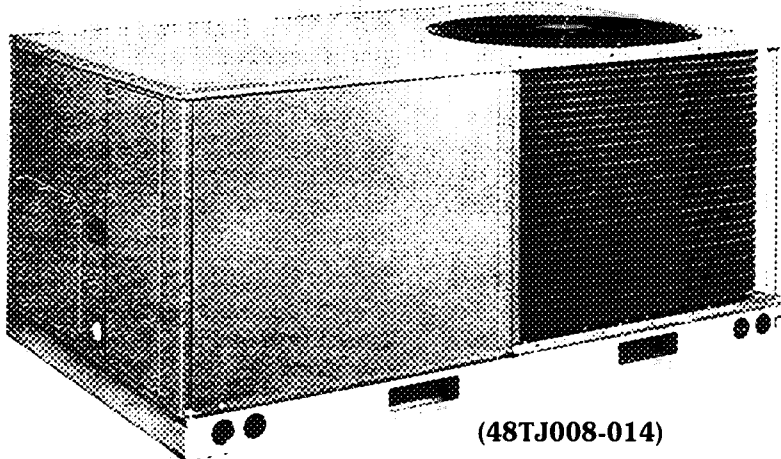




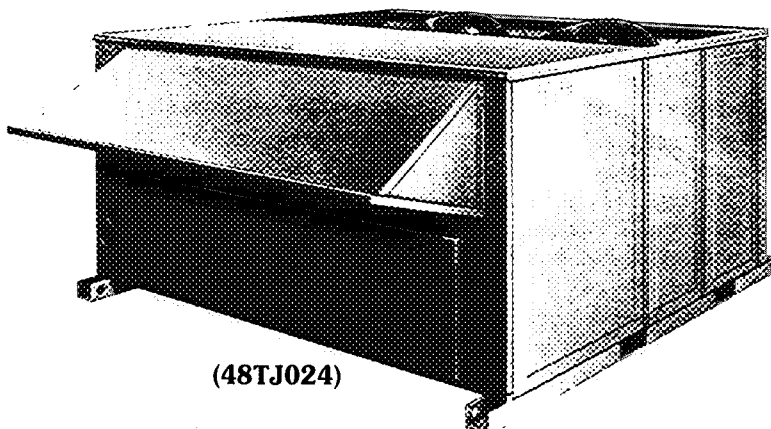
Advance Product Data

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

3 to 25 Nominal Tons



(48TJ008-014)



(48TJ024)

Single-Package Rooftop Units with:

- Alumagard™ heat exchanger coating
- Induced-draft fan
- Turbo-tubular™ heat exchangers
- Galvanized steel cabinet with Carrier Weather Armor® coating
- Return-air filters
- Commercial strength base rails (full perimeter on 004-014)
- Corrosion-resistant 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

Features/Benefits

Compact, vertical discharge units convert to horizontal discharge (48TJ016-028 require accessory roof curb), 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, and 2 curb sizes are offered for 016-028 units [one for low heat; one for high heat].) The contractor can order and install the roof curb early in the construction stage, before decisions on size requirements are made.

All units feature formed baserail design with forklift slots and rigging holes for easier maneuvering.

Packaging protects the unit 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 the horizontal supply/return adapter curb assembly (016-028).

Convenient duct openings in the 48TJ016-028 unit basepans permit side-by-side or concentric duct connections without requiring internal unit modification.

The 48TJ units were designed with service technicians in mind. The efficient in-shot burners and all ignition components are contained in an easily removable, compact assembly.

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-curb service connections (standard on 48TJ016-028 units; accessory on 48TJ004-014 units) allow power and control wiring to be routed through the curb, minimizing roof penetrations. Both power and control connections are made on the same side of the unit to simplify installation.

Proven compressor reliability

Design techniques feature computer-programmed balance between compressor, condenser, and evaporator. Carrier-specified hermetic (004-014, 020, and 024 units) and semi-hermetic (016 and 028 units) compressors are equipped with compressor overcurrent and overtemperature protection to ensure dependability. Crankcase heaters (016 and 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 and 020, 024 units. Carrier's exclusive Acutrol™ metering device precisely controls refrigerant flow, preventing slugging and flood-back, while maintaining optimum unit performance.

Durable, dependable construction

Produced for durability in any climate, the weather-resistant cabinets are designed with Carrier Weather Armor® coating. The cabinets are made of pre-painted, galvanized steel for long life and attractive appearance.

Integrated economizers and outdoor air

During a first stage call for cooling, if the outdoor-air temperature is below the control set point, the mixed-air sensor modulates the economizer outdoor-air damper open to achieve the 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 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 and Accusensor™ III differential enthalpy control.

The Varislide™ type economizer 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.

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 on 48TJ004-014 units). The damper can be preset to admit up to 25% outdoor air.

Quiet, efficient operation and dependable performance

Compressors have vibration isolation for extremely quiet operation. Efficient fan and motor design permits operation at very low sound levels.

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 motor allows 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 and double waved for higher heat transfer.

Turbo-tubular™ 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. In addition, turbulators inside the heat exchanger tube act as baffles, forcing the hot gases to stay in close con-

tact with the cell walls and improving heat transfer. 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 winds 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 air.

During the Heating mode, the evaporator-fan relay automatically starts the evaporator fan after the heat exchanger warms up. This prevents cold air from entering the supply air when the conditioned space is calling for heat.

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 48TJ004-014 units 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.

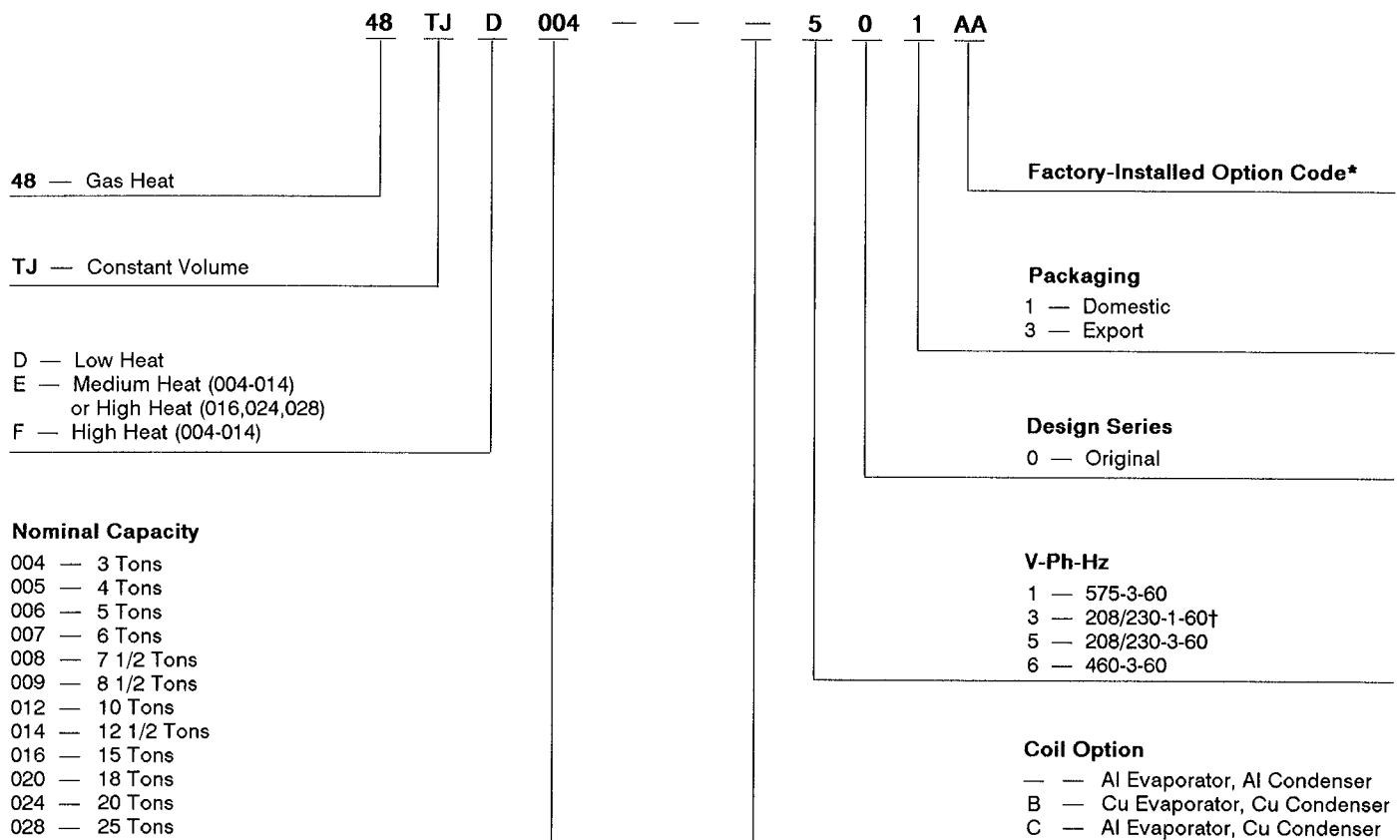
All 48TJ units have a flame rectification sensor to quickly sense the burner (48TJ004-014) or pilot (48TJ016-028) flame and ignite burners almost immediately. Fast shutdown is a certainty since the sensor reacts quickly to any flame outage or system failure.

Safety is also assured due to the heating safety controls which will shut down the unit if a problem is sensed. If excessive temperatures develop, limit switches shut off the gas valve. The rollout switch 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.

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Model number nomenclature



LEGEND

AI — Aluminum
Cu — Copper
FIOP — Factory-Installed Option

*Refer to 48TJ price pages for 48TJ FIOP code table.

†Single phase is available on 5-ton and smaller units. The 48TJ006 unit is 230-1-60 only.

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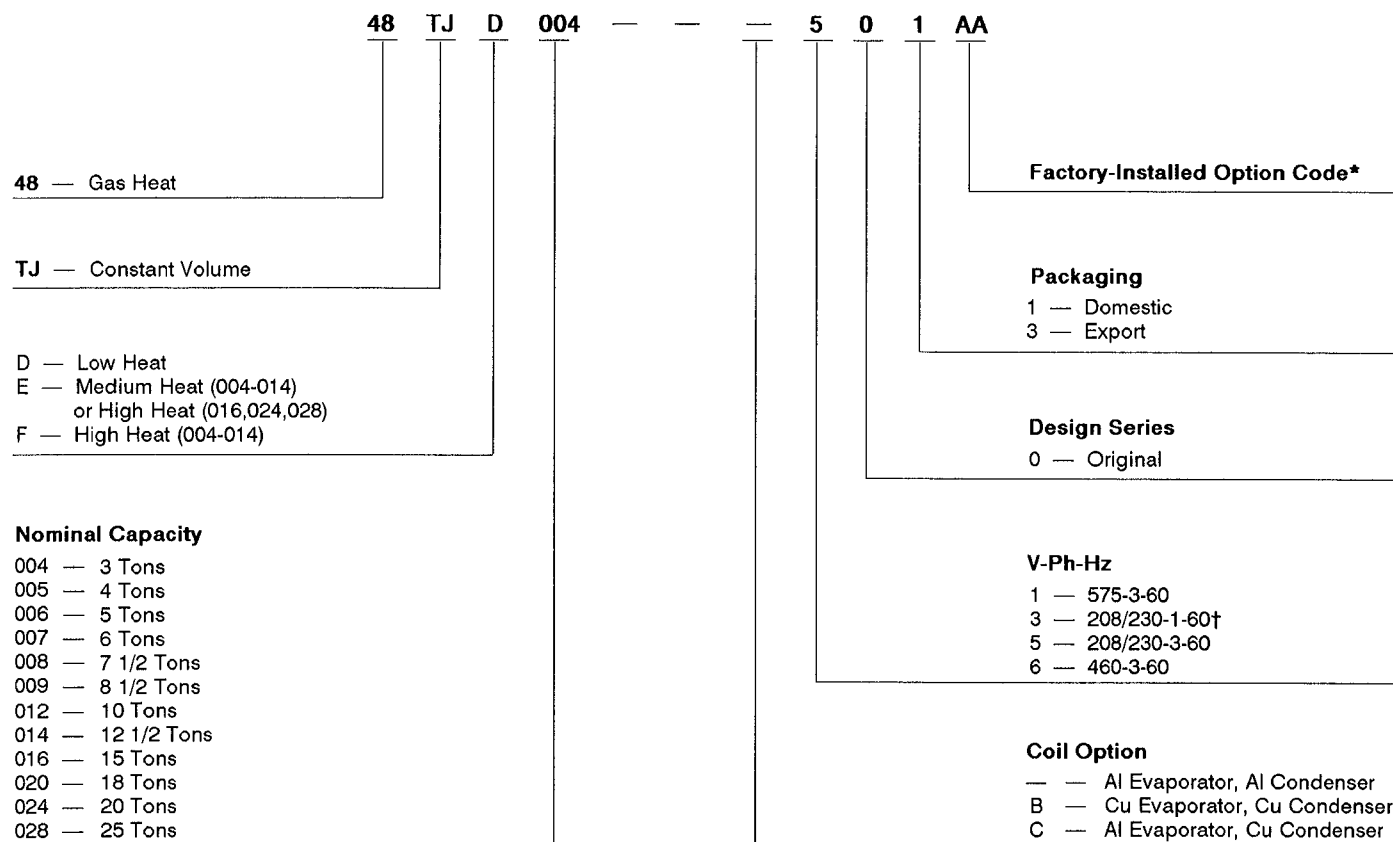
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†Single phase is available on 5-ton and smaller units. The 48TJ006 unit is 230-1-60 only.

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	35,500	4.0	10.00	9.70	8.60	8.2
005	4	1600	48,000	5.4	10.00	9.70	8.60	8.2
006	5	2000	58,500	6.8	10.00	9.70	8.60	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	8.90	8.4	†
008	7½	2600	85,500	9.6	8.90	8.6	9.70
009	8½	3000	98,000	11.0	8.90	8.6	9.45
012	10	3500	116,000	13.0	8.90	8.8	9.75
014	12½	4500	142,000	16.0	8.90	8.8	8.85

UNIT 48TJ	NOMINAL TONS	NET COOLING CAPACITY (Btuh)	TOTAL kW	EER	IPLV
016	15	180,000	20.9	8.60	†
020	18	194,000	22.8	8.60	8.20
024	20	220,000	25.9	8.50	8.30
028	25	268,000	31.2	8.50	8.40

LEGEND

ARI — Air Conditioning and Refrigeration Institute
Bels — Sound Levels (1 bel = 10 decibels)
EER — Energy Efficiency Ratio
IPLV — Integrated Part-Load Values
SEER — Seasonal Energy Efficiency Ratio

*Applies only to units with capacity of 65,000 Btuh or less
 †The IPLV only applies to two-stage cooling units.

NOTES.

Rated in accordance with ARI Standards 210/240-89 or 360-86 (for 014-028) and 270-84.

Ratings are net values, reflecting the effects of circulating fan heat.

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

HEATING CAPACITIES AND EFFICIENCIES

UNIT 48	HEATING INPUT (Btuh) Stage 2/Stage 1	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (F)	AFUE (%)	STEADY-STATE EFFICIENCY (%)	CALIFORNIA SEASONAL EFFICIENCY (%)
TJE004	74,000	59,200	25-55	80	80	77.2
TJF004	115,000/82,000	92,000	55-85	80	80	76.7
TJD005	74,000	59,200	25-55	80	80	77.2
TJE005	115,000	92,000	35-65	80	80	77.1
TJF005	150,000/120,000	120,000	50-80	80	80	76.9
TJD006	74,000	59,200	25-55	80	80	77.2
TJE006	115,000	92,000	35-65	80	80	77.1
TJF006	150,000/120,000	120,000	50-80	80	80	76.9
TJD007	74,000	59,200	25-55	80	80	77.2
TJE007	115,000	92,000	35-65	80	80	77.1
TJF007	150,000/120,000	120,000	50-80	80	80	76.9
TJD008	125,000	100,000	20-50	80	80	75.8
TJE008	180,000/120,000	144,000	35-65	80	80	77.1
TJF008	220,000/180,000	176,000	45-75	80	80	77.1
TJD009	125,000	100,000	20-50	80	80	75.8
TJE009	180,000/120,000	144,000	35-65	80	80	77.1
TJF009	220,000/180,000	176,000	45-75	80	80	77.1
TJD012	180,000/120,000	144,000	35-65	80	80	77.1
TJE012	220,000/180,000	176,000	35-65	80	80	77.1
TJF012	250,000/200,000	200,000	40-70	80	80	76.4
TJD014	220,000/180,000	176,000	35-65	80	80	77.1
TJE014	250,000/200,000	200,000	40-70	80	80	76.4

LEGEND

AFUE — Annual Fuel Utilization Efficiency

NOTE: NOx levels are 40 nanograms/joule with the accessory NOx reduction kit (004-014).

