.4 20.20	155.4 19.52	184.6 18.82	131.0 20.40	167.6 19.76	200.0 19.08	138.8 20.60	178.8 19.90	214.0 19.28	145.2 20.80	189.8 20.00	222.0 19.52	151.8 20.80	200.0 20.20	228.0 19.76
105	TC	240.0	216.0	190.6	246.0	222.0	196.6	250.0	226.0	204.0	252.0	228.0	212.0	256.0	230.0	218.0
	SHC kW	120.0 21.80	150.8 21.00	178.4 20.20	127.2 22.00	163.6 21.20	193.8 20.60	135.0 22.20	175.2 21.40	204.0 20.80	141.6 22.40	185.4 21.60	212.0 21.00	147.4 22.40	196.2 21.60	218.0 21.40
115	TC	228.0	204.0	176.6	232.0	208.0	184.6	236.0	212.0	194.2	238.0	214.0	202.0	240.0	216.0	208.0
	SHC kW	116.0 23.40	146.2 22.40	171.8 21.60	123.8 23.60	158.4 22.60	184.6 22.00	130.4 23.80	169.6 22.80	194.2 22.40	137.2 23.80	180.8 23.00	202.0 22.60	144.0 24.00	190.8 23.20	206.0 22.80
125	TC	214.0	188.8	163.2	218.0	194.2	174.2	220.0	197.6	183.4	224.0	199.8	190.6	226.0	202.0	196.0
	SHC kW	111.0 24.80	140.8 23.80	162.8 23.00	118.6 25.00	153.4 24.00	174.2 23.40	125.8 25.20	164.8 24.20	183.4 23.80	132.0 25.40	175.6 24.40	190.4 24.00	139.0 25.40	185.2 24.60	195.4 24.40

48TJ028 (25 TONS)		Air Entering Evaporator — Cfm/BF											
Temp (F) Air Entering Condenser (Edb)		7000/0.03			8750/0.05			10,000/0.07			11,250/0.09		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	323.9	299.4	275.8	331.3	312.7	288.4	336.1	319.8	294.7	342.6	322.5	300.0
	SHC kW	159.4 21.10	195.2 20.50	230.6 19.90	170.1 21.30	216.5 20.90	259.1 20.20	177.6 21.50	231.1 21.10	276.8 20.40	186.6 21.70	242.9 21.20	292.6 20.50
85	TC	315.3	290.4	264.3	326.9	303.2	278.0	333.7	309.1	285.0	335.1	314.2	291.1
	SHC kW	156.3 22.70	191.7 22.10	224.9 21.30	168.4 23.10	213.2 22.50	254.9 21.80	177.5 23.30	226.9 22.70	273.8 22.00	184.4 23.30	240.7 22.80	288.4 22.20
95	TC	304.1	277.4	243.1	315.3	290.1	263.8	320.4	295.6	271.1	324.1	300.6	279.4
	SHC kW	152.0 24.80	186.5 24.00	215.2 23.20	165.0 25.20	208.5 24.50	248.0 23.50	173.0 25.40	222.4 24.60	266.4 23.80	181.6 25.50	236.5 24.80	279.4 24.10
105	TC	291.2	261.4	224.8	300.9	274.2	242.1	305.7	280.3	252.3	309.8	284.8	266.3
	SHC kW	147.2 26.90	179.7 25.80	206.6 25.00	159.9 27.20	201.8 26.30	237.3 25.40	168.3 27.40	216.8 26.60	252.3 25.80	176.8 27.60	231.1 26.80	266.3 26.00
115	TC	274.6	237.9	207.6	285.9	251.5	222.6	291.3	258.4	237.7	293.9	267.5	247.1
	SHC kW	140.9 28.80	170.0 27.80	198.6 26.80	154.9 29.40	193.2 28.20	222.6 27.40	164.1 29.60	208.7 28.50	237.7 27.70	163.0 29.70	224.3 28.50	247.1 28.10
125	TC	254.5	214.9	184.3	266.7	230.9	206.7	272.0	236.0	220.8	276.1	240.0	231.1
	SHC kW	133.3 30.90	160.8 29.90	184.3 28.90	148.0 31.40	185.1 30.20	206.7 29.60	157.5 31.70	200.2 30.50	220.8 29.90	166.6 31.90	214.4 30.80	231.1 30.30

Standard Ratings

### LEGEND

- BF — Bypass Factor
- Edb — Entering Dry-Bulb
- Ewb — Entering Wet-Bulb
- kW — Compressor Motor Power Input
- Ldb — Leaving Dry-Bulb
- Lwb — Leaving Wet-Bulb
- SHC — Sensible Heat Capacity (1000 Btuh) Gross
- TC — Total Capacity (1000 Btuh) Gross

### NOTES:

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

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

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

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

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

- SHC is based on 80 F edb temperature of air entering evaporator coil. Below 80 F edb, subtract (corr factor x cfm) from SHC. Above 80 F edb, add (corr factor x cfm) to SHC.

BYPASS FACTOR (BF)	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.90	
.20	.87	1.74	2.62	3.49	4.36	
.30	.76	1.53	2.29	3.05	3.82	

Interpolation is permissible.

$$\text{Correction Factor} = 1.10 \times (1 - \text{BF}) \times (\text{edb} - 80).$$



## FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS

48TJ004 (3 TONS) — STANDARD MOTOR (DIRECT DRIVE)												
Airflow (Cfm)	Low Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts
<b>900</b>	0.49	0.21	253	0.50	0.23	277	0.51	0.26	307	0.55	0.31	363
<b>1000</b>	0.42	0.23	270	0.43	0.25	292	0.43	0.27	321	0.51	0.32	374
<b>1100</b>	0.37	0.24	287	0.38	0.26	307	0.39	0.28	335	0.46	0.33	385
<b>1200</b>	0.33	0.26	304	0.33	0.27	323	0.34	0.29	349	0.40	0.34	397
<b>1300</b>	0.27	0.27	321	0.28	0.29	338	0.28	0.31	364	0.34	0.34	408
<b>1400</b>	0.20	0.29	338	0.23	0.30	354	0.25	0.32	378	—	—	—
<b>1500</b>	0.16	0.30	355	0.18	0.31	369	0.20	0.33	392	—	—	—

**LEGEND**

**Bhp** — Brake Horsepower Input to Fan  
**Esp** — External Static Pressure (in. wg)  
**FIOF** — Factory-Installed Option

**NOTES:**

1. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TJ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)																		
Airflow Cfm	External Static Pressure (in. wg)																	
	0.1			0.2			0.3			0.4			0.5			0.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
<b>900</b>	581	0.12	119	673	0.18	179	736	0.22	219	805	0.25	249	865	0.29	288	911	0.34	338
<b>1000</b>	644	0.19	189	709	0.22	219	782	0.28	279	835	0.30	298	900	0.35	348	937	0.38	378
<b>1100</b>	687	0.22	219	746	0.26	259	806	0.30	298	867	0.35	348	929	0.40	398	964	0.40	398
<b>1200</b>	733	0.26	259	785	0.32	318	843	0.35	348	903	0.41	408	960	0.47	467	994	0.50	497
<b>1300</b>	754	0.29	288	826	0.38	378	891	0.43	428	942	0.48	477	991	0.53	527	<b>1047</b>	<b>0.60</b>	<b>597</b>
<b>1400</b>	810	0.35	348	868	0.45	448	937	0.51	507	984	0.57	567	<b>1032</b>	<b>0.62</b>	<b>617</b>	<b>1067</b>	<b>0.67</b>	<b>666</b>
<b>1500</b>	841	0.42	418	911	0.53	527	985	0.61	607	<b>1029</b>	<b>0.66</b>	<b>656</b>	<b>1073</b>	<b>0.72</b>	<b>716</b>	<b>1109</b>	<b>0.77</b>	<b>766</b>

48TJ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)																		
Airflow Cfm	External Static Pressure (in. wg)																	
	0.7			0.8			0.9			1.0			1.1			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
<b>900</b>	957	0.39	388	988	0.43	428	<b>1039</b>	<b>0.47</b>	<b>448</b>	<b>1061</b>	<b>0.51</b>	<b>487</b>	<b>1083</b>	<b>0.54</b>	<b>527</b>	<b>1105</b>	<b>0.58</b>	<b>567</b>
<b>1000</b>	992	0.44	438	<b>1039</b>	<b>0.49</b>	<b>487</b>	<b>1061</b>	<b>0.55</b>	<b>507</b>	<b>1088</b>	<b>0.60</b>	<b>547</b>	<b>1111</b>	<b>0.66</b>	<b>587</b>	<b>1136</b>	<b>0.72</b>	<b>627</b>
<b>1100</b>	<b>1013</b>	<b>0.49</b>	<b>487</b>	<b>1068</b>	<b>0.55</b>	<b>547</b>	<b>1091</b>	<b>0.61</b>	<b>577</b>	<b>1109</b>	<b>0.66</b>	<b>607</b>	<b>1127</b>	<b>0.73</b>	<b>637</b>	<b>1145</b>	<b>0.80</b>	<b>666</b>
<b>1200</b>	<b>1045</b>	<b>0.56</b>	<b>557</b>	<b>1090</b>	<b>0.64</b>	<b>637</b>	<b>1109</b>	<b>0.68</b>	<b>647</b>	<b>1156</b>	<b>0.73</b>	<b>676</b>	<b>1203</b>	<b>0.81</b>	<b>706</b>	<b>1250</b>	<b>0.86</b>	<b>736</b>
<b>1300</b>	<b>1075</b>	<b>0.64</b>	<b>637</b>	<b>1122</b>	<b>0.70</b>	<b>696</b>	<b>1152</b>	<b>0.76</b>	<b>716</b>	<b>1190</b>	<b>0.82</b>	<b>756</b>	<b>1228</b>	<b>0.87</b>	<b>796</b>	<b>1266</b>	<b>0.94</b>	<b>836</b>
<b>1400</b>	<b>1110</b>	<b>0.73</b>	<b>726</b>	<b>1160</b>	<b>0.78</b>	<b>766</b>	<b>1181</b>	<b>0.83</b>	<b>806</b>	<b>1237</b>	<b>0.88</b>	<b>845</b>	<b>1293</b>	<b>0.94</b>	<b>885</b>	<b>1349</b>	<b>0.99</b>	<b>925</b>
<b>1500</b>	<b>1150</b>	<b>0.78</b>	<b>816</b>	<b>1190</b>	<b>0.84</b>	<b>855</b>	<b>1225</b>	<b>0.89</b>	<b>895</b>	<b>1271</b>	<b>0.95</b>	<b>945</b>	<b>1317</b>	<b>1.00</b>	<b>995</b>	<b>1383</b>	<b>1.05</b>	<b>1044</b>

**LEGEND**

**Bhp** — Brake Horsepower Input to Fan  
**FIOF** — Factory-Installed Option  
**Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates a field-supplied drive is required. (See Note 3).
2.  indicates field-supplied motor and drive are required.
3. Motor drive range is 760 to 1000 rpm. All other rpms require a field-supplied drive.
4. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

5. Maximum continuous bhp is 1.0 and the maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
7. Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS (cont)

48TJ005 (4 TONS) — STANDARD MOTOR (DIRECT DRIVE)												
Airflow (Cfm)	Low Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts
1200	0.68	0.41	458	0.74	0.45	506	0.74	0.51	572	0.85	0.56	632
1300	0.61	0.42	471	0.67	0.46	521	0.66	0.52	589	0.78	0.58	651
1400	0.53	0.45	503	0.59	0.49	556	0.59	0.54	616	0.70	0.60	681
1500	0.45	0.47	536	0.51	0.52	593	0.52	0.56	631	0.63	0.62	698
1600	0.36	0.49	557	0.42	0.54	616	0.45	0.58	654	0.56	0.64	723
1700	0.26	0.52	584	0.32	0.57	646	0.37	0.60	678	0.48	0.66	750
1800	0.15	0.54	610	0.22	0.60	674	0.30	0.62	698	0.41	0.68	772
1900	0.04	0.56	629	0.11	0.62	696	0.23	0.64	720	0.34	0.70	796
2000	—	—	—	—	—	—	0.16	0.66	744	0.26	0.73	823

### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**Esp** — External Static Pressure (in. wg)  
**FIOF** — Factory-Installed Option

### NOTES:

1. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.

3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TJ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)																					
Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.1			0.2			0.3			0.4			0.6			0.7			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	596	0.20	210	665	0.25	263	722	0.31	320	779	0.36	378	872	0.48	504	915	0.54	567	957	0.60	630
1300	633	0.24	252	699	0.30	315	754	0.36	378	809	0.42	441	902	0.55	578	943	0.61	641	984	0.67	704
1400	672	0.30	315	735	0.36	378	788	0.42	441	840	0.48	504	933	0.62	651	972	0.69	720	1011	0.75	788
1500	711	0.35	368	770	0.42	441	822	0.49	510	873	0.55	578	963	0.69	725	1002	0.77	804	1041	0.84	858
1600	751	0.42	441	835	0.49	515	871	0.56	588	907	0.63	662	993	0.77	787	1033	0.85	869	1072	0.93	950
1700	791	0.49	515	873	0.57	599	907	0.65	678	941	0.72	757	1024	0.87	889	1064	0.96	976	1103	1.04	1063
1800	831	0.58	609	881	0.66	693	929	0.74	772	976	0.81	851	1057	0.97	991	1095	1.06	1078	1132	1.14	1165
1900	872	0.67	704	919	0.75	788	965	0.84	877	1011	0.92	967	1091	1.08	1104	1127	1.17	1191	1162	1.25	1277
2000	913	0.77	809	958	0.86	904	1002	0.95	993	1046	1.03	1082	1125	1.21	1237	1160	1.30	1323	1195	1.38	1410

48TJ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)																					
Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.9			1.0			1.1			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	993	0.65	678	1028	0.69	725	1056	0.72	751	1083	0.74	778	1134	0.80	935	1185	0.88	965	1331	0.99	1000
1300	1021	0.74	772	1058	0.80	841	1090	0.85	888	1121	0.89	935	1171	0.94	988	1219	1.00	999	1268	1.10	1029
1400	1049	0.82	837	1086	0.89	885	1120	0.96	950	1153	1.00	976	1210	1.12	1071	1257	1.17	1105	1307	1.25	1190
1500	1077	0.92	922	1113	0.99	985	1147	1.06	1054	1180	1.13	1081	1241	1.27	1215	1295	1.37	1294	1339	1.43	1350
1600	1107	1.00	998	1141	1.09	1084	1174	1.17	1134	1207	1.25	1196	1269	1.40	1339	1326	1.54	1454	1376	1.65	1558
1700	1137	1.12	1128	1171	1.20	1194	1203	1.29	1278	1235	1.37	1310	1296	1.53	1463	1354	1.70	1605	1407	1.84	1738
1800	1167	1.23	1239	1202	1.32	1313	1233	1.41	1398	1263	1.49	1425	1323	1.67	1597	1381	1.85	1747	1436	2.02	1907
1900	1197	1.35	1360	1232	1.45	1442	1263	1.54	1532	1294	1.63	1559	1351	1.81	1731	1408	2.00	1889	1463	2.19	2068
2000	1229	1.48	1491	1262	1.58	1572	1294	1.68	1671	1325	1.78	1702	1362	1.97	1884	1436	2.16	2040	1489	2.36	2229

### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**FIOF** — Factory-Installed Option  
**Watts** — Input Watts to Motor

### NOTES:

- 1. Boldface** indicates field-supplied drive is required. (See Note 3.)
- 2. [Shaded Box]** indicates field-supplied motor and drive required.
- Motor drive range is 835 to 1185 rpm. All other rpms require a field-supplied drive.
- Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

5. Maximum continuous bhp is 1.0, and the maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensure that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.

6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

7. Interpolation is permissible. Do not extrapolate.



**FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS (cont)**

48TJ006 (5 TONS) — STANDARD MOTOR (DIRECT DRIVE)																		
Airflow (Cfm)	Low Speed						Medium Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts
1500	0.69	0.67	750	1.01	0.71	791	1.00	0.70	782	1.20	0.76	845	1.22	0.79	875	1.28	0.85	949
1600	0.49	0.70	780	0.85	0.74	824	0.85	0.74	821	1.06	0.79	883	1.09	0.82	913	1.17	0.89	988
1700	0.29	0.73	810	0.70	0.77	857	0.70	0.77	861	0.93	0.83	921	0.97	0.85	950	1.06	0.92	1027
1800	0.09	0.75	839	0.54	0.80	891	0.55	0.81	900	0.80	0.86	959	0.84	0.89	988	0.95	0.96	1066
1900	—	—	—	0.39	0.83	924	0.40	0.84	940	0.67	0.90	997	0.72	0.92	1025	0.84	0.99	1105
2000	—	—	—	0.23	0.86	957	0.25	0.88	979	0.54	0.93	1035	0.59	0.95	1063	0.73	1.03	1144
2100	—	—	—	0.08	0.89	990	0.10	0.91	1018	0.41	0.96	1073	0.46	0.99	1101	0.62	1.06	1183
2200	—	—	—	—	—	—	—	—	—	0.28	1.00	1111	0.34	1.02	1138	0.51	1.10	1222
2300	—	—	—	—	—	—	—	—	—	0.15	1.03	1149	0.21	1.06	1176	0.40	1.13	1261
2400	—	—	—	—	—	—	—	—	—	0.02	1.07	1187	0.09	1.09	1213	0.29	1.17	1300
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.18	1.20	1340	

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- Esp** — External Static Pressure (in. wg)
- FIOF** — Factory-Installed Option

**NOTES:**

1. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TJ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)																		
Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	750	0.36	368	808	0.42	429	914	0.56	572	1001	0.69	705	1084	0.85	869	1168	1.01	1032
1600	794	0.42	429	846	0.49	501	950	0.64	654	1034	0.78	797	1111	0.94	961	1194	1.11	1134
1700	839	0.50	511	884	0.57	582	983	0.72	736	1068	0.88	899	1145	1.03	1053	1218	1.21	1237
1800	885	0.58	593	924	0.66	674	1018	0.82	838	1105	0.98	1001	1179	1.13	1155	1246	1.32	1349
1900	932	0.68	695	965	0.76	777	1057	0.92	940	1143	1.10	1124	1212	1.26	1288	1280	1.43	1461
2000	979	0.78	797	1008	0.87	889	1096	1.04	1063	1177	1.22	1247	1247	1.40	1431	1300	1.57	1604
2100	1026	0.89	910	1051	0.99	1012	1136	1.17	1196	1210	1.35	1380	1284	1.54	1574	1347	1.72	1758
2200	1074	1.02	1042	1095	1.12	1145	1173	1.30	1328	1245	1.49	1523	1322	1.70	1737	1380	1.89	1931
2300	1122	1.16	1185	1140	1.26	1288	1210	1.47	1502	1284	1.65	1686	1356	1.80	1901	1418	2.07	2115
2400	1170	1.30	1328	1185	1.41	1441	1249	1.61	1645	1323	1.80	1860	1389	2.03	2074	1456	2.26	2310
2500	1218	1.46	1492	1231	1.57	1604	1289	1.78	1819	1363	2.00	2044	1424	2.22	2269	1500	2.45	2504

48TJ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)									
Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1199	1.19	1216	1226	1.46	1492	1250	1.69	1757
1600	1263	1.28	1308	1275	1.49	1523	1299	1.78	1800
1700	1295	1.39	1420	1351	1.58	1615	1352	1.80	1850
1300	1319	1.52	1553	1389	1.71	1747	1435	1.91	1952
1900	1343	1.64	1676	1415	1.80	1891	1478	2.05	2095
2000	1374	1.77	1809	1438	1.99	2034	1505	2.21	2258
2100	1409	1.91	1952	1465	2.14	2167	—	—	—
2200	1442	2.08	2126	1498	2.30	2350	—	—	—
2300	1475	2.26	2310	—	—	—	—	—	—
2400	1565	2.47	2524	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive is required. (See Note 3.)
2.  indicates field-supplied motor and drive required.
3. Motor drive range is 900 to 1300 rpm. All other rpms require a field-supplied drive.
4. Values include losses for filters, units casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

5. Maximum continuous bhp is 1.80 and the maximum continuous watts are 1921. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
7. Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS (cont)

### 48TJ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	942	<b>0.70</b>	<b>646</b>	<b>978</b>	<b>0.66</b>	<b>700</b>	<b>1063</b>	<b>0.82</b>	<b>771</b>	1147	0.97	891	1248	1.20	1081	1322	1.33	1190
1900	<b>982</b>	<b>0.80</b>	<b>739</b>	<b>1023</b>	<b>0.78</b>	<b>779</b>	1097	0.91	843	1175	1.11	1006	1266	1.29	1156	1356	1.47	1310
2000	<b>1022</b>	<b>0.91</b>	<b>835</b>	<b>1068</b>	<b>0.90</b>	<b>867</b>	1132	1.01	924	1218	1.23	1106	1303	1.41	1258	1397	1.52	1353
2100	<b>1063</b>	<b>0.99</b>	<b>916</b>	1115	1.00	998	1180	1.17	1056	1261	1.35	1207	1340	1.53	1361	1428	1.66	1473
2200	1104	1.13	1039	1159	1.15	1081	1214	1.28	1148	1310	1.52	1353	1375	1.63	1447	1459	1.80	1595
2300	1130	1.26	1156	1202	1.29	1140	1248	1.38	1233	1358	1.69	1499	1410	1.72	1526	<b>1488</b>	<b>1.93</b>	<b>1709</b>
2400	1174	1.37	1258	1237	1.41	1224	1292	1.55	1378	1392	1.81	1604	1460	1.90	1683	<b>1532</b>	<b>2.14</b>	<b>1892</b>
2500	1201	1.48	1361	1272	1.53	1335	1335	1.71	1517	1427	1.94	1718	<b>1518</b>	<b>2.16</b>	<b>1910</b>	<b>1575</b>	<b>2.35</b>	<b>2076</b>
2600	1246	1.62	1491	1320	1.68	1482	1368	1.81	1604	1458	2.06	1823	1562	2.42	2136	1620	2.59	2283
2700	1285	1.75	1613	1361	1.82	1595	1400	1.91	1691	<b>1490</b>	<b>2.19</b>	<b>1936</b>	1602	2.64	2326	1666	2.85	2504
2800	1304	1.87	1726	1402	1.95	1639	1439	2.08	1840	1543	2.43	2145	1642	2.86	2512	—	—	—
2900	1345	2.07	1910	1446	2.16	1814	<b>1477</b>	<b>2.16</b>	<b>1989</b>	1585	2.65	2335	—	—	—	—	—	—
3000	1378	2.26	2084	<b>1489</b>	<b>2.36</b>	<b>2032</b>	1529	2.52	2223	1598	2.73	2444	—	—	—	—	—	—

### 48TJ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1395	1.46	1301	<b>1475</b>	<b>1.56</b>	<b>1387</b>	<b>1542</b>	<b>1.71</b>	<b>1517</b>
1900	1430	1.58	1404	<b>1504</b>	<b>1.69</b>	<b>1499</b>	<b>1556</b>	<b>1.82</b>	<b>1613</b>
2000	1459	1.67	1482	<b>1532</b>	<b>1.82</b>	<b>1613</b>	<b>1588</b>	<b>1.97</b>	<b>1744</b>
2100	<b>1489</b>	<b>1.80</b>	<b>1595</b>	<b>1567</b>	<b>1.99</b>	<b>1761</b>	<b>1626</b>	<b>2.16</b>	<b>1910</b>
2200	<b>1528</b>	<b>1.95</b>	<b>1726</b>	<b>1603</b>	<b>2.17</b>	<b>1919</b>	<b>1666</b>	<b>2.37</b>	<b>2093</b>
2300	<b>1561</b>	<b>2.13</b>	<b>1884</b>	<b>1637</b>	<b>2.35</b>	<b>2076</b>	1710	2.54	2272
2400	<b>1584</b>	<b>2.28</b>	<b>2015</b>	1671	2.55	2249	1756	2.70	2467
2500	1633	2.53	2232	1698	2.72	2405	—	—	—
2600	1675	2.77	2436	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—

#### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**FIOF** — Factory-Installed Option  
**Watts** — Input Watts to Motor

#### NOTES:

- Boldface** indicates field-supplied drive is required. (See Note 3.)
- █ indicates field-supplied motor and drive required.
- Motor drive range is 1070 to 1460 rpm. All other rpms require a field-supplied drive.

- Values include losses for filters, units casing, and wet coils. See page 49 for accessory/FIOF static pressure information.
- Maximum continuous bhp is 2.40 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
- Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
- Interpolation is permissible. Do not extrapolate.





**FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS (cont)**

<b>48TJ008 (7½ TONS) — STANDARD MOTOR (BELT DRIVE)</b>															
Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	514	0.55	562	593	0.76	723	662	0.99	907	724	1.22	1097	781	1.78	1318
2300	521	0.57	577	600	0.79	747	668	1.02	932	730	1.26	1131	786	1.50	1335
2400	536	0.63	623	613	0.85	795	680	1.09	989	741	1.34	1199	796	1.59	1413
2500	551	0.69	669	626	0.93	859	693	1.17	1056	753	1.43	1275	808	1.69	1499
2550	559	0.72	692	634	0.97	891	700	1.21	1089	759	1.48	1318	814	1.74	1543
2600	567	0.75	716	641	1.00	916	706	1.25	1123	764	1.52	1353	819	1.79	1587
2700	582	0.83	779	655	1.08	981	719	1.34	1199	776	1.61	1430	831	1.89	1674
2800	598	0.90	835	670	1.17	1056	732	1.43	1275	789	1.71	1517	842	2.00	1770
2900	614	0.98	899	684	1.25	1123	745	1.53	1361	802	1.81	1604	854	2.11	1866
3000	630	1.07	973	699	1.35	1207	759	1.63	1447	815	1.92	1700	866	2.23	1971
3100	646	1.16	1047	714	1.45	1292	773	1.74	1543	828	2.04	1805	878	2.35	2076
3200	662	1.26	1131	729	1.55	1378	787	1.86	1648	841	2.16	1910	891	2.48	2188
3300	679	1.36	1216	744	1.66	1473	801	1.98	1753	854	2.29	2023	904	2.61	2300
3400	695	1.47	1310	759	1.78	1578	816	2.10	1858	867	2.42	2136	917	2.75	2420
3500	712	1.59	1413	774	1.90	1683	830	2.23	1971	881	2.56	2257	930	2.90	2546
3600	729	1.71	1517	790	2.03	1796	845	2.37	2093	895	2.71	2386	943	3.05	2670
3700	745	1.84	1630	805	2.17	1919	860	2.52	2223	909	2.87	2521	956	3.22	2807
3750	754	1.91	1691	813	2.24	1980	868	2.59	2283	917	2.95	2587	963	3.30	2870

<b>48TJ008 (7½ TONS) — STANDARD MOTOR (BELT DRIVE)</b>									
Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	841	1.81	1604	902	2.25	1989	939	2.60	2292
2300	843	1.83	1621	905	2.28	2015	943	2.62	2309
2400	849	1.88	1665	910	2.31	2041	952	2.74	2411
2500	859	1.96	1735	912	2.31	2050	963	2.81	2470
2550	864	2.01	1779	915	2.34	2067	968	2.81	2479
2600	869	2.06	1823	918	2.37	2093	973	2.81	2487
2700	880	2.17	1919	927	2.47	2180	976	2.84	2495
2800	892	2.29	2023	938	2.58	2275	983	2.92	2562
2900	903	2.42	2136	949	2.71	2386	993	3.03	2653
3000	915	2.54	2240	961	2.85	2504	1003	3.17	2767
3100	926	2.67	2352	972	3.00	2629	1015	3.32	2886
3200	938	2.81	2470	983	3.14	2743	1026	3.47	3002
3300	950	2.95	2587	995	3.30	2870	—	—	—
3400	963	3.10	2710	1007	3.45	2987	—	—	—
3500	976	3.25	2831	—	—	—	—	—	—
3600	988	3.41	2956	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOP** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 4.)
2.  indicates alternate drive required.
3.  indicates field-supplied motor and drive required.
4. Standard drive range is 590 to 840 rpm. Alternate drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.

5. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOP static pressure information.
6. Maximum continuous bhp is 2.40 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
8. Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS (cont)

48TJ009 (8½ TONS) — STANDARD MOTOR (BELT DRIVE)															
Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	559	0.72	692	634	0.97	891	700	1.21	1089	759	1.48	1318	814	1.74	1543
2600	567	0.75	716	641	1.00	916	706	1.25	1123	764	1.52	1353	819	1.79	1587
2700	582	0.83	779	655	1.08	981	719	1.34	1199	776	1.61	1430	831	1.89	1674
2800	598	0.90	835	670	1.17	1056	732	1.43	1275	789	1.71	1517	842	2.00	1770
2900	614	0.98	899	684	1.25	1123	745	1.53	1361	802	1.81	1604	854	2.11	1866
3000	630	1.07	973	690	1.35	1207	759	1.63	1447	815	1.92	1700	866	2.23	1971
3100	646	1.16	1047	714	1.45	1292	773	1.74	1543	828	2.04	1805	878	2.35	2076
3200	662	1.26	1131	729	1.55	1378	787	1.86	1648	841	2.16	1910	891	2.48	2188
3300	679	1.36	1216	744	1.66	1473	801	1.98	1753	854	2.29	2023	904	2.61	2300
3400	695	1.47	1310	759	1.78	1578	816	2.10	1858	867	2.42	2136	917	2.75	2420
3500	712	1.59	1413	774	1.90	1683	830	2.23	1971	881	2.56	2257	930	2.90	2546
3600	729	1.71	1517	790	2.03	1796	845	2.37	2093	895	2.71	2386	943	3.05	2670
3700	745	1.84	1630	805	2.17	1919	860	2.52	2223	909	2.87	2521	956	3.22	2807
3750	754	1.91	1691	813	2.24	1980	868	2.59	2283	917	2.95	2587	963	3.30	2870
3800	762	1.98	1753	821	2.31	2041	875	2.66	2343	924	3.03	2653	970	3.38	2933
3900	779	2.12	1875	836	2.46	2171	890	2.82	2479	938	3.19	2783	—	—	—
4000	796	2.27	2006	852	2.61	2300	905	2.98	2612	953	3.37	2925	—	—	—
4100	813	2.42	2136	868	2.78	2445	920	3.15	2751	—	—	—	—	—	—
4200	830	2.59	2283	884	2.95	2587	935	3.33	2894	—	—	—	—	—	—
4250	839	2.68	2360	890	3.04	2661	—	—	—	—	—	—	—	—	—

48TJ009 (8½ TONS) — STANDARD MOTOR (BELT DRIVE)									
Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	2.01	1779	915	2.34	2067	968	2.81	2479
2600	869	2.06	1823	918	2.37	2093	973	2.81	2487
2700	880	2.17	1919	927	2.47	2180	976	2.84	2495
2800	892	2.29	2023	938	2.58	2275	983	2.92	2562
2900	903	2.42	2136	949	2.71	2386	993	3.03	2653
3000	915	2.54	2240	961	2.85	2504	1003	3.17	2767
3100	926	2.67	2352	972	3.00	2629	1016	3.32	2886
3200	938	2.81	2470	983	3.14	2743	1026	3.47	3002
3300	950	2.95	2587	995	3.30	2870	—	—	—
3400	963	3.10	2710	1007	3.45	2987	—	—	—
3500	976	3.25	2831	—	—	—	—	—	—
3600	988	3.41	2956	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—
3800	—	—	—	—	—	—	—	—	—
3900	—	—	—	—	—	—	—	—	—
4000	—	—	—	—	—	—	—	—	—
4100	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—

### LEGEND

- Bhp** — Brake Horsepower Input to Fan
- FLOP** — Factory-Installed Option
- Watts** — Input Watts to Motor

### NOTES:

1. **Boldface** indicates field-supplied drive required. (See Note 3.)
2.  indicates field-supplied motor and drive required.
3. Motor drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.
4. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FLOP static pressure information.

5. Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
7. Interpolation is permissible. Do not extrapolate.



**FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS (cont)**

**48TJ012 (10 TONS) — STANDARD AND ALTERNATE MOTORS (BELT DRIVE)**

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	592	0.76	723	661	0.93	859	722	1.09	989	779	1.26	1131	829	1.42	1267	880	1.58	1404
3100	607	0.83	779	676	1.01	924	734	1.17	1056	791	1.34	1199	840	1.51	1344	890	1.68	1491
3200	622	0.90	835	690	1.09	989	746	1.25	1123	803	1.43	1275	852	1.60	1422	900	1.77	1569
3300	638	0.98	899	705	1.17	1056	759	1.33	1190	815	1.52	1353	864	1.70	1508	910	1.88	1665
3400	653	1.06	965	719	1.26	1131	772	1.43	1275	826	1.62	1439	876	1.81	1604	921	1.98	1753
3500	669	1.15	1039	733	1.35	1207	786	1.53	1361	838	1.72	1526	888	1.91	1691	933	2.10	1858
3600	684	1.24	1114	747	1.44	1284	800	1.64	1456	850	1.82	1613	900	2.03	1796	945	2.22	2014
3700	700	1.33	1190	760	1.54	1370	814	1.75	1552	863	1.92	1700	912	2.14	1892	957	2.34	2117
3800	715	1.43	1275	774	1.64	1456	828	1.86	1648	875	2.04	1805	924	2.26	1997	969	2.47	2230
3900	731	1.54	1370	787	1.74	1543	843	1.98	1753	888	2.16	1910	936	2.38	2151	981	2.60	2344
4000	747	1.64	1456	801	1.85	1639	857	2.10	1858	902	2.30	2032	948	2.51	2265	993	2.74	2469
4100	763	1.76	1560	816	1.97	1744	872	2.23	1971	916	2.44	2203	960	2.64	2380	1005	2.88	2596
4200	778	1.88	1665	831	2.10	1884	886	2.36	2084	929	2.58	2326	972	2.78	2505	1016	3.03	2735
4300	794	2.00	1770	846	2.23	1971	900	2.50	2256	943	2.73	2460	985	2.93	2642	1028	3.17	2866
4400	810	2.13	1884	861	2.37	2093	913	2.64	2380	958	2.89	2605	999	3.09	2791	1040	3.32	3010
4500	826	2.27	2006	876	2.52	2273	927	2.78	2505	973	3.04	2744	1012	3.26	2952	—	—	—
4600	842	2.41	2177	892	2.67	2406	940	2.92	2633	987	3.21	2904	—	—	—	—	—	—
4700	858	2.55	2300	907	2.83	2551	954	3.08	2782	1002	3.38	3068	—	—	—	—	—	—
4800	874	2.70	2433	922	2.99	2698	968	3.24	2933	—	—	—	—	—	—	—	—	—
4900	890	2.86	2578	938	3.16	2857	—	—	—	—	—	—	—	—	—	—	—	—
5000	906	3.03	2735	953	3.33	3020	—	—	—	—	—	—	—	—	—	—	—	—

**48TJ012 (10 TONS) — STANDARD AND ALTERNATE MOTOR (BELT DRIVE)**

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	924	1.73	1534	970	1.89	1736	1019	2.00	1828	1066	2.30	2082
3100	935	1.84	1695	977	2.00	1828	1026	2.17	1971	1070	2.44	2203
3200	946	1.95	1786	987	2.11	1920	1029	2.28	2065	1075	2.51	2265
3300	957	2.06	1878	998	2.23	2022	1037	2.40	2169	1082	2.58	2326
3400	967	2.17	1971	1009	2.35	2125	1047	2.53	2282	<b>1087</b>	<b>2.70</b>	<b>2433</b>
3500	976	2.29	2074	1020	2.48	2238	1058	2.66	2397	<b>1095</b>	<b>2.84</b>	<b>2560</b>
3600	986	2.41	2177	1030	2.61	2353	1069	2.80	2523	1106	2.98	2688
3700	998	2.54	2291	1039	2.74	2469	1081	2.94	2651	1117	3.13	2829
3800	1010	2.67	2406	1049	2.87	2587	1091	3.08	2782	1128	3.29	2981
3900	1022	2.81	2533	1060	3.02	2726	1100	3.23	2923	—	—	—
4000	1034	2.96	2670	1072	3.17	2866	1110	3.38	3068	—	—	—
4100	1046	3.11	2810	1084	3.32	3010	—	—	—	—	—	—
4200	1058	3.26	2952	—	—	—	—	—	—	—	—	—
4300	—	—	—	—	—	—	—	—	—	—	—	—
4400	—	—	—	—	—	—	—	—	—	—	—	—
4500	—	—	—	—	—	—	—	—	—	—	—	—
4600	—	—	—	—	—	—	—	—	—	—	—	—
4700	—	—	—	—	—	—	—	—	—	—	—	—
4800	—	—	—	—	—	—	—	—	—	—	—	—
4900	—	—	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 4.)
2.  indicates alternate motor and/or drive required.
3.  indicates field-supplied motor and drive required.
4. Standard motor drive range is 685 to 935 rpm. Alternate motor drive range is 835 to 1085 rpm. All other rpms require a field-supplied drive.

5. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.
6. Maximum continuous bhp is 2.4 for the standard motor and 2.9 for the alternate motor. Maximum continuous watts are 2120 for the standard motor and 2615 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
8. Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 VERTICAL DISCHARGE UNITS (cont)

### 48TJ014 (12½ TONS) — STANDARD AND ALTERNATE MOTORS (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	737	1.41	1300	798	1.64	1486	854	1.84	1658	909	2.12	1893	961	2.35	2097	1014	2.61	2325
3800	745	1.46	1340	805	1.69	1531	861	1.89	1700	915	2.17	1940	967	2.41	2149	1019	2.67	2378
3900	761	1.56	1423	820	1.80	1624	875	2.01	1802	928	2.29	2044	979	2.55	2272	1029	2.80	2494
4000	777	1.67	1514	836	1.92	1725	889	2.14	1914	941	2.40	2140	991	2.68	2387	1040	2.94	2620
4100	793	1.79	1615	851	2.05	1836	904	2.27	2027	955	2.52	2246	1004	2.82	2512	1052	3.08	2746
4200	810	1.91	1717	867	2.18	1948	918	2.41	2149	968	2.65	2361	1017	2.96	2638	1064	3.23	2882
4300	826	2.04	1828	883	2.32	2070	933	2.55	2272	982	2.79	2485	1030	3.11	2773	1076	3.40	3037
4400	842	2.17	1940	898	2.46	2193	948	2.70	2405	996	2.93	2611	1043	3.25	2901	1088	3.56	3184
4500	859	2.31	2061	914	2.60	2316	962	2.85	2539	1010	3.09	2755	1056	3.40	3037	1101	3.73	3341
4600	876	2.45	2184	930	2.76	2459	977	3.01	2683	1024	3.26	2910	1070	3.55	3175	1114	3.90	3498
4700	892	2.60	2316	945	2.91	2593	992	3.18	2837	1039	3.43	3065	1083	3.71	3322	1126	4.07	3655
4800	909	2.77	2468	961	3.07	2737	1008	3.36	3001	1053	3.61	3230	1097	3.88	3479	1140	4.25	3822
4900	926	2.93	2611	977	3.24	2891	1024	3.54	3166	1068	3.80	3405	1111	4.06	3646	1153	4.41	3971
5000	942	3.11	2773	993	3.41	3047	1039	3.73	3341	1080	3.99	3581	1125	4.25	3822	1166	4.59	4139
5100	959	3.29	2937	1009	3.60	3221	1055	3.92	3516	1097	4.19	3767	1139	4.46	4018	1180	4.78	4316
5200	976	3.47	3101	1025	3.78	3387	1071	4.12	3702	1112	4.40	3962	1153	4.67	4214	1194	4.98	4503
5300	993	3.67	3285	1041	3.98	3572	1086	4.33	3897	1127	4.61	4158	1168	4.90	4428	1208	5.19	4698
5400	1010	3.87	3470	1057	4.18	3757	1102	4.54	4093	1142	4.84	4372	1182	5.13	4642	1221	5.41	4902
5500	1027	4.07	3655	1073	4.39	3953	1118	4.76	4298	1157	5.07	4586	1197	5.36	4856	1235	5.64	5115
5600	1043	4.29	3860	1090	4.61	4158	1133	4.99	4512	1173	5.31	4810	1211	5.61	5087	—	—	—
5700	1060	4.51	4065	1106	4.83	4363	1149	5.22	4726	1189	5.55	5032	—	—	—	—	—	—
5800	1077	4.74	4279	1122	5.07	4586	1165	5.45	4939	—	—	—	—	—	—	—	—	—
5900	1094	4.98	4503	1139	5.31	4810	1181	5.70	5170	—	—	—	—	—	—	—	—	—
6000	1111	5.22	4726	1155	5.55	5032	—	—	—	—	—	—	—	—	—	—	—	—
6100	1128	5.48	4967	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6250	1162	6.00	5446	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

### 48TJ014 (12½ TONS) — STANDARD AND ALTERNATE MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	1065	2.87	2557	1113	3.12	2783	1158	3.36	2997	1197	3.56	3180
3800	1070	2.94	2620	1118	3.19	2846	1163	3.44	3074	1203	3.65	3267
3900	1079	3.07	2737	1128	3.34	2983	1173	3.60	3221	1214	3.83	3433
4000	1089	3.22	2873	1137	3.49	3120	1183	3.76	3368	1225	4.00	3590
4100	1100	3.36	3001	1147	3.65	3267	1193	3.93	3525	1236	4.19	3767
4200	1110	3.51	3138	1157	3.81	3414	1202	4.09	3674	1245	4.38	3943
4300	1121	3.67	3285	1167	3.97	3562	1212	4.27	3841	1255	4.56	4111
4400	1133	3.84	3442	1178	4.14	3720	1222	4.44	3999	1265	4.74	4279
4500	1144	4.00	3590	1188	4.31	3878	1232	4.62	4167	1274	4.93	4456
4600	1157	4.19	3767	1199	4.49	4046	1242	4.81	4344	1284	5.13	4642
4700	1169	4.38	3943	1210	4.68	4223	1252	5.00	4521	1294	5.33	4828
4800	1181	4.58	4130	1222	4.87	4400	1263	5.20	4707	—	—	—
4900	1194	4.77	4307	1234	5.09	4605	1274	5.40	4893	—	—	—
5000	1207	4.97	4493	1247	5.30	4800	1286	5.62	5097	—	—	—
5100	1220	5.18	4689	1259	5.52	5004	—	—	—	—	—	—
5200	1233	5.38	4874	1272	5.74	5207	—	—	—	—	—	—
5300	1246	5.58	5060	—	—	—	—	—	—	—	—	—
5400	—	—	—	—	—	—	—	—	—	—	—	—
5500	—	—	—	—	—	—	—	—	—	—	—	—
5600	—	—	—	—	—	—	—	—	—	—	—	—
5700	—	—	—	—	—	—	—	—	—	—	—	—
5800	—	—	—	—	—	—	—	—	—	—	—	—
5900	—	—	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—	—	—
6100	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—

#### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**FIOF** — Factory-Installed Option  
**Watts** — Input Watts to Motor

#### NOTES:

- 1. Boldface** indicates field-supplied drive required. (See Note 4.)
- 2.**  indicates alternate motor and/or drive required.
- 3.**  indicates field-supplied motor and drive required.
- 4.** Standard motor drive range is 860 to 1080 rpm. Alternate motor drive range is 900 to 1260 rpm. All other rpms require a field-supplied drive.

- 5.** Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.
- 6.** Maximum continuous bhp is 4.20 for the standard motor and 5.25 for the alternate motor. Maximum continuous watts are 3775 for the standard motor and 4400 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
- 7.** Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
- 8.** Interpolation is permissible. Do not extrapolate.



## FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS

48TJ004 (3 TONS) — STANDARD MOTOR (DIRECT DRIVE)												
Airflow (Cfm)	Low Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts
900	0.54	0.21	253	0.57	0.23	277	0.55	0.26	307	0.60	0.31	363
1000	0.49	0.23	270	0.51	0.25	292	0.52	0.27	321	0.53	0.32	374
1100	0.43	0.24	287	0.45	0.26	307	0.46	0.28	335	0.49	0.33	385
1200	0.39	0.26	304	0.40	0.27	323	0.38	0.29	349	0.43	0.34	397
1300	0.33	0.27	321	0.35	0.29	338	0.35	0.31	364	0.36	0.34	408
1400	0.26	0.29	338	0.28	0.30	354	0.29	0.32	378	—	—	—
1500	0.21	0.30	355	0.23	0.31	369	0.24	0.33	392	—	—	—

### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**Esp** — External Static Pressure (in. wg)  
**FIOF** — Factory-Installed Option

### NOTES:

1. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TJ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)																		
Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.3			0.4			0.5			0.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	526	0.06	70	584	0.08	99	656	0.12	139	734	0.22	219	818	0.25	269	875	0.27	269
1000	570	0.09	109	627	0.13	149	738	0.19	189	800	0.26	259	848	0.29	288	895	0.31	308
1100	614	0.13	149	670	0.16	189	758	0.23	229	812	0.29	288	863	0.32	308	914	0.35	348
1200	658	0.16	189	710	0.23	229	780	0.28	279	840	0.32	318	889	0.36	358	938	0.40	398
1300	703	0.20	239	752	0.27	269	808	0.32	318	868	0.37	368	916	0.41	408	963	0.45	448
1400	725	0.29	288	776	0.31	308	845	0.38	378	891	0.42	418	937	0.47	467	983	0.51	507
1500	755	0.33	328	816	0.38	378	870	0.43	428	924	0.48	477	969	0.53	527	<b>1014</b>	<b>0.58</b>	<b>577</b>

48TJ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)																		
Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.7			0.8			0.9			1.0			1.1			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	924	0.32	308	953	0.35	348	989	0.38	388	<b>1028</b>	<b>0.42</b>	<b>438</b>	<b>1074</b>	<b>0.45</b>	<b>487</b>	<b>1120</b>	<b>0.50</b>	<b>537</b>
1000	936	0.35	348	977	0.39	388	<b>1020</b>	<b>0.44</b>	<b>438</b>	<b>1064</b>	<b>0.48</b>	<b>477</b>	<b>1124</b>	<b>0.52</b>	<b>537</b>	<b>1185</b>	<b>0.55</b>	<b>597</b>
1100	960	0.39	388	<b>1005</b>	<b>0.43</b>	<b>428</b>	<b>1052</b>	<b>0.49</b>	<b>487</b>	<b>1100</b>	<b>0.52</b>	<b>527</b>	<b>1163</b>	<b>0.56</b>	<b>587</b>	<b>1225</b>	<b>0.60</b>	<b>647</b>
1200	988	0.45	448	<b>1038</b>	<b>0.50</b>	<b>497</b>	<b>1076</b>	<b>0.53</b>	<b>527</b>	<b>1136</b>	<b>0.59</b>	<b>577</b>	<b>1201</b>	<b>0.61</b>	<b>647</b>	<b>1266</b>	<b>0.64</b>	<b>716</b>
1300	<b>1012</b>	<b>0.51</b>	<b>507</b>	<b>1061</b>	<b>0.56</b>	<b>557</b>	<b>1094</b>	<b>0.61</b>	<b>607</b>	<b>1172</b>	<b>0.65</b>	<b>647</b>	<b>1239</b>	<b>0.69</b>	<b>716</b>	<b>1306</b>	<b>0.72</b>	<b>786</b>
1400	<b>1027</b>	<b>0.56</b>	<b>557</b>	<b>1071</b>	<b>0.60</b>	<b>597</b>	<b>1108</b>	<b>0.67</b>	<b>666</b>	<b>1208</b>	<b>0.70</b>	<b>706</b>	<b>1278</b>	<b>0.75</b>	<b>786</b>	<b>1347</b>	<b>0.79</b>	<b>865</b>
1500	<b>1056</b>	<b>0.63</b>	<b>627</b>	<b>1097</b>	<b>0.68</b>	<b>676</b>	<b>1117</b>	<b>0.70</b>	<b>696</b>	<b>1245</b>	<b>0.74</b>	<b>776</b>	<b>1315</b>	<b>0.80</b>	<b>865</b>	<b>1385</b>	<b>0.85</b>	<b>955</b>

### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**FIOF** — Factory-Installed Option  
**Watts** — Input Watts to Motor

### NOTES:

1. **Boldface** indicates field-supplied drive required. (See Note 2.)
2. Motor drive range is 760 to 1000 rpm. All other rpms require field-supplied drive.
3. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