HEATING CAPACITIES AND EFFICIENCIES

UNIT 48	HEATING INPUT (Btuh) Stage 2/Stage 1*	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (F)	STEADY-STATE EFFICIENCY (%)
TJD016	231,000/115,500	185,000	25-55	80
TJE016	270,000/115,500	216,000	25-55	80
TJD020,024	270,000/115,500	216,000	15-45	80
TJE024	485,000/242,500	388,000	35-65	80
TJD028	270,000/115,500	216,000	15-45	80
TJE028	485,000/242,500	388,000	35-65	80

*All units are 2-stage heat

Physical data — 48TJ004-007

UNIT SIZE		004E/F	005D/E/F	006D/E/F	007D/E/F
NOMINAL CAPACITY (tons)		3	4	5	6
OPERATING WEIGHT (lb)					
Unit		—	—	—	—
Al/Al*		460	470	490	565
Al/Cu*		34	34	34	34
Economizer		115	115	115	115
Roof Curb					
COMPRESSOR		Hermetic			
Quantity		1	1	1	1
Oil (oz)		50	50	50	65
REFRIGERANT TYPE		R-22			
Operating Charge (lb-oz)		3-6	4-11	5-13	9-0
Circuit 1		—	—	—	—
Circuit 2		—	—	—	—
CONDENSER COIL		Enhanced Copper Tubes, Aluminum Lanced Fins			
Rows...Fins/in.		1 .17	1 .17	1...17	2 17
Total Face Area (sq ft)		7.36	11.39	13 19	10.42
CONDENSER FAN		Propeller Type			
Nominal Cfm		4100	4100	4100	4100
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
EVAPORATOR COIL		Enhanced Copper Tubes, Aluminum Double-Wavy Fins, Acutrol™ Feed 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
EVAPORATOR FAN		Centrifugal Type			
Quantity...Size (in.)	Std	1 ..10 x 10	1. 10 x 10	1...11 x 10	1...10 x 10
	Alt	1 ..10 x 10	1...10 x 10	1. 10 x 10	—
Type Drive	Std	Direct	Direct	Direct	Belt
	Alt	Belt	Belt	Belt	—
Nominal Cfm	Std	1200	1600	2000	2400
	Alt	1200	1600	2000	2400
Motor Hp	Std	—	—	—	—
	Alt	—	—	—	—
Maximum Continuous Bhp	Std	.34	.81	1.19	2 40
	Alt	.66	1.20	1.80	—
Motor Frame Size	Std	48	48	48	56
	Alt	48	48	48	—
Nominal Rpm High/Low	Std	860/845	1080/970	1080/850	—
	Alt	—	—	—	—
Fan Rpm Range	Std	—	—	—	1070-1460
	Alt	558-1326	970-1310	900-1300	—
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100	2100
Motor Pulley Pitch Diameter A/B (in.)	Std	—	—	—	2 8/3.8
	Alt	1.9/2 9	1.9/2.9	2.4/3.4	—
Nominal Motor Shaft Diameter (in.)	Std	—	—	—	—
	Alt	—	—	—	—
Fan Pulley Pitch Diameter (in.)	Std	—	—	—	4.5
	Alt	4.5	4 0	4.5	—
Nominal Fan Shaft Diameter (in.)	Std	—	—	—	—
	Alt	—	—	—	—
Belt, Quantity...Type...Length (in.)	Std	—	—	—	1...A.. 40
	Alt	1 . A.. 39	1 ..A...36	1...A...39	—
Pulley Center Line Distance (in.)	Std	—	—	—	14.7-15.5
	Alt	10 0-12.4	10.0-12.4	14.7-15.5	—
Speed Change per Full Turn of	Std	—	—	—	78
Movable Pulley Flange (rpm)	Alt	42	68	63	—
Movable Pulley Maximum Full Turns	Std	—	—	—	5
From Closed Position	Alt	5	5	5	—
Factory Setting	Std	—	—	—	3
	Alt	3	3	3	—
Factory Speed Setting (rpm)	Std	—	—	—	1230
	Alt	651	1106	1060	—
Fan Shaft Diameter at Pulley (in.)		5/8	5/8	5/8	5/8

(Table continued on next page)

UNIT SIZE	004E/F	005D/E/F	006D/E/F	007D/E/F
FURNACE SECTION				
Rollout Switch Cutout Temp (F)**	195	195	195	195
Burner Orifice Diameter (In. ...drill size)				
Natural Gas Std	.113...33	.113...33/.113...33/.129...30	.113...33/.113...33/.129...30	.113...33/.113...33/.129...30
Liquid Propane Alt	.089...43	.089...43/.089...43/.102...38	.089...43/.089...43/.102...38	.089...43/.089...43/.102...38
Pilot Orifice Diameter (In. ...drill size)				
Natural Gas Std	—	—	—	—
Liquid Propane Alt	—	—	—	—
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	—/82,000	74,000/115,000/120,000	74,000/115,000/120,000	74,000/115,000/120,000
Stage 2	74,000/115,000	—/—/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 Std	3.5	3.5	3.5	3.5
Liquid Propane Alt	3.5	3.5	3.5	3.5
Gas Valve Quantity	1	1	1	1
Field Gas Connection Size (In.)	1/2	1/2	1/2	1/2
HIGH-PRESSURE SWITCH (psig)†				
Standard Compressor		450 ± 50		500 ± 50
Internal Relief				
Cutout		428		428
Reset (Auto.)		320		320
LOW-PRESSURE SWITCH (psig)†				
Cutout			7 ± 3	
Reset (Auto.)			22 ± 7	
FREEZE PROTECTION THERMOSTAT (F)†				
Opens			30 ± 5	
Closes			45 ± 5	
OUTDOOR-AIR INLET SCREENS				
Quantity...Size (In.)			Cleanable 1...20 x 24 x 1	
RETURN-AIR FILTERS				
Quantity...Size (In.)			Throwaway 2...16 x 25 x 2	

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
CU — Copper

*Evaporator coil fin material/condenser coil fin material

†Requires an optional/accessory controls kit

**Rollout switch is manual reset

††Weight of 14-in. roof curb.

‡The alternate motor is not available on 575-v units.

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

***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) located in the liquid line. The 48TJ016-028 units have a low-pressure switch (standard) located in the suction line.

Physical data — 48TJ008-014

UNIT SIZE		008D/E/F	009D/E/F	012D/E/F	014D/E
NOMINAL CAPACITY (tons)		7½	8½	10	12½
OPERATING WEIGHT (lb)					
Unit		—	—	—	—
Al/Al*		870	880	1035	1050
Al/Cu*		44	44	44	44
Economizer		143	143	143	143
Roof Curb††					
COMPRESSOR		Hermetic			
Quantity		2	2	2	2
Oil (oz)		50 ea	50 ea	50 ea	65 ea
REFRIGERANT TYPE		R-22			
Operating Charge (lb-oz)					
Circuit 1		7-0	7-0	9-7	10-0
Circuit 2		5-12	6-2	8-6	9-3
CONDENSER COIL		Enhanced Copper Tubes, Aluminum Lanced Fins			
Rows...Fins/in.		1...17	2...17	2...17	2...17
Total Face Area (sq ft)		20.50	14.25	19.86	25.00
CONDENSER FAN		Propeller Type			
Nominal Cfm		6500	6500	7000	7200
Quantity...Diameter (in.)		1...26	1...26	1...26	1...26
Motor Hp...Rpm		¾...1100	¾...1100	¾...1100	¾...1100
Watts Input (Total)		950	950	950	950
EVAPORATOR COIL		Enhanced Copper Tubes, Aluminum Double-Wavy Fins, 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
EVAPORATOR FAN		Centrifugal Type			
Quantity...Size (in.)	Std	1 15 x 15	1 15 x 15	1 15 x 15	1...15 x 15
	Alt	1 15 x 15	—	1 15 x 15	1...15 x 15
Type Drive	Std	Belt	Belt	Belt	Belt
	Alt	Belt	—	Belt	Belt
Nominal Cfm	Std	3000	3400	4000	5000
	Alt	3000	3400	4000	5000
Motor Hp	Std	—	—	—	—
	Alt	—	—	—	—
Maximum Continuous Bhp	Std	2.40	2.40	2.40	4.20
	Alt	—	—	2.90	5.25
Motor Frame Size	Std	56	56	56	56
	Alt	—	—	56	56
Nominal Rpm High/Low	Std	—	—	—	—
	Alt	—	—	—	—
Fan Rpm Range	Std	590-840	685-935	685-935	860-1080
	Alt	685-935	—	835-1085	900-1260
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100	2100
Motor Pulley Pitch Diameter A/B (in.)	Std	2.4/3.4	2.8/3.8	2.8/3.8	4.0/5.0
	Alt	2.8/3.8	—	3.4/4.4	3.1/4.1
Nominal Motor Shaft Diameter (in.)	Std	—	—	—	—
	Alt	—	—	—	—
Fan Pulley Pitch Diameter (in.)	Std	7.0	7.0	7.0	8.0
	Alt	7.0	—	7.0	5.9
Nominal Fan Shaft Diameter (in.)	Std	—	—	—	—
	Alt	—	—	—	—
Belt, Quantity...Type...Length (in.)	Std	1...A...48	1...A...48	1...A...51	1...A...51
	Alt	1...A...51	—	1...A...57	1...BX...46
Pulley Center Line Distance (in.)	Std	16.75-19.25	16.75-19.25	15.85-17.50	15.85-17.50
	Alt	16.75-19.25	—	15.85-17.50	15.85-17.50
Speed Change per Full Turn of	Std	50	50	50	44
Movable Pulley Flange (rpm)	Alt	50	—	50	50
Movable Pulley Maximum Full Turns	Std	5	5	5	5
From Closed Position	Alt	5	—	5	6
Factory Setting	Std	5	5	5	5
	Alt	5	—	5	6
Factory Speed Setting (rpm)	Std	590	685	685	860
	Alt	685	—	835	900
Fan Shaft Diameter at Pulley (in.)		1	1	1	1

(Table continued on next page.)

UNIT SIZE	008D/E/F	009D/E/F	012D/E/F	014D/E
FURNACE SECTION				
Rollout Switch Cutout Temp (F)**	195	195	195	195
Burner Orifice Diameter (in. ...drill size)				
Natural Gas Std	120...31	120...31	.120. 31/.120 31/.129 30	.120. 31/ 129.. 30
Liquid Propane Alt	.096...41	.096...41	.096 .41/ .096.. 41/.102 ..38	.096 .41/ 102.. 38
Pilot Orifice Diameter (in. ...drill size)				
Natural Gas Std	—	—	—	—
Liquid Propane Alt	—	—	—	—
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	—/180,000/220,000	—/180,000/220,000	180,000/220,000/250,000	220,000/250,000
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 Std	3 5	3 5	3 5	3.5
Liquid Propane Alt	3.5	3 5	3 5	3.5
Gas Valve Quantity	1	1	1	1
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
HIGH-PRESSURE SWITCH (psig)†		450 ± 50		500 ± 50
Standard Compressor Internal Relief Cutout		428		428
Reset (Auto.)		320		320
LOW-PRESSURE SWITCH (psig)†		7 ± 3		
Cutout		22 ± 7		
Reset (Auto.)				
FREEZE PROTECTION THERMOSTAT (F)†		30 ± 5		
Opens		45 ± 5		
Closes				
OUTDOOR-AIR INLET SCREENS		Cleanable		
Quantity...Size (in.)		1 20 x 25 x 1		
		1 16 x 25 x 1		
RETURN-AIR FILTERS		Throwaway		
Quantity...Size (in.)	4 . 16 x 20 x 2	4. .16 x 20 x 2	4.. 20 x 20 x 2	4 . 20 x 20 x 2

LEGEND

AI — Aluminum
Bhp — Brake Horsepower
CU — Copper

*Evaporator coil fin material/condenser coil fin material.

†Requires an optional/accessory controls kit

**Rollout switch is manual reset.

††Weight of 14-in. roof curb.

||The alternate motor is not available on 575-v units

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

***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) located in the liquid line The 48TJ016-028 units have a low-pressure switch (standard) located in the suction line.

Physical data — 48TJ016-028

UNIT SIZE		016D/E	020D	024D/E	028D/E
NOMINAL CAPACITY (tons)		15	18	20	25
OPERATING WEIGHT (lb)					
Unit					
Al/Al*		1570/1590	1850	1850/1900	2234/2284
Al/Cu*		1650/1670	1980	1980/2030	2364/2414
Economizer		110	110	110	110
Roof Curb††		200	200	200/213	200/213
COMPRESSOR		Semi-Hermetic	Hermetic		Semi-Hermetic
Quantity		1	2	2	2
Oil (oz)		160	65 ea	65 ea	152 ea
REFRIGERANT TYPE			R-22		
Operating Charge (lb-oz)					
Circuit 1‡		23-9	15-8	15-8	16-12
Circuit 2		—	15-8	15-8	15-12
CONDENSER COIL			Enhanced Copper Tubes, Aluminum Lanced or Copper Fins		
Rows...Fins/in.		3...13.6	4...15	4...15	4...15
Total Face Area (sq ft)		18.9	22.2	22.2	22.2
CONDENSER FAN			Propeller Type		
Nominal Cfm		12,000	14,200	14,200	14,200
Quantity...Diameter (in.)		2...26	2...30	2...30	2...30
Motor Hp...Rpm		1...1075	1...1075	1...1075	1...1075
Watts Input (Total)		3550	3550	3550	3550
EVAPORATOR COIL			Copper Tubes, Aluminum or Copper Plate Fins		
Rows...Fins/in.		3...14.3	4...15	4...15	4...15
Total Face Area (sq ft)		16.5	17.9	17.9	17.9
EVAPORATOR FAN‡			Centrifugal Type		
Quantity...Size (in.)		Std 2...10 x 10	2. 12 x 12	2. 12 x 12	2...12 x 12
		Alt 2...10 x 10	—	2. 12 x 12	2...12 x 12
Type Drive		Std Belt	Belt	Belt	Belt
		Alt Belt	—	Belt	Belt
Nominal Cfm		Std 6000	8000	8000	10,000
		Alt 6000	—	10,000	10,000
Motor Hp		Std 3.0	5	5	7½
		Alt 3.7‡	—	7½	10
Maximum Continuous Bhp		Std 3.45	5.90	5.90	8.7 [208/230 v]
		Alt 4.25	—	8.7 [208/230 v]	9.5 [460 v]
Motor Frame Size		Std —	184T	184T	213T
		Alt —	—	213T	215T
Nominal Rpm High/Low		Std —	—	—	—
		Alt —	—	—	—
Fan Rpm Range		Std 896-1161	—	—	—
		Alt 1141-1407	—	—	—
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		1550	1500	1500	1500
Motor Pulley Pitch Diameter A/B (in.)‡		Std 1.9/2.9	5.1	5.1	6.1
		Alt 3.4/4.4	—	6.1	6.9
Nominal Motor Shaft Diameter (in.)		Std —	1½	1½	1½
		Alt —	—	1¾	1¾
Fan Pulley Pitch Diameter (in.)		Std 4.9	8.4	8.4	8.4
		Alt 5.5	—	8.4	8.4
Nominal Fan Shaft Diameter (in.)		Std 1¾	1¾	1¾	1¾
		Alt 1¾	—	1¾	1¾
Belt, Quantity...Type...Length (in.)		Std 1...BX...38	1...B...50	1...B...50	1...BX...51
		Alt 1...A...43	—	1...BX...51	1...BX...53
Pulley Center Line Distance (in.)		Std —	—	—	—
		Alt —	—	—	—
Speed Change per Full Turn of		Std 54	—	—	—
Movable Pulley Flange (rpm)		Alt 54	—	—	—
Movable Pulley Maximum Full Turns		Std 5	—	—	—
From Closed Position		Alt 5	—	—	—
Factory Setting		Std 3.5	—	—	—
		Alt 3.5	—	—	—
Factory Speed Setting (rpm)		Std 975	1070	1070	1287
		Alt 1221	—	1287	1438
Fan Shaft Diameter at Pulley (in.)		1	1	1	1

(Table continued on next page.)

UNIT SIZE	016D/E	020D	024D/E	028D/E
FURNACE SECTION				
Rollout Switch Cutout				
Temp (F)**	190	190	190	190
Burner Orifice Diameter				
(in. ...drill size)				
Natural Gas	.113...33	.113...33	.113...33	.113...33
Liquid Propane	—	—	—	—
Pilot Orifice Diameter				
(in. ...drill size)				
Natural Gas	0.64 .52	.064. 52	.064.. 52	.064 ..52
Liquid Propane	—	—	—	—
Thermostat Heat Anticipator				
Setting (amps)				
208/230 v Stage 1	.98	.98	.98	.98
Stage 2	.44	.44	.44	.44
460 v Stage 1	1.20	1.20	1.20	1.20
Stage 2	.44	.44	.44	.44
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	3.5	3.5	3.5	3.5
Liquid Propane	—	—	—	—
Gas Valve Quantity	2	2	2	2
Field Gas Connection				
Size (in.)	3/4	3/4	3/4	3/4
HIGH-PRESSURE SWITCH (psig)				
Standard Compressor			—	
Internal Relief				
Cutout			426	
Reset (Auto.)			320	
LOW-PRESSURE SWITCH (psig)				
Cutout			7	
Reset (Auto.)			22	
FREEZE PROTECTION				
Thermostat (F)				
Opens			30 ± 5	
Closes			45 ± 5	
OUTDOOR-AIR INLET SCREENS				
Quantity...Size (in.)			Cleanable	
			2 20 x 25 x 1	
			1 20 x 20 x 1	
RETURN-AIR FILTERS				
Quantity...Size (in.)			Throwaway***	
	2...20 x 20 x 2			
	3...16 x 20 x 2		4...20 x 20 x 2	
	2...16 x 25 x 2		4...16 x 20 x 2	

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
CU — Copper

*Evaporator coil fin material/condenser coil fin material.

†Requires an optional/accessory controls kit.

**Rollout switch is manual reset.

††Weight of 14-in. roof curb

‡The alternate motor is not available on 575-v units.

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

***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) located in the liquid line. The 48TJ016-028 units have a low-pressure switch (standard) located in the suction line

Options and accessories

ITEM	OPTION*	ACCESSORY†
Integrated Economizer (Includes Hood for 004-014 Units)	X	X
Manual Outdoor-Air Damper	X	X**
Filter Door Access Panel Kit (004-014)	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, 012-016, 024, 028)	X	
Two-Position Damper		X
Barometric Relief Damper (016-028)		X
Roof Curb		X
Remote Control Panel		X
Thermostat and Subbase		X
Power Exhaust (016-028)		X
Outdoor-Air Thermostat (016-028)		X
Motormaster® Head Pressure Control (Speed Control) (004-007 and 016-028)		X
Motormaster II Head Pressure Control (Fan Cycling) (004-014)		X
Time Guard® II Control Circuit (016-028)		X
Thru-the-Curb Service Connections (004-014)		X
Electronic Programmable Thermostat		X
Accusensor™ II Enthalpy Control (004-014)		X
Accusensor III Differential Enthalpy Sensor		X
Condenser Coil Hail Guard Assembly (004-014)		X
Economizer Upgrade Package (004-014)		X
LP (Liquid Propane) Conversion Kit (004-014)		X
Flue Shield (004-014)		X
NO _x Reduction Kit (004-014)		X
Flue Discharge Deflector (004-014)		X
External Filter Package (004-014)		X

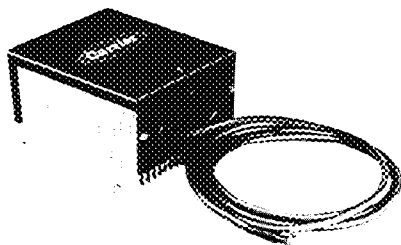
*Factory installed

†Field installed

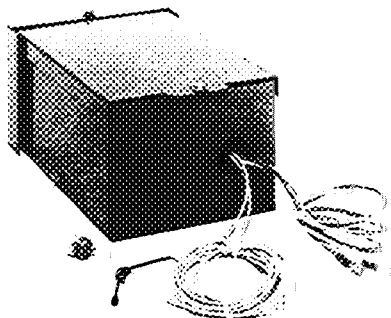
**48TJ004-014 units only

HEAD PRESSURE CONTROL

The 48TJ004-014, 020, and 024 standard units are designed to operate in cooling at outdoor temperatures down to 25 F, the standard 48TJ016 operates down to 40 F, and the standard 48TJ028 unit operates down to 48 F. With accessory Motormaster (48TJ004-007 and 016-028) control (condenser-fan speed modulation) or Motormaster II (48TJ004-014) control (condenser-fan cycling) 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.