4. Maximum continuous bhp is 1.00 and maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS (cont)

48TJ005 (4 TONS) — STANDARD MOTOR (DIRECT DRIVE)												
Airflow (Cfm)	Low Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts
1200	0.75	0.41	458	0.81	0.45	506	0.87	0.51	572	0.92	0.56	632
1300	0.68	0.42	471	0.74	0.46	521	0.79	0.52	589	0.85	0.58	651
1400	0.60	0.45	503	0.66	0.49	556	0.71	0.54	616	0.77	0.60	681
1500	0.51	0.47	536	0.58	0.52	593	0.64	0.56	631	0.70	0.62	698
1600	0.42	0.49	557	0.49	0.54	616	0.56	0.58	654	0.63	0.64	723
1700	0.32	0.52	584	0.39	0.57	646	0.48	0.60	678	0.55	0.66	750
1800	0.21	0.54	610	0.29	0.60	674	0.41	0.62	698	0.48	0.68	772
1900	0.09	0.56	629	0.18	0.62	696	0.33	0.64	720	0.41	0.70	796
2000	—	—	—	0.06	0.65	731	0.26	0.66	744	0.33	0.73	823

### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**Esp** — External Static Pressure (in. wg)  
**FIOF** — Factory-Installed Option

### NOTES:

1. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

- Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
- Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TJ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)																					
Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.1			0.2			0.3			0.4			0.6			0.7			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	569	0.18	189	641	0.23	242	701	0.29	299	761	0.34	357	859	0.46	483	901	0.52	546	943	0.58	609
1300	604	0.22	231	673	0.28	294	731	0.34	352	788	0.39	410	887	0.52	546	928	0.59	615	968	0.65	683
1400	640	0.27	284	705	0.33	347	761	0.39	410	817	0.45	473	914	0.59	620	955	0.66	688	996	0.72	757
1500	676	0.32	336	738	0.38	399	793	0.45	468	847	0.51	536	940	0.65	683	982	0.73	767	1024	0.81	851
1600	713	0.38	399	772	0.44	462	825	0.51	536	877	0.58	609	967	0.73	767	1009	0.81	851	1051	0.89	935
1700	750	0.45	473	806	0.51	536	857	0.59	615	908	0.66	693	997	0.81	851	1037	0.90	940	1077	1.01	1030
1800	788	0.52	546	841	0.59	620	890	0.67	704	939	0.75	788	1026	0.91	956	1065	1.01	1040	1104	1.07	1124
1900	826	0.60	630	876	0.68	714	924	0.76	799	971	0.84	883	1056	1.01	1061	1094	1.10	1151	1132	1.18	1240
2000	864	0.70	735	912	0.77	809	958	0.86	898	1004	0.94	988	1087	1.12	1177	1125	1.21	1271	1162	1.30	1366

48TJ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)																					
Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.9			1.0			1.1			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	987	0.64	652	1030	0.70	695	1068	0.79	792	1106	0.87	889	1134	0.98	998	1189	1.12	1138	1245	1.21	1358
1300	1006	0.71	709	1044	0.77	736	1086	0.84	833	1128	0.91	930	1183	1.10	1052	1226	1.23	1215	1297	1.35	1406
1400	1033	0.79	797	1069	0.86	838	1104	0.93	925	1139	1.01	1012	1218	1.14	1090	1286	1.34	1282	1320	1.48	1463
1500	1060	0.88	891	1095	0.95	930	1129	1.02	1022	1162	1.09	1114	1228	1.24	1186	1303	1.40	1339	1343	1.60	1530
1600	1087	1.01	1001	1123	1.05	1073	1156	1.13	1150	1185	1.20	1226	1250	1.35	1291	1319	1.51	1444	1382	1.68	1607
1700	1114	1.07	1108	1151	1.15	1185	1183	1.23	1262	1215	1.31	1339	1276	1.48	1415	1334	1.64	1569	1398	1.80	1722
1800	1141	1.17	1221	1178	1.26	1318	1211	1.35	1390	1243	1.43	1461	1303	1.61	1540	1359	1.78	1702	1418	1.95	1865
1900	1168	1.28	1371	1204	1.37	1502	1238	1.47	1548	1271	1.56	1594	1330	1.74	1664	1386	1.93	1846	1439	2.11	2018
2000	1197	1.39	1485	1231	1.48	1604	1265	1.59	1666	1298	1.69	1727	1358	1.89	1808	1413	2.08	1989	1466	2.27	2171

### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**FIOF** — Factory-Installed Option  
**Watts** — Input Watts to Motor

### NOTES:

- 1. Boldface** indicates field-supplied drive required. (See Note 3.)
- 2. [Shaded Box]** indicates field-supplied motor and drive required.
- Motor drive range: 835 to 1185 rpm. All other rpms require a field-supplied drive.
- Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.

- Maximum continuous bhp is 1.00 and the maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
- Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
- Interpolation is permissible. Do not extrapolate.



**FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS (cont)**

48TJ006 (5 TONS) — STANDARD MOTOR (DIRECT DRIVE)																		
Airflow (Cfm)	Low Speed						Medium Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230,460, 575 V			208 V			230, 460, 575 V		
	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts	Esp	Bhp	Watts
1500	0.74	0.67	750	1.06	0.71	791	1.07	0.70	782	1.27	0.76	845	1.26	0.79	875	1.33	0.85	949
1600	0.54	0.70	780	0.90	0.74	824	0.92	0.74	821	1.13	0.79	883	1.14	0.82	913	1.22	0.89	988
1700	0.34	0.73	810	0.75	0.77	857	0.77	0.77	861	1.00	0.83	921	1.01	0.85	950	1.11	0.92	1027
1800	0.14	0.75	839	0.59	0.80	891	0.62	0.81	900	0.87	0.86	959	0.89	0.88	988	1.00	0.96	1066
1900	—	—	—	0.44	0.83	924	0.47	0.84	940	0.74	0.90	997	0.77	0.92	1025	0.89	0.99	1105
2000	—	—	—	0.28	0.86	957	0.32	0.88	979	0.61	0.93	1035	0.64	0.95	1063	0.78	1.03	1144
2100	—	—	—	0.13	0.89	990	0.17	0.91	1018	0.48	0.96	1073	0.51	0.99	1101	0.67	1.06	1183
2200	—	—	—	—	—	—	0.02	0.95	1058	0.35	1.00	1111	0.39	1.02	1138	0.56	1.10	1222
2300	—	—	—	—	—	—	—	—	—	0.22	1.03	1149	0.26	1.06	1176	0.45	1.13	1261
2400	—	—	—	—	—	—	—	—	—	0.09	1.07	1187	0.14	1.09	1213	0.34	1.17	1300
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23	1.20	1340	

**LEGEND**

**Bhp** — Brake Horsepower Input to Fan  
**Esp** — External Static Pressure (in. wg)  
**FIOP** — Factory-Installed Option

**NOTES:**

1. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOP static pressure information.

- Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
- Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TJ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)																		
Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	730	0.34	357	789	0.40	420	896	0.53	557	990	0.67	704	1072	0.83	872	1153	1.00	1051
1600	770	0.40	420	826	0.46	483	931	0.61	641	1020	0.75	788	1101	0.91	956	1178	1.09	1145
1700	811	0.47	494	865	0.54	567	966	0.69	725	1051	0.84	883	1133	1.01	1061	1205	1.18	1240
1800	852	0.55	578	905	0.62	651	1002	0.78	820	1084	0.93	977	1163	1.10	1156	1235	1.29	1355
1900	894	0.54	567	945	0.72	757	1037	0.88	925	1119	1.04	1093	1194	1.21	1271	1266	1.40	1471
2000	936	0.74	778	984	0.82	862	1072	0.98	1030	1154	1.16	1219	1226	1.33	1397	1297	1.53	1608
2100	978	0.85	893	1024	0.93	977	1108	1.10	1156	1192	1.29	1355	1259	1.47	1545	1327	1.66	1744
2200	1021	0.97	1019	1064	1.05	1103	1145	1.22	1282	1225	1.43	1503	1294	1.62	1702	1359	1.80	1902
2300	1064	1.10	1156	1104	1.18	1240	1183	1.36	1429	1260	1.57	1650	1330	1.78	1870	1392	1.97	2070
2400	1107	1.24	1303	1145	1.32	1387	1222	1.45	1524	1296	1.73	1818	1365	1.94	2038	1426	2.15	2259
2500	1150	1.39	1460	1186	1.48	1555	1262	1.68	1765	1331	1.89	1986	1400	2.12	2227	1461	2.34	2459

48TJ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)												
Airflow (Cfm)	External Static Pressure (in. wg)											
	1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1221	1.17	1229	1256	1.30	1366	1283	1.32	1387	1303	1.22	1282
1600	1252	1.27	1334	1311	1.45	1524	1340	1.58	1660	1330	1.61	1692
1700	1278	1.37	1439	1345	1.57	1650	1397	1.76	1849	1424	1.89	1986
1800	1303	1.48	1555	1371	1.69	1776	1433	1.90	1996	1480	2.09	2196
1900	1330	1.59	1671	1396	1.80	1902	1460	2.03	2133	1517	2.25	2364
2000	1362	1.73	1818	1422	1.94	2038	1485	2.16	2270	1544	2.40	2522
2100	1393	1.87	1965	1452	2.08	2185	1510	2.31	2427	1570	2.55	2674
2200	1423	2.02	2122	1483	2.24	2354	1538	2.46	2585	1594	2.71	2821
2300	1454	2.18	2291	1515	2.41	2532	1571	2.64	2758	1623	2.88	2976
2400	1485	2.36	2480	1544	2.59	2721	1604	2.84	2947	1657	3.07	3152
2500	1518	2.55	2679	1574	2.78	2905	1633	3.03	3134	1692	3.28	3345

**LEGEND**

**Bhp** — Brake Horsepower Input to Fan  
**FIOP** — Factory-Installed Option  
**Watts** — Input Watts to Motor

**NOTES:**

- Boldface** indicates field-supplied drive required. (See Note 3.)
- █ indicates field-supplied motor and drive required.
- Motor drive range: 900 to 1300 rpm. All other rpms require a field-supplied drive.

- Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOP static pressure information.
- Maximum continuous bhp is 1.80 and maximum continuous watts are 1921. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
- Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
- Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS (cont)

### 48TJ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	885	0.63	623	942	0.73	700	1047	0.90	835	1139	1.05	956	1193	1.14	1031	1276	1.30	1165
1900	928	0.73	700	982	0.83	779	1084	1.02	932	1160	1.11	1006	1223	1.24	1114	1301	1.38	1233
2000	971	0.84	787	1022	0.94	867	1121	1.12	1014	1188	1.22	1097	1254	1.36	1216	1329	1.44	1284
2100	1015	0.97	891	1063	1.10	998	1140	1.18	1064	1196	1.27	1140	1272	1.45	1292	1354	1.58	1404
2200	1060	1.10	998	1104	1.20	1081	1159	1.23	1106	1229	1.41	1258	1306	1.53	1361	1363	1.70	1508
2300	1104	1.25	1123	1130	1.27	1140	1196	1.37	1224	1264	1.56	1387	1340	1.66	1473	1397	1.86	1648
2400	1138	1.30	1165	1174	1.37	1224	1245	1.57	1396	1305	1.63	1447	1373	1.84	1630	1440	1.95	1726
2500	1183	1.43	1275	1201	1.50	1335	1284	1.65	1465	1338	1.75	1552	1402	1.99	1761	1469	2.04	1805
2600	1210	1.58	1404	1246	1.67	1482	1312	1.76	1560	1366	1.96	1735	1435	2.10	1858	1494	2.19	1936
2700	1254	1.76	1560	1285	1.80	1595	1354	1.95	1726	1403	2.14	1892	1474	2.21	1954	1536	2.46	2171
2800	1274	1.82	1613	1304	1.85	1639	1374	2.12	1875	1459	2.25	1989	1514	2.42	2136	1570	2.66	2343
2900	1318	1.95	1726	1345	2.05	1814	1412	2.32	2050	1496	2.54	2240	1529	2.61	2300	1603	2.87	2521
3000	1362	2.20	1945	1378	2.30	2032	1451	2.40	2119	1534	2.66	2343	1560	2.81	2470	1611	3.01	2648

### 48TJ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1341	1.40	1250	1413	1.55	1378	1474	1.58	1404
1900	1374	1.53	1361	1437	1.62	1439	1490	1.67	1482
2000	1396	1.66	1473	1460	1.68	1491	1509	1.77	1569
2100	1413	1.75	1552	1475	1.73	1534	1529	1.92	1700
2200	1434	1.81	1604	1487	1.85	1639	1554	2.07	1831
2300	1459	1.88	1665	1520	2.07	1831	1576	2.24	1980
2400	1502	2.06	1823	1552	2.24	1980	1604	2.42	2136
2500	1524	2.24	1980	1585	2.42	2136	1638	2.60	2292
2600	1552	2.40	2119	1616	2.63	2317	1671	2.80	2462
2700	1584	2.61	2300	1646	2.83	2487	1706	2.97	2653
2800	1624	2.85	2504	1677	2.99	2661	—	—	—
2900	1671	3.03	2725	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—

#### LEGEND

**Bhp** — Brake Horsepower Input to Fan  
**FIOF** — Factory-Installed Option  
**Watts** — Input Watts to Motor

#### NOTES:

- Boldface** indicates field-supplied drive required. (See Note 3.)
- indicates field-supplied motor and drive required.
- Motor drive range: 1070 to 1460 rpm. All other rpms require a field-supplied drive.

- Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.
- Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
- Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
- Interpolation is permissible. Do not extrapolate.





**FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS (cont)**

**48TJ008 (7½ TONS) — STANDARD MOTOR (BELT DRIVE)**

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			0.9			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	507	0.53	547	586	0.73	700	658	0.97	891	722	1.22	1097	752	1.34	1199	783	1.46	1301
2300	513	0.55	562	592	0.76	723	663	1.00	916	727	1.26	1131	756	1.38	1224	786	1.49	1327
2400	528	0.60	600	606	0.83	779	674	1.06	965	738	1.34	1199	766	1.46	1301	795	1.58	1404
2500	542	0.66	646	619	0.90	835	686	1.13	1022	748	1.41	1258	777	1.55	1370	806	1.68	1491
2550	550	0.69	669	627	0.94	867	692	1.17	1056	754	1.45	1292	783	1.60	1413	812	1.74	1543
2600	557	0.72	692	634	0.97	891	698	1.21	1089	759	1.49	1327	787	1.64	1456	816	1.79	1587
2700	573	0.79	747	648	1.05	956	711	1.29	1156	770	1.58	1404	798	1.73	1534	827	1.88	1665
2800	588	0.86	803	662	1.13	1022	723	1.38	1233	782	1.66	1473	809	1.82	1613	837	1.98	1753
2900	604	0.94	867	676	1.21	1089	737	1.48	1318	794	1.76	1560	821	1.92	1700	848	2.08	1840
3000	620	1.02	932	690	1.30	1165	750	1.58	1404	806	1.86	1648	832	2.02	1788	849	2.18	1927
3100	636	1.11	1006	704	1.39	1241	764	1.69	1499	818	1.97	1744	844	2.13	1884	870	2.29	2023
3200	652	1.21	1089	718	1.49	1327	778	1.80	1595	831	2.09	1849	856	2.25	1980	882	2.40	2119
3300	668	1.31	1173	732	1.59	1413	793	1.92	1700	844	2.21	1954	869	2.37	2093	894	2.53	2232
3400	684	1.41	1258	747	1.70	1508	807	2.04	1805	857	2.35	2076	882	2.51	2206	907	2.66	2343
3500	701	1.53	1361	762	1.82	1613	821	2.16	1910	871	2.48	2188	895	2.64	2326	919	2.80	2462
3600	717	1.65	1465	777	1.94	1718	835	2.29	2023	885	2.63	2317	908	2.79	2453	932	2.95	2587
3700	733	1.77	1569	792	2.07	1831	849	2.42	2136	899	2.78	2445	922	2.95	2579	945	3.11	2718
3750	742	1.84	1630	800	2.14	1892	856	2.49	2197	907	2.86	2512	929	3.03	2653	952	3.20	2719

**48TJ008 (7½ TONS) — STANDARD MOTOR (BELT DRIVE)**

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	843	1.81	1604	908	2.25	1989	955	2.59	2283
2300	846	1.84	1630	910	2.25	2015	959	2.61	2300
2400	853	1.88	1665	912	2.31	2041	967	2.68	2360
2500	859	1.94	1718	919	2.37	2093	971	2.73	2403
2550	864	1.99	1761	920	2.39	2110	974	2.76	2428
2600	868	2.04	1805	921	2.41	2136	976	2.78	2445
2700	878	2.16	1910	928	2.45	2162	983	2.88	2529
2800	889	2.29	2023	937	2.57	2266	986	2.91	2554
2900	900	2.41	2128	947	2.70	2377	993	3.01	2637
3000	910	2.52	2223	958	2.85	2504	1002	3.15	2751
3100	920	2.64	2326	968	2.99	2620	1012	3.30	2870
3200	931	2.76	2428	979	3.13	2735	1023	3.47	3002
3300	942	2.89	2537	989	3.26	2839	1034	3.63	3121
3400	954	3.02	2645	1000	3.40	2948	1044	3.79	3237
3500	966	3.15	2751	1011	3.55	3062	1054	3.94	3340
3600	978	3.30	2870	1022	3.69	3165	1065	4.10	3445
3700	990	3.45	2987	1034	3.84	3272	1076	4.26	3544
3750	997	3.54	3055	1040	3.93	3333	1082	5.27	3609

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOP** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 4.)
2.  indicates alternate drive required.
3.  indicates field-supplied motor and drive required.
4. Standard drive range is 590 to 840 rpm. Alternate drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.

5. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOP static pressure information.
6. Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
8. Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS (cont)

### 48TJ009 (8½ TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			0.9			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	550	0.69	669	627	0.94	867	692	1.17	1056	754	1.45	1292	783	1.60	1413	812	1.74	1543
2600	557	0.72	692	634	0.97	891	698	1.21	1089	759	1.49	1327	787	1.64	1456	816	1.79	1587
2700	573	0.79	747	648	1.05	956	711	1.29	1156	770	1.58	1404	798	1.73	1534	827	1.88	1665
2800	588	0.86	803	662	1.13	1022	723	1.38	1233	782	1.66	1473	809	1.82	1613	837	1.98	1753
2900	604	0.94	867	676	1.21	1089	737	1.48	1318	794	1.76	1560	821	1.92	1700	848	2.08	1840
3000	620	1.02	932	690	1.30	1165	750	1.58	1404	806	1.86	1648	832	2.02	1788	849	2.18	1927
3100	636	1.11	1006	704	1.39	1241	764	1.69	1499	818	1.97	1744	844	2.13	1884	870	2.29	2023
3200	652	1.21	1089	718	1.49	1327	778	1.80	1595	831	2.09	1849	856	2.25	1980	882	2.40	2119
3300	668	1.31	1173	732	1.59	1413	793	1.92	1700	844	2.21	1954	869	2.37	2093	894	2.53	2232
3400	684	1.41	1258	747	1.70	1508	807	2.04	1805	857	2.35	2076	882	2.51	2206	907	2.66	2343
3500	701	1.53	1361	762	1.82	1613	821	2.16	1910	871	2.48	2188	895	2.64	2326	919	2.80	2462
3600	717	1.65	1465	777	1.94	1718	835	2.29	2023	885	2.63	2317	908	2.79	2453	932	2.95	2587
3700	733	1.77	1569	792	2.07	1831	849	2.42	2136	899	2.78	2445	922	2.95	2579	945	3.11	2718
3750	742	1.84	1630	800	2.14	1892	856	2.49	2197	907	2.86	2512	929	3.03	2653	952	3.20	2719
3800	750	1.90	1683	807	2.21	1954	863	2.56	2257	914	2.93	2571	936	3.11	2847	958	3.28	2854
3900	767	2.04	1805	822	2.35	2076	877	2.71	2386	928	3.09	2702	950	3.27	2979	972	3.45	2987
4000	783	2.18	1927	838	2.50	2206	891	2.86	2512	942	3.26	2839	964	3.45	3187	986	3.63	3121
4100	800	2.34	2067	854	2.66	2343	905	3.02	2645	956	3.43	2971	978	3.62	3244	1000	3.81	3251
4200	817	2.49	2197	869	2.82	2479	920	3.19	2783	970	3.60	3099	992	3.80	3258	1015	4.00	3380
4250	826	2.58	2275	877	2.91	2554	928	3.28	2854	977	3.69	3165	999	3.90	3306	1022	4.10	3445

### 48TJ009 (8½ TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	1.99	1761	920	2.39	2110	974	2.76	2428
2600	868	2.04	1805	921	2.41	2136	976	2.78	2445
2700	878	2.16	1910	928	2.45	2162	983	2.88	2529
2800	889	2.29	2023	937	2.57	2266	986	2.91	2554
2900	900	2.41	2128	947	2.70	2377	993	3.01	2637
3000	910	2.52	2223	958	2.85	2504	1002	3.15	2751
3100	920	2.64	2326	968	2.99	2620	1012	3.30	2870
3200	931	2.76	2428	979	3.13	2735	1023	3.47	3002
3300	942	2.89	2537	989	3.26	2839	1034	3.63	3121
3400	954	3.02	2645	1000	3.40	2948	1044	3.79	3237
3500	966	3.15	2751	1011	3.55	3062	1054	3.94	3340
3600	978	3.30	2870	1022	3.69	3165	1065	4.10	3445
3700	990	3.45	2987	1034	3.84	3272	1076	4.26	3544
3750	997	3.54	3055	1040	3.93	3333	1082	5.27	3609
3800	1003	3.62	3114	1045	4.01	3387	1087	4.43	3643
3900	1015	3.80	3244	1057	4.18	3495	1098	4.60	3733
4000	1028	3.99	3373	1070	4.36	3603	1110	4.78	3820
4100	1042	4.18	3495	1082	4.56	3713	1122	4.97	3902
4200	1055	4.38	3614	1095	4.76	3811	1134	5.16	3971
4250	1062	4.49	3676	1102	4.87	3860	1140	5.27	4006

#### LEGEND

- Bhp** — Brake Horsepower Input to Fan
- FLOP** — Factory-Installed Option
- Watts** — Input Watts to Motor

#### NOTES:

1. **Boldface** indicates field-supplied drive required. (See Note 3.)
2.  indicates field-supplied motor and drive required.
3. Motor drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.

4. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FLOP static pressure information.
5. Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
7. Interpolation is permissible. Do not extrapolate.



**FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS (cont)**

**48TJ012 (10 TONS) — STANDARD AND ALTERNATE MOTORS (BELT DRIVE)**

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	552	0.68	661	632	0.87	810	701	1.05	956	761	1.22	1097	816	1.36	1216	871	1.54	1370
3100	565	0.74	708	644	0.93	859	711	1.12	1014	772	1.31	1173	825	1.45	1292	879	1.63	1447
3200	578	0.81	763	656	1.00	916	723	1.20	1081	782	1.39	1241	835	1.55	1378	887	1.71	1517
3300	591	0.88	818	668	1.08	973	734	1.28	1148	793	1.47	1310	845	1.65	1465	895	1.80	1595
3400	605	0.96	883	680	1.16	1047	745	1.36	1216	803	1.56	1387	856	1.75	1552	904	1.91	1691
3500	619	1.04	948	691	1.23	1106	755	1.44	1284	813	1.65	1465	867	1.86	1648	914	2.03	1796
3600	633	1.13	1022	703	1.31	1173	766	1.52	1353	824	1.74	1543	877	1.97	1744	924	2.15	1901
3700	648	1.23	1106	714	1.39	1241	777	1.61	1430	835	1.85	1639	887	2.07	1831	935	2.28	2015
3800	662	1.33	1190	726	1.51	1310	789	1.72	1526	846	1.95	1726	897	2.18	1927	946	2.40	2169
3900	677	1.44	1284	738	1.61	1387	801	1.82	1613	857	2.06	1823	908	2.29	2023	956	2.53	2282
4000	692	1.55	1378	750	1.73	1473	813	1.94	1718	868	2.17	1919	918	2.40	2119	967	2.66	2397
4100	707	1.67	1482	762	1.84	1560	825	2.05	1814	878	2.28	2015	929	2.53	2282	977	2.78	2505
4200	722	1.80	1595	775	1.97	1656	837	2.16	1910	889	2.40	2119	941	2.66	2397	987	2.91	2624
4300	737	1.94	1718	787	2.09	1761	848	2.27	2006	900	2.52	2273	952	2.80	2523	999	3.04	2744
4400	752	2.08	1840	800	2.21	1875	860	2.39	2110	912	2.66	2397	962	2.93	2642	1008	3.19	2885
4500	768	2.24	1980	814	2.35	1989	871	2.51	2265	924	2.80	2523	973	3.07	2772	1019	3.34	3029
4600	783	2.40	2119	827	2.50	2121	883	2.64	2380	937	2.95	2661	983	3.21	2904	—	—	—
4700	799	2.56	2309	841	2.64	2291	894	2.77	2496	949	3.10	2800	994	3.36	3049	—	—	—
4800	814	2.74	2469	855	2.80	2424	906	2.91	2624	961	3.26	2952	—	—	—	—	—	—
4900	—	—	—	868	2.90	2578	918	3.05	2754	972	3.40	3088	—	—	—	—	—	—
5000	—	—	—	883	3.10	2735	931	3.21	2904	—	—	—	—	—	—	—	—	—

**48TJ012 (10 TONS) — STANDARD AND ALTERNATE MOTORS (BELT DRIVE)**

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	918	1.67	1482	967	1.89	1736	1010	2.09	1903	1063	2.46	2221
3100	928	1.78	1478	973	1.94	1778	1018	2.17	1971	1070	2.51	2265
3200	937	1.90	1745	981	2.04	1861	1026	2.26	2048	1075	2.57	2318
3300	946	2.00	1828	991	2.16	1963	1032	2.32	2099	1080	2.64	2380
3400	953	2.10	1912	1000	2.29	2074	1041	2.44	2203	1083	2.65	2389
3500	961	2.20	1997	1009	2.41	2177	1051	2.57	2318	1090	2.74	2469
3600	970	2.32	2099	1017	2.53	2282	1061	2.72	2451	1099	2.88	2596
3700	980	2.45	2212	1024	2.64	2380	1069	2.87	2587	1109	3.03	2735
3800	989	2.58	2326	1033	2.76	2487	1077	2.99	2698	1118	3.20	2895
3900	1000	2.73	2460	1042	2.91	2624	1085	3.12	2819	1127	3.36	3049
4000	1010	2.87	2587	1052	3.06	2763	1093	3.24	2933	—	—	—
4100	1021	3.02	2726	1062	3.22	2914	1102	3.41	3097	—	—	—
4200	1032	3.17	2866	1072	3.38	2971	—	—	—	—	—	—
4300	1042	3.32	3010	—	—	—	—	—	—	—	—	—
4400	—	—	—	—	—	—	—	—	—	—	—	—
4500	—	—	—	—	—	—	—	—	—	—	—	—
4600	—	—	—	—	—	—	—	—	—	—	—	—
4700	—	—	—	—	—	—	—	—	—	—	—	—
4800	—	—	—	—	—	—	—	—	—	—	—	—
4900	—	—	—	—	—	—	—	—	—	—	—	—
5000	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 4.)
2.  indicates alternate motor and/or drive required.
3.  indicates field-supplied motor and drive required.
4. Standard motor drive range is 685 to 935 rpm. Alternate motor drive range is 835 to 1085 rpm. All other rpms require a field-supplied drive.

5. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.
6. Maximum continuous bhp is 2.4 for the standard motor and 2.9 for the alternate motor. Maximum continuous watts are 2120 for the standard motor and 2615 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
8. Interpolation is permissible. Do not extrapolate.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ004-014 HORIZONTAL DISCHARGE UNITS (cont)

48TJ014 (12½ TONS) — STANDARD AND ALTERNATE MOTORS (BELT DRIVE)																		
Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	684	1.24	1162	755	1.48	1353	816	1.70	1540	875	1.94	1738	933	2.23	1988	989	2.49	2219
3800	691	1.28	1194	761	1.52	1390	822	1.75	1582	880	1.98	1776	937	2.28	2035	993	2.55	2272
3900	705	1.37	1267	773	1.62	1473	834	1.86	1674	891	2.08	1862	947	2.39	2131	1002	2.66	2370
4000	720	1.47	1349	786	1.71	1548	847	1.97	1768	902	2.19	1957	957	2.50	2228	1011	2.79	2485
4100	734	1.56	1423	800	1.82	1641	860	2.09	1871	914	2.31	2061	967	2.60	2316	1021	2.91	2593
4200	749	1.66	1506	813	1.92	1725	873	2.21	1974	926	2.44	2175	978	2.71	2414	1030	3.04	2710
4300	764	1.77	1598	826	2.04	1828	886	2.33	2079	938	2.57	2290	989	2.83	2521	1040	3.18	2837
4400	779	1.88	1691	840	2.16	1931	899	2.46	2193	951	2.71	2414	1000	2.96	2638	1050	3.31	2955
4500	793	1.99	1785	854	2.28	2035	912	2.59	2307	963	2.86	2548	1012	3.09	2755	1061	3.43	3065
4600	808	2.11	1888	868	2.42	2158	925	2.73	2459	975	3.00	2674	1024	3.25	2901	1071	3.56	3184
4700	822	2.24	2000	882	2.56	2281	937	2.86	2548	988	3.16	2819	1036	3.42	3056	1082	3.70	3313
4800	837	2.37	2114	896	2.71	2414	950	3.00	2674	1001	3.32	2964	1048	3.59	3212	1093	3.86	3461
4900	852	2.51	2237	910	2.86	2548	963	3.15	2810	1014	3.48	3111	1060	3.76	3368	1105	4.02	3609
5000	867	2.65	2361	924	3.01	2683	977	3.30	2946	1027	3.65	3267	1073	3.94	3535	1117	4.20	3776
5100	882	2.79	2485	938	3.17	2828	990	3.46	3092	1040	3.82	3424	1085	4.12	3702	1129	4.40	3962
5200	896	2.95	2629	952	3.33	2973	1003	3.63	3248	1053	4.00	3590	1098	4.30	3869	1141	4.60	4148
5300	911	3.11	2773	967	3.50	3129	1017	3.80	3405	1066	4.18	3757	1111	4.50	4055	1153	4.80	4335
5400	926	3.27	2919	981	3.68	3294	1030	3.98	3572	1079	4.35	3916	1124	4.70	4270	1166	5.01	4531
5500	940	3.44	3074	995	3.86	3461	1044	4.17	3748	1092	4.54	4093	1137	4.91	4437	1178	5.22	4726
5600	955	3.62	3239	1010	4.04	3627	1058	4.38	3943	1105	4.73	4270	1150	5.12	4633	1190	5.44	4930
5700	970	3.80	3405	1024	4.23	3804	1072	4.59	4139	1118	4.93	4456	1163	5.34	4837	1203	5.67	5143
5800	985	3.99	3581	1039	4.42	3981	1086	4.80	4335	1131	5.14	4652	1176	5.56	5041	—	—	—
5900	1000	4.18	3757	1053	4.62	4167	1100	5.02	4540	1144	5.36	4856	—	—	—	—	—	—
6000	1015	4.39	3953	1068	4.83	4363	1114	5.25	4754	1158	5.58	5060	—	—	—	—	—	—
6100	1030	4.59	4139	1083	5.04	4558	1128	5.48	4967	—	—	—	—	—	—	—	—	—
6250	1062	5.02	4560	1098	5.27	4763	1142	5.72	5182	—	—	—	—	—	—	—	—	—

48TJ014 (12½ TONS) — STANDARD AND ALTERNATE MOTORS (BELT DRIVE)												
Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	1041	2.75	2445	1086	2.98	2634	1122	3.16	2819	1146	3.28	2928
3800	1046	2.81	2503	1092	3.05	2719	1129	3.25	2901	1156	3.39	3028
3900	1055	2.94	2620	1102	3.20	2855	1143	3.42	3056	1174	3.59	3212
4000	1064	3.07	2737	1112	3.34	2983	1155	3.59	3212	1190	3.80	3405
4100	1072	3.20	2855	1121	3.49	3120	1165	3.76	3368	1203	3.99	3581
4200	1081	3.34	2983	1130	3.64	3258	1175	3.92	3516	1215	4.18	3757
4300	1090	3.48	3111	1139	3.79	3396	1185	4.08	3664	1226	4.36	3925
4400	1100	3.63	3248	1148	3.94	3535	1194	4.25	3822	1236	4.54	4093
4500	1109	3.78	3387	1157	4.09	3674	1203	4.42	3981	1246	4.72	4260
4600	1119	3.93	3525	1166	4.26	3832	1212	4.58	4130	1255	4.91	4437
4700	1129	4.09	3674	1175	4.43	3990	1221	4.76	4298	1264	5.09	4605
4800	1139	4.24	3813	1185	4.60	4148	1230	4.93	4456	1273	5.28	4782
4900	1150	4.38	3943	1194	4.77	4307	1239	5.12	4633	1282	5.47	4958
5000	1161	4.54	4093	1204	4.95	4475	1248	5.31	4810	1291	5.66	5133
5100	1172	4.71	4251	1214	5.13	4642	1257	5.51	4995	—	—	—
5200	1183	4.91	4419	1225	5.29	4791	1267	5.70	5170	—	—	—
5300	1194	5.08	4596	1236	5.47	4958	—	—	—	—	—	—
5400	1206	5.29	4791	1247	5.65	5124	—	—	—	—	—	—
5500	1218	5.52	4958	—	—	—	—	—	—	—	—	—
5600	1230	5.75	5124	—	—	—	—	—	—	—	—	—
5700	—	—	—	—	—	—	—	—	—	—	—	—
5800	—	—	—	—	—	—	—	—	—	—	—	—
5900	—	—	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—	—	—
6100	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 4.)
2.  indicates alternate motor and/or drive required.
3.  indicates field-supplied motor and drive required.
4. Standard motor drive range is 860 to 1080 rpm. Alternate motor drive range is 900 to 1260 rpm. All other rpms require a field-supplied drive.

5. Values include losses for filters, unit casing, and wet coils. See page 49 for accessory/FIOF static pressure information.
6. Maximum continuous bhp is 4.2 for the standard motor and 5.25 for the alternate motor. The maximum continuous watts are 3775 for the standard motor and 4400 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
8. Interpolation is permissible. Do not extrapolate.



**FAN PERFORMANCE — 48TJ016-028 UNITS**

**48TJ016 (15 TONS) — STANDARD MOTOR (BELT DRIVE); 208/230-V AND 460-V UNITS**

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
4500	801	1.05	933	890	1.26	1119	971	1.46	1297	1050	1.67	1483	1125	1.88	1670	1200	2.12	1883
4800	843	1.25	1110	928	1.47	1306	1006	1.68	1492	1081	1.90	1687	1153	2.13	1892	1223	2.36	2096
5100	885	1.47	1306	968	1.70	1510	1043	1.93	1714	1114	2.16	1918	1183	2.40	2131	1250	2.64	2345
5400	927	1.71	1519	1008	1.95	1732	1080	2.20	1954	1148	2.44	2167	1214	2.69	2389	1279	2.94	2611
5700	971	1.98	1758	1049	2.24	1989	1118	2.50	2220	1134	2.75	2442	1247	3.01	2673	1309	3.28	2913
6000	1016	2.28	2025	1091	2.55	2265	1158	2.83	2513	1222	3.10	2753	1282	3.36	2984	1342	3.64	3233
6300	1059	2.60	2309	1133	2.89	2567	1198	3.17	2815	1259	3.46	3073	1318	3.74	3321	1375	4.02	3570
6600	1104	2.96	2629	1174	3.26	2895	1239	3.56	3162	1297	3.86	3428	1355	4.15	3686	—	—	—
6900	1150	3.35	2975	1218	3.67	3259	1281	3.98	3535	—	—	—	—	—	—	—	—	—
7200	1194	3.77	3348	1260	4.10	3641	—	—	—	—	—	—	—	—	—	—	—	—
7500	1238	4.23	3758	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

**48TJ016 (15 TONS) — STANDARD MOTOR (BELT DRIVE); 208/230-V AND 460-V UNITS**

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
4500	1275	2.39	2123	1349	2.70	2398	1421	3.03	2691	1490	3.39	3011
4800	1293	2.62	2327	1364	2.92	2593	1433	3.24	2877	1501	3.59	3188
5100	1316	2.90	2575	1382	3.18	2824	1448	3.49	3099	1514	3.86	3428
5400	1342	3.20	2842	1403	3.47	3082	1466	3.77	3348	1529	4.16	3694
5700	1370	3.54	3144	1429	3.81	3384	1487	4.11	3650	—	—	—
6000	1401	3.92	3481	1458	4.20	3730	—	—	—	—	—	—
6300	—	—	—	—	—	—	—	—	—	—	—	—
6600	—	—	—	—	—	—	—	—	—	—	—	—
6900	—	—	—	—	—	—	—	—	—	—	—	—
7200	—	—	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 2.)
2. Motor drive range is 1227 to 1559 rpm. Other rpms require a field-supplied drive.
3. Static pressure losses (i.e., economizer) must be added to external static pressure before entering Fan Performance table. See table on page 49 for accessory/FIOF static pressure information.

4. Interpolation is permissible. Do not extrapolate.
5. Maximum continuous bhp is 4.25 and the maximum continuous watts are 3775. Extensive motor and drive testing on these units ensures that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the watts rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
6. Fan performance is based on wet coils, clean filters, and casing losses.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

**48TJ016 (15 TONS) — STANDARD MOTOR (BELT DRIVE); 575-V UNITS**

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
4500	801	1.05	933	890	1.26	1119	971	1.46	1297	1050	1.67	1483	1125	1.88	1670	1200	2.12	1883
4800	843	1.25	1110	928	1.47	1306	1006	1.68	1492	1081	1.90	1687	1153	2.13	1892	1223	2.36	2096
5100	885	1.47	1306	968	1.70	1510	1043	1.93	1714	1114	2.16	1918	1183	2.40	2131	1250	2.64	2345
5400	927	1.71	1519	1008	1.95	1732	1080	2.20	1954	1148	2.44	2167	1214	2.69	2389	1279	2.94	2611
5700	971	1.98	1758	1049	2.24	1989	1118	2.50	2220	1134	2.75	2442	1247	3.01	2673	1309	3.28	2913
6000	1016	2.28	2025	1091	2.55	2265	1158	2.83	2513	1222	3.10	2753	1282	3.36	2984	—	—	—
6300	1059	2.60	2309	1133	2.89	2567	1198	3.17	2815	—	—	—	—	—	—	—	—	—
6600	1104	2.96	2629	1174	3.26	2895	—	—	—	—	—	—	—	—	—	—	—	—
6900	1150	3.35	2975	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

**48TJ016 (15 TONS) — STANDARD MOTOR (BELT DRIVE); 575-V UNITS**

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
4500	1275	2.39	2123	1349	2.70	2398	1421	3.03	2691	1490	3.39	3011
4800	1293	2.62	2327	1364	2.92	2593	1433	3.24	2877	—	—	—
5100	1316	2.90	2575	1382	3.18	2824	—	—	—	—	—	—
5400	1342	3.20	2842	—	—	—	—	—	—	—	—	—
5700	—	—	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—	—	—
6300	—	—	—	—	—	—	—	—	—	—	—	—
6600	—	—	—	—	—	—	—	—	—	—	—	—
6900	—	—	—	—	—	—	—	—	—	—	—	—
7200	—	—	—	—	—	—	—	—	—	—	—	—
7500	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 2.)
2. Motor drive range is 1201 to 1462 rpm. Other rpms require a field-supplied drive.
3. Static pressure losses (i.e., economizer) must be added to external static pressure before entering Fan Performance table. See table on page 49 for accessory/FIOF static pressure information.

4. Interpolation is permissible. Do not extrapolate.
5. Maximum continuous bhp is 3.45 and the maximum continuous watts are 3065. Extensive motor and drive testing on these units ensures that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the watts rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
6. Fan performance is based on wet coils, clean filters, and casing losses.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

# Performance data (cont)



## FAN PERFORMANCE — 48TJ016-028 UNITS (cont)

48TJ020 (18 TONS) — STANDARD MOTOR (BELT DRIVE)																		
Airflow (CFM)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
5400	707	1.34	1237	805	1.72	1526	898	2.04	1830	986	2.42	2159	1071	2.82	2594	1153	3.22	2894
5500	717	1.40	1292	813	1.80	1585	905	2.10	1892	992	2.50	2223	1076	2.90	2680	1157	3.30	2962
6000	767	1.80	1617	858	2.20	1932	944	2.50	2256	1026	2.90	2600	1104	3.30	2967	1181	3.80	3358
6500	817	2.20	1992	903	2.60	2329	985	3.00	2673	1062	3.40	3031	1136	3.80	3410	1209	4.30	3811
7000	869	2.70	2427	950	3.10	2787	1028	3.50	3151	1102	3.90	3527	1172	4.40	3919	1241	4.80	4331
7200	889	2.94	2624	969	3.34	2993	1046	3.74	3366	1118	4.18	3749	1187	4.64	4147	1255	5.08	4564
7500	920	3.30	2919	998	3.70	3303	1073	4.10	3689	1143	4.60	4083	1210	5.00	4490	1275	5.50	4914
8000	973	3.90	3476	1047	4.30	3886	1119	4.80	4294	1186	5.30	4708	1250	5.70	5131	—	—	—
8500	1026	4.60	4102	1097	5.10	4635	1166	5.60	4967	—	—	—	—	—	—	—	—	—
9000	1079	5.40	4800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

48TJ020 (18 TONS) — STANDARD MOTOR (BELT DRIVE)												
Airflow (Cfm)	External Static Pressure (in. wg)											
	1.3			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
5400	11.92	3.47	3095	1231	3.72	3296	1306	4.12	3716	1379	4.62	4153
5500	1196	3.55	3164	1234	3.80	3366	1309	4.20	3789	1381	4.70	4229
6000	1218	4.00	3565	1251	4.20	3772	1327	4.70	4206	1396	5.20	4658
6500	1244	4.50	4022	1279	4.70	4233	1348	5.20	4677	1415	5.80	5139
7000	1275	5.05	4547	1308	5.30	4762	—	—	—	—	—	—
7200	1288	5.33	4783	—	—	—	—	—	—	—	—	—
7500	1307	5.75	5135	—	—	—	—	—	—	—	—	—
8000	—	—	—	—	—	—	—	—	—	—	—	—
8500	—	—	—	—	—	—	—	—	—	—	—	—
9000	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 2.)
2. Motor drive range is 1047 to 1251 rpm. Other rpms require a field-supplied drive.
3. Static pressure losses (i.e., economizer) must be added to external static pressure before entering Fan Performance table. See table on page 49 for accessory/FIOF static pressure information.

4. Interpolation is permissible. Do not extrapolate.
5. Maximum continuous bhp is 5.9 and the maximum continuous watts are 5180. Extensive motor and drive testing on these units ensures that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the watts rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
6. Fan performance is based on wet coils, clean filters, and casing losses.
7. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TJ024 (20 TONS) — STANDARD MOTOR (BELT DRIVE)																		
Airflow (CFM)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
6,000	767	1.80	1617	858	2.20	1932	944	2.50	2256	1026	2.90	2600	1104	3.30	2967	1181	3.80	3358
6,500	817	2.20	1992	903	2.60	2329	985	3.00	2673	1062	3.40	3031	1136	3.80	3410	1209	4.30	3811
7,000	869	2.70	2427	950	3.10	2787	1028	3.50	3151	1102	3.90	3527	1172	4.40	3919	1241	4.80	4331
7,500	920	3.30	2919	998	3.70	3303	1073	4.10	3689	1143	4.60	4083	1210	5.00	4490	1275	5.50	4914
8,000	973	3.90	3476	1047	4.30	3886	1119	4.80	4294	1186	5.30	4708	1250	5.70	5131	1313	6.20	5569
8,500	1026	4.60	4102	1097	5.10	4635	1166	5.60	4967	1231	6.00	5401	1292	6.50	5843	1352	7.00	6297
9,000	1079	5.40	4800	1147	5.90	5257	1214	6.40	5714	1276	6.90	6171	1336	7.40	6632	1393	7.90	7102
9,500	1133	6.20	5576	1199	6.80	6058	1263	7.30	6540	1323	7.90	7018	1381	8.40	7500	1436	8.90	7988
10,000	1188	7.20	6432	1250	7.80	6939	1313	8.30	7444	1371	8.90	7946	1426	9.50	8449	—	—	—

48TJ024 (20 TONS) — STANDARD MOTOR (BELT DRIVE)															
Airflow (Cfm)	External Static Pressure (in. wg)														
	1.4			1.6			1.8			1.9			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
6,000	1255	4.20	3772	1327	4.70	4206	1396	5.20	4658	1431	5.45	4884	1465	5.70	5110
6,500	1279	4.70	4233	1348	5.20	4677	1415	5.80	5139	1449	6.10	5370	1482	6.40	5601
7,000	1308	5.30	4762	1373	5.80	5215	1437	6.40	5686	1469	6.70	5922	1501	7.00	6157
7,500	1339	6.00	5356	1401	6.50	5818	1462	7.00	6298	1493	7.25	6538	1523	7.50	6778
8,000	1373	6.70	6024	1433	7.30	6495	1493	7.80	6966	1523	8.05	7202	—	—	—
8,500	1410	7.60	6765	1467	8.10	7248	1524	8.70	7731	—	—	—	—	—	—
9,000	1449	8.50	7584	1503	9.00	8033	—	—	—	—	—	—	—	—	—
9,500	1488	9.40	8403	—	—	—	—	—	—	—	—	—	—	—	—
10,000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

**NOTES:**

1. **Boldface** indicates field-supplied drive required. (See Note 3.)
2.  indicates additional capability of the 460-v motor.
3. Motor drive range is 1238 to 1494 rpm. Other rpms require a field-supplied drive.
4. Static pressure losses (i.e., economizer) must be added to external static pressure before entering Fan Performance table. See table on page 49 for accessory/FIOF static pressure information.

5. Interpolation is permissible. Do not extrapolate.
6. Maximum continuous bhp is 8.7 for 208/230 and 575-v units and 9.5 for 460-v units. The maximum continuous watts are 7915 for the 208/230 and 575-v units and 8640 for the 460-v units. Extensive motor and drive testing on these units ensures that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the watts rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
7. Fan performance is based on wet coils, clean filters, and casing losses.
8. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.



### FAN PERFORMANCE — 48TJ016-028 UNITS (cont)

#### 48TJ028 (25 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (CFM)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			0.9			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
7,500	962	3.39	3123	1039	3.81	3507	1111	4.23	3895	1179	4.66	4295	1212	4.89	4503	1245	5.11	4710
8,000	1017	4.04	3717	1091	4.48	4126	1160	4.93	4536	1225	5.38	4954	1256	5.62	5170	1287	5.85	5386
8,500	1072	4.76	4385	1143	5.23	4818	1209	5.70	5250	1271	6.18	5688	1302	6.42	5913	1332	6.66	6137
9,000	1128	5.57	5129	1196	6.07	5587	1260	6.56	6042	1320	7.06	6501	1348	7.32	6735	1377	7.57	6968
9,500	1185	6.47	5955	1250	6.99	6437	1311	7.51	6915	1369	8.03	7395	1396	8.30	7638	1424	8.56	7881
10,000	1241	7.45	6865	1304	8.00	7372	1363	8.55	7873	1419	9.09	8376	1445	9.37	8629	1472	9.64	8882
10,500	1298	8.54	7865	1359	9.12	8396	1415	9.69	8921	1469	10.26	9446	1495	10.55	9710	1521	10.83	9973
11,000	1355	9.72	8956	1414	10.33	9512	1469	10.93	10,062	1521	11.52	10,609	—	—	—	—	—	—
11,250	1384	10.36	9540	1441	10.97	10,107	1495	11.58	10,668	—	—	—	—	—	—	—	—	—

#### 48TJ028 (25 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.3			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
7,500	1309	5.58	5143	1341	5.83	5370	1372	6.08	5597	1434	6.59	6067	1494	7.12	6558
8,000	1349	6.33	5833	1379	6.59	6065	1409	6.84	6297	1467	7.36	6779	—	—	—
8,500	1390	7.17	6600	1419	7.43	6839	1447	7.68	7077	1504	8.22	7571	—	—	—
9,000	1433	8.08	7446	1461	8.35	7692	1488	8.62	7938	—	—	—	—	—	—
9,500	1478	9.10	8378	1505	9.37	8626	—	—	—	—	—	—	—	—	—
10,000	1524	10.20	9396	1550	10.48	9653	—	—	—	—	—	—	—	—	—
10,500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11,000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11,250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

#### LEGEND

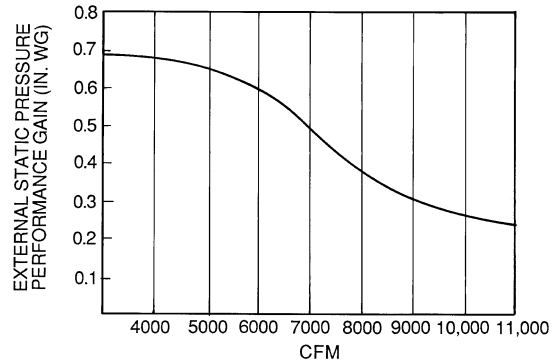
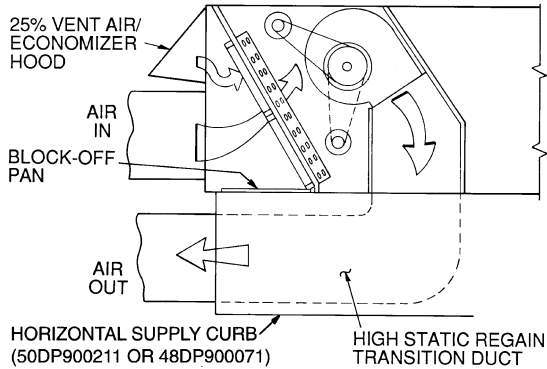
- Bhp** — Brake Horsepower Input to Fan
- FIOF** — Factory-Installed Option
- Watts** — Input Watts to Motor

#### NOTES:

1. **Boldface** indicates field-supplied drive required. (See Note 3.)
2.  indicates additional capability of the 460-v motor.
3. Motor drive range is 1323 to 1579 rpm. Other rpms require a field-supplied drive.
4. Static pressure losses (i.e., economizer) must be added to external static pressure before entering Fan Performance table. See table on page 49 for accessory/FIOF static pressure information.