Motormaster
(004-007 and
016-028)



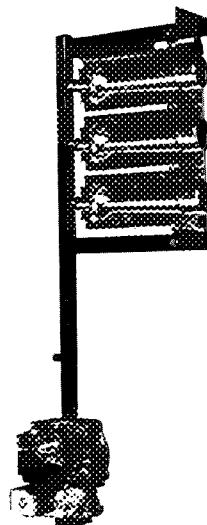
Motormaster II
(004-014)

*48TJ016-028 units require both the accessory outdoor-air thermostat and accessory Motormaster control to operate down to -20 F

TIME GUARD II CONTROL

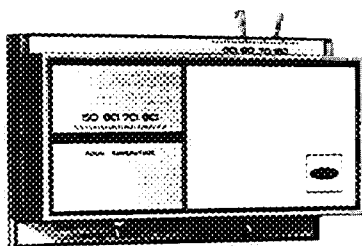
Time Guard II control automatically prevents compressor from restarting for at least 5 minutes after a shutdown. Accessory prevents short cycling of compressor if thermostat is changed rapidly. Time Guard II mounts in the control compartment of unit.

LIQUID PROPANE (LP) CONVERSION KIT (004-007 SHOWN)



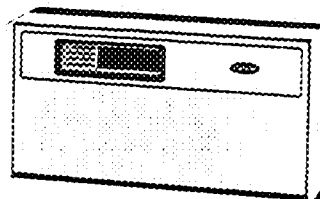
The LP conversion kit allows the unit to utilize a liquid propane fuel supply in areas where natural gas is unavailable.

THERMOSTAT

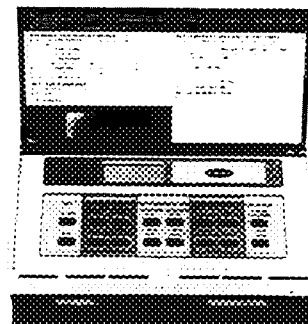


Zone thermostat (24 v) provides one- or 2-stage cooling for control of unit. Matching subbases are available with or without tamperproof switches and automatic change-over.

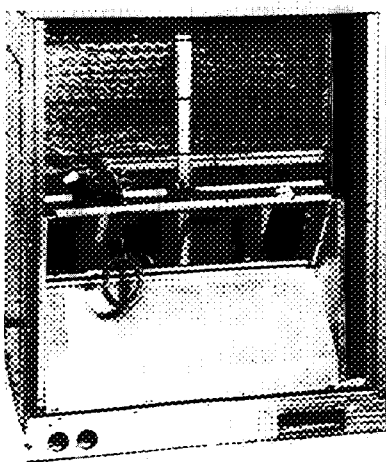
ELECTRONIC PROGRAMMABLE THERMOSTAT



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 tamper-proof control in high traffic spaces.



VARISLIDE™ ECONOMIZER (004-014)

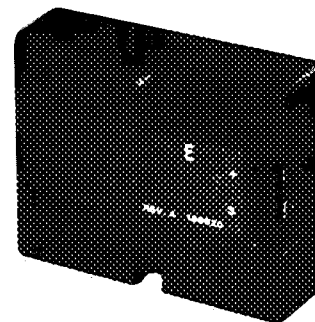


Exclusive Varislide™ economizer damper design saves energy while providing economical and reliable cooling. A sliding plate on the face of the economizer controls the amount of outdoor air entering the system. Closed, it provides a leakproof seal which prevents ambient air from seeping in or conditioned 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.

ACCUSENSOR™ II (004-014 Only)



ACCUSENSOR™ III



Accusensor economizer controls help provide efficient, economical economizer operation. Accusensor I standard dry-bulb sensor measures outdoor temperature. 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 control. Accusensor III differential enthalpy sensor compares outdoor temperature and humidity to return-air temperature and humidity and determines the most economical mixture of air (when purchased in addition to solid-state enthalpy control).

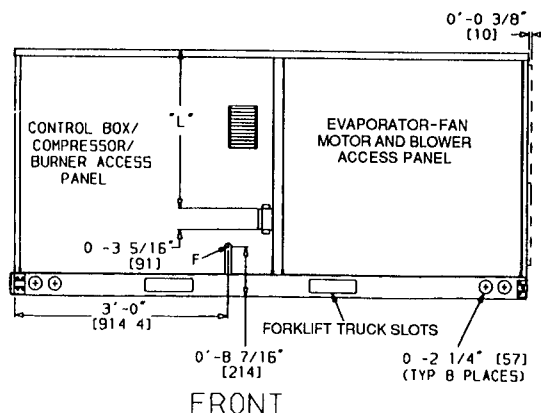
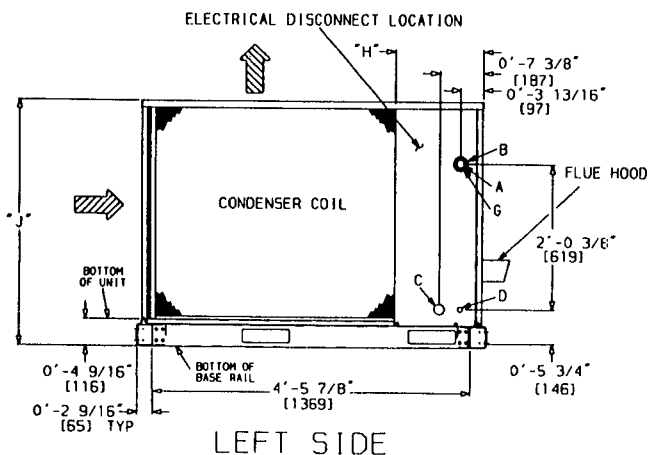
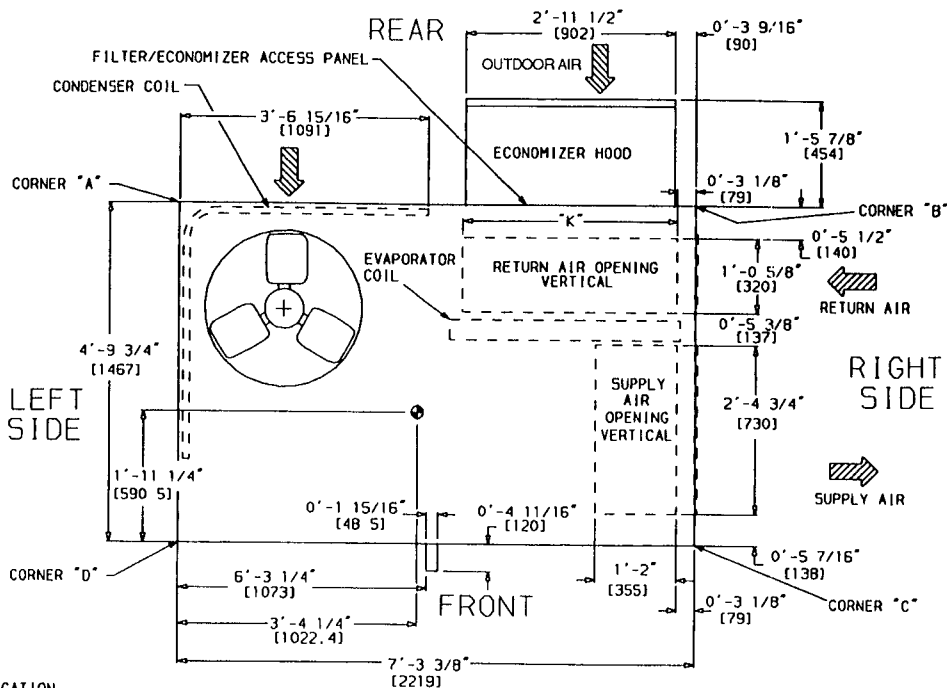
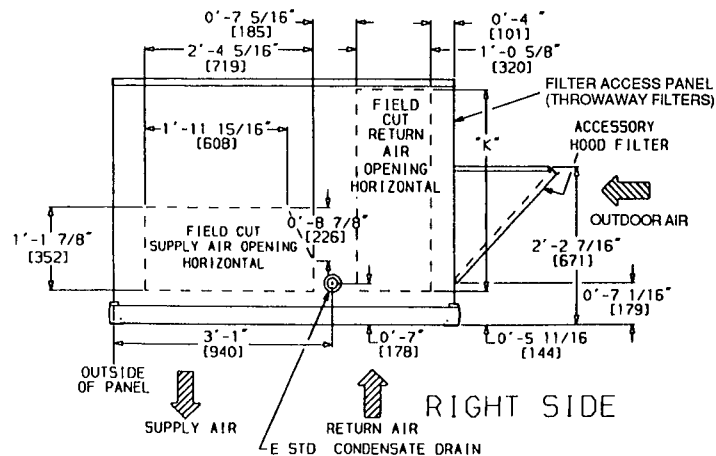
Base unit dimensions — 48TJ008-014

UNIT	CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"H"		"J"		"K"		"L"	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm
48TJD/TJE/TJF008	189	86	161	73	239	109	280	127	2-0 ⁷ / ₈	632	3-5 ⁵ / ₁₆	1050	2-9 ¹ / ₁₆	856	2- 2 ⁷ / ₁₆	672
48TJD/TJE/TJF009	191	87	163	74	242	110	284	129	1-2 ⁷ / ₈	378	3-5 ⁵ / ₁₆	1050	2-9 ¹ / ₁₆	856	2- 2 ⁷ / ₁₆	672
48TJD/TJE/TJF012	225	102	192	87	285	129	333	151	1-2 ⁷ / ₈	378	4-1 ⁵ / ₁₆	1253	3-0 ³ / ₈	924	2-10 ⁷ / ₁₆	875
48TJD/TJE014	228	103	195	88	289	131	338	153	1-2 ⁷ / ₈	378	4-1 ⁵ / ₁₆	1253	3-0 ³ / ₈	924	2-10 ⁷ / ₁₆	875

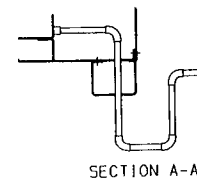
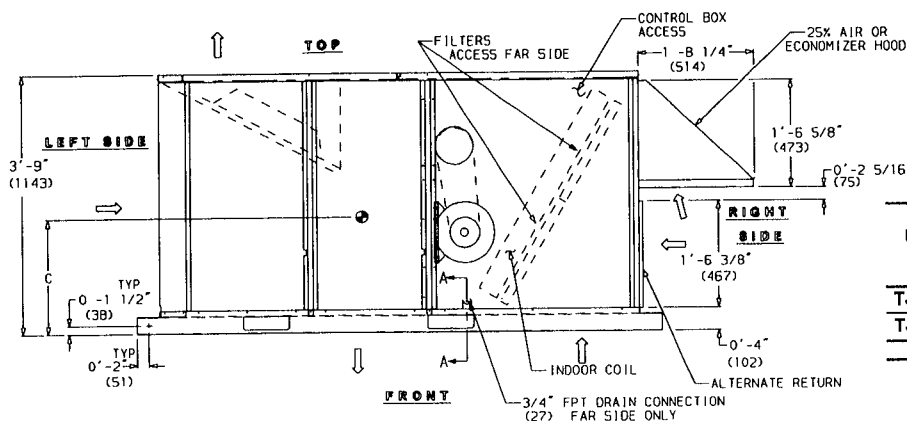
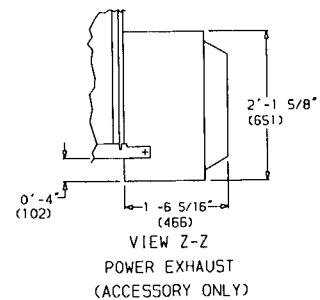
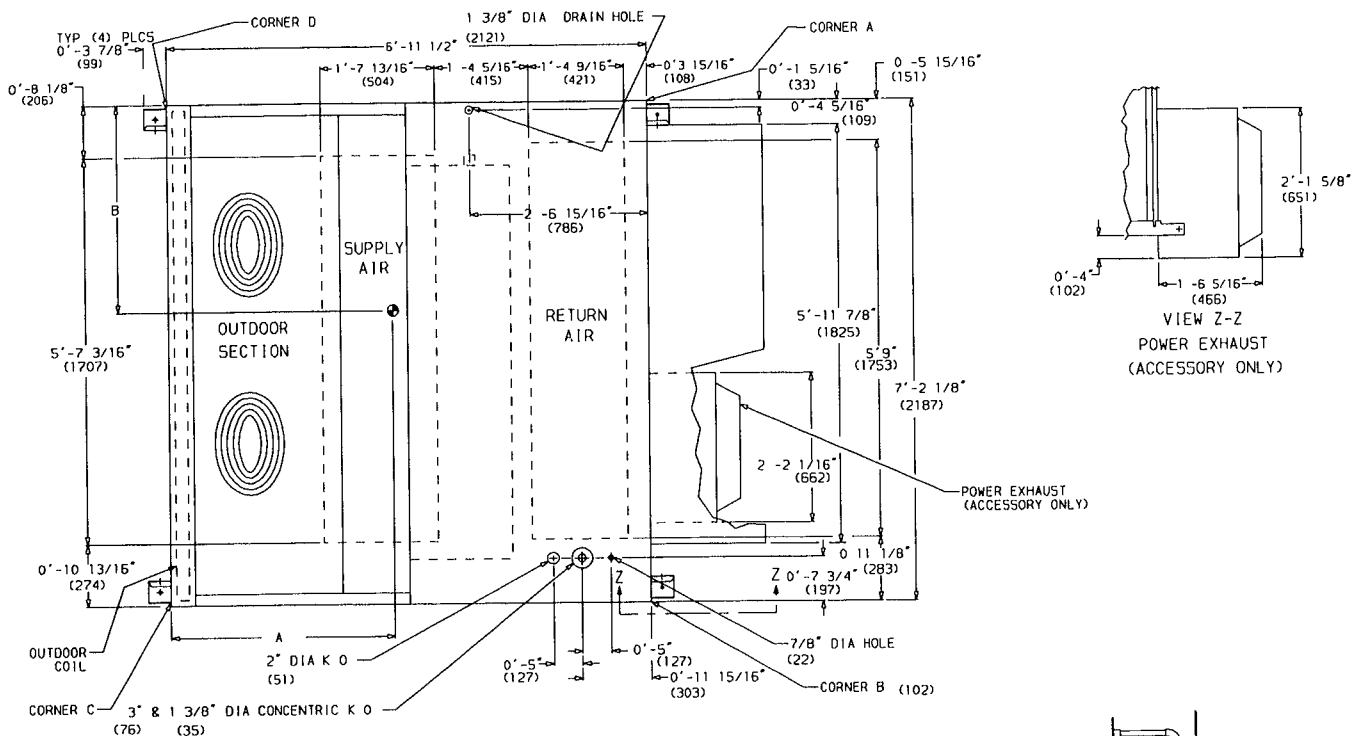
CONNECTION SIZES	
A	1 ³ / ₈ " Dia. [35] Field Power Supply Hole
B	2 ¹ / ₂ " Dia. [64] Power Supply Knock-Out
C	1 ³ / ₈ " Dia. [44] Charging Port Hole
D	7/8" Dia. [22] Field Control Wiring Hole
E	3/4"-14 NPT Condensate Drain
F	1/2"-14 NPT Gas Connection 48TJD008 and 009 3/4"-14 NPT Gas Connection 48TJE,F008 and 009, 48TJD,E012 and 014, 48TJF012
G	2" Dia. [51] Power Supply Knock-Out

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 Note 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



Base unit dimensions — 48TJ016



UNIT	CORNER WEIGHT							
	A		B		C		D	
48	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg
TJD016	400	181	316	143	377	171	477	216
TJE016	405	184	319	145	382	173	484	220