5. Interpolation is permissible. Do not extrapolate.
6. Fan performance is based on wet coils, clean filters, and casing losses.
7. Maximum continuous bhp is 10.2 for 208/230 and 575-v units and 11.8 for 460-v units. The maximum continuous watts are 9510 for the 208/230 and 575-v units and 11,000 for the 460-v units. Extensive motor and drive testing on these units ensures that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the watts rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 52 for additional information.
8. Fan performance is based on wet coils, clean filters, and casing losses.
9. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

## 48TJ016-028 HORIZONTAL SUPPLY/RETURN FAN PERFORMANCE WITH 50DP900211 OR 48DP900071 HIGH STATIC REGAIN ADAPTER CURB



**NOTES:**

1. Dimensions are in millimeters.
2. The 50DP900211 and 48DP900071 high static regain adapter accessories may be used to provide horizontal supply/return.

NOTE: The 50DP900211 and 48DP900071 horizontal supply/return adapter accessories improve 50TJ016-028 fan performance by increasing external static pressure by amount shown above.

### AIR QUANTITY LIMITS

UNIT 48TJ	MINIMUM CFM	MAXIMUM CFM
004	900	1500
005	1200	2000
006	1500	2500
007	1800	3000
008	2250	3750
009	2550	4250

UNIT 48TJ	MINIMUM CFM	MAXIMUM CFM
012	3000	5,000
014	3750	6,250
016	4500	7,500
020	5400	9,000
024	6000	10,000
028	7000	11,250

### SOUND POWER (Total Unit)

UNIT 48TJ	SOUND RATING (60 Hz)	A-WEIGHTED (dB)	OCTAVE BANDS							
			63	125	250	500	1000	2000	4000	8000
004-006	8.2 Bels	80.5	56.8	75.8	72.4	72.9	74.8	75.4	71.3	69.1
007	8.4 Bels	82.4	56.0	69.8	72.9	75.9	78.3	76.5	72.6	67.9
008,009	8.6 Bels	86.4	83.2	87.4	83.5	82.8	83.0	77.7	71.8	67.0
012	8.8 Bels	87.6	97.6	90.4	85.7	84.8	83.9	77.5	71.3	65.8
014	8.8 Bels	86.4	83.7	87.2	83.4	82.8	83.0	77.7	71.8	67.0
016	8.8 Bels	87.3	87.1	89.9	86.4	84.0	82.7	79.0	73.9	68.6
020	9.0 Bels	89.5	95.7	88.9	87.2	85.2	81.9	79.5	72.7	66.0
024	9.5 Bels	94.1	98.7	92.3	93.8	90.9	89.6	85.9	80.3	74.3
028	9.5 Bels	94.1	98.7	92.3	93.8	90.9	89.6	85.9	80.3	74.3

Bels — Sound Levels (1 bel = 10 decibels)





**ACCESSORY/FIOP STATIC PRESSURE\* (in. wg) – 48TJ004-007**

COMPONENT	CFM									
	900	1200	1400	1600	1800	2000	2200	2400	2600	3000
Durablade Economizer	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Parablade Economizer	0.08	0.10	0.17	0.26	0.33	0.34	0.36	0.40	0.44	—

LEGEND

FIOP – Factory-Installed Option

\*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

**ACCESSORY/FIOP STATIC PRESSURE\* (in. wg) – 48TJ008-014**

COMPONENT	CFM									
	2200	2500	3000	3500	4000	4500	5000	5500	6000	6250
Durablade Economizer	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.09
Parablade Economizer	0.21	0.25	0.35	0.49	0.61	—	—	—	—	—

LEGEND

FIOP – Factory-Installed Option

\*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

**ACCESSORY/FIOP STATIC PRESSURE\* (in. wg) – 48TJ016-028**

COMPONENT	CFM									
	4500	5000	5400	6000	7200	7500	9000	10,000	11,250	
Economizer	0.04	0.05	0.06	0.07	0.09	0.10	0.11	0.12	0.14	

LEGEND

FIOP – Factory-Installed Option

\*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

**FAN RPM AT MOTOR PULLEY SETTINGS\* — 48TJ004-028**

UNIT 48TJ	MOTOR PULLEY TURNS OPEN												
	0	½	1	1½	2	2½	3	3½	4	4½	5	5½	6
004†	1000	976	952	928	904	880	856	832	808	784	760	—	—
005†	1185	1150	1115	1080	1045	1010	975	940	905	870	835	—	—
006†	1300	1260	1220	1180	1140	1100	1060	1020	980	940	900	—	—
007**	1460	1420	1380	1345	1305	1265	1225	1185	1150	1110	1070	—	—
008**	840	815	790	765	740	715	690	665	635	615	590	—	—
008††	935	910	885	860	835	810	785	760	735	710	685	—	—
009**	935	910	885	860	835	810	785	760	735	710	685	—	—
012**	935	910	885	860	835	810	785	760	735	710	685	—	—
012†	1085	1060	1035	1010	985	960	935	910	885	860	835	—	—
014**	1080	1060	1035	1015	990	970	950	925	905	880	860	—	—
014†	1260	1220	1185	1155	1130	1100	1075	1045	1015	990	960	930	900
016(208/230,460 v)**	1559	1524	1491	1458	1425	1392	1359	1326	1293	1260	1227	—	—
016(575 v)**	1462	1436	1410	1384	1358	1332	1305	1279	1253	1227	1201	—	—
020**	1251	1234	1217	1200	1183	1166	1149	1132	1115	1098	1081	1064	1047
024**	1494	1472	1451	1430	1408	1387	1366	1345	1323	1302	1281	1259	1238
028**			1536	1515	1493	1472	1451	1430	1408	1387	1366	1344	1323

\*Approximate fan rpm shown.

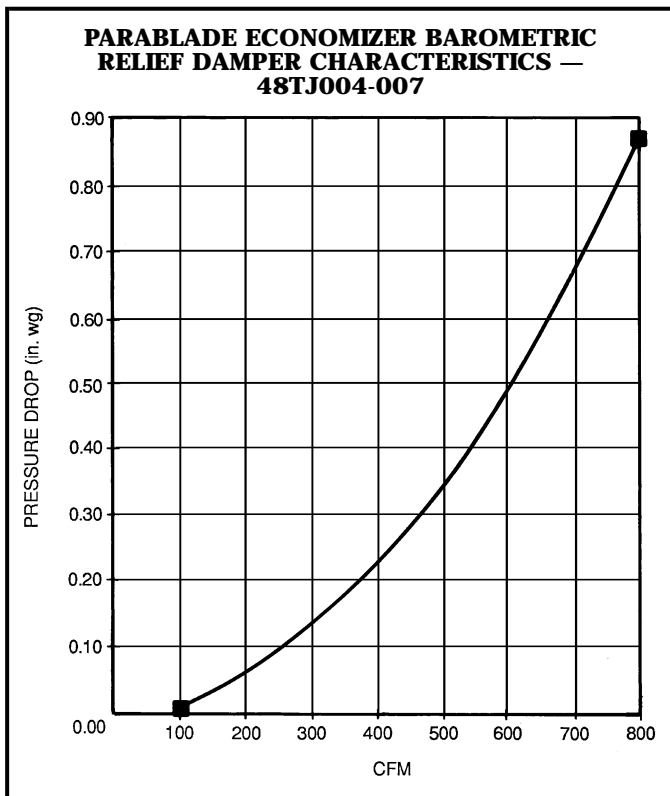
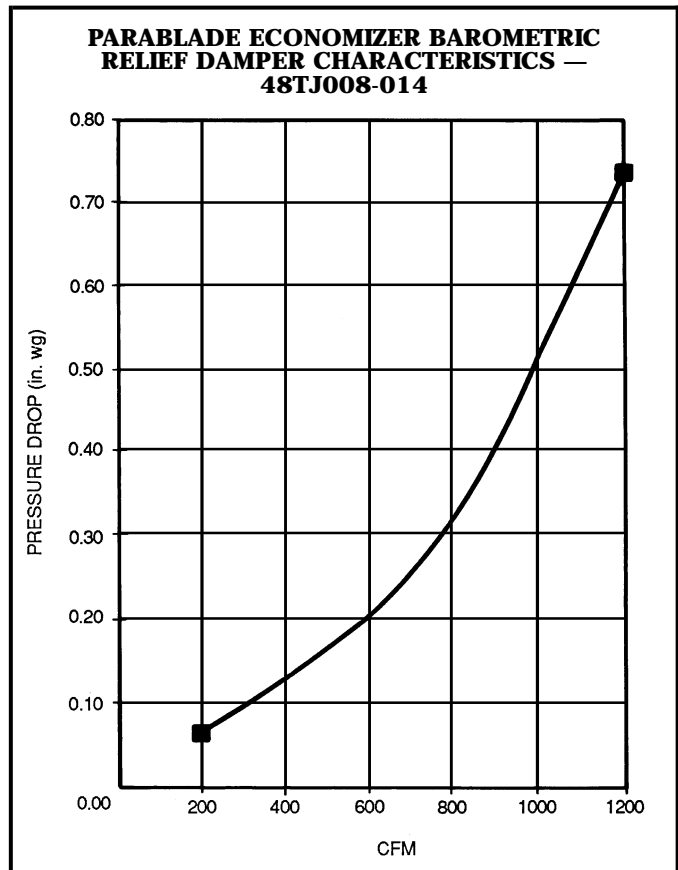
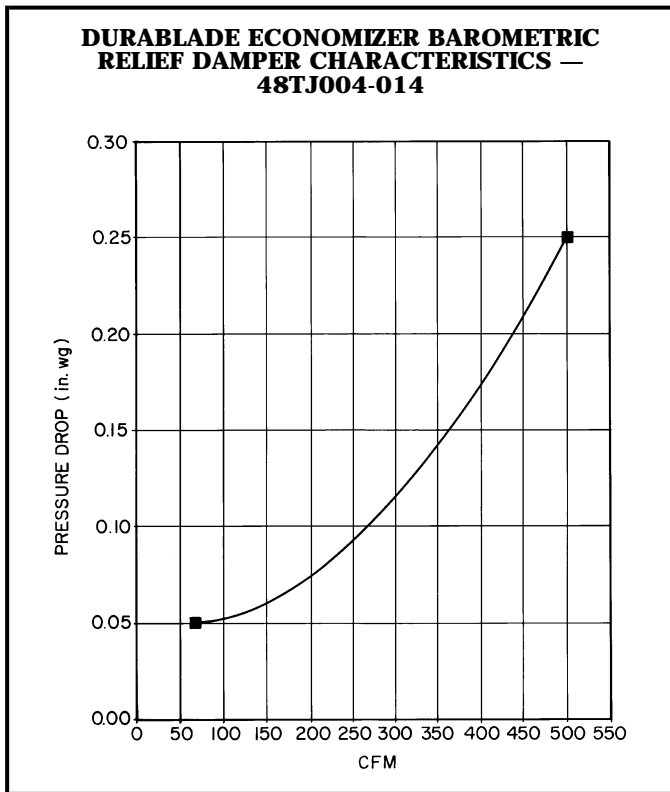
†Indicates alternate motor and drive package.

\*\*Indicates standard motor and drive package.

††Indicates alternate drive package only.

||Do not run this fan at less than 1 full turn open, as it will exceed the maximum allowable rpm of 1550.

# Performance data (cont)



**ALTITUDE COMPENSATION\* — 48TJ004-007**

ELEVATION (Ft)	72,000 AND 115,000 BTUH NOMINAL INPUT		150,000 BTUH NOMINAL INPUT	
	Natural Gas Orifice Size†	Liquid Propane Orifice Size†	Natural Gas Orifice Size†	Liquid Propane Orifice Size†
0-2,000	33	43	30	38
2,000	34	43	30	39
3,000	35	44	31	40
4,000	36	44	32	41
5,000	36	44	33	42
6,000	37	45	34	43
7,000	37	45	35	43
8,000	38	46	36	44
9,000	39	47	37	44
10,000	41	48	38	45
11,000	43	48	39	45
12,000	44	49	40	46
13,000	44	49	41	47
14,000	45	50	42	47

\*As the height above sea level increases, there is less oxygen per cubic foot of air. Therefore, heat input rate should be reduced at higher altitudes.

†Orifices available through your local Carrier distributor.



**ALTITUDE COMPENSATION\* —  
48TJ008-014**

ELEVATION (Ft)	125,000, 180,000, AND 224,000 BTUH NOMINAL INPUT		250,000 BTUH NOMINAL INPUT	
	Natural Gas Orifice Size†	Liquid Propane Orifice Size†	Natural Gas Orifice Size†	Liquid Propane Orifice Size†
0-2,000	31	41	30	38
2,000	32	42	30	39
3,000	32	42	31	40
4,000	32	42	32	41
5,000	33	43	33	42
6,000	34	43	34	43
7,000	35	44	35	43
8,000	36	44	36	44
9,000	37	45	37	44
10,000	38	46	38	45
11,000	39	47	39	45
12,000	40	47	40	46
13,000	41	48	41	47
14,000	42	48	42	47

\*As the height above sea level increases, there is less oxygen per cubic foot of air. Therefore, heat input rate should be reduced at higher altitudes.

†Orifices available through your local Carrier distributor.

**EVAPORATOR-FAN MOTOR EFFICIENCY**

48TJ	MOTOR EFFICIENCY (%)
004,005	75
006	74
007	84
008-012	80
014	87
016	84
020	83
024	84
028	81

**ALTITUDE COMPENSATION\* —  
48TJ016-028**

ELEVATION (Ft)	NATURAL GAS Orifice Size††
0-2,000	33
2,000	35
3,000	35
4,000	36
5,000	36
6,000	37
7,000	38
8,000	38
9,000	40
10,000	41
11,000	43
12,000	44
13,000	44
14,000	45

\*As the height above sea level increases, there is less oxygen per cubic foot of air. Therefore, heat input rate should be reduced at higher altitudes.

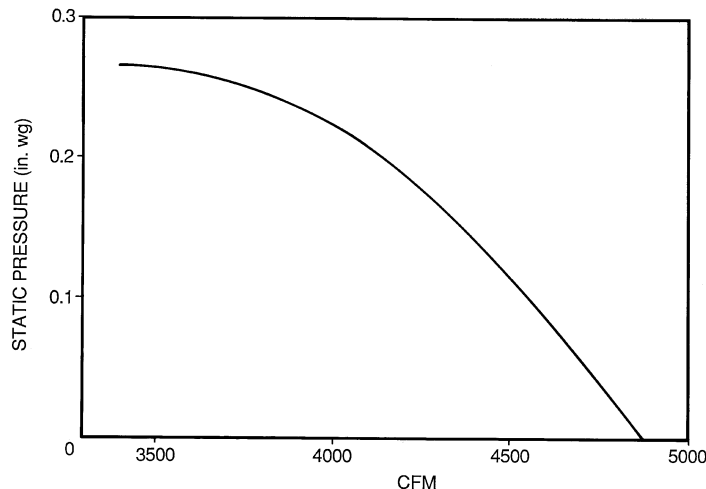
††Orifices available through your Carrier distributor.

**ALTITUDE DERATING FACTOR\* —  
48TJ004-028**

ELEVATION (Ft)	MAXIMUM HEATING VALUE (Btu/ft <sup>3</sup> )
0-2,000	1,100
2,001-3,000	1,050
3,001-4,000	1,000
4,001-5,000	950
5,001-6,000	900

\*Derating of the unit is not required unless the heating value of the gas exceeds the values listed in the table above, or if the elevation exceeds 6000 ft. Derating conditions must be 4% per thousand ft above sea level. For example, at 4000 ft, if the heating value of the gas exceeds 1000 Btu/ft<sup>3</sup>, the unit will require a 16% derating. For elevations above 6000 ft, the same formula applies. For example, at 7000 ft, the unit will require a 28% derating of the maximum heating value per the National Fuel Gas Code.

**FAN PERFORMANCE USING ACCESSORY POWER EXHAUST (48TJ016-028)**



# Performance data (cont)



## EVAPORATOR-FAN MOTOR PERFORMANCE

UNIT 48TJ	EVAPORATOR-FAN MOTOR	UNIT VOLTAGE	MAXIMUM ACCEPTABLE CONTINUOUS BHP*	MAXIMUM ACCEPTABLE OPERATING WATTS	MAXIMUM AMP DRAW
004	Standard	208/230	0.34	440	2.9
		460			1.4
		575			1.4
	Alternate	208/230	1.00	1000	5.4
		460			2.3
		575			2.3
005	Standard	208/230	0.75	850	3.5
		460			1.8
		575			1.8
	Alternate	208/230	1.00	1000	5.4
		460			2.3
		575			2.3
006	Standard	208/230	1.20	1340	5.9
		460			3.2
		575			3.2
	Alternate	208/230	1.80	1921	8.9
		460			4.7
		575			4.7
007	Standard	208/230	2.40	2120	6.1
		460			2.7
		575			2.7
008	Standard	208/230	2.40	2120	6.1
		460			2.7
		575			2.7
009	Standard	208/230	2.40	2120	6.1
		460			2.7
		575			2.7
012	Standard	208/230	2.40	2120	6.1
		460			2.7
		575			2.7
	Alternate	208/230	2.90	2615	7.9
		460			3.6
		575			3.6
014	Standard	208/230	4.20	3775	11.1
		460			5.0
		575			5.0
	Alternate	208/230	5.25	4400	15.0
		460			7.4
		575			7.4
016	Standard	208/230	4.25	3775	10.5
		460			4.8
		575	3.45	3065	3.9
020	Standard	208/230	5.90	5180	15.8
		460			7.9
		575			6.0
024	Standard	208/230	8.70	7915	22.0
		460	9.50	8640	13.0
		575	8.70	7915	10.0
028	Standard	208/230	10.20	9510	28.0
		460	11.80	11,000	14.6
		575	10.20	9510	13.0

### LEGEND

**Bhp** — Brake Horsepower

\*Extensive motor and electrical testing on these units ensures that the full horsepower range of the motors can be utilized with confidence. Using your fan motors up to the horsepower ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

# Electrical data — 48TJ004-014



UNIT 48TJ	NOMINAL VOLTAGE (60 Hz)	IFM TYPE	VOLTAGE RANGE		COMPR (ea)		OFM (ea)		IFM FLA	COMBUSTION FAN MOTOR FLA	POWER SUPPLY		DISCONNECT SIZE*	
			Min	Max	RLA	LRA	Hp	FLA			MCA	MOCP†	FLA	LRA
004 (3 Tons)	208/230 (single phase)	Std	187	254	16.9	86.7	¼	1.4	2.8	.57	25.3/25.3	35/35	24/24	97/97
		Alt												
	208/230 (3 phase)	Std	187	254	11.7	65.0	¼	1.4	2.8	.57	18.8/18.8	25/25	18/18	76/76
		Alt												
	460 (3 phase)	Std	414	508	5.1	33.0	¼	0.8	1.3	.30	8.5	15	8	38
		Alt												
	575 (3 phase)	Std	518	632	4.1	27.0	¼	0.8	1.3	.30	6.8	15	7	31
		Alt												
005 (4 Tons)	208/230 (single phase)	Std	187	254	23.0	110.0	¼	1.4	3.5	.57	33.7/33.7	40/40	32/32	122/122
		Alt												
	208/230 (3 phase)	Std	187	254	15.3	92.0	¼	1.4	3.5	.57	24.0/24.0	30/30	24/24	104/104
		Alt												
	460 (3 phase)	Std	414	508	7.0	46.0	¼	0.8	1.8	.30	11.4	15	11	52
		Alt												
	575 (3 phase)	Std	518	632	5.8	44.0	¼	0.8	1.8	.30	9.3	15	9	49
		Alt												
006 (5 Tons)	208/230 (single phase)	Std	187	254	30.5	141.0	¼	1.4	5.9	.57	42.7/42.7	50/50	43/43	155/155
		Alt												
	208/230 (3 phase)	Std	187	254	17.7	110.0	¼	1.4	5.9	.57	29.4/29.4	35/35	29/29	124/124
		Alt												
	460 (3 phase)	Std	414	508	8.6	55.0	¼	0.8	3.2	.30	14.8	20	15	63
		Alt												
	575 (3 phase)	Std	518	632	6.4	44.0	¼	0.8	3.2	.30	12.0	15	12	52
		Alt												
007 (6 Tons)	208/230 (3 phase)	Std	187	254	20.9	142.0	¼	1.4	5.8	.57	33.3/33.3	40/40	32/32	187/187
	460 (3 phase)	Std	414	508	9.9	72.0	¼	0.8	2.6	.30	15.6	20	15	94
	575 (3 phase)	Std	518	632	7.9	58.0	¼	0.8	2.6	.30	14.6	15	12	76
008 (7½ Tons)	208/230 (3 phase)	Std	187	254	13.6	73.4	¼	1.4	5.8	.57	39.2/39.2	45/45	41/41	194/194
	460 (3 phase)	Std	414	508	6.2	37.7	¼	0.7	2.6	.30	18.0	25	19	99
	575 (3 phase)	Std	518	632	4.9	31.0	¼	0.7	2.6	.30	14.2	20	15	81
009 (8½ Tons)	208/230 (3 phase)	Std	187	254	15.8	92.0	¼	1.4	5.8	.57	44.2/44.2	50/50	46/46	231/231
	460 (3 phase)	Std	414	508	7.4	46.0	¼	0.7	2.6	.30	20.7	25	22	116
	575 (3 phase)	Std	518	632	5.9	44.0	¼	0.7	2.6	.30	16.5	20	17	107
012 (10 Tons)	208/230 (3 phase)	Std	187	254	17.9	110.0	¼	1.4	5.8	.57	48.9/48.9	60/60	51/51	267/267
		Alt												
	460 (3 phase)	Std	414	508	8.6	55.0	¼	0.7	2.6	.30	23.4	30	24	134
		Alt												
	575 (3 phase)	Std	518	632	6.4	44.0	¼	0.7	2.6	.30	17.6	20	18	107
		Alt												
014 (12½ Tons)	208/230 (3 phase)	Std	187	254	22.3	142.0	¼	1.4	10.6	.57	63.6/63.6	70/70	67/67	375/375
		Alt												
	460 (3 phase)	Std	414	508	10.4	72.0	¼	0.7	4.8	.30	29.6	40	31	190
		Alt												
	575 (3 phase)	Std	518	632	9.5	58.5	¼	0.7	4.8	.30	26.6	30	28	154
		Alt												

See Legend and Notes on page 54.