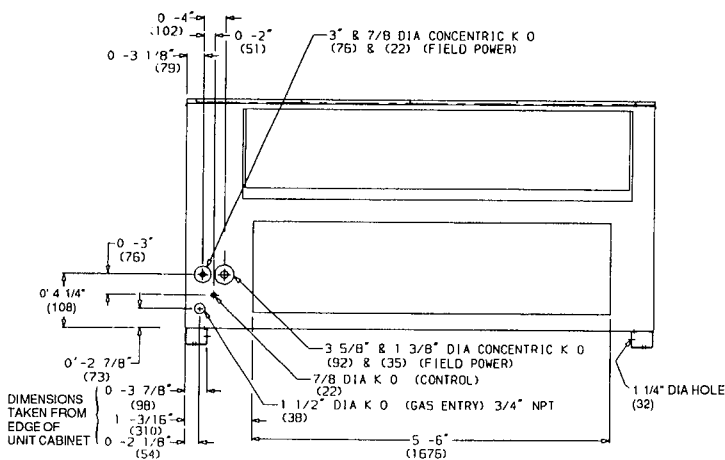
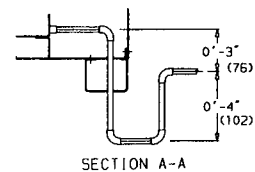
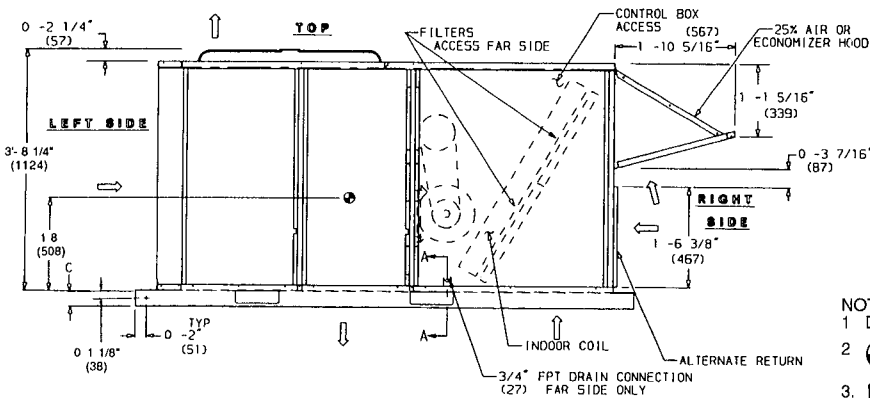
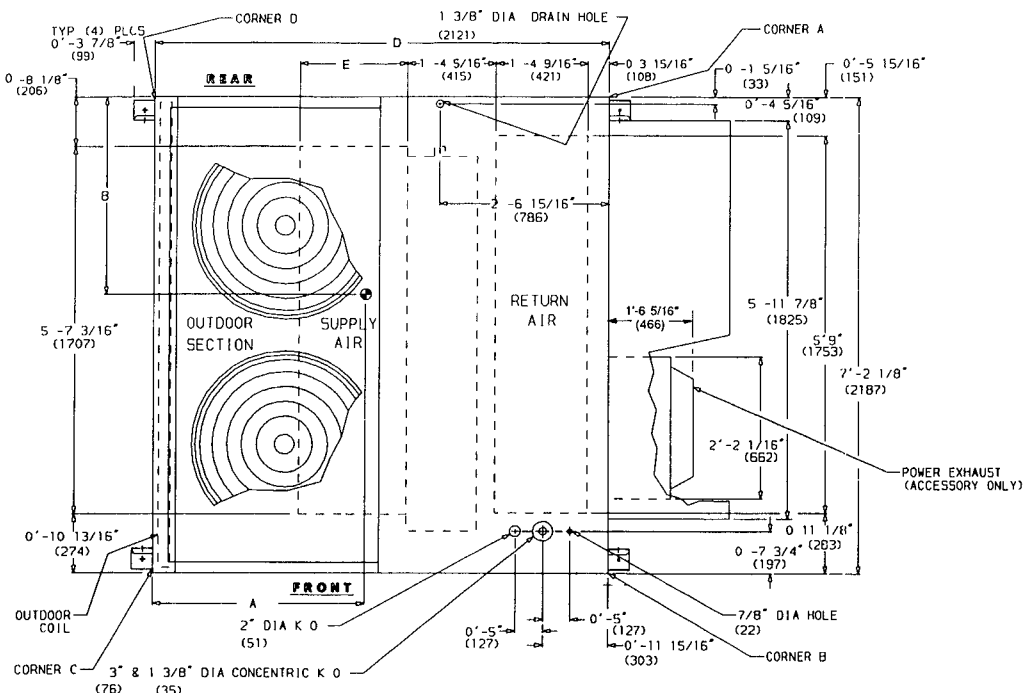
UNIT	DIMENSIONS					
	A		B		C	
	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm
TJD016	3-5	1041	3-3	991	1-8	508
TJE016	3-2	965	3-2	965	1-8	508

NOTES:

- Dimensions in () are in millimeters
- Center of gravity
- Direction of airflow.
- Ductwork to be attached to accessory roof curb 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)
 - 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 cover drip edge

Base unit dimensions — 48TJ020-028

UNIT 48	CORNER WEIGHT								DIMENSIONS									
	A		B		C		D		A		B		C		D		E	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm
TJD020	498	226	472	214	358	162	567	257	3-3	991	3-7	1092	0-3	76	6-11½	2121	1-7¼	504
TJD024	498	226	472	214	358	162	567	257	3-3	991	3-7	1092	0-3	76	6-11½	2121	1-7¼	504
TJE024	431	196	421	191	494	224	685	311	4-2	1270	3-4	1016	0-4½	114	8- 7¼	2623	3-3½	1006
TJD028	523	237	541	245	574	260	596	270	3-3	991	3-7	1092	0-3	76	6-11½	2121	1-7¼	504
TJE028	465	211	486	220	725	329	737	334	4-2	1270	3-5	1041	0-4½	114	8- 7¼	2623	3-3½	1006



NOTES:

- 1 Dimensions in () are in millimeters
- 2  Center of gravity
3.  Direction of airflow
- 4 Ductwork to be attached to accessory roof curb 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)
 - 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 cover drip edge

Accessory dimensions

ROOF CURB - 48TJ004-007

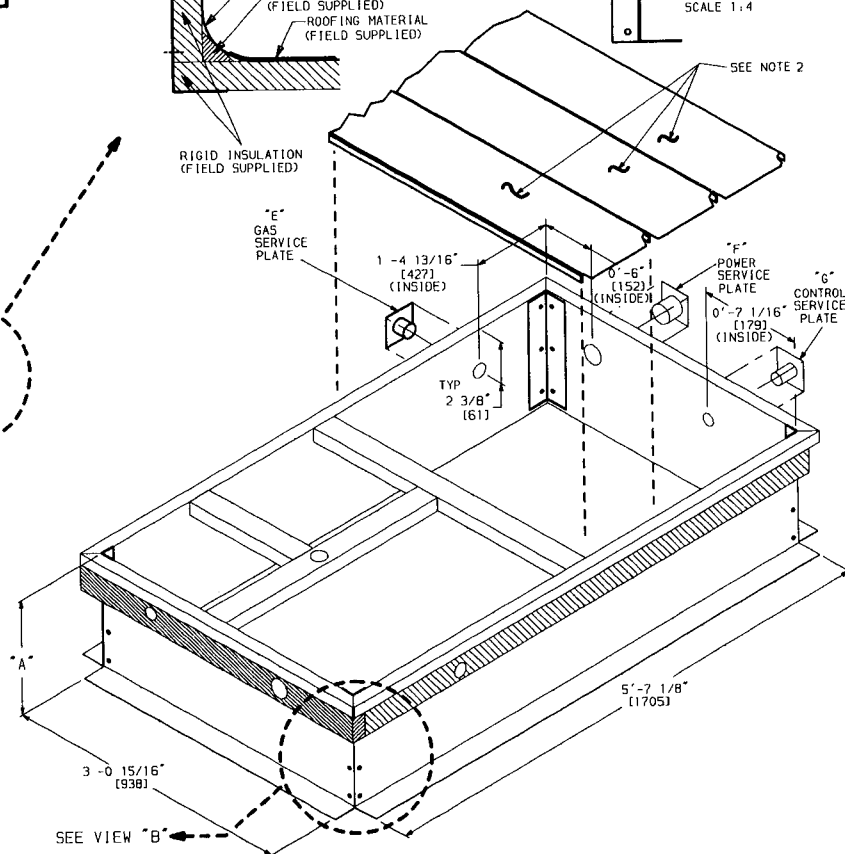
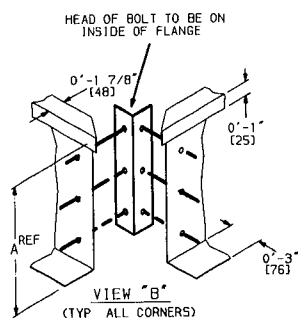
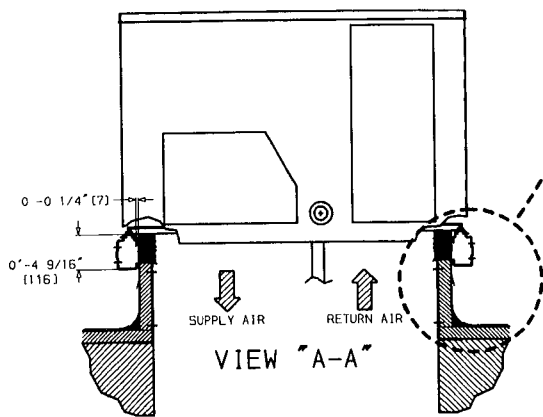
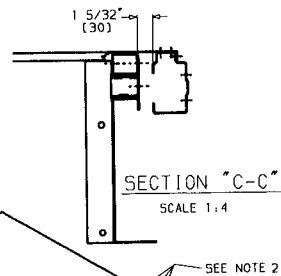
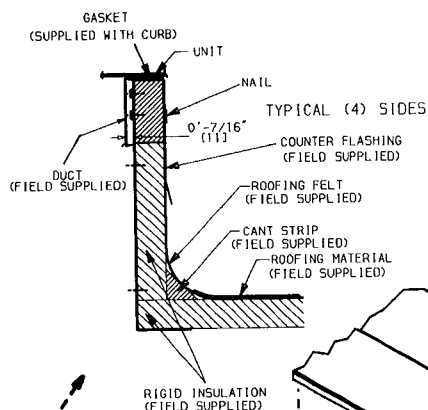
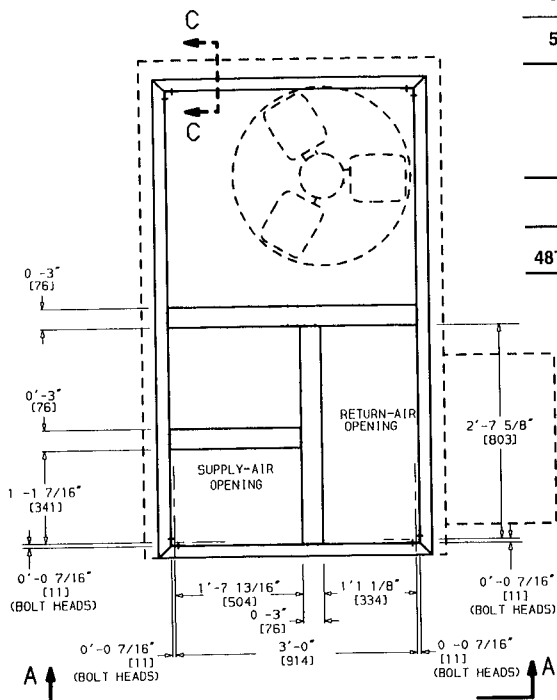
ROOF CURB ACCESSORY	"A"	UNIT SIZE
50DJ900771	1'-2" [356]	48TJE/TJF004
50DJ900781	2'-0" [610]	48TJD/TJE/TJF005-007

NOTES:

- 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 is 4 ft on each side.
 7.  Direction of airflow

SERVICE PLATE SIZES

UNIT SIZE	"E" GAS	"F" POWER	"G" CONTROL	CONNECTOR PKG ACY
48TJE/TJF004 48TJD/TJE/TJF005-007	3/4" [19] NPT	3/4" [19] NPT	3/4" [19] NPT	50DJ900791



ROOF CURB — 48TJ008-014

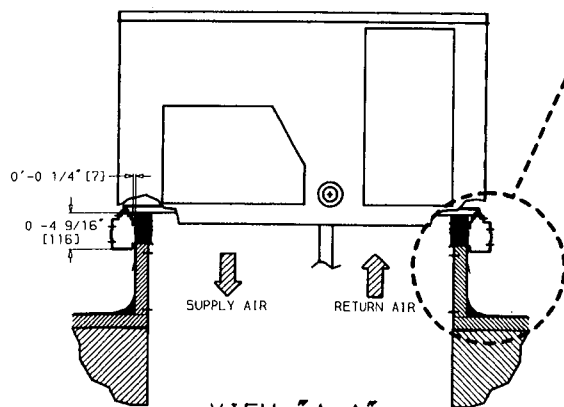
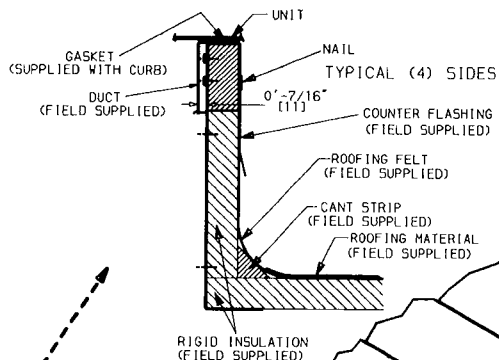
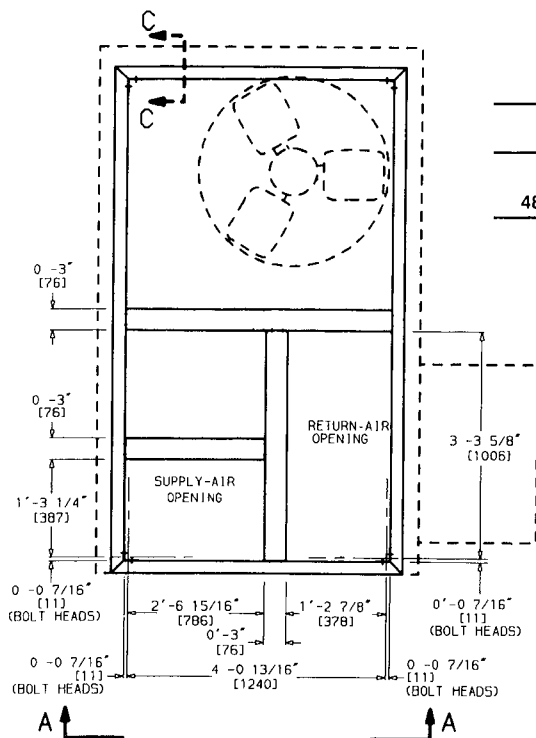
ROOF CURB ACCESSORY	"A"	UNIT SIZE
50DJ901371	1'-2" [356]	48TJD/TJE008-014
50DJ901381	2'-0" [610]	48TJF008,009,012

NOTES:

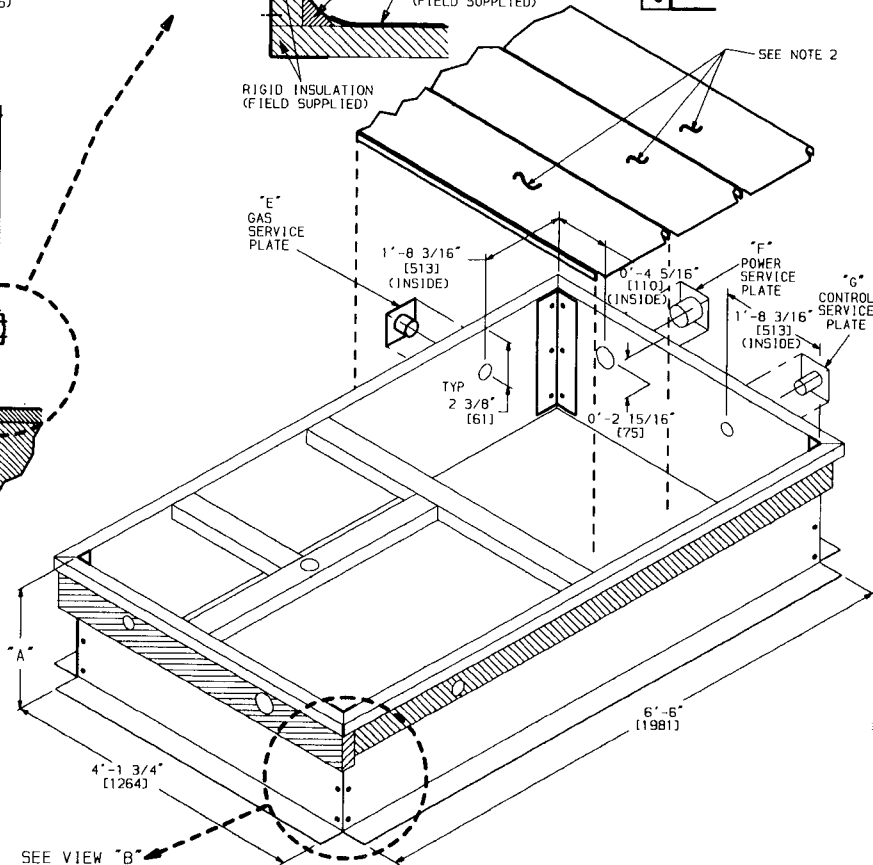
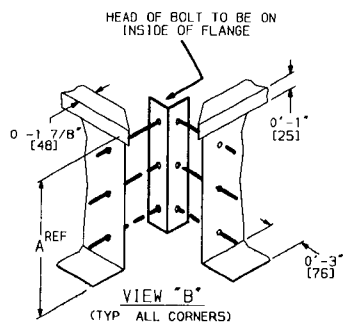
- 1 Roof curb accessory is shipped unassembled
- 2 Insulated panels
- 3 Dimensions in [] are in millimeters
- 4 Roof curb: galvanized steel
- 5 Attach ductwork to curb (flanges of duct rest on curb)
- 6 Service clearance 4 ft on each side
- 7  Direction of airflow

SERVICE PLATE SIZES

UNIT SIZE	"E" GAS	"F" POWER	"G" CONTROL	CONNECTOR PKG ACY
48TJD008-014 48TJE008-014 48TJF008,009,012	3/4" [19] NPT	1" [25] NPT	3/4" [19] NPT	50DJ901551