UNIT 48TJ	NOMINAL VOLTAGE (60 Hz)	VOLTAGE RANGE		COMPRESSOR				OFM			IFM	POWER EXHAUST		COMBUSTION FAN MOTOR**	POWER SUPPLY	
				NO. 1		NO. 2										
		Min	Max	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	FLA	FLA	LRA	FLA	MCA	MOCP†
016	208/230 (3 phase)	187	254	61.0	266	—	—	3	½	1.70	10.5/10.5	—	—	0.57	92/92	150/150
												4.6	18.8	0.57	96/96	150/150
	460 (3 phase)	414	508	28.0	120	—	—	3	½	0.80	4.8	—	—	0.30	42	70
												2.3	6.0	0.30	45	70
	575 (3 phase)	518	632	23.0	96	—	—	3	½	0.75	3.9	—	—	0.57	35	50
												2.1	4.8	0.57	37	60
020	208/230 (3 phase)	187	254	35.6	198	28.2	160	3	½	1.70	15.8/15.8	—	—	0.57	94/94	125/125
												4.6	18.8	0.57	98/98	125/125
	460 (3 phase)	414	508	17.8	99	14.1	80	3	½	0.80	7.9	—	—	0.30	47	60
												2.3	6.0	0.30	49	60
	575 (3 phase)	518	632	14.3	79	11.3	64	3	½	0.75	6.0	—	—	0.57	37	50
												2.1	4.8	0.57	40	50
024	208/230 (3 phase)	187	254	35.6	198	35.6	198	2	1	5.50	25.0/25.0	—	—	0.57	116/116	150/150
												4.6	18.8	0.57	121/121	150/150
	460 (3 phase)	414	508	17.8	99	17.8	99	2	1	2.80	13.0	—	—	0.30	59	70
												2.3	6.0	0.30	61	70
	575 (3 phase)	518	632	14.3	79	14.3	79	2	1	3.40	10.0	—	—	0.57	49	60
												2.1	4.8	0.57	51	60
028	208/230 (3 phase)	187	254	43.6	228	43.6	228	2	1	5.50	28.0/28.0	—	—	0.57	137/137	175/175
												4.6	18.8	0.57	142/142	175/175
	460 (3 phase)	414	508	22.1	114	22.1	114	2	1	2.80	14.6	—	—	0.30	70	90
												2.3	6.0	0.30	72	90
	575 (3 phase)	518	632	17.9	91	17.9	91	2	1	3.40	13.0	—	—	0.57	60	70
												2.1	4.8	0.57	62	80

### LEGEND

- FLA — Full Load Amps
- HACR — Heating, Air Conditioning and Refrigeration
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps
- MOCP — Maximum Overcurrent Protection
- NEC — National Electrical Code
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps

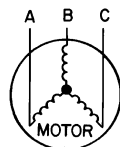
### 2. Unbalanced 3-Phase Supply Voltage

Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent voltage imbalance.

% Voltage Imbalance

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

EXAMPLE: Supply voltage is 460-3-60.



AB = 452 v  
BC = 464 v  
AC = 455 v

$$\begin{aligned} \text{Average Voltage} &= \frac{452 + 464 + 455}{3} \\ &= \frac{1371}{3} \\ &= 457 \end{aligned}$$

Determine maximum deviation from average voltage.

(AB) 457 - 452 = 5 v  
(BC) 464 - 457 = 7 v  
(AC) 457 - 455 = 2 v

Maximum deviation is 7 v.

Determine percent voltage imbalance.

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{7}{457} \\ &= 1.53\% \end{aligned}$$

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.

\*Used to determine minimum disconnect size per NEC.

†Fuse or HACR circuit breaker.

\*\*The 48TJ024 and 028 high-heat units have 2 combustion-fan motors.



004-014 Only



016-028 Only



016-028 Only



004-007 Only

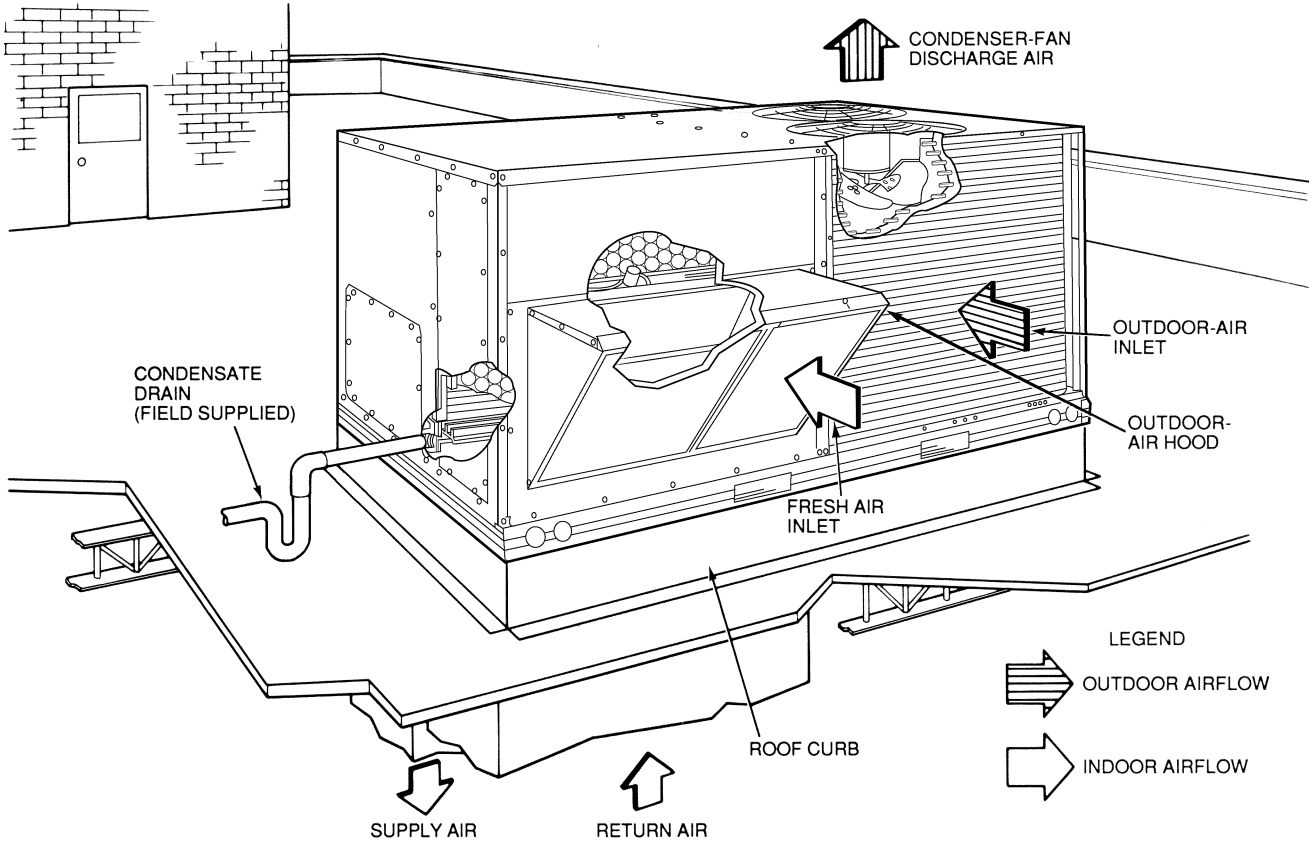


008-014 Only

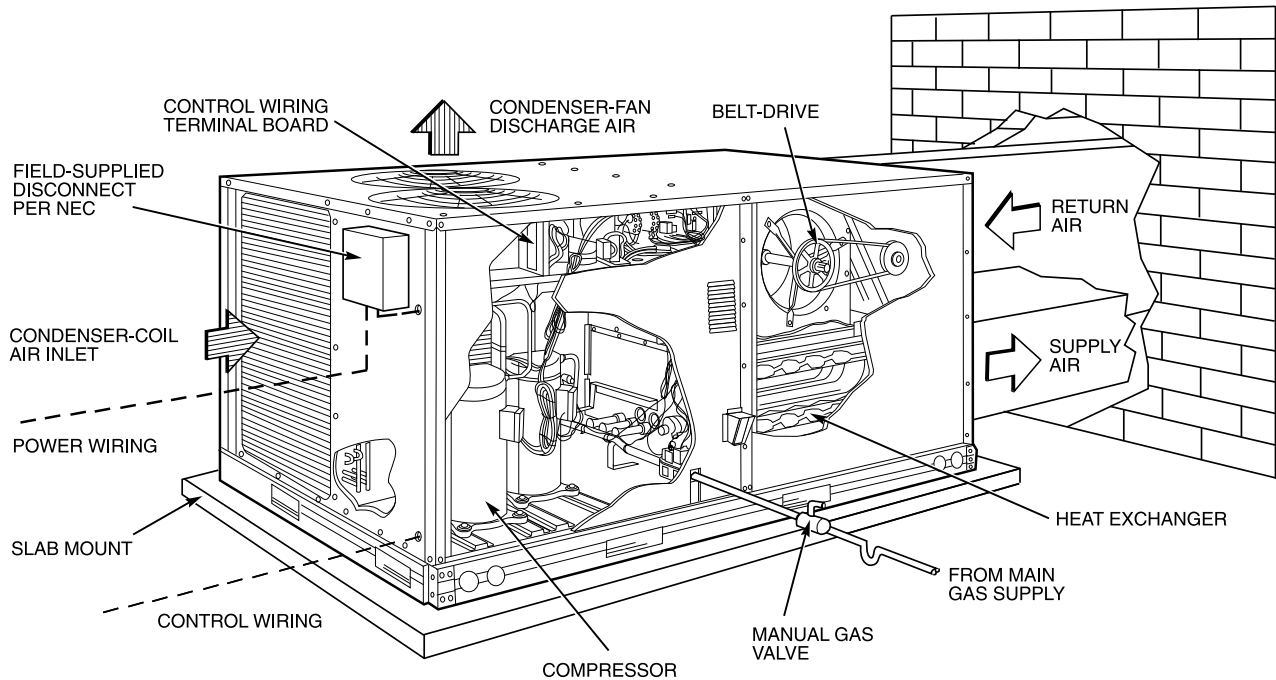
### NOTES:

1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.

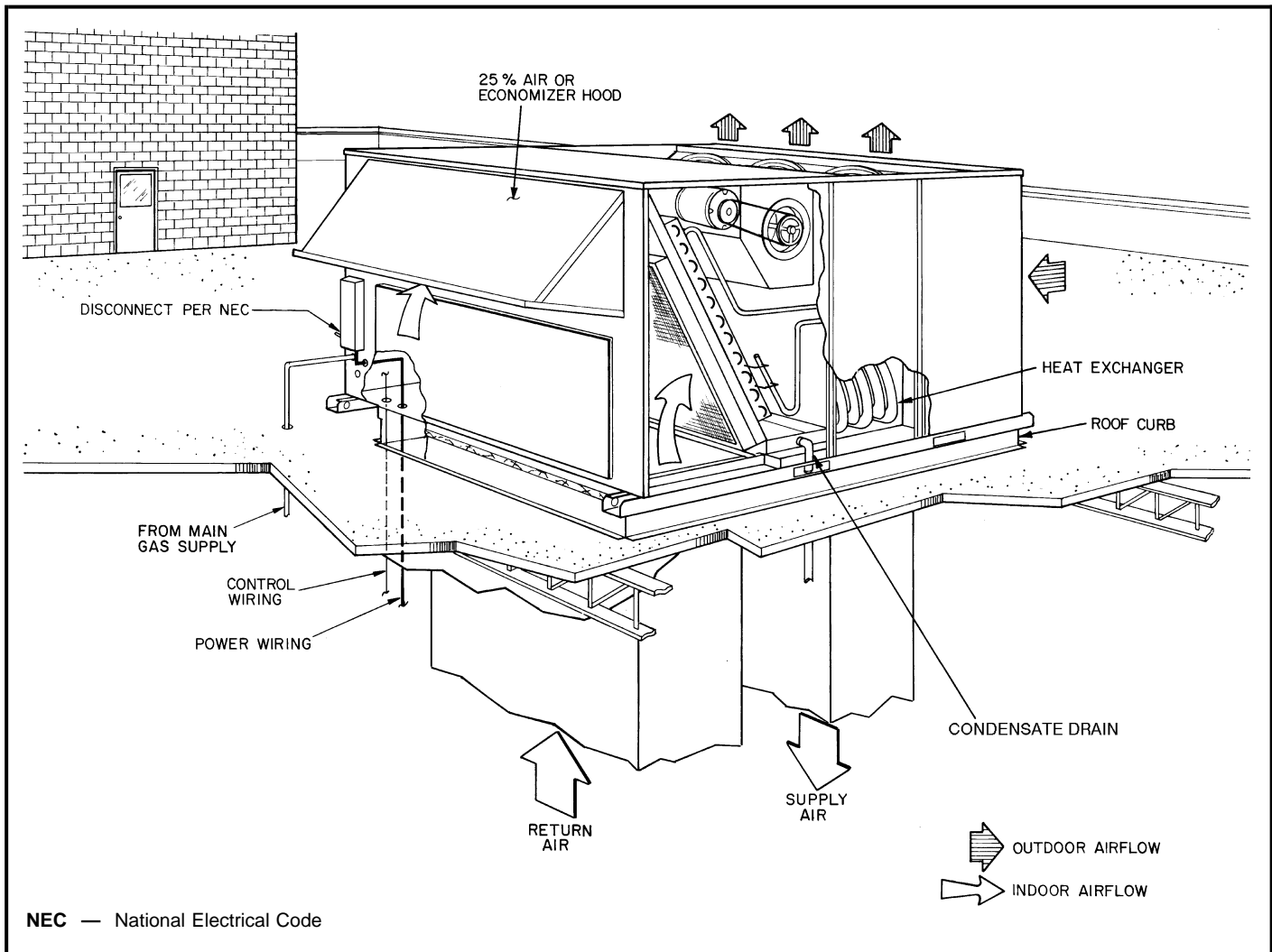
## VERTICAL DISCHARGE DUCTING



## HORIZONTAL DISCHARGE DUCTING



NEC — National Electrical Code

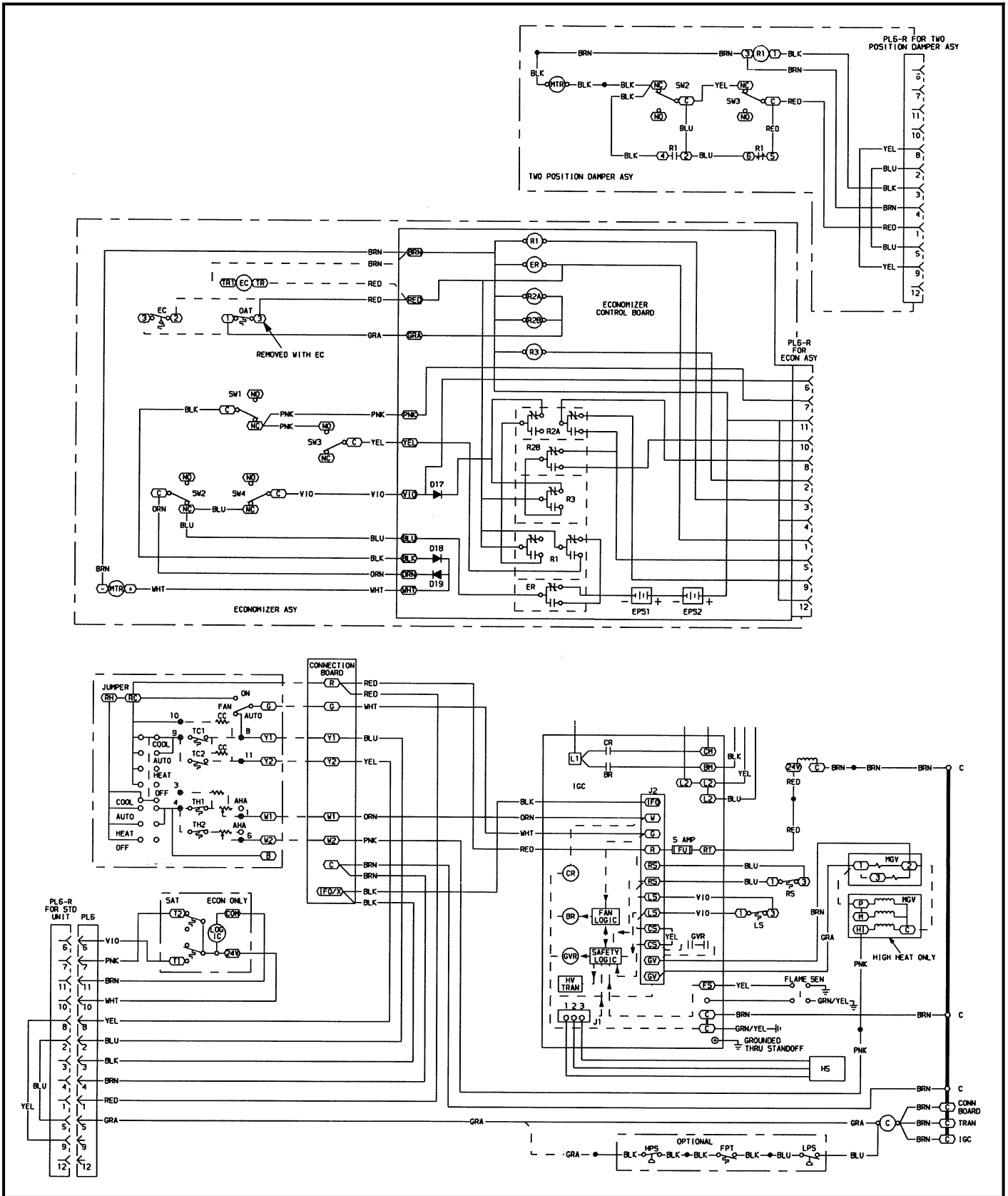


## LEGEND FOR TYPICAL CONTROL WIRING SCHEMATICS

<b>AHA</b> — Adjustable Heat Anticipator	<b>IFCB</b> — Indoor (Evaporator) Fan Circuit Breaker	<b>SW</b> — Switch
<b>BKR W/AT</b> — Breaks with Amp Turns	<b>IFM</b> — Indoor (Evaporator) Fan Motor	<b>TB</b> — Terminal Block
<b>C</b> — Contactor, Compressor	<b>IFR</b> — Indoor (Evaporator) Fan Relay	<b>TC</b> — Thermostat Cooling
<b>CB</b> — Circuit Breaker	<b>IGC</b> — Integrated Gas Unit Controller	<b>TDR</b> — Time Delay Relay
<b>CC</b> — Cooling Compensator	<b>IP</b> — Internal Protector	<b>TH</b> — Thermostat Heating
<b>CH</b> — Crankcase Heater	<b>L</b> — Light	<b>TRAN</b> — Transformer
<b>CLO</b> — Compressor Lockout	<b>LOR</b> — Lockout Relay	Terminal (Marked)
<b>CLS</b> — Compressor Lockout Switch	<b>LPS</b> — Loss-of-Charge/ Low-Pressure Switch	Terminal (Unmarked)
<b>COMP</b> — Compressor Motor	<b>LS</b> — Limit Switch	Terminal Block
<b>CR</b> — Control Relay	<b>MAT</b> — Mixed-Air Thermostat	Splice
<b>CT</b> — Current Transformer	<b>MGV</b> — Main Gas Valve	Splice (Marked)
<b>DM</b> — Damper Motor	<b>NC</b> — Normally Closed	Factory Wiring
<b>DU</b> — Dummy Terminal	<b>NO</b> — Normally Open	Field Control Wiring
<b>EC</b> — Enthalpy Control	<b>OAT</b> — Outdoor-Air Thermostat	Field Power Wiring
<b>EQUIP</b> — Equipment	<b>OFC</b> — Outdoor (Condenser) Fan Contactor	Accessory or Optional Wiring
<b>FPT</b> — Freeze Protection Thermostat	<b>OFM</b> — Outdoor (Condenser) Fan Motor	To Indicate Common Potential Only, Not to Represent Wiring
<b>FU</b> — Fuse	<b>PGV</b> — Pilot Gas Valve	
<b>GND</b> — Ground	<b>PL</b> — Plug	
<b>HPS</b> — High-Pressure Switch	<b>PRI</b> — Primary	
<b>HR</b> — Heat Relay	<b>PS</b> — Pressure Switch	
<b>HV</b> — High Voltage	<b>QT</b> — Quadruple Terminal	
<b>I</b> — Ignitor	<b>R</b> — Relay	
<b>ICP</b> — Ignitor Control Pack	<b>RS</b> — Rollout Switch	
<b>IDM</b> — Induced-Draft Motor	<b>SN</b> — Sensor	
<b>IDR</b> — Induced-Draft Relay		
<b>IDR</b> — Induced-Draft Relay		
<b>IFC</b> — Indoor (Evaporator) Fan Contactor		



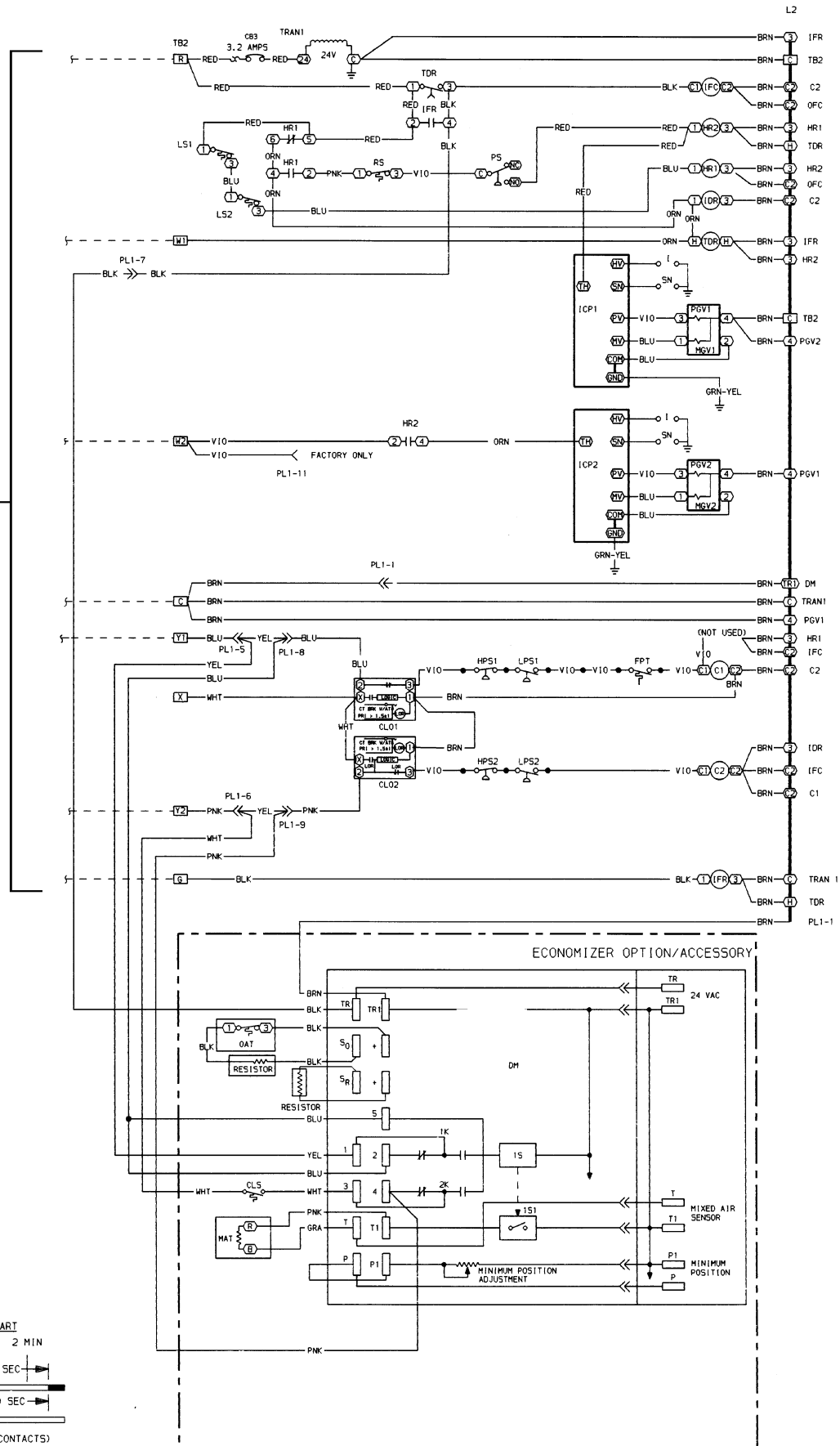
# Typical wiring schematic — 48TJ004-014



# Typical wiring schematic — 48TJ016-028



TO FIELD-SUPPLIED THERMOSTAT. SEE APPLICATION DATA SECTION (PAGE 65) FOR MORE DETAILS



## Operating sequence

**Cooling, units without economizer** — When thermostat calls for cooling, terminals G and Y1 are energized. The indoor (evaporator) fan contactor (IFC) and compressor contactor no. 1 (C1) are energized, and evaporator-fan motor (IFM), compressor no. 1 (48TJ004-014 and 020-028) or unloaded compressor (48TJ016), and condenser fan(s) start. The condenser-fan motor(s) runs continuously while unit is cooling. For units with 2 stages of cooling, if the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts (48TJ008-014 and 020-028), or compressor no. 1 runs fully loaded (48TJ016).

**Heating, units without economizer (48TJ004-014)** — When the thermostat calls for heating, terminal W1 is energized. In order to prevent thermostat short-cycling, the unit is locked into the Heating mode for at least 1 minute when W1 is energized. The induced-draft motor (IDM) is then energized and the burner ignition sequence begins. The indoor (evaporator) fan motor (IFM) is energized 45 seconds after a flame is ignited. On units equipped for two stages of heat, when additional heat is needed, W2 is energized and the high-fire solenoid on the main gas valve (MGV) is energized. When the thermostat is satisfied and W1 is deenergized, the IFM stops after a 45-second time-off delay.

**Heating, units without economizer (48TJ016-028)**

NOTE: The 48TJ016-028 units have 2 stages of heat.

Set thermostat system switch at HEAT or AUTO. position and set fan switch to AUTO. position for heating.

When first-stage thermostat calls for heat, time-delay relay for evaporator fan begins timer sequence. Induced-draft relay closes, and induced-draft motor starts.

Draft pressure switch closes and pilot valve no. 1 opens, allowing gas to flow to the first-stage pilot. Spark ignitor ignites pilot flame. Sensor detects flame and the main gas valve no. 1 opens. Gas flows to main burners and first-stage burners ignite. Spark ignitor turns off.

When sequence is complete, time-delay relay closes and evaporator fans start.

**SECOND STAGE — 48TJD016-028 LOW-HEAT AND 48TJE016 HIGH-HEAT UNITS** — With an additional heating call, the second-stage thermostat closes. (The control relay closes during the first stage of operation.) Pilot valve no. 2 opens, and the spark ignitor ignites pilot. The sensor detects a flame and energizes main gas valve coil no. 2, opening main gas valve no. 2. Gas flows to the main burners, and the second stage burners ignite. The spark ignitor turns off.

When the second-stage thermostat is satisfied, the second-stage gas valve closes.

When the first-stage thermostat is satisfied, the first-stage gas valve closes. The induced-draft motor turns off, the time relay opens, and the timer sequence begins. When the sequence is complete, the evaporator-fan motor turns off.

**SECOND-STAGE — 48TJE024,028 HIGH-HEAT UNITS** — With an additional heating call, the second-stage thermostat closes. (The control relay closes during the first stage of operation.) The second-stage induced-draft relay closes, and the second-stage induced-draft motor starts.

The second-stage draft pressure switch closes and pilot valve no. 2 opens, allowing gas to flow to the second-stage pilot. Spark ignitor ignites pilot flame. The sensor detects the flame, and main gas valve no. 2 opens. Gas flows to main burners and second-stage burners ignite. Spark ignitor turns off.

When the second-stage thermostat is satisfied, the second-stage gas valve closes and the second-stage induced-draft motor turns off.

When the first-stage thermostat is satisfied, the first-stage gas valve closes. The first-stage induced-draft motor turns off, the time relay opens, and the timer sequence begins. When the sequence is complete, the evaporator-fan motor turns off.

**Cooling, units with Durablade economizer (48TJ004-014)** — When the outdoor-air temperature is above the OAT (outdoor-air thermostat) setting and the room thermostat calls for cooling, compressor contactor no. 1 is energized to start compressor no. 1 and the outdoor (condenser) fan motor (OFM). The indoor (evaporator) fan motor (IFM) is energized and the economizer damper moves to the minimum position. Upon a further call for cooling, compressor contactor no. 2 will be energized, starting compressor no. 2 (008-014 only). After the thermostat is satisfied, the damper moves to the fully closed position when using an auto fan or to the minimum position when using a continuous fan.

When the outdoor-air temperature is below the OAT setting and the thermostat calls for cooling, the economizer dampers move to the minimum position. If the supply-air temperature is above 57 F, the damper continues to open until it reaches the fully open position or until the supply-air temperature drops below 52 F.

When the supply-air temperature falls to between 57 F and 52 F, the damper will remain at an intermediate open position. If the supply-air temperature falls below 52 F, the damper will modulate closed until it reaches the minimum position or until the supply-air temperature is above 52 F. When the thermostat is satisfied, the damper will move to the fully closed position when using an auto fan or to the minimum position when using a continuous fan.

If the outdoor air alone cannot satisfy the cooling requirements of the conditioned space, economizer cooling is integrated with mechanical cooling, providing second-stage cooling. Compressor no. 1 and the condenser fan will be energized and the position of the economizer damper will be determined by the supply-air temperature. Compressor no. 2 is locked out.

When the second stage of cooling is satisfied, the compressor and OFM will be deenergized. The damper position will be determined by the supply-air temperature.

After a 30-second delay, the IFM shuts off. If the thermostat fan selector switch is in the ON position, the IFM will run continuously.

**Cooling, units with Parablade economizer (48TJ004-007)** — When the outdoor air is above the enthalpy control (EC) setting, and the room thermostat calls for cooling, and the compressor contactor is energized to start the compressor and the condenser-fan motor. The evaporator-fan motor is energized and the economizer damper moves to

the minimum position. After the room thermostat is satisfied, the damper will spring return to the fully-closed position.

When the outdoor air is below the (EC) setting and the thermostat calls for cooling, the economizer outdoor-air damper is opened proportionally to maintain between 50 and 56 F at the mixed-air sensor. If outdoor air alone cannot satisfy the cooling requirements, economizer cooling is integrated with mechanical cooling. When the room thermostat is satisfied, the damper will spring return to the fully-closed position.

**Cooling, units with Parablade economizer (48TJ008-014)** — When the outdoor air is above the enthalpy control (EC) setting, and the room thermostat calls for cooling, and compressor contactor no. 1 is energized to start compressor no. 1 and the condenser-fan motor. The evaporator-fan motor is energized and the economizer damper moves to the minimum position. Upon a further call for cooling, compressor contactor no. 2 is energized, starting compressor no. 2. After the room thermostat is satisfied, the damper will spring return to the fully-closed position.

When the outdoor-air temperature is below the EC setting and the thermostat calls for cooling, the economizer outdoor-air damper is opened proportionally to maintain between 50 and 56 F at the mixed-air sensor. If outdoor-air alone cannot satisfy the cooling requirements, economizer cooling is integrated with mechanical cooling, and the second compressor is locked out. When the room thermostat is satisfied, the damper will spring return to the fully-closed position.

**Cooling, units with economizer (48TJ016-028)** — Upon a call for cooling, when outdoor ambient is above the temperature control setting, the economizer damper moves to VENT position. The compressors and evaporator and condenser fans energize.

Upon a first call for cooling, when outdoor ambient is below the temperature control setting, the evaporator fan

starts and the economizer opens to maintain 53 F leaving-air temperature. The compressors remain off.

Upon a second-stage call for cooling, compressor no. 1 is energized and mechanical cooling is integrated with economizer cooling. If the outdoor-air temperature drops below 50 F, a cooling lockout switch prevents the compressors from running.

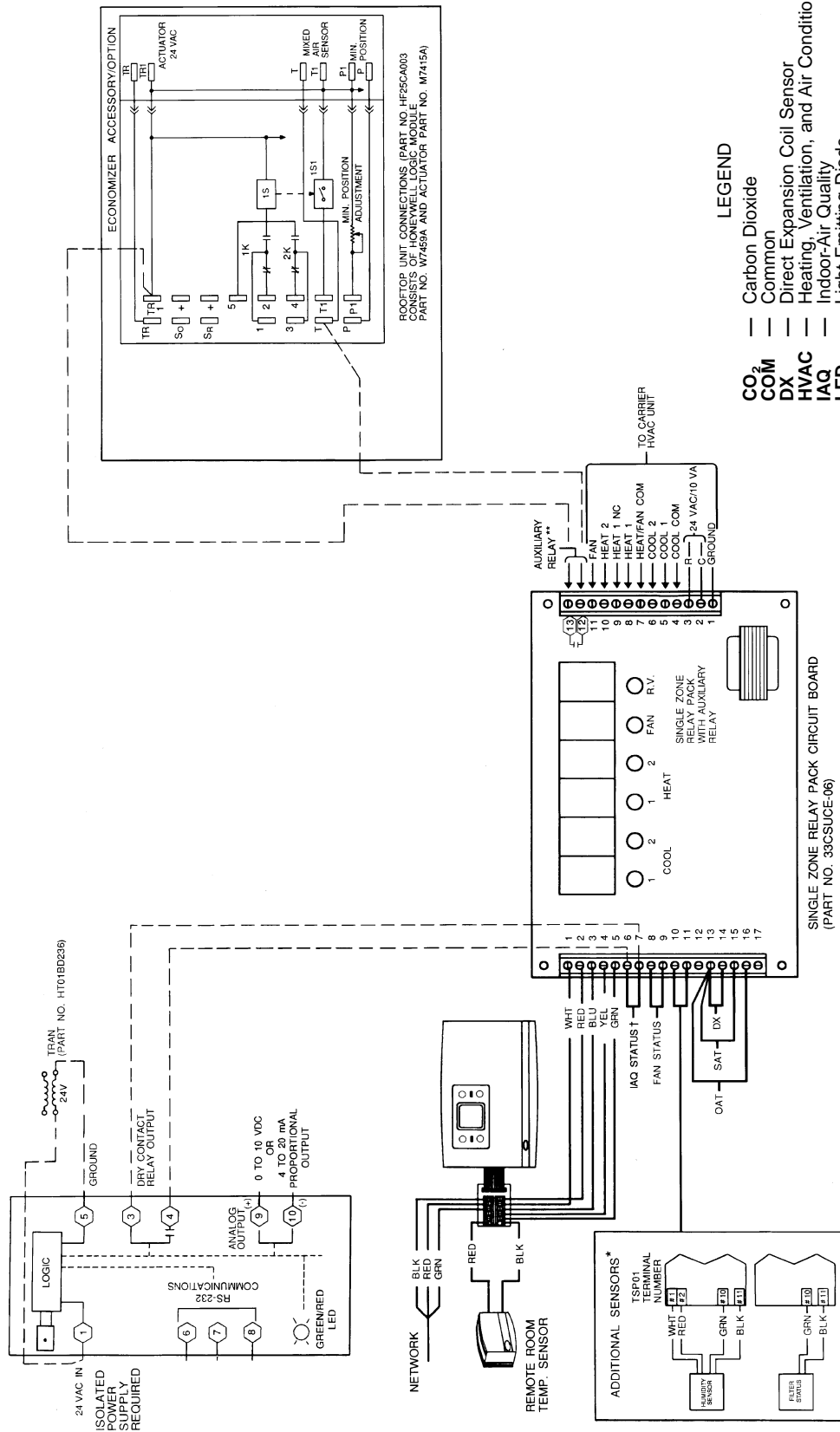
When supply-air temperature drops below a fixed set point, the economizer damper modulates to maintain the temperature at the fixed set point.

A freeze protection thermostat (FPT) is located on the evaporator coil. It detects frost build-up and turns off the compressors, allowing the coil to clear. Once frost has melted, the compressors can be reenergized.

**Heating, units with economizer (48TJ004-014)** — When the thermostat calls for heating, terminal W1 is energized. In order to prevent thermostat short-cycling, the unit is locked into the Heating mode for at least 1 minute when W1 is energized. The induced-draft motor is then energized and the burner ignition sequence begins. The indoor (evaporator) fan motor (IFM) is energized 45 seconds after a flame is ignited and the damper moves to the minimum position. On units equipped for two stages of heat, when additional heat is needed, W2 is energized and the high-fire solenoid on the main gas valve (MGV) is energized. When the thermostat is satisfied and W1 is deenergized, the IFM stops after a 45 second time-off delay. The economizer damper then moves to the fully closed position. When using continuous fan, the damper will remain in the minimum position.

**Heating, units with economizer (48TJ016-028)** — Outdoor-air damper stays at VENT position while evaporator fan is operating. Refer to Heating, units without economizer section on page 59 for remainder of operating sequence.

# INDOOR-AIR QUALITY AND APOLLO CONTROLS WIRING



\*Filter status switch and humidity sensor cannot function simultaneously.  
 Only one sensor can be wired.  
 †Such as a CO<sub>2</sub> sensor.  
 \*\*Set auxiliary option to "2" — IAQ Control per VTS or VVT Installation Instructions.

# Controls (cont)



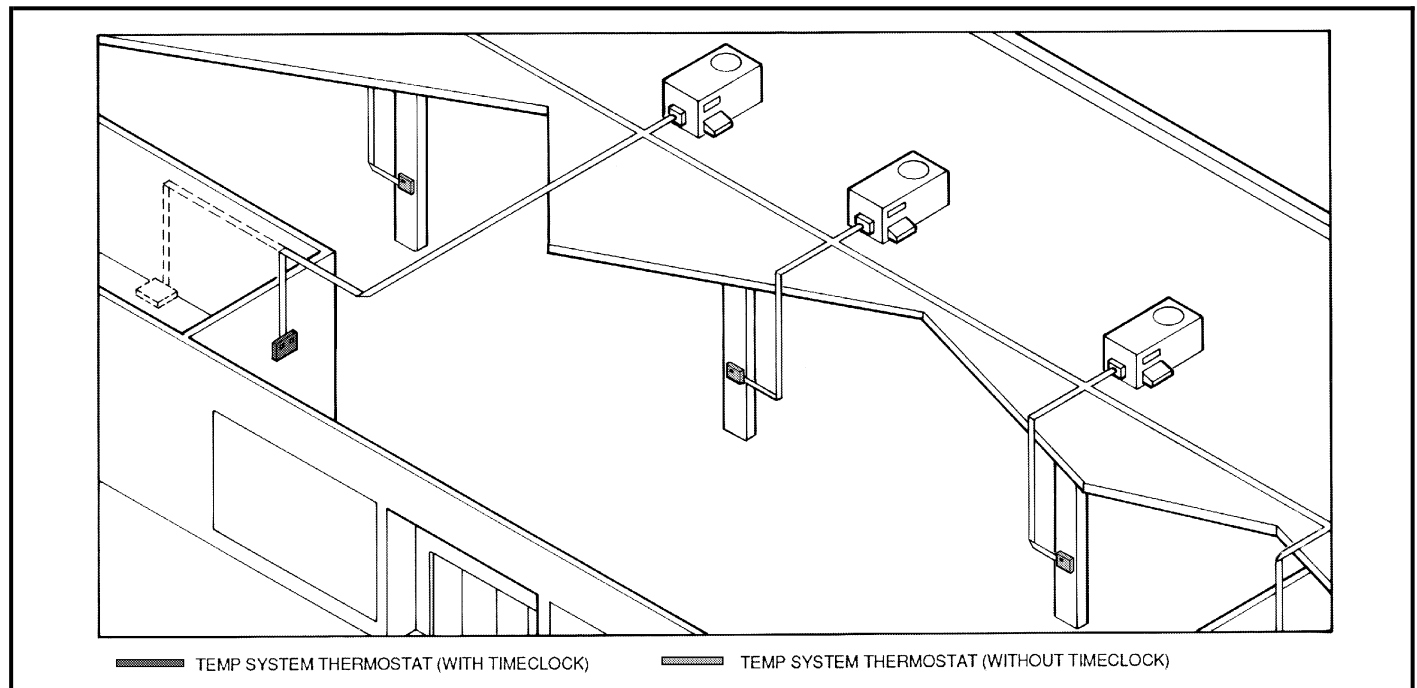
## TEMP systems

A TEMP System is a network of communicating Carrier TEMP System Thermostats and rooftop, factory-mounted Apollo direct digital controls, each serving its own zone and heating/cooling unit. Networking allows your building manager to easily access each of your systems from a single location...whether they are in the same building or located throughout town.

The TEMP System's inherently flexible, modular base design supports the **exact** number of independent, single zone systems you require...no more, no less, no compromises.

Ideal for department stores, small office buildings, fast food chains, schools, and hotels, a TEMP System is a cost-effective way to maintain comfortable building environments.

NOTE: Unit temperature rise must not be exceeded for proper unit operation.

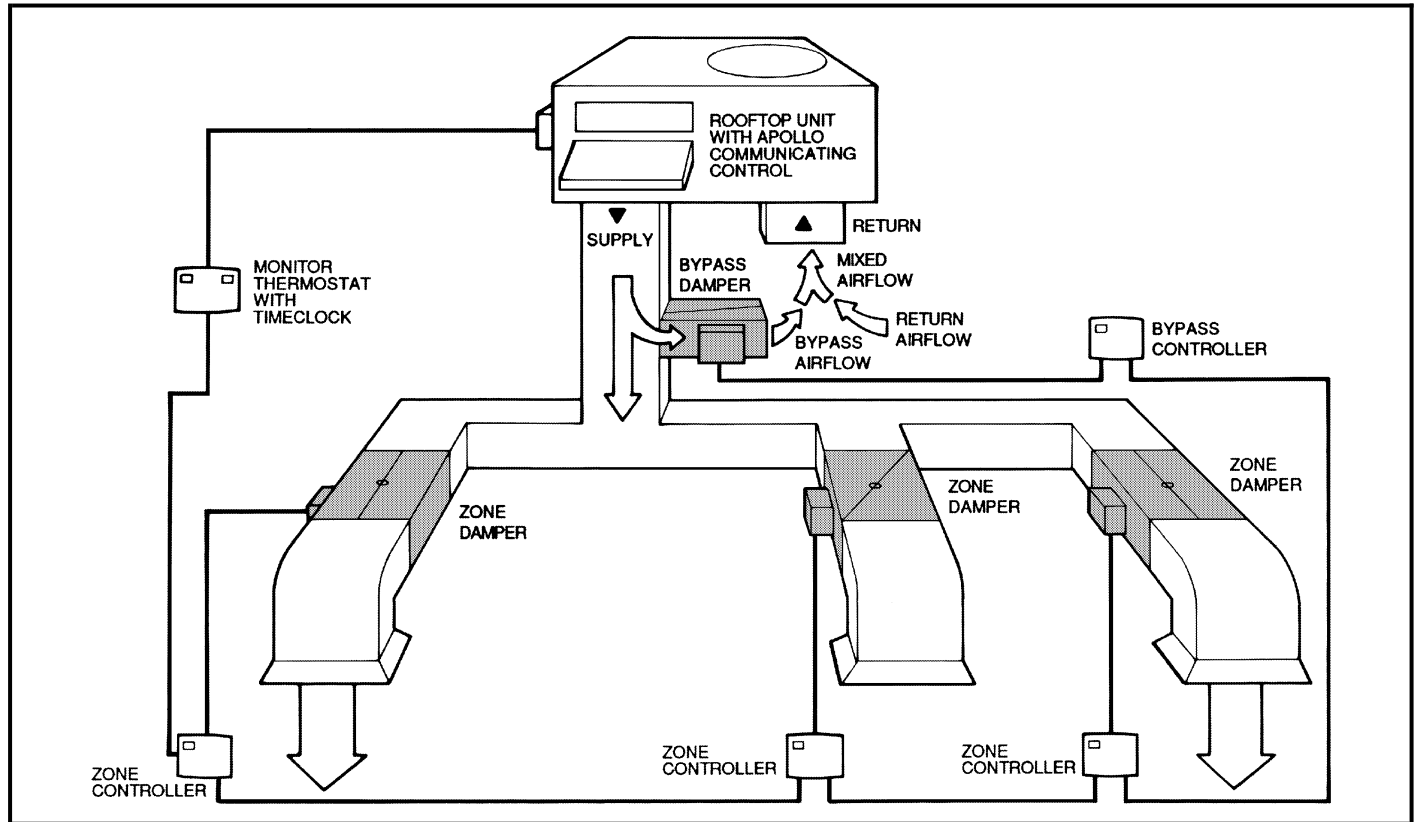


**Variable Volume/Variable Temperature VVT® Systems**

VVT Systems are dedicated to total building comfort. Carrier thermostats, zone dampers, and HVAC equipment with factory-mounted direct digital controls continually monitor and adjust their operation to ensure uninterrupted and personalized comfort for all occupants.

Through the use of communicating electronic controls, VVT Systems are able to provide the comfort of a multiple zone system while using the installation, operating and maintenance economics of single zone equipment... virtually putting an end to the cost vs comfort compromise.

NOTE: Unit temperature rise must not be exceeded for proper unit operation.



**Ductwork (48TJ004-014)** — Secure vertical discharge ductwork to roof curb. For horizontal discharge applications, attach ductwork to unit, or field-supplied flanges can be attached to horizontal discharge openings and all ductwork attached to flanges.

**Ductwork (48TJ016-028)** — Ductwork should be attached to the curb on all units. Interior installation may proceed before unit is set in place on roof. If ductwork will be attached to the unit, do not drill in condensate drain pan area — leaks may result. See figures on page 65 for information on field-installed concentric ductwork when applicable.

**To convert Durablade economizer from vertical discharge to horizontal discharge (48TJ004-014):**

1. Remove economizer to gain access to return duct opening.
2. Move the horizontal discharge duct opening covers to the vertical discharge openings.
3. Rotate economizer 90 degrees (until the economizer motor faces the condenser section).
4. Rotate the barometric relief damper 90 degrees (economizer only).
5. Install block-off plate over the opening on the access panel.

NOTE: Parablade economizer is for vertical discharge units only.

**Thru-the-curb service connections (48TJ016-028)** — Roof curb connections allow field power wires, control wires, and gas supply to enter through the roof curb opening.

**Thru-the-bottom service connections (48TJ004-014)** — An accessory kit is required for proper installation of thru-the-bottom connections.

**Thermostat** — Use of 2-stage cooling thermostat is recommended for all units. A 2-stage cooling thermostat is required on units with accessory economizer to provide integrated cooling.

**Heating-to-cooling changeover** — All units are automatic changeover from heating to cooling when automatic changeover thermostat and subbase are used.

**Airflow** — Units are draw-thru on cooling and blow-thru on heating.

**Maximum airflow** — To minimize the possibility of condensate blow-off from evaporator, airflow through units should not exceed 500 cfm/ton on 004-024 units, and 11,250 cfm on 028 units.

**Minimum airflow** — The minimum airflow for cooling is 300 cfm/ton on 004-024 units and 280 cfm/ton on 028 units. Refer to Heating Capacities and Efficiencies table on page 6 for minimum airflow cfm for heating on 016-028 units.

**Minimum ambient cooling operation temperature (48TJ004-014)** — The cooling temperature for size 004-014 standard units is 25 F. With accessory Motormaster® control units can operate at outdoor temperatures down to -20 F.

**Minimum ambient cooling operation temperature (48TJ016-028)** — Units are designed to operate at outdoor temperatures down to 40 F for 48TJ016, 35 F for 48TJ020, 25 F for 48TJ024, and 48 F for 48TJ028. To operate at lower outdoor-air temperatures, see Price Pages or contact your local Carrier representative for appropriate accessory combinations for specific applications.

**Maximum operating outdoor-air temperature** — For cooling, this temperature is 115 F (004-016), 120 F (020), or 125 F (024,028).

**High altitude** — A change to the gas orifice may be required at high altitudes. Refer to Altitude Compensation charts on pages 50 and 51.

**Minimum temperature** — Air entering the heat exchanger in heating must be a minimum of 50 F continuous and 45 F intermittent.