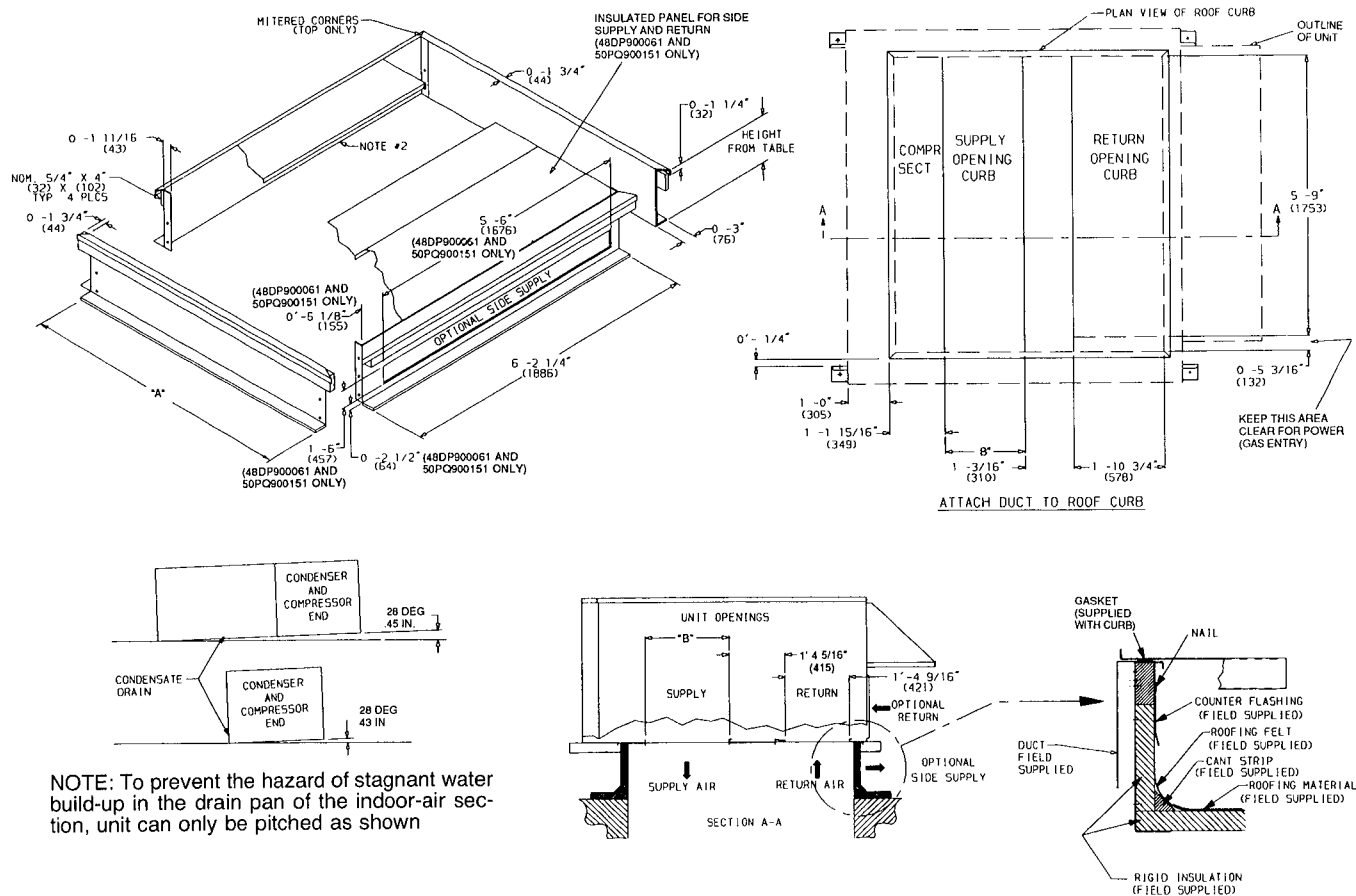
VIEW "A-A"



SEE VIEW "B"

Accessory dimensions (cont)

ROOF CURB — 48TJ016-028



LEGEND

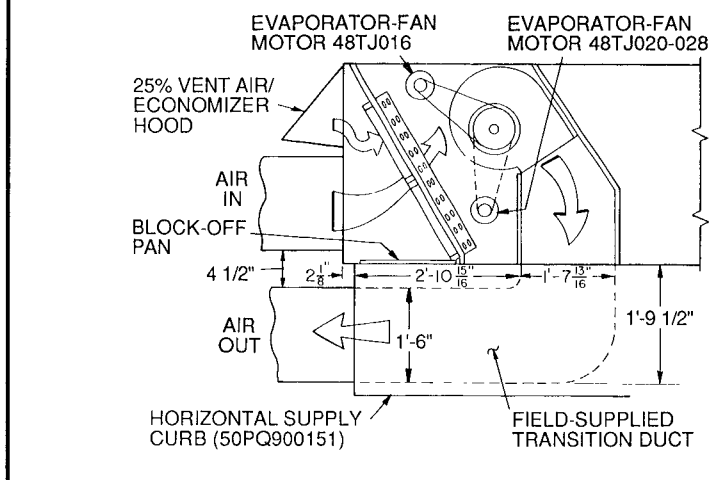
COMPR SECT. — Compressor Section

NOTES:

- 1 Roof curb accessory is shipped unassembled.
- 2 Insulated panels, 1-in thick neoprene-coated, 1½ lb density.
- 3 Dimensions in () are in millimeters.
4.  Direction of airflow
5. Roof curb: 16 gage steel.

ACCESSORY PACKAGE NO.	CURB HEIGHT	DESCRIPTION	"A"	"B"
50PQ900221	1'-2" (355)	Standard Curb — 14" High	5'-7 1/16" (1703)	1'-7 13/16" (503)
50PQ900141	2'-0" (610)	Standard Curb for Units Requiring High Installation	5'-7 1/16" (1703)	1'-7 13/16" (503)
50PQ900151	2'-0" (610)	Horizontal Supply and Return Curb	5'-7 1/16" (1703)	1'-7 13/16" (503)
48DP900041	1'-2" (355)	Standard Curb — 14" High	7'-2 13/16" (2205)	3'-3 5/8" (1006)
48DP900051	2'-0" (610)	Standard Curb for Units Requiring High Installation	7'-2 13/16" (2205)	3'-3 5/8" (1006)
48DP900061	2'-0" (610)	Horizontal Supply and Return Curb	7'-2 13/16" (2205)	3'-3 5/8" (1006)

HORIZONTAL SUPPLY/RETURN CURB — 48TJ016-028



Selection procedure (with 48TJE016 example)

I Determine cooling and heating requirements at design conditions.

Given

Required Cooling Capacity 175,000 Btuh
 Sensible Heat Capacity 118,000 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 0.8 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 48TJE016 (page 24) 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 179,000 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 5) 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 compo-

nents. From the given and the Accessory/FIOP Economizer Static Pressure Drop table (page 37) (number derived through interpolation) find

External static pressure 0.80 in. wg

Economizer static pressure 0.04 in. wg

Total static pressure 0.84 in. wg

Enter the Fan Performance table 48TJE016 at 4,500 cfm and 0.84 in. wg external static pressure. By interpolation, find that the rpm is 1100 and the bhp is 1.75. The shading indicates that the selection is the factory-installed standard motor and drive

V Determine net cooling capacity.

Cooling capacities are gross capacities and do not include indoor (evaporator) fan motor (IFM) heat. To determine input power to the motor, convert bhp to watts using the motor efficiencies found in the notes following the Fan Performance table

$$\begin{aligned} \text{IFM Watts} &= \frac{\text{Bhp} \times 746 \text{ Watts/Bhp}}{\text{Motor Efficiency}} \\ &= \frac{1.75 \times 746}{0.84} \end{aligned}$$

$$\text{IFM Watts} = 1554$$

Determine net cooling capacity using the following formula:

$$\begin{aligned} \text{Net capacity} &= \text{Gross capacity} - \text{IFM heat} \\ &= 179,000 \text{ Btuh} - 1554 \left(3 \frac{412 \text{ Btuh}}{\text{Watts}} \right) \\ &= 179,000 \text{ Btuh} - 5302 \text{ Btuh} \\ &= 173,698 \text{ Btuh} \end{aligned}$$

$$\begin{aligned} \text{Net sensible capacity} &= 120,000 \text{ Btuh} - 5302 \text{ Btuh} \\ &= 114,698 \text{ Btuh} \end{aligned}$$

The calculations show that a 48TJE016 unit 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
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	26.1	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
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	60.2	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	6.25	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
85	TC SHC kW	55.7	50.8	45.3	57.7	53.4	48.5	59.4	55.0	50.2
		26.4	32.5	37.8	28.4	36.7	43.6	30.5	40.3	47.9
		4.40	4.24	4.08	4.47	4.35	4.20	4.54	4.42	4.25
95	TC SHC kW	52.9	48.1	42.5	55.2	50.5	45.7	56.7	52.0	47.4
		25.5	31.5	36.4	27.6	35.9	42.2	29.7	39.2	46.7
		4.70	4.54	4.36	4.78	4.63	4.47	4.87	4.70	4.56
105	TC SHC kW	50.1	45.3	39.8	52.3	47.6	42.8	53.6	48.9	44.9
		24.4	30.3	35.1	26.7	34.5	40.7	28.8	38.1	44.6
		5.00	4.81	4.62	5.10	4.91	4.73	5.17	4.99	4.84
115	TC SHC kW	47.3	42.6	37.2	49.3	44.6	40.0	50.5	45.9	42.4
		23.4	29.2	33.7	25.9	33.3	39.3	27.8	37.1	42.4
		5.30	5.07	4.88	5.42	5.19	4.99	5.48	5.28	5.12

48TJ007 (6 TONS)										
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		1500/0.05			2100/0.08			2700/0.10		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	79.2	72.3	65.5	84.8	77.1	69.5	87.1	79.9	72.7
	SHC	37.3	45.5	53.7	42.0	53.0	64.0	45.8	59.7	72.7
	KW	6.05	5.87	5.69	6.25	6.04	5.83	6.33	6.14	5.95
95	TC	76.2	69.1	62.1	80.5	73.2	66.3	83.7	75.9	68.0
	SHC	36.3	44.2	52.1	40.5	50.2	62.8	44.9	58.3	68.0
	KW	6.60	6.38	6.15	6.76	6.55	6.33	6.90	6.65	6.39
105	TC	72.5	65.6	58.7	76.6	69.6	62.5	79.2	71.8	64.3
	SHC	34.9	42.7	50.6	39.3	50.2	61.1	43.5	57.0	64.3
	KW	7.12	6.86	6.60	7.30	7.05	6.80	7.42	7.16	6.93
115	TC	68.8	62.0	55.2	72.7	65.7	58.7	74.7	67.7	60.7
	SHC	33.5	41.3	49.1	38.1	48.7	58.7	42.0	55.7	60.7
	KW	7.63	7.34	7.05	7.83	7.55	7.27	7.94	7.67	7.40

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)

48TJ008 (7½ TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		2250/0.08			3000/0.105			3750/0.125		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	104.9	96.1	87.0	110.5	101.3	92.3	113.7	104.4	96.1
	SHC	51.5	63.7	75.2	56.9	72.8	87.1	61.5	81.0	95.9
	kW	7.53	7.24	6.93	7.73	7.44	7.14	7.84	7.55	7.30
95	TC	100.0	90.8	81.1	104.6	95.7	86.6	107.6	98.6	91.1
	SHC	49.7	61.7	72.4	55.0	70.9	84.2	59.7	79.0	91.1
	kW	8.15	7.81	7.46	8.32	8.01	7.69	8.45	8.14	7.85
105	TC	94.0	85.3	75.1	98.6	89.6	80.7	101.1	92.3	86.4
	SHC	47.5	59.5	69.5	53.0	68.4	80.6	57.6	76.8	86.4
	kW	8.71	8.37	8.00	8.93	8.56	8.25	9.04	8.70	8.44
115	TC	88.2	79.4	67.9	91.7	83.5	75.3	94.3	85.9	81.5
	SHC	45.4	57.1	65.9	50.5	66.3	75.2	55.2	73.9	81.5
	kW	9.29	8.92	8.58	9.46	9.12	8.86	9.59	9.25	9.05

48TJ012 (10 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		3000/0.07			4000/0.11			5000/0.15		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	139.1	125.6	111.4	146.0	132.8	118.9	150.5	138.2	125.1
	SHC	66.3	81.5	95.1	73.1	93.5	110.7	79.1	104.8	124.6
	kW	10.55	10.16	9.78	10.78	10.43	10.07	10.94	10.63	10.27
95	TC	132.8	119.2	104.2	139.4	126.3	112.0	143.7	130.9	118.8
	SHC	64.1	79.0	91.8	71.1	89.3	107.1	77.4	102.6	118.8
	kW	11.36	10.94	10.53	11.64	11.23	10.82	11.81	11.45	11.04
105	TC	126.0	112.4	97.6	131.9	119.0	105.7	135.8	123.4	113.1
	SHC	61.7	76.3	88.6	68.6	88.3	103.1	74.7	99.4	113.1
	kW	12.16	11.68	11.24	12.43	11.99	11.56	12.62	12.22	11.84
115	TC	118.8	105.1	90.1	124.2	111.6	98.9	128.1	115.6	107.7
	SHC	59.0	73.4	84.8	66.0	85.7	98.2	72.7	96.8	107.7
	kW	12.91	12.42	11.94	13.19	12.74	12.29	13.42	12.98	12.64

48TJ009 (8½ TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		2550/0.08			3400/0.105			4250/0.125		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	118.5	106.6	94.1	125.3	113.3	100.4	129.7	117.5	106.2
	SHC	58.0	70.9	82.8	64.3	81.7	96.6	69.8	91.3	106.0
	kW	8.22	7.95	7.68	8.37	8.12	7.87	8.49	8.23	7.99
95	TC	112.7	100.4	87.8	119.2	107.1	94.9	122.6	111.1	101.4
	SHC	56.0	68.6	79.8	62.2	79.3	93.1	67.3	89.2	101.3
	kW	8.83	8.54	8.25	9.00	8.73	8.43	9.08	8.84	8.61
105	TC	106.6	94.4	81.3	112.4	100.7	89.0	116.3	104.5	96.3
	SHC	53.7	66.2	76.6	59.6	76.9	89.0	65.7	86.4	96.2
	kW	9.43	9.13	8.82	9.59	9.31	9.03	9.73	9.43	9.23
115	TC	100.5	87.4	73.8	105.5	94.2	83.4	108.4	97.7	90.9
	SHC	51.5	63.6	72.6	57.1	74.3	83.4	62.4	83.6	90.9
	kW	10.04	9.73	9.42	10.19	9.89	9.67	10.29	10.00	9.86

48TJ014 (12½ TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		3750/0.075			5000/0.10			6250/0.125		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	165.1	152.0	138.2	172.2	159.2	145.9	177.0	163.4	151.9
	SHC	81.3	102.3	122.2	89.4	116.6	140.7	97.6	129.6	151.9
	kW	12.46	12.25	12.01	12.62	12.39	12.18	12.73	12.48	12.29
95	TC	159.0	144.6	126.7	165.6	152.3	137.2	169.9	156.3	146.0
	SHC	79.6	99.6	116.9	88.1	114.9	136.7	96.4	128.7	145.7
	kW	13.38	13.09	12.79	13.53	13.22	13.01	13.65	13.39	13.17
105	TC	151.1	135.1	112.3	157.9	142.5	125.8	161.7	147.3	138.1
	SHC	77.3	96.5	109.6	86.5	112.5	125.8	94.4	126.7	138.1
	kW	14.31	13.96	13.62	14.49	14.18	13.89	14.60	14.30	14.11
115	TC	142.0	118.5	100.0	148.5	125.6	114.8	152.4	132.3	125.6
	SHC	74.4	89.9	100.0	83.7	106.1	114.8	92.9	121.2	125.6
	kW	15.25	14.83	14.52	15.46	15.05	14.83	15.58	15.18	15.05

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 Btu/h) Gross
TC	—	Total Capacity (1000 Btu/h) Gross

NOTES:

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

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

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

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

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 = $1.10 \times (1 - BF) \times (edb - 80)$

Performance data (cont)

COOLING CAPACITIES (cont)

48TJ016 (15 TONS)										
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		4500/0.06			6000/0.08			7500/0.10		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	204.0	187.0	169.0	210.0	194.0	177.0	215.0	199.0	184.0
	SHC	97.4	122.0	145.0	106.0	139.0	168.0	115.0	154.0	183.0
	kW	15.90	15.40	14.90	16.10	15.70	15.20	16.40	15.90	15.50
95	TC	197.0	179.0	155.0	204.0	187.0	166.0	209.0	191.0	178.0
	SHC	96.0	120.0	139.0	104.0	137.0	163.0	114.0	152.0	177.0
	kW	17.20	16.60	15.90	17.50	17.00	16.40	17.80	17.20	16.80
105	TC	189.0	169.0	142.0	197.0	178.0	155.0	200.0	182.0	169.0
	SHC	92.9	116.0	132.0	103.0	134.0	154.0	112.0	150.0	169.0
	kW	18.50	17.80	17.10	18.90	18.30	17.60	19.10	18.50	18.00
115	TC	180.0	154.0	128.0	186.0	163.0	144.0	191.0	170.0	158.0
	SHC	90.2	110.0	125.0	101.0	129.0	144.0	111.0	146.0	158.0
	kW	19.90	19.00	18.30	20.20	19.40	18.90	20.50	19.70	19.30

48TJ020 (18 TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		5000/0.045			6000/0.06			7000/0.075			8000/0.085		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	232.1	210.2	188.4	235.7	214.8	193.8	239.3	219.3	199.3	242.1	225.7	203.8
	SHC	108.8	132.8	156.1	114.2	143.5	170.8	119.6	154.2	185.5	125.6	166.5	197.7
	kW	17.34	16.96	16.46	17.48	17.13	16.63	17.62	17.29	16.81	17.74	17.34	16.96
95	TC	223.0	202.9	179.5	227.5	206.6	184.8	232.1	210.2	190.1	235.7	218.4	195.0
	SHC	105.8	129.9	153.3	112.0	140.6	167.2	118.2	151.2	181.0	124.5	163.8	193.2
	kW	18.96	18.50	17.82	19.12	18.64	18.01	19.28	18.77	18.20	19.43	18.83	18.37
105	TC	212.0	192.0	167.5	216.6	196.6	172.6	221.1	201.1	177.7	225.7	203.8	184.6
	SHC	101.9	125.9	147.7	108.6	136.9	161.5	115.2	147.9	175.4	121.7	158.4	184.6
	kW	20.48	19.93	19.09	20.66	20.11	19.38	20.84	20.29	19.67	20.93	20.48	19.96
115	TC	202.9	178.0	153.2	206.6	183.5	159.8	210.2	188.9	166.3	212.9	192.4	174.6
	SHC	98.3	120.8	144.1	105.0	132.2	155.2	111.7	143.6	166.2	118.1	154.3	174.6
	kW	21.84	21.20	20.48	22.11	21.48	20.84	22.39	21.75	21.20	22.48	21.93	21.48

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:

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

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

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

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

- 3 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

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

COOLING CAPACITIES (cont)

48TJ024 (20 TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		6000/0.06			7000/0.075			8000/0.085			9000/0.095		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	259.0	236 0	213.0	263 0	241 0	219 0	266 0	248 0	224 0	269.0	252 0	229.0
	SHC	125.5	157.7	187.7	131.4	169.5	203.9	138.0	183.0	217.3	145.0	193 0	227.0
	kW	19.21	18.82	18.28	19.36	19.00	18.47	19.49	19.06	18.64	19.56	19.17	18.81
95	TC	250 0	227 0	203 1	255 0	231 0	208 9	259 0	240 0	214 3	262 0	246 0	220 0
	SHC	123.1	154.5	183.7	129.9	166.2	198.9	136.8	180.0	212 3	142.7	189.0	220.0
	kW	21.01	20.48	19.79	21.19	20.63	20.00	21.35	20.69	20.19	21.48	20.82	20.48
105	TC	238 0	216 0	189 7	243 0	221 0	195 3	248 0	224 0	202 9	250 0	226 0	210 9
	SHC	119.3	150.4	177.5	126.6	162.5	192.7	133.7	174.1	202.9	140.0	184 8	210 9
	kW	22.7	22.1	21.3	22.9	22.3	21.62	23.0	22.5	21.93	23.2	21.6	22.12
115	TC	227 0	201 6	175 6	231.0	207 6	182 8	234 0	211 4	191.9	237 0	214 6	200 1
	SHC	115.4	145.3	170.5	122.8	157.8	182.6	129.8	169 6	191.9	136.5	180 2	200.1
	kW	24.3	23.6	22.9	24.6	23.9	23.3	24.7	24.1	23.6	24.9	24.1	23.8

48TJ028 (25 TONS)													
Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		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
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	156.3	191.7	224.9	168.4	213.2	254.9	177.5	226.9	273.8	184.4	240.7	288.4
	kW	22.7	22.1	21.3	23.1	22.5	21.8	23.3	22.7	22.0	23.3	22.8	22.2
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	152.0	186.5	215.2	165.0	208.5	248.0	173.0	222.4	266.4	181.6	236.5	279.4
	kW	24.8	24.0	23.2	25.2	24.5	23.5	25.4	24.6	23.8	25.5	24.8	24.1
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	147.2	179.7	206.6	159.9	201.8	237.3	168.3	216.8	252.3	176.8	231.1	266.3
	kW	26.9	25.8	25.0	27.2	26.3	25.4	27.4	26.6	25.8	27.6	26.8	26.0
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	140.9	170.0	198.6	154.9	193.2	222.6	164.1	208.7	237.7	163.0	224.3	247.1
	kW	28.8	27.8	26.8	29.4	28.2	27.4	29.6	28.5	27.7	29.7	28.5	28.1

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:

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

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

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

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

- 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.

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

Performance data (cont)

FAN PERFORMANCE – 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	ESP	Bhp	ESP	Bhp	ESP	Bhp
900	0.46	0.17	0.48	0.19	0.49	0.21	0.51	0.25
1000	0.44	0.20	0.45	0.22	0.47	0.23	0.48	0.27
1100	0.40	0.21	0.42	0.24	0.44	0.25	0.45	0.29
1200	0.32	0.23	0.37	0.25	0.38	0.27	0.40	0.31
1300	0.28	0.24	0.32	0.26	0.32	0.29	0.34	0.32
1400	0.22	0.26	0.25	0.28	0.26	0.30	0.28	0.33
1500	0.16	0.27	0.18	0.33	0.20	0.31	0.21	0.34

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure (in. wg)

NOTE: Values include losses for filters, unit casing, and wet coils

48TJ004 (3 TONS) – ALTERNATE MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)															
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.85	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
900	673	0.18	736	0.22	805	0.25	865	0.29	911	0.34	957	0.39	988	0.43	1039	0.47
950	691	0.20	750	0.23	821	0.27	885	0.32	925	0.36	977	0.41	1018	0.46	1052	0.50
1000	709	0.22	782	0.28	835	0.30	900	0.35	937	0.38	992	0.44	1039	0.49	1061	0.55
1050	727	0.24	786	0.29	851	0.32	914	0.37	950	0.41	1005	0.46	1055	0.52	1081	0.57
1100	746	0.26	806	0.30	867	0.35	929	0.40	964	0.44	1013	0.49	1068	0.55	1092	0.61
1150	770	0.30	826	0.32	885	0.38	944	0.43	979	0.47	1031	0.52	1089	0.61	1100	0.66
1200	785	0.32	843	0.35	903	0.41	960	0.47	994	0.50	1045	0.56	1098	0.64	1109	0.66
1250	805	0.35	869	0.39	922	0.45	977	0.50	1011	0.54	1060	0.59	1105	0.66	1138	0.70
1300	826	0.38	891	0.43	942	0.48	991	0.53	1047	0.60	1075	0.64	1122	0.70	—	—
1350	846	0.41	914	0.47	963	0.52	1013	0.58	1063	0.64	1092	0.68	1141	0.73	—	—
1400	868	0.45	937	0.51	984	0.57	1032	0.62	1067	0.67	1110	0.73	—	—	—	—
1450	889	0.49	961	0.56	1006	0.61	1052	0.67	1088	0.72	1129	0.78	—	—	—	—
1500	911	0.53	985	0.61	1029	0.66	1073	0.72	1109	0.77	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- Boldface** indicates field-supplied motor and drive required (See Note 4.)
- Maximum usable bhp is 0.66. Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- Values include losses for filters, unit casing, and wet coils.
- Alternate motor drive range: 558 to 1326 rpm. All other rpms require field-supplied drive. In order to achieve rpms over 790, reversal of the evaporator-fan and fan-motor pulleys in the field will be necessary. See Fan Rpm tables on page 38.
- Use of a field-supplied motor may affect wire sizing. Contact your Carrier distributor to verify.
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 63$$

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	ESP	Bhp	ESP	Bhp	ESP	Bhp
1200	0.53	0.44	0.58	0.48	0.72	0.56	0.84	0.65
1300	0.44	0.48	0.50	0.50	0.64	0.60	0.75	0.68
1400	0.35	0.50	0.42	0.54	0.56	0.63	0.67	0.69
1500	0.25	0.53	0.33	0.58	0.47	0.65	0.58	0.72
1600	0.16	0.57	0.24	0.60	0.38	0.68	0.50	0.74
1700	0.09	0.58	0.15	0.63	0.30	0.69	0.40	0.76
1800	0.00	0.61	0.06	0.65	0.22	0.71	0.32	0.78
1900	—	—	—	—	0.12	0.73	0.24	0.79
2000	—	—	—	—	0.03	0.74	0.15	0.81

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure (in. wg)

NOTE: Values include losses for filters, unit casing, and wet coils

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

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		1.0		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1200	701	0.22	758	0.28	834	0.35	914	0.42	1012	0.56	1056	0.59	1098	0.62	1180	0.68	1255	0.76
1300	747	0.27	800	0.34	865	0.41	945	0.52	1050	0.62	1090	0.63	1132	0.68	1212	0.72	1280	0.78
1400	792	0.33	847	0.40	901	0.47	960	0.56	1091	0.67	1130	0.70	1165	0.72	1242	0.82	1310	0.89
1500	836	0.39	897	0.46	947	0.55	1000	0.61	1132	0.72	1170	0.75	1205	0.82	1275	0.91	1330	0.98
1600	881	0.47	945	0.54	983	0.62	1065	0.67	1172	0.77	1207	0.86	1238	0.92	1310	1.05	1350	1.08
1700	925	0.55	981	0.61	1020	0.68	1103	0.72	1202	0.88	1243	0.98	1270	1.05	1350	1.16	1372	1.19
1800	964	0.63	1024	0.72	1084	0.75	1140	0.82	1230	0.97	1268	1.07	1300	1.15	1360	1.25	1380	1.28
1900	1011	0.73	1068	0.79	1120	0.82	1172	0.91	1256	1.18	1310	1.13	1325	1.22	1400	1.47	1425	1.50
2000	1058	0.81	1100	0.85	1160	0.90	1237	1.20	1285	1.25	1320	1.31	1400	1.38	1440	1.57	1500	1.55

LEGEND

Bhp — Brake Horsepower

NOTES:

- Boldface** indicates field-supplied motor and drive required (See Note 5.)
- Shaded** indicates field-supplied motor and drive required
- Maximum usable bhp is 1.2 Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected
- Values include losses for filters, unit casing, and wet coils
- Alternate motor drive range: 970 to 1310 rpm. All other rpms require field-supplied drive
- Use of a field-supplied motor may affect wire sizing Contact Carrier representative to verify
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = .79$$

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	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp
1500	0.65	0.64	0.90	0.71	0.90	0.68	1.00	0.75	1.05	0.82	1.10	0.90
1600	0.45	0.64	0.80	0.71	0.80	0.70	0.92	0.77	0.97	0.84	1.03	0.93
1700	0.23	0.64	0.65	0.71	0.65	0.75	0.83	0.83	0.89	0.86	0.95	0.95
1800	0.01	0.64	0.52	0.71	0.52	0.79	0.73	0.87	0.78	0.88	0.87	0.97
1900	—	—	0.35	0.70	0.35	0.83	0.61	0.92	0.66	0.92	0.78	1.02
2000	—	—	0.19	0.64	0.19	0.84	0.50	0.93	0.55	0.94	0.68	1.04
2100	—	—	0.00	0.57	0.00	0.86	0.35	0.96	0.42	0.99	0.58	1.09
2200	—	—	—	—	—	—	0.22	0.95	0.30	1.02	0.47	1.12
2300	—	—	—	—	—	—	0.08	0.92	0.15	1.04	0.36	1.15
2400	—	—	—	—	—	—	0.00	0.89	0.02	1.06	0.25	1.18
2500	—	—	—	—	—	—	—	—	—	—	0.13	1.19

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure (in. wg)

NOTE: Values include losses for filters, unit casing, and wet coils

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		1.2		1.4		1.6		1.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	750	0.37	808	0.43	914	0.57	1001	0.70	1084	0.85	1168	1.02	1199	1.11	1126	1.02	1243	1.32	1174	1.22
1600	794	0.44	846	0.50	950	0.65	1034	0.78	1111	0.93	1194	1.11	1263	1.27	1275	1.35	1340	1.48	1330	1.61
1700	839	0.52	884	0.58	983	0.73	1068	0.88	1145	1.04	1218	1.20	1295	1.40	1351	1.57	1352	1.62	1422	1.89
1800	885	0.61	924	0.67	1018	0.82	1105	0.99	1179	1.15	1246	1.32	1319	1.51	1389	1.72	1435	1.85	1496	2.06
1900	932	0.72	965	0.77	1057	0.94	1143	1.12	1212	1.27	1280	1.45	1343	1.63	1405	1.85	1475	2.05	1517	2.25
2000	979	0.83	1008	0.88	1096	1.06	1177	1.24	1247	1.41	1314	1.59	1374	1.78	1439	1.96	1505	2.22	1544	2.40
2100	1026	0.96	1051	1.01	1136	1.19	1210	1.37	1284	1.57	1347	1.74	1408	1.94	1465	2.13	1528	2.36	—	—
2200	1074	1.10	1095	1.15	1173	1.33	1245	1.51	1322	1.73	1385	1.90	1442	2.11	1498	2.33	—	—	—	—
2300	1122	1.25	1140	1.30	1210	1.47	1284	1.67	1356	1.90	1418	2.09	1475	2.29	—	—	—	—	—	—
2400	1170	1.42	1185	1.46	1249	1.64	1322	1.85	1389	2.16	1456	2.36	—	—	—	—	—	—	—	—
2500	1218	1.61	1231	1.64	1299	1.87	1362	2.04	1424	2.34	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- Boldface** indicates field-supplied motor and drive required (See Note 4)
- Shaded** indicates field-supplied motor and drive required
- Maximum usable bhp is 1.8 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected
- Alternate motor drive range: 900 to 1300 rpm All other rpms require field-supplied drive
- Values include losses for filters, unit casing, and wet coils
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = .81$$

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

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		1.0		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1200	701	0.22	758	0.28	834	0.35	914	0.42	1012	0.56	1056	0.59	1098	0.62	1180	0.68	1255	0.76
1300	747	0.27	800	0.34	865	0.41	945	0.52	1050	0.62	1090	0.63	1132	0.68	1212	0.72	1280	0.78
1400	792	0.33	847	0.40	901	0.47	960	0.56	1091	0.67	1130	0.70	1165	0.72	1242	0.82	1310	0.89
1500	836	0.39	897	0.46	947	0.55	1000	0.61	1132	0.72	1170	0.75	1205	0.82	1275	0.91	1330	0.98
1600	881	0.47	945	0.54	983	0.62	1065	0.67	1172	0.77	1207	0.86	1238	0.92	1310	1.05	1350	1.08
1700	925	0.55	981	0.61	1020	0.68	1103	0.72	1202	0.88	1243	0.98	1270	1.05	1350	1.16	1372	1.19
1800	964	0.63	1024	0.72	1084	0.75	1140	0.82	1230	0.97	1268	1.07	1300	1.15	1380	1.29	1450	1.38
1900	1011	0.73	1068	0.79	1120	0.82	1172	0.91	1256	1.18	1310	1.13	1328	1.25	1440	1.47	1505	1.56
2000	1058	0.81	1100	0.85	1160	0.90	1237	1.20	1285	1.25	1320	1.31	1400	1.38	1448	1.57	1500	1.65

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1. Boldface** indicates field-supplied motor and drive required (See Note 5)
- 2. Shaded** indicates field-supplied motor and drive required.
- 3. Maximum usable bhp is 1.2** Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected
- Values include losses for filters, unit casing, and wet coils
- Alternate motor drive range: 970 to 1310 rpm All other rpms require field-supplied drive
- Use of a field-supplied motor may affect wire sizing Contact Carrier representative to verify
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 79$$

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	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp
1500	0.65	0.64	0.90	0.71	0.90	0.68	1.00	0.75	1.05	0.82	1.10	0.90
1600	0.45	0.64	0.80	0.71	0.80	0.70	0.92	0.77	0.97	0.84	1.03	0.93
1700	0.23	0.64	0.65	0.71	0.65	0.75	0.83	0.83	0.89	0.86	0.95	0.95
1800	0.01	0.64	0.52	0.71	0.52	0.79	0.73	0.87	0.78	0.88	0.87	0.97
1900	—	—	0.35	0.70	0.35	0.83	0.61	0.92	0.66	0.92	0.78	1.02
2000	—	—	0.19	0.64	0.19	0.84	0.50	0.93	0.55	0.94	0.68	1.04
2100	—	—	0.00	0.57	0.00	0.86	0.35	0.96	0.42	0.99	0.58	1.09
2200	—	—	—	—	—	—	0.22	0.95	0.30	1.02	0.47	1.12
2300	—	—	—	—	—	—	0.08	0.92	0.15	1.04	0.36	1.15
2400	—	—	—	—	—	—	0.00	0.89	0.02	1.06	0.25	1.18
2500	—	—	—	—	—	—	—	—	—	—	0.13	1.19

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure (in. wg)

NOTE: Values include losses for filters, unit casing, and wet coils

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		1.2		1.4		1.6		1.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	750	0.37	808	0.43	914	0.57	1001	0.70	1084	0.85	1168	1.02	1199	1.11	1126	1.02	1243	1.32	1174	1.22
1600	794	0.44	846	0.50	950	0.65	1034	0.78	1111	0.93	1194	1.11	1263	1.27	1275	1.35	1340	1.48	1330	1.61
1700	839	0.52	884	0.58	983	0.73	1068	0.88	1145	1.04	1218	1.20	1295	1.40	1351	1.57	1352	1.62	1454	1.88
1800	885	0.61	924	0.67	1018	0.82	1105	0.99	1179	1.15	1246	1.32	1319	1.51	1389	1.72	1435	1.82	1496	2.08
1900	932	0.72	965	0.77	1057	0.94	1143	1.12	1212	1.27	1280	1.45	1343	1.63	1405	1.85	1472	2.06	1517	2.25
2000	979	0.83	1008	0.88	1096	1.06	1177	1.24	1247	1.41	1314	1.59	1374	1.78	1436	1.98	1505	2.21	1544	2.40
2100	1026	0.96	1051	1.01	1136	1.19	1210	1.37	1284	1.57	1347	1.74	1409	1.92	1465	2.15	1528	2.36	—	—
2200	1074	1.10	1095	1.15	1173	1.33	1245	1.51	1322	1.73	1390	1.92	1442	2.11	1498	2.33	—	—	—	—
2300	1122	1.25	1140	1.30	1210	1.47	1284	1.67	1356	1.90	1418	2.09	1465	2.28	—	—	—	—	—	—
2400	1170	1.42	1185	1.46	1249	1.64	1325	1.85	1398	2.08	1455	2.26	—	—	—	—	—	—	—	—
2500	1218	1.61	1231	1.64	1296	1.81	1373	2.04	1448	2.23	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1. Boldface** indicates field-supplied motor and drive required (See Note 4)
- 2. Shaded** indicates field-supplied motor and drive required
- 3. Maximum usable bhp is 1.8** 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected
- Alternate motor drive range: 900 to 1300 rpm All other rpms require field-supplied drive
- Values include losses for filters, unit casing, and wet coils
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 81$$

FAN PERFORMANCE – VERTICAL DISCHARGE UNITS (cont)