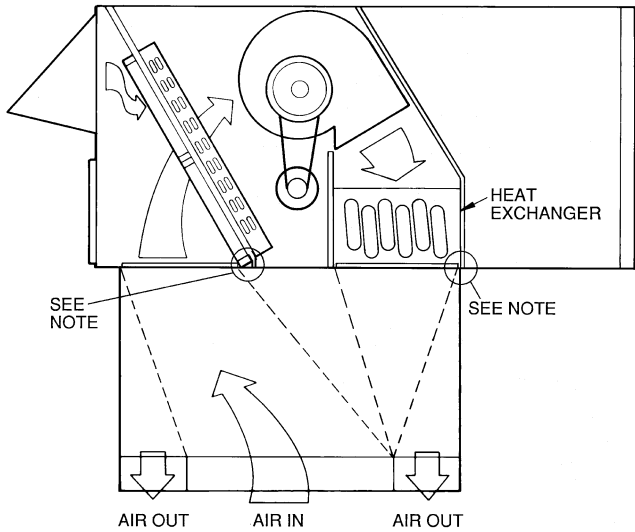
**Internal unit design** — Due to Carrier's internal unit design (draw-thru over the motor), air path, and specially designed motors, the full horsepower (maximum continuous bhp) listed in the Physical Data table and the notes following each Fan Performance table can be utilized with extreme confidence.

Using Carrier motors with the values listed in the Physical and Fan Performance Data tables *will not* result in nuisance tripping or premature motor failure. The unit warranty will not be affected.

**Apollo direct digital communicating controls** — The Apollo direct digital controls must be used with either a Carrier master or monitor thermostat.

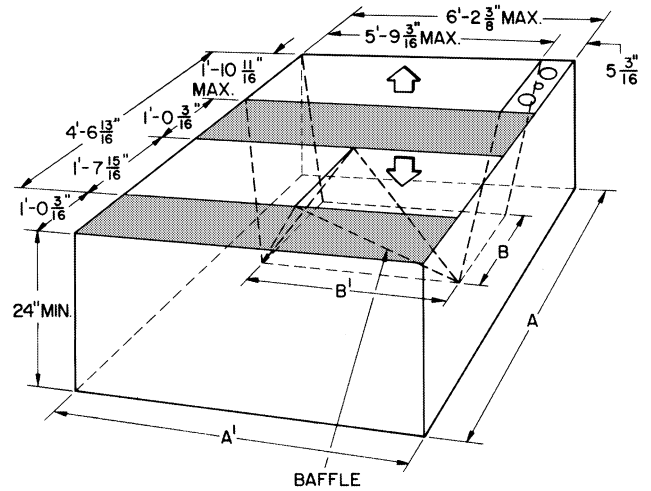


**CONCENTRIC DUCT AIR DISTRIBUTION  
48TJ016-028 ONLY**



NOTE: Do not drill in this area, damage to basepan may result in water leak.

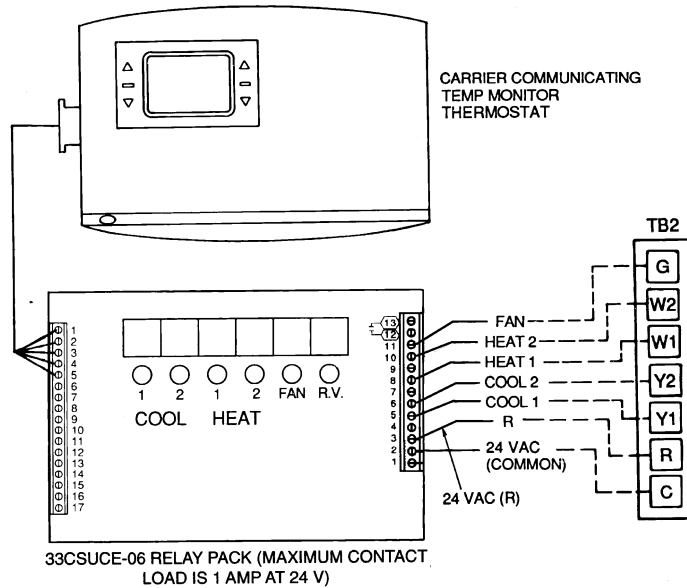
**CONCENTRIC DUCT DETAILS  
48TJ016-028 ONLY**



NOTE: Dimensions A, A' and B, B' are obtained from field-supplied ceiling diffuser.

█ indicates block-off panels.

**STANDARD UNIT TYPICAL FIELD THERMOSTAT WIRING,  
48TJ016-028**



LEGEND  
TB — Terminal Block



## Packaged Rooftop Electric Cooling Unit with Gas Heat — Constant Volume Application

### HVAC Guide Specifications

Size Range: **3 to 12½ Tons, Nominal (Cooling)  
72,000 to 250,000 Btuh, Nominal  
(Input Heating)**

Carrier Model Numbers: **48TJD,  
48TJE,  
48TJF**

#### Part 1 — General

##### 1.01 SYSTEM DESCRIPTION

- A. Outdoor rooftop mounted, electrically-controlled heating and cooling unit utilizing a hermetic compressor(s) for cooling duty and gas combustion for heating duty. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.

##### 1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standards 210/240 or 360 and 270. Designed in accordance with UL Standard 1995.
- B. Unit shall be designed to conform to ASHRAE 15, latest revision.
- C. 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.
- D. Roof curb shall be designed to conform to NRCA Standards.
- E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
- F. Unit casing shall be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 500-hour salt spray test.
- G. Unit shall be designed in accordance with ISO 9001, and shall be manufactured in a facility registered to ISO 9002/BS5750, Part 2.

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Unit shall be stored and handled per manufacturer's recommendations.

#### Part 2 — Products

##### 2.01 EQUIPMENT (STANDARD)

###### A. General:

Factory assembled, single-piece heating and cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to field start-up.

###### B. Unit Cabinet:

- 1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a pre-painted baked enamel finish on all externally exposed surfaces.

- 2. Evaporator fan compartment interior cabinet surfaces shall be insulated with a minimum ½-in. thick, flexible fiberglass insulation, coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
- 3. Cabinet panels shall be easily removable for servicing.
- 4. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
- 5. Unit shall have a factory-installed, sloped condensate drain pan made of a non-corrosive material, providing a minimum ¾-in. connection with both vertical and horizontal drains, and shall comply with ASHRAE Standard 62.
- 6. Unit shall have a factory-installed filter access panel to provide filter access with tool-less removal.
- 7. Unit shall have standard thru-the-bottom power connection capability.

###### C. Fans:

###### 1. Evaporator Fan:

- a. Fan shall be direct or belt driven as shown on the equipment drawings. Belt drive shall include an adjustable-pitch motor pulley.
- b. Fan wheel shall be double-inlet type with forward-curved blades.
- c. Bearings shall be sealed, permanently lubricated ball-bearing type for longer life and lower maintenance.

- 2. Evaporator fan shall be made from steel with a corrosion-resistant finish and shall be dynamically balanced.

- 3. Condenser fan shall be of the direct-driven propeller type and shall discharge air vertically.

- 4. Condenser fan shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

- 5. Induced-draft blower shall be of the direct-driven, single inlet, forward-curved centrifugal type, made from steel with a corrosion-resistant finish and shall be dynamically balanced.

###### D. Compressor(s):

- 1. Fully hermetic type, internally protected.
- 2. Factory spring-shock mounted and internally spring mounted for vibration isolation.
- 3. On independent mounting circuits (008-014).

###### E. Coils:

- 1. Evaporator and condenser coils shall have aluminum plate fins mechanically bonded to copper tubes with all joints brazed.
- 2. Tube sheet openings shall be belled to prevent tube wear.
- 3. Evaporator coil shall be of the full face active design.

#### F. Heating Section:

1. Induced-draft combustion type with energy saving direct-spark ignition system and redundant main gas valve.
2. The heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gage steel coated with a nominal 1.2 mil aluminum-silicone alloy for corrosion resistance.
3. Burners shall be of the in-shot type constructed of aluminum-coated steel.
4. All gas piping shall enter the unit cabinet at a single location.
5. The integrated gas controller (IGC) board shall include gas heat operation fault notification using an LED (light-emitting diode).
6. 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.
7. The IGC board shall contain algorithms that modify evaporator-fan operation to prevent future cycling on high-temperature limit switch.
8. The LED shall be visible without removal of control box access panel.

#### G. Refrigerant Components:

Refrigerant circuit components shall include:

1. Acutrol™ feed system.
2. Refrigerant strainer.
3. Service gage connections on suction, discharge, and liquid lines.

#### H. Filter Section:

1. Standard filter section shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
2. Filter face velocity shall not exceed 320 fpm at nominal airflows.
3. Filter section should use only one size filter.
4. Filters shall be accessible through an access panel with “no-tool” removal.

#### I. Controls and Safeties:

##### 1. Unit Controls:

Unit shall be complete with self-contained low-voltage control circuit protected by an auto-reset device.

##### 2. Safeties:

- a. Unit shall incorporate compressor overtemperature and overcurrent safety devices to shut off compressor.
- b. Heating section shall be provided with the following minimum protections:
  - 1) High-temperature limit switch.
  - 2) Induced-draft motor speed sensor.
  - 3) Flame rollout switch.
  - 4) Flame proving controls.

#### J. Operating Characteristics:

1. Unit shall be capable of starting and running at 115 F ambient outdoor temperature, meeting maximum load criteria of ARI Standard 210/240 or 360.
2. Compressor with standard controls shall be capable of operation down to 25 F ambient outdoor temperature.

#### K. Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single factory-predrilled location.

#### L. Motors:

1. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have line break thermal and current overload protection.
2. Evaporator-fan motor shall have permanently lubricated bearings and inherent automatic-reset thermal overload protection.
3. Totally enclosed condenser-fan motor shall have permanently lubricated bearings, and inherent automatic-reset thermal overload protection.
4. Induced-draft motor shall have permanently lubricated sealed bearings and inherent automatic-reset thermal overload protection.

#### M. Special Features:

Certain features are not applicable when the features designated \* are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

- \* 1. Direct Digital Communicating Controls:
  - a. Shall be available as a factory-installed option.
  - b. Shall actively monitor all modes of operation, as well as evaporator-fan status, filter status, indoor-air quality, supply-air temperature, and outdoor-air temperature.
  - c. Shall work with Carrier TEMP and VVT® systems.
  - d. Shall have built-in diagnostics for thermostat commands for both staged heating and cooling, evaporator-fan operation, and economizer operation.
  - e. Shall be equipped with a 5-minute time delay between modes of operation.
2. Roof Curbs (Horizontal and Vertical):
  - a. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
  - b. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
- \* 3. Integrated Economizers:
  - a. Integrated integral modulating type capable of simultaneous economizer and compressor operation.



- b. Includes all hardware and controls to provide cooling with outdoor air.
  - c. Equipped with low-leakage dampers, not to exceed 3% leakage at 1 in. wg pressure differential (variable sliding plate economizer only) or parallel blade design.
  - d. Capable of introducing up to 100% outdoor air.
  - e. Parallel opposed blade economizer shall be equipped with a barometric relief damper with up to 30% of return air (004-007) or 45% of return air (008-014) relief. The variable sliding plate economizer is equipped with 30% of return-air relief (004-014).
  - f. Designed to close damper during loss-of-power situations with emergency power supply (variable sliding plate economizer) or spring return built into motor (parallel opposed blade economizer).
  - g. Dry bulb outdoor-air thermostat (variable sliding plate economizer) or enthalpy (parallel opposed blade economizer) protection shall be provided as standard.
  - h. Variable sliding plate economizer is a guillotine-style damper, and the parallel opposed blade economizer is a parallel blade design.
  - i. Parallel opposed blade economizer shall provide control of internal building pressure through its inherent power exhaust function.
  - j. Parallel opposed blade economizer shall be capable of exhausting up to 100% outdoor air.  
NOTE: Parallel opposed blade type economizer shall also be available with power exhaust.
- \* 4. Manual Outdoor-Air Damper:  
Manual damper package shall consist of damper, birdscreen, and rainhood which can be preset to admit up to 50% outdoor air for year round ventilation.
  - \* 5. 100% Two-Position Damper:
    - a. Two-position damper package shall include single blade damper and motor. Admits up to 100% outdoor air.
    - b. Damper shall close upon indoor (evaporator) fan shutoff.
    - c. Designed to close damper during loss of power situations.
    - d. Equipped with 15% barometric relief damper.
  - \* 6. 25% Two-Position Damper:
    - a. Two-position damper package shall include single blade damper and motor. Admits up to 25% outdoor air.
    - b. Damper shall close upon indoor (evaporator) fan shutoff.
    - c. Designed to close damper during loss of power situations.
  - d. Equipped with barometric relief damper.
  - \* 7. Solid-State Enthalpy Control:
    - a. For use with variable sliding plate economizer package only.
    - b. Capable of sensing outdoor-air heat content (temperature and humidity) and control economizer cut-in point to have minimum heat content air passing over the evaporator coil for most efficient system operation.
  - \* 8. Differential Enthalpy Sensor:
    - a. For use with economizer only.
    - b. Capable of comparing heat content (temperature and humidity) of outdoor air and return air and controlling economizer cut-in point at the most economical level.
  - \* 9. Head Pressure Control Package:  
Consists of solid-state control and condenser-coil temperature sensor to maintain condensing temperature between 90 F and 110 F at outdoor ambient temperatures down to -20 F by condenser-fan speed modulation or condenser-fan cycling.
  - \* 10. Remote Control Panel:  
Panel shall be a decorative, indoor, wall-mounted panel consisting of:
    - a. Two-stage heat/2-stage cool thermostat.
    - b. Automatic changeover.
    - c. System switch with HEAT-COOL-AUTO.-OFF settings.
    - d. Fan switch with ON-AUTO. settings.
    - e. Indicator lights for HEAT-COOL-FAN operation.
    - f. Three unused indicator lights for field use.
  - 11. LP (Liquid Propane) Gas Conversion Kit:  
Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane gas.
  - \* 12. Electronic Programmable Thermostat:  
Capable of using deluxe full-featured electronic thermostat. Shall use built-in compressor cycle delay control for both heating and cooling duty. Capable of working with Carrier direct digital controls.
  - \* 13. Flue Shield:  
Provides protection from the hot sides of the gas flue hood.
  - \* 14. Thermostat and Subbase:  
Provides staged cooling and heating automatic (or manual) changeover, fan control, and indicator light.
  - \* 15. Condenser Coil Hail Guard Assembly:  
Hail guard shall protect against damage from hail and flying debris.

16. Salt Spray Protection Package (008-014):  
Coil guard protects coil from corrosion in coastal areas and in areas with high sulfur emissions.
17. NO<sub>x</sub> Reduction Kit:  
Package shall contain all necessary hardware and instructions to convert a standard natural gas unit to reduce the nitrous oxide (NO<sub>x</sub>) emissions to a level of 40 nanograms/joule.
18. Controls Upgrade Kit:  
Kit shall contain high-pressure, loss-of-charge/low-pressure, and freeze protection switches. It shall mount on factory-installed Schrader fittings.
19. Alternate Motor(s) and/or Drive(s) (004-006, 008, 012, 014):  
Alternate motor(s) and drive(s) shall be factory-installed to provide additional performance range.
20. Flue Discharge Deflector:  
Flue discharge deflector directs unit exhaust vertically instead of horizontally.
- \* 21. Condenser Coil Grille:  
The grille protects the condenser coil from damage by large objects without increasing unit clearances.
22. Compressor Cycle Delay:  
Unit shall be prevented from restarting for minimum of 5 min. after shutdown.
23. Thru-the-Bottom Service Connectors:  
Kit shall provide connectors to permit gas and electrical connections to be brought to the unit through the basepan.
24. Fan/Filter Status Switch:  
Provides status of indoor (evaporator) fan (ON/OFF) or filter (CLEAN/DIRTY). Status shall be displayed over communication bus when used with direct digital controls or with an indicator light at the thermostat.



## Packaged Rooftop Electric Cooling Unit with Gas Heat — Constant Volume Application

### HVAC Guide Specifications

Size Range: **15 to 25 Tons, Nominal (Cooling)**  
**115,500 to 485,000 Btuh, Nominal (Input Heating)**

Carrier Model Numbers: **48TJD,**  
**48TJE**

#### Part 1 — General

##### 1.01 SYSTEM DESCRIPTION

- A. Unit is an outdoor rooftop mounted, electrically controlled heating and cooling unit utilizing a reciprocating semi-hermetic compressor(s) for cooling duty and gas combustion for heating duty. Supply air shall be discharged downward or horizontally (with horizontal supply/return curb or adapter assembly), as shown on contract drawings. Standard unit shall include a manual outdoor-air inlet.

##### 1.02 QUALITY ASSURANCE

- A. Unit (016-024) shall be rated in accordance with ARI Standards 270 and 360 and all units shall be designed in accordance with UL Standard 1995.

NOTE: The 48TJ028 is beyond the scope of the ARI certification program.

- B. Unit shall be designed to conform to ASHRAE 15.
- C. Unit shall be ETL and ETL, Canada tested and certified in accordance with ANSI Z21.47 Standards as a total package.
- D. Roof curb shall be designed to conform to NRCA Standards.
- E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
- F. Unit casing shall be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 500-hour salt spray test.
- G. Unit shall be manufactured in a facility registered to ISO 9002/BS5750, Part 2.

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Unit shall be stored and handled per manufacturer's recommendations.

#### Part 2 — Products

##### 2.01 EQUIPMENT (STANDARD)

###### A. General:

The 48TJ unit shall be a factory assembled, single-piece heating and cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to field start-up.

###### B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.

2. Indoor blower compartment interior surfaces shall be insulated with a minimum 1/2-in. thick fiberglass insulation coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
3. Cabinet panels shall be easily removable for servicing.
4. Filters shall be accessible through an access panel.
5. Holes shall be provided in the base rails for rigging shackles to facilitate overhead rigging.
6. Unit shall have a factory-installed internal condensate drain connection and a sloped condensate pan.

###### C. Fans:

1. Indoor blower (evaporator fan):
  - a. Fan shall be belt driven. Belt drive shall include an adjustable pulley.
  - b. Fan wheel shall be made from steel with a corrosion resistant finish. It shall be a dynamically balanced, double-inlet type with forward-curved blades.
2. Condenser fans shall be of the direct-driven propeller type, with corrosion-resistant blades riveted to corrosion-resistant steel supports. They shall be dynamically balanced and discharge air upwards.
3. Induced-draft blower shall be of the direct-driven, single inlet, forward-curved, centrifugal type. It shall be made from steel with a corrosion-resistant finish and shall be dynamically balanced.

###### D. Compressor(s):

1. The reciprocating semi-hermetic compressor(s) has factory-installed external spring vibration isolation.
2. Factory-installed crankcase heater prevents refrigerant dilution of oil.
3. The semi-hermetic compressor shall have unloading capability (016 only).
4. Compressors shall be on independent circuits (020-028).

###### E. Coils:

Standard evaporator and condenser coils shall have copper or aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed.

###### F. Heating Section:

1. Induced-draft combustion type with energy saving direct-spark ignition system and redundant main gas valve.
2. The heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gage steel coated with a nominal 1.2 mil aluminum-silicone alloy for corrosion resistance.
3. Burners shall be of the in-shot type constructed of aluminum-coated steel.
4. All gas piping shall enter the unit at a single location.



#### G. Refrigerant Components:

Refrigerant circuit components shall include:

1. Fixed expansion device with filter driers.
2. Service valve gage and connections on suction, discharge, and liquid lines.
3. Thermostatic expansion valve (016) or Acutrol™ feed system (020-028).

#### H. Filter Section:

Standard filter section shall consist of 2 sizes of factory-installed 2-in. thick throwaway fiberglass filters of commercially available sizes.

#### I. Controls and Safeties:

##### 1. Unit Controls:

- a. Economizer control (optional)
- b. Capacity control (2-step)
- c. Unit shall be complete with self-contained low-voltage control circuit.

##### 2. Safeties:

- a. Unit shall incorporate a solid-state compressor lockout which provides reset capability at the space thermostat, should any of the following safety devices trip and shut off compressor:
  - 1) Compressor overtemperature, overcurrent.
  - 2) Low-pressure switch.
  - 3) Freezestat (evaporator coil).
  - 4) High-pressure switch.
- b. Supply-air thermostat shall be located in the unit.
- c. Heating section shall be provided with the following minimum protections:
  - 1) High-temperature limit switch.
  - 2) Induced-draft motor speed sensor.
  - 3) Flame rollout switch.
  - 4) Flame proving controls.
  - 5) Redundant gas valve.

#### J. Operating Characteristics:

1. Unit shall be capable of starting and running at 115 F ambient outdoor temperature per maximum load criteria of ARI Standard 360.
2. Unit with standard controls will operate in cooling down to an outdoor ambient temperature of 40 F on 48TJ016 units, to 35 F on 020 units, to 25 F ambient on 024 units, and to 48 F ambient on 028 units.
3. Unit shall be provided with fan time delay to prevent cold air delivery.

#### K. Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single location.

#### L. Motors:

1. All compressor motors shall be of the refrigerant cooled type with thermal and calibrated circuit breaker overload protection.
2. All fan motors shall have permanently lubricated, sealed bearings and inherent automatic-reset thermal overload protection or manual reset calibrated circuit breakers.

#### M. Special Features:

Certain features are not applicable when the features designated \* are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

- \* 1. Direct Digital Communicating Controls:
  - a. Shall be available as a factory-installed option.
  - b. Shall actively monitor all modes of operation, as well as evaporator-fan status, filter status, indoor-air quality, supply-air temperature, and outdoor-air temperature.
  - c. Shall work with Carrier TEMP and VVT® systems.
  - d. Shall have built-in diagnostics for thermostat commands for both staged heating and cooling, evaporator-fan operation, and economizer operation.
  - e. Shall be equipped with a 5-minute time delay between modes of operation.
2. Roof Curbs (Horizontal and Vertical):
  - a. Formed of 18-gage galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
  - b. Permits installing and securing ductwork to curb prior to mounting unit on the curb.
3. Horizontal Adapter:

Includes factory-assembled adapter and duct and substantially improves evaporator fan static performance.
- \* 4. Integrated Economizer:
  - a. Integrated type capable of simultaneous economizer and compressor operation to provide cooling with outdoor air.
  - b. Equipped with low-leakage dampers not to exceed 3% leakage, at 1.0 in. wg pressure differential.
  - c. Capable of introducing up to 100% outdoor air.
  - d. Equipped with dry-bulb temperature control to govern economizer changeover.



5. Two-Position Damper:  
Two-position damper package shall include single blade damper and motor. Admits up to 25% outdoor air, and shall close upon unit shutoff.
6. Accessory Compressor Cycle Delay:  
Compressor shall be prevented from restarting for a minimum of 5 minutes after shutdown.
- \* 7. Thermostats and Subbases:  
To provide staged heating and cooling in addition to automatic (or manual) changeover and fan control.
- \* 8. Barometric Relief Damper Package:
  - a. Package shall include damper, seals, hardware, and hoods to relieve excess internal pressure.
  - b. Damper shall close due to gravity upon unit shutdown.
- \* 9. Power Exhaust:  
Package shall include an exhaust fan, motor, and damper for vertical flow units with economizer to control overpressurization of building.
- \* 10. Head Pressure Control Package:  
Consists of an accessory outdoor-air package and a solid-state control with condenser coil temperature sensor for controlling condenser-fan motor speed to maintain condensing temperature between 90 F and 100 F at outdoor ambient temperature down to -20 F.
11. Low-Ambient Kits:  
When used, allows units to operate at lower outdoor ambient temperatures. See price pages for more information.
- \* 12. Enthalpy Sensor:
  - a. For use with economizer only.
  - b. Capable of comparing heat content (temperature and humidity) of outdoor air and indoor air and controlling economizer cut-in point at the most economical level.  
NOTE: Two accessory enthalpy sensors are required for differential enthalpy control.
- \* 13. Remote Control Panel:  
Panel shall be a decorative, indoor, wall-mounted panel consisting of:
  - a. Two-stage heat/2-stage cool thermostat.
  - b. Automatic changeover.
  - c. System switch with HEAT-COOL-AUTO.-OFF settings.
  - d. Fan switch with ON-AUTO. settings.
  - e. Ventilation control for remote variation of the amount of outdoor-air intake.
  - f. Indicator lights for HEAT-COOL-FAN operation.
  - g. Three unused indicator lights for field use.
- \* 14. Electronic Programmable Thermostat:  
Capable of using deluxe full-featured electronic thermostat.
15. Winter Start Time-Delay Relay:  
Used in conjunction with the accessory low-ambient kit or head pressure control device, permits operation in cooling at lower outdoor ambient temperatures. See price pages for more information.
16. Liquid Propane Conversion Kit (TJD/E016, TJD020, TJD024, TJD028):  
Kit shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquified propane gas.