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		1.0		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1200	701	0.22	758	0.28	834	0.35	914	0.42	1012	0.56	1056	0.59	1098	0.62	1180	0.68	1255	0.76
1300	747	0.27	800	0.34	865	0.41	945	0.52	1050	0.62	1090	0.63	1132	0.68	1212	0.72	1280	0.78
1400	792	0.33	847	0.40	901	0.47	960	0.56	1091	0.67	1130	0.70	1165	0.72	1242	0.82	1310	0.89
1500	836	0.39	897	0.46	947	0.55	1000	0.61	1132	0.72	1170	0.75	1205	0.82	1275	0.91	1330	0.98
1600	881	0.47	945	0.54	983	0.62	1065	0.67	1172	0.77	1207	0.86	1238	0.92	1310	1.05	1350	1.08
1700	925	0.55	981	0.61	1020	0.68	1103	0.72	1202	0.88	1243	0.98	1270	1.05	1350	1.16	1372	1.19
1800	964	0.63	1024	0.72	1084	0.75	1140	0.82	1230	0.97	1268	1.07	1300	1.15	1390	1.28	1450	1.38
1900	1011	0.73	1068	0.79	1120	0.82	1172	0.91	1256	1.18	1310	1.13	1320	1.27	1440	1.47	1500	1.60
2000	1058	0.81	1100	0.85	1160	0.90	1237	1.20	1290	1.25	1330	1.31	1400	1.38	1440	1.57	1550	1.65

LEGEND

Bhp — Brake Horsepower

NOTES:

- Boldface** indicates field-supplied motor and drive required (See Note 5)
- Shaded** indicates field-supplied motor and drive required
- Maximum usable bhp is 1.2 Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected.
- Values include losses for filters, unit casing, and wet coils
- Alternate motor drive range: 970 to 1310 rpm All other rpms require field-supplied drive
- Use of a field-supplied motor may affect wire sizing Contact Carrier representative to verify
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 79$$

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	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp
1500	0.65	0.64	0.90	0.71	0.90	0.68	1.00	0.75	1.05	0.82	1.10	0.90
1600	0.45	0.64	0.80	0.71	0.80	0.70	0.92	0.77	0.97	0.84	1.03	0.93
1700	0.23	0.64	0.65	0.71	0.65	0.75	0.83	0.83	0.89	0.86	0.95	0.95
1800	0.01	0.64	0.52	0.71	0.52	0.79	0.73	0.87	0.78	0.88	0.87	0.97
1900	—	—	0.35	0.70	0.35	0.83	0.61	0.92	0.66	0.92	0.78	1.02
2000	—	—	0.19	0.64	0.19	0.84	0.50	0.93	0.55	0.94	0.68	1.04
2100	—	—	0.00	0.57	0.00	0.86	0.35	0.96	0.42	0.99	0.58	1.09
2200	—	—	—	—	—	—	0.22	0.95	0.30	1.02	0.47	1.12
2300	—	—	—	—	—	—	0.08	0.92	0.15	1.04	0.36	1.15
2400	—	—	—	—	—	—	0.00	0.89	0.02	1.06	0.25	1.18
2500	—	—	—	—	—	—	—	—	—	—	0.13	1.19

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure (in wg)

NOTE: Values include losses for filters, unit casing, and wet coils

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		1.2		1.4		1.6		1.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	750	0.37	808	0.43	914	0.57	1001	0.70	1084	0.85	1168	1.02	1199	1.11	1126	1.02	1243	1.32	1174	1.22
1600	794	0.44	846	0.50	950	0.65	1034	0.78	1111	0.93	1194	1.11	1263	1.27	1275	1.35	1340	1.48	1330	1.61
1700	839	0.52	884	0.58	983	0.73	1068	0.88	1145	1.04	1218	1.20	1295	1.40	1351	1.57	1352	1.62	1424	1.89
1800	885	0.61	924	0.67	1018	0.82	1105	0.99	1179	1.15	1246	1.32	1319	1.51	1389	1.72	1435	1.88	1490	2.09
1900	932	0.72	965	0.77	1057	0.94	1143	1.12	1212	1.27	1280	1.45	1343	1.63	1408	1.84	1455	2.06	1517	2.25
2000	979	0.83	1008	0.88	1096	1.06	1177	1.24	1247	1.41	1314	1.59	1374	1.78	1436	1.98	1505	2.21	1544	2.40
2100	1026	0.96	1051	1.01	1136	1.19	1210	1.37	1284	1.57	1347	1.74	1408	1.94	1465	2.13	1528	2.36	—	—
2200	1074	1.10	1095	1.15	1173	1.33	1245	1.51	1322	1.73	1380	1.97	1442	2.17	1498	2.34	—	—	—	—
2300	1122	1.25	1140	1.30	1210	1.47	1284	1.67	1356	1.90	1418	2.09	1475	2.27	—	—	—	—	—	—
2400	1170	1.42	1185	1.46	1249	1.64	1323	1.85	1395	2.09	1458	2.30	—	—	—	—	—	—	—	—
2500	1218	1.61	1231	1.64	1298	1.87	1370	2.04	1444	2.34	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- Boldface** indicates field-supplied motor and drive required (See Note 4)
- Shaded** indicates field-supplied motor and drive required
- Maximum usable bhp is 1.8 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected
- Alternate motor drive range: 900 to 1300 rpm All other rpms require field-supplied drive
- Values include losses for filters, unit casing, and wet coils
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 81$$

Performance data (cont)

FAN PERFORMANCE – 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		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	935	0.67	983	0.75	1069	0.91	1152	1.08	1226	1.26	1294	1.45	1358	1.64	1420	1.85	1486	2.11
1900	982	0.78	1027	0.86	1111	1.03	1190	1.20	1263	1.40	1330	1.59	1392	1.79	1452	2.00	1511	2.23
2000	1029	0.90	1072	0.98	1154	1.16	1228	1.34	1301	1.54	1367	1.75	1428	1.96	1486	2.17	1542	2.39
2100	1076	1.03	1117	1.12	1197	1.31	1267	1.49	1338	1.69	1403	1.91	1464	2.13	1521	2.35	1575	2.57
2200	1124	1.18	1163	1.27	1240	1.47	1307	1.66	1376	1.86	1440	2.08	1500	2.31	1557	2.54	1610	2.77
2300	1171	1.33	1209	1.43	1283	1.64	1350	1.84	1414	2.04	1478	2.27	1537	2.51	1593	2.75	1646	2.99
2400	1219	1.51	1255	1.61	1326	1.82	1392	2.03	1453	2.24	1516	2.47	1574	2.72	1629	2.97	—	—
2500	1267	1.70	1301	1.80	1370	2.02	1435	2.25	1493	2.46	1554	2.69	1612	2.94	—	—	—	—
2600	1315	1.90	1348	2.00	1414	2.23	1473	2.47	1535	2.69	1592	2.92	—	—	—	—	—	—
2700	1363	2.12	1395	2.23	1456	2.46	1521	2.71	1577	2.94	—	—	—	—	—	—	—	—
2800	1411	2.36	1442	2.47	1502	2.71	1563	2.96	—	—	—	—	—	—	—	—	—	—
2900	1459	2.61	1489	2.72	1548	2.97	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp – Brake Horsepower

NOTES:

- 1 **Boldface** indicates field-supplied drive required (See Note 6)
- 2 **Shading** indicates field-supplied motor and drive required
- 3 *Maximum usable bhp is 2.4* Extensive motor and electrical testing on these units has ensured that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 4 Values include losses for filters, unit casing, and wet coils
- 5 Use of a field-supplied motor may affect wire sizing. Contact Carrier representative to verify
- 6 Standard motor drive range is 1070 to 1460 rpm. All other rpms require field-supplied drive
- 7 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = .81$$

48TJ008 (7½ TONS) – STANDARD MOTOR (BELT DRIVE)																	
Airflow (Cfm)	External Static Pressure (in. wg)																
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Bhp
2200	506	0.52	586	0.72	656	0.95	718	1.18	776	1.43	838	1.78	898	2.21	935	2.38	—
2250	514	0.55	593	0.76	662	0.99	724	1.22	781	1.78	841	1.81	902	2.25	938	2.60	—
2300	521	0.57	600	0.79	668	1.02	730	1.26	786	1.50	843	1.83	905	2.28	942	2.62	—
2400	536	0.63	613	0.85	680	1.09	741	1.34	796	1.59	849	1.88	910	2.31	952	2.74	—
2500	551	0.69	626	0.93	693	1.17	753	1.43	808	1.69	859	1.96	912	2.31	953	2.69	—
2550	559	0.72	634	0.97	700	1.21	759	1.48	814	1.74	864	2.01	915	2.34	958	2.69	—
2600	567	0.75	641	1.00	706	1.25	764	1.52	819	1.79	869	2.06	918	2.37	973	2.81	—
2700	582	0.83	655	1.08	719	1.34	776	1.61	831	1.89	880	2.17	927	2.47	976	2.84	—
2800	598	0.90	670	1.17	732	1.43	789	1.71	842	2.00	892	2.29	938	2.59	983	2.92	—
2900	614	0.98	684	1.25	745	1.53	802	1.81	854	2.11	903	2.42	949	2.71	993	3.03	—
3000	630	1.07	699	1.35	759	1.63	815	1.92	866	2.23	915	2.54	961	2.85	1002	3.17	—
3100	646	1.16	714	1.45	773	1.74	828	2.04	878	2.35	926	2.67	972	3.00	1015	3.22	—
3200	662	1.26	729	1.55	787	1.86	841	2.16	891	2.46	938	2.81	983	3.14	1026	3.27	—
3300	679	1.36	744	1.66	801	1.98	854	2.29	904	2.61	950	2.95	995	3.30	—	—	—
3400	695	1.47	759	1.78	816	2.10	867	2.42	917	2.75	963	3.10	1007	3.45	—	—	—
3500	712	1.59	774	1.90	830	2.23	881	2.56	930	2.90	976	3.25	—	—	—	—	—
3600	729	1.71	790	2.03	845	2.37	895	2.71	943	3.05	988	3.41	—	—	—	—	—
3700	745	1.84	805	2.17	860	2.52	909	2.87	956	3.22	—	—	—	—	—	—	—
3750	754	1.91	813	2.24	866	2.59	917	2.95	963	3.30	—	—	—	—	—	—	—
3800	762	1.98	821	2.31	875	2.66	924	3.02	970	3.38	—	—	—	—	—	—	—
3900	779	2.12	836	2.45	890	2.82	938	3.18	—	—	—	—	—	—	—	—	—
4000	796	2.27	853	2.61	905	2.98	953	3.37	—	—	—	—	—	—	—	—	—
4100	813	2.42	868	2.78	920	3.15	—	—	—	—	—	—	—	—	—	—	—
4200	830	2.59	884	2.95	935	3.33	—	—	—	—	—	—	—	—	—	—	—
4250	839	2.66	892	3.04	—	—	—	—	—	—	—	—	—	—	—	—	—
4300	847	2.76	900	3.13	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp – Brake Horsepower

NOTES:

- 1 **Boldface** indicates field-supplied drive required (See Note 7)
- 2 **Shading** indicates alternate drive required (See Note 7)
- 3 **Shading** indicates field-supplied motor and drive required
- 4 *Maximum usable bhp is 2.4* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 5 Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify
- 6 Values include losses for filters, unit casing, and wet coils
- 7 Standard motor drive range: 590 to 840 rpm. Alternate drive range: 690 to 935 rpm. All other rpms require field-supplied drive
- 8 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = .83$$

Performance data (cont)

FAN PERFORMANCE — 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		1.2		1.4	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	935	0.67	983	0.75	1069	0.91	1152	1.08	1226	1.26	1294	1.45	1358	1.64	1420	1.85
1900	982	0.78	1027	0.86	1111	1.03	1190	1.20	1263	1.40	1330	1.59	1392	1.79	1452	2.00
2000	1029	0.90	1072	0.98	1154	1.16	1228	1.34	1301	1.54	1367	1.75	1428	1.96	1486	2.17
2100	1076	1.03	1117	1.12	1197	1.31	1267	1.49	1338	1.69	1403	1.91	1464	2.13	1521	2.35
2200	1124	1.18	1163	1.27	1240	1.47	1307	1.66	1376	1.86	1440	2.08	1500	2.31	1557	2.54
2300	1171	1.33	1209	1.43	1283	1.64	1350	1.84	1414	2.04	1478	2.27	1537	2.51	1593	2.75
2400	1219	1.51	1255	1.61	1326	1.82	1392	2.03	1453	2.24	1518	2.47	1574	2.72	1629	2.97
2500	1267	1.70	1301	1.80	1370	2.02	1435	2.25	1493	2.46	1554	2.69	1612	2.94	—	—
2600	1315	1.90	1348	2.00	1414	2.23	1473	2.47	1535	2.69	1592	2.92	—	—	—	—
2700	1363	2.12	1395	2.23	1458	2.46	1521	2.71	1577	2.94	—	—	—	—	—	—
2800	1411	2.36	1442	2.47	1503	2.71	1564	2.96	—	—	—	—	—	—	—	—
2900	1459	2.61	1489	2.72	1548	2.97	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- Boldface** indicates field-supplied drive required (See Note 6)
- Shading** indicates field-supplied motor and drive required
- Maximum usable bhp is 2.4 Extensive motor and electrical testing on these units has ensured that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- Values include losses for filters, unit casing, and wet coils.
- Use of a field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- Standard motor drive range is 1070 to 1460 rpm. All other rpms require field-supplied drive.
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 81$$

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

Airflow (Cfm)	External Static Pressure (in. wg)															
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2200	506	0.52	586	0.72	656	0.95	718	1.18	776	1.43	838	1.78	898	2.21	955	2.59
2250	514	0.55	593	0.76	662	0.99	724	1.22	781	1.78	841	1.81	902	2.25	959	2.60
2300	521	0.57	600	0.79	668	1.02	730	1.26	786	1.50	843	1.83	905	2.28	963	2.62
2400	536	0.63	613	0.85	680	1.09	741	1.34	796	1.59	849	1.88	910	2.31	962	2.74
2500	551	0.69	626	0.93	693	1.17	753	1.43	808	1.69	859	1.96	912	2.31	963	2.81
2550	559	0.72	634	0.97	700	1.21	759	1.48	814	1.74	864	2.01	915	2.34	966	2.81
2600	567	0.75	641	1.00	706	1.25	764	1.52	819	1.79	869	2.06	918	2.37	973	2.81
2700	582	0.83	655	1.08	719	1.34	776	1.61	831	1.89	880	2.17	927	2.47	975	2.84
2800	598	0.90	670	1.17	732	1.43	789	1.71	842	2.00	892	2.29	938	2.58	983	2.90
2900	614	0.98	684	1.25	745	1.53	802	1.81	854	2.11	903	2.42	949	2.71	993	3.09
3000	630	1.07	699	1.35	759	1.63	815	1.92	866	2.23	915	2.54	961	2.85	1003	3.17
3100	646	1.16	714	1.45	773	1.74	828	2.04	878	2.35	926	2.67	972	3.00	1015	3.32
3200	662	1.26	729	1.55	787	1.86	841	2.16	891	2.46	938	2.81	983	3.14	1026	3.47
3300	679	1.36	744	1.66	801	1.98	854	2.29	904	2.51	950	2.95	995	3.30	—	—
3400	695	1.47	759	1.78	816	2.10	867	2.42	917	2.75	963	3.10	1007	3.45	—	—
3500	712	1.59	774	1.90	830	2.23	881	2.56	930	2.90	976	3.25	—	—	—	—
3600	729	1.71	790	2.03	845	2.37	895	2.71	943	3.05	989	3.41	—	—	—	—
3700	745	1.84	805	2.17	860	2.52	909	2.87	956	3.22	—	—	—	—	—	—
3750	754	1.91	813	2.24	868	2.59	917	2.95	963	3.30	—	—	—	—	—	—
3800	762	1.98	821	2.31	875	2.66	924	3.00	970	3.38	—	—	—	—	—	—
3900	779	2.12	836	2.46	890	2.82	938	3.19	—	—	—	—	—	—	—	—
4000	796	2.27	852	2.61	905	2.98	953	3.37	—	—	—	—	—	—	—	—
4100	813	2.42	868	2.76	920	3.15	—	—	—	—	—	—	—	—	—	—
4200	830	2.59	884	2.95	935	3.33	—	—	—	—	—	—	—	—	—	—
4250	839	2.63	892	3.04	—	—	—	—	—	—	—	—	—	—	—	—
4300	847	2.70	900	3.13	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- Boldface** indicates field-supplied drive required (See Note 7)
- Shading** indicates alternate drive required (See Note 7)
- Shading** indicates field-supplied motor and drive required
- Maximum usable bhp is 2.4 Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- Values include losses for filters, unit casing, and wet coils.
- Standard motor drive range: 590 to 840 rpm. Alternate drive range: 690 to 935 rpm. All other rpms require field-supplied drive.
- To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 83$$

FAN PERFORMANCE — 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		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2200	506	0.52	586	0.72	656	0.95	718	1.18	776	1.43	838	1.78	898	2.21	935	2.58
2250	514	0.55	593	0.76	662	0.99	724	1.22	781	1.78	841	1.81	902	2.25	939	2.62
2300	521	0.57	600	0.79	668	1.02	730	1.26	786	1.50	843	1.83	905	2.28	942	2.65
2400	536	0.63	613	0.85	680	1.09	741	1.34	796	1.59	849	1.88	910	2.31	952	2.74
2500	551	0.69	626	0.93	693	1.17	753	1.43	808	1.69	859	1.96	912	2.31	962	2.81
2550	559	0.72	634	0.97	700	1.21	759	1.48	814	1.74	864	2.01	915	2.34	966	2.84
2600	567	0.75	641	1.00	706	1.25	764	1.52	819	1.79	869	2.06	918	2.37	973	2.87
2700	582	0.83	655	1.08	719	1.34	776	1.61	831	1.89	880	2.17	927	2.47	978	2.94
2800	598	0.90	670	1.17	732	1.43	789	1.71	842	2.00	892	2.29	936	2.58	983	3.02
2900	614	0.98	684	1.25	745	1.53	802	1.81	854	2.11	903	2.42	946	2.71	993	3.09
3000	630	1.07	699	1.35	759	1.63	815	1.92	866	2.23	915	2.54	951	2.85	1003	3.17
3100	646	1.16	714	1.45	773	1.74	828	2.04	878	2.35	926	2.67	972	3.00	1015	3.32
3200	662	1.26	729	1.55	787	1.86	841	2.16	891	2.48	939	2.81	983	3.14	1026	3.37
3300	679	1.36	744	1.66	801	1.98	854	2.29	904	2.61	950	2.95	995	3.30	—	—
3400	695	1.47	759	1.78	816	2.10	867	2.42	917	2.75	963	3.10	1007	3.45	—	—
3500	712	1.59	774	1.90	830	2.23	881	2.56	930	2.90	975	3.25	—	—	—	—
3600	729	1.71	790	2.03	845	2.37	895	2.71	943	3.05	988	3.41	—	—	—	—
3700	745	1.84	805	2.17	860	2.52	909	2.87	956	3.22	—	—	—	—	—	—
3750	754	1.91	813	2.24	868	2.59	917	2.95	962	3.30	—	—	—	—	—	—
3800	762	1.98	821	2.31	875	2.66	924	3.03	970	3.38	—	—	—	—	—	—
3900	779	2.12	836	2.46	890	2.82	938	3.19	—	—	—	—	—	—	—	—
4000	796	2.27	852	2.61	905	2.98	952	3.37	—	—	—	—	—	—	—	—
4100	813	2.42	868	2.78	920	3.15	—	—	—	—	—	—	—	—	—	—
4200	830	2.59	884	2.95	935	3.33	—	—	—	—	—	—	—	—	—	—
4250	839	2.68	892	3.04	—	—	—	—	—	—	—	—	—	—	—	—
4300	847	2.76	900	3.13	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

1 **Boldface** indicates field-supplied drive required (See Note 7)

2 **Shading** indicates field-supplied motor required (See Note 7)

3 **Shading** indicates field-supplied motor and drive required

4 *Maximum usable bhp is 2.4* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected.

5 Use of field-supplied motor may affect wire sizing Contact Carrier representative to verify

6 Values include losses for filters, unit casing, and wet coils

7 Standard motor drive range: 690 to 935 rpm All other rpms require field-supplied drive

8 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 83$$

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

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	592	0.76	661	0.93	722	1.09	779	1.26	829	1.42	880	1.58	924	1.73	970	1.89	1019	2.00
3100	607	0.83	676	1.01	734	1.17	791	1.34	840	1.51	890	1.68	935	1.84	977	2.00	1026	2.17
3200	622	0.90	690	1.09	746	1.25	803	1.43	852	1.60	900	1.77	946	1.95	987	2.11	1029	2.28
3300	638	0.98	705	1.17	759	1.33	815	1.52	864	1.70	910	1.88	957	2.06	998	2.23	1037	2.40
3400	653	1.06	719	1.26	772	1.43	826	1.62	876	1.81	921	1.98	967	2.17	1009	2.35	1047	2.53
3500	669	1.15	733	1.35	786	1.53	838	1.72	888	1.91	933	2.10	976	2.29	1020	2.48	1058	2.66
3600	684	1.24	747	1.44	800	1.64	850	1.82	900	2.03	945	2.22	985	2.41	1030	2.61	1069	2.80
3700	700	1.33	760	1.54	814	1.75	863	1.92	912	2.14	957	2.34	998	2.54	1039	2.74	1081	2.94
3800	715	1.43	774	1.64	828	1.86	875	2.04	924	2.26	969	2.47	1010	2.67	1049	2.87	1091	3.05
3900	731	1.54	787	1.74	843	1.98	888	2.16	936	2.38	981	2.60	1022	2.81	1060	3.02	1100	3.23
4000	747	1.64	801	1.85	857	2.10	902	2.30	948	2.51	993	2.74	1034	2.96	1072	3.17	1110	3.35
4100	763	1.76	816	1.97	872	2.23	915	2.44	960	2.64	1005	2.88	1046	3.11	1084	3.32	—	—
4200	778	1.88	831	2.10	886	2.36	929	2.58	972	2.78	1015	3.03	1058	3.26	—	—	—	—
4300	794	2.00	846	2.23	900	2.50	943	2.73	985	2.97	1028	3.17	—	—	—	—	—	—
4400	810	2.13	861	2.37	913	2.64	956	2.89	999	3.20	1040	3.32	—	—	—	—	—	—
4500	826	2.27	876	2.52	927	2.78	970	3.03	1012	3.25	—	—	—	—	—	—	—	—
4600	842	2.41	892	2.67	940	2.92	982	3.21	—	—	—	—	—	—	—	—	—	—
4700	858	2.55	907	2.83	954	3.08	995	3.38	—	—	—	—	—	—	—	—	—	—
4800	874	2.70	922	2.99	968	3.24	—	—	—	—	—	—	—	—	—	—	—	—
4900	890	2.86	938	3.16	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5000	906	3.03	953	3.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

1 **Boldface** indicates field-supplied drive required (See Note 7)

2 **Shading** indicates alternate motor and drive required (See Note 7)

3 **Shading** indicates field-supplied motor and drive required

4 *Maximum usable bhp is 2.4 with standard motor; 2.9 with alternate motor* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure Unit warranty will not be affected.

5 Use of field-supplied motor may affect wire sizing Contact Carrier representative to verify

6 Values include losses for filters, unit casing, and wet coils

7 Standard motor drive range: 690 to 935 rpm Alternate motor drive range: 840 to 1085 rpm All other rpms require field-supplied drive

8 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 83$$

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TJ014 (12½ TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3700	729	1.36	790	1.58	847	1.79	902	2.06	955	2.29	1008	2.55	1060	2.80	1108	3.05	1152	3.27	1190	3.46
3800	745	1.46	805	1.69	861	1.89	915	2.17	967	2.41	1019	2.67	1070	2.94	1118	3.19	1163	3.44	1203	3.65
3900	761	1.56	820	1.80	875	2.01	928	2.29	979	2.55	1029	2.80	1079	3.07	1128	3.34	1173	3.60	1214	3.83
4000	777	1.67	836	1.92	889	2.14	941	2.40	991	2.68	1040	2.94	1089	3.22	1137	3.49	1183	3.76	1225	4.00
4100	793	1.79	851	2.05	904	2.27	955	2.52	1004	2.82	1052	3.08	1100	3.36	1147	3.65	1193	3.93	1236	4.19
4200	810	1.91	867	2.18	918	2.41	968	2.65	1017	2.96	1064	3.23	1110	3.51	1157	3.81	1202	4.09	1245	4.38
4300	826	2.04	883	2.32	933	2.55	982	2.79	1030	3.11	1076	3.40	1121	3.67	1167	3.97	1212	4.27	1255	4.56
4400	842	2.17	898	2.46	948	2.70	996	2.93	1043	3.25	1088	3.56	1133	3.84	1178	4.14	1222	4.44	1265	4.74
4500	859	2.31	914	2.60	962	2.85	1010	3.09	1056	3.40	1101	3.73	1144	4.00	1186	4.31	1228	4.62	1271	4.93
4600	876	2.45	930	2.76	977	3.01	1024	3.26	1070	3.55	1114	3.90	1157	4.19	1199	4.49	1242	4.81	1284	5.13
4700	892	2.60	945	2.91	992	3.18	1039	3.43	1083	3.71	1126	4.07	1169	4.38	1210	4.68	1252	5.00	1293	5.32
4800	909	2.77	961	3.07	1008	3.36	1053	3.61	1097	3.88	1140	4.25	1181	4.58	1222	4.87	1263	5.20	1303	5.52
4900	926	2.93	977	3.24	1024	3.54	1068	3.80	1111	4.06	1153	4.41	1194	4.77	1234	5.09	1274	5.40	1314	5.72
5000	942	3.11	993	3.41	1039	3.73	1082	3.99	1125	4.32	1166	4.59	1207	4.97	1247	5.30	1288	5.62	1328	5.94
5100	959	3.29	1009	3.60	1055	3.92	1097	4.19	1139	4.46	1179	4.78	1219	5.10	1259	5.42	1299	5.74	1339	6.06
5200	976	3.47	1025	3.78	1071	4.12	1112	4.40	1153	4.67	1194	4.98	1233	5.30	1272	5.62	1312	5.94	1352	6.28
5300	993	3.67	1041	3.98	1086	4.33	1127	4.61	1168	4.90	1208	5.19	1247	5.49	1286	5.79	1325	6.09	1364	6.40
5400	1010	3.87	1057	4.18	1102	4.54	1142	4.84	1182	5.13	1221	5.43	1260	5.73	1299	6.03	1338	6.33	1377	6.64
5500	1027	4.07	1073	4.39	1118	4.76	1157	5.07	1197	5.37	1235	5.67	1274	5.97	1312	6.27	1351	6.57	1389	6.87
5600	1043	4.29	1090	4.61	1133	4.99	1173	5.29	1211	5.59	1249	5.89	1287	6.19	1325	6.49	1363	6.79	1401	7.09
5700	1060	4.51	1106	4.83	1149	5.22	1189	5.52	1227	5.82	1265	6.12	1303	6.42	1341	6.72	1379	7.02	1417	7.32
5800	1077	4.74	1122	5.07	1165	5.45	1205	5.75	1243	6.05	1281	6.35	1319	6.65	1357	6.95	1395	7.25	1433	7.55
5900	1094	4.98	1138	5.31	1181	5.69	1221	5.99	1259	6.29	1297	6.59	1335	6.89	1373	7.19	1411	7.49	1449	7.79
6000	1111	5.22	1155	5.55	1200	6.02	1240	6.32	1278	6.62	1316	6.92	1354	7.22	1392	7.52	1430	7.82	1468	8.12
6100	1128	5.46	1171	5.79	1217	6.25	1257	6.55	1295	6.85	1333	7.15	1371	7.45	1409	7.75	1447	8.05	1485	8.35
6200	1145	5.70	1187	6.03	1233	6.58	1273	6.88	1311	7.18	1349	7.48	1387	7.78	1425	8.08	1463	8.38	1501	8.68

LEGEND

Bhp — Brake Horsepower

NOTES:

1 **Boldface** indicates field-supplied drive required (See Note 6)

2 **Shaded** indicates field-supplied motor and drive required

3 *Maximum usable bhp is 4.2* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected

4 Values include losses for filters, unit casing, and wet coils

5 Use of a field-supplied motor may affect wire sizing. Contact Carrier representative to verify

6 Standard motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive

7 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 85$$

48TJ014 (12½ TONS) — ALTERNATE MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3700	729	1.36	790	1.58	847	1.79	902	2.06	955	2.29	1008	2.55	1060	2.80	1108	3.05	1152	3.27	1190	3.46
3800	745	1.46	805	1.69	861	1.89	915	2.17	967	2.41	1019	2.67	1070	2.94	1118	3.19	1163	3.44	1203	3.65
3900	761	1.56	820	1.80	875	2.01	928	2.29	979	2.55	1029	2.80	1079	3.07	1128	3.34	1173	3.60	1214	3.83
4000	777	1.67	836	1.92	889	2.14	941	2.40	991	2.68	1040	2.94	1089	3.22	1137	3.49	1183	3.76	1225	4.00
4100	793	1.79	851	2.05	904	2.27	955	2.52	1004	2.82	1052	3.08	1100	3.36	1147	3.65	1193	3.93	1236	4.19
4200	810	1.91	867	2.18	918	2.41	968	2.65	1017	2.96	1064	3.23	1110	3.51	1157	3.81	1202	4.09	1245	4.38
4300	826	2.04	883	2.32	933	2.55	982	2.79	1030	3.11	1076	3.40	1121	3.67	1167	3.97	1212	4.27	1255	4.56
4400	842	2.17	898	2.46	948	2.70	996	2.93	1043	3.25	1088	3.56	1133	3.84	1178	4.14	1222	4.44	1265	4.74
4500	859	2.31	914	2.60	962	2.85	1010	3.09	1056	3.40	1101	3.73	1144	4.00	1188	4.31	1232	4.62	1274	4.93
4600	876	2.45	930	2.76	977	3.01	1024	3.26	1070	3.55	1114	3.90	1157	4.19	1199	4.49	1242	4.81	1284	5.13
4700	892	2.60	945	2.91	992	3.18	1039	3.43	1083	3.71	1126	4.07	1169	4.38	1210	4.68	1252	5.00		
4800	909	2.77	961	3.07	1008	3.36	1053	3.61	1097	3.88	1140	4.25	1181	4.58	1222	4.87	1263	5.20		
4900	926	2.93	977	3.24	1024	3.54	1068	3.80	1111	4.06	1153	4.41	1194	4.77	1234	5.09				
5000	942	3.11	993	3.41	1039	3.73	1080	3.99	1125	4.25	1166	4.59	1207	4.97						
5100	959	3.29	1009	3.60	1055	3.92	1097	4.19	1139	4.46	1180	4.78	1220	5.18						
5200	976	3.47	1025	3.78	1071	4.12	1112	4.40	1153	4.67	1194	4.98								
5300	993	3.67	1041	3.98	1086	4.33	1127	4.61	1168	4.90	1208	5.19								
5400	1010	3.87	1057	4.18	1102	4.54	1142	4.84	1182	5.13										
5500	1027	4.07	1073	4.39	1118	4.76														
5600	1043	4.29	1090	4.61	1133	4.99														
5700	1060	4.51	1106	4.83	1149	5.22														
5800	1077	4.74	1122	5.07																
5900	1094	4.98																		
6000	1111	5.22																		
6100																				
6200																				

LEGEND

Bhp — Brake Horsepower

NOTES:

1 **Boldface** indicates field-supplied drive required (See Note 4)

2 **Shaded** indicates field-supplied motor and drive required

3 *Maximum usable bhp is 5.25* Extensive motor and drive testing on these units ensures that the full horsepower range of the motor can

NOTE: Fan Performance tables for 016-028 units are on pages 36 and 37.

FAN PERFORMANCE – 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	ESP	Bhp	ESP	Bhp	ESP	Bhp
900	0.53	0.17	0.55	0.19	0.63	0.21	0.64	0.25
1000	0.48	0.20	0.51	0.22	0.57	0.23	0.60	0.27
1100	0.43	0.21	0.45	0.24	0.52	0.25	0.54	0.29
1200	0.36	0.23	0.40	0.25	0.47	0.27	0.47	0.31
1300	0.28	0.24	0.32	0.26	0.38	0.29	0.41	0.32
1400	0.20	0.26	0.24	0.28	0.31	0.30	0.32	0.33
1500	0.11	0.27	0.14	0.33	0.21	0.31	0.22	0.34

LEGEND

Bhp — Brake Horsepower
ESP — External Static Pressure (in wg)

NOTE: Values include losses for filters, unit casing, and wet coils

48TJ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)																						
Airflow (Cfm)	External Static Pressure (in. wg)																					
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1.0		1.1		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
900	—	—	—	—	777	0.22	831	0.25	885	0.27	923	0.32	960	0.35	995	0.38	1068	0.42	1117	0.45	1165	0.48
950	—	—	728	0.17	783	0.25	837	0.27	890	0.29	931	0.34	971	0.38	1000	0.41	1071	0.44	1120	0.47	1170	0.51
1000	—	—	738	0.19	800	0.26	848	0.29	895	0.31	936	0.35	977	0.39	1020	0.44	1076	0.48	1123	0.52	1173	0.56
1050	—	—	748	0.21	808	0.27	855	0.30	902	0.33	949	0.38	995	0.42	1045	0.47	1081	0.50	1128	0.54	1176	0.58
1100	—	—	758	0.23	812	0.29	863	0.32	914	0.35	960	0.39	1005	0.43	1052	0.49	1091	0.52	1138	0.56	1186	0.60
1150	—	—	766	0.26	821	0.30	874	0.34	926	0.38	970	0.42	1013	0.45	1066	0.50	1106	0.56	1155	0.60	1204	0.65
1200	710	0.23	780	0.28	840	0.32	889	0.36	938	0.40	988	0.45	1038	0.50	1076	0.53	1110	0.59	1160	0.63	1210	0.68
1250	731	0.25	795	0.30	850	0.32	900	0.39	950	0.43	998	0.48	1045	0.52	1085	0.56	1135	0.62	1185	0.67	1236	0.71
1300	752	0.27	808	0.32	868	0.37	916	0.41	963	0.45	1012	0.51	1061	0.56	1094	0.61	1141	0.65	1190	0.70	1238	0.75
1350	759	0.29	828	0.35	878	0.39	922	0.44	966	0.48	1015	0.53	1064	0.58	1104	0.65	1145	0.68	1193	0.73	1241	0.78
1400	776	0.31	845	0.38	891	0.42	937	0.47	983	0.51	1027	0.56	1071	0.60	1108	0.67	1149	0.70	1196	0.75	1243	0.80
1450	795	0.35	853	0.40	902	0.45	951	0.50	999	0.55	1040	0.60	1081	0.64	1112	0.68	1152	0.72	1199	0.76	1243	0.80
1500	816	0.38	870	0.43	924	0.48	969	0.53	1014	0.58	1056	0.63	1097	0.68	1117	0.70	1155	0.74	1201	0.78	1245	0.82

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1** **Boldface** indicates field-supplied motor and drive required (See Note 4.)
- 2** *Maximum usable bhp is 0.66* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 3** Values include losses for filters, unit casing, and wet coils.
- 4** Alternate motor drive range: 558 to 1326 rpm. All other rpms require field-supplied drive. In order to achieve rpms over 790, reversal of the evaporator-fan and fan-motor pulleys in the field will be necessary. See Fan Rpm tables on page 38.
- 5** To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 63$$

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	ESP	Bhp	ESP	Bhp	ESP	Bhp
1200	0.78	0.44	0.85	0.48	0.92	0.56	1.01	0.65
1300	0.70	0.48	0.76	0.50	0.84	0.60	0.94	0.68
1400	0.62	0.50	0.68	0.54	0.78	0.63	0.87	0.69
1500	0.52	0.53	0.59	0.58	0.69	0.65	0.78	0.72
1600	0.44	0.57	0.50	0.60	0.61	0.68	0.70	0.74
1700	0.34	0.58	0.40	0.63	0.53	0.69	0.62	0.76
1800	0.22	0.61	0.30	0.65	0.45	0.71	0.54	0.78
1900	0.10	0.63	0.20	0.68	0.37	0.73	0.48	0.79
2000	—	—	0.09	0.69	0.29	0.74	0.39	0.81

LEGEND

Bhp — Brake Horsepower
ESP — External Static Pressure (in wg)

NOTE: Values include losses for filters, unit casing, and wet coils

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

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		1.0		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1300	701	0.22	758	0.28	834	0.35	914	0.42	1012	0.56	1056	0.59	1098	0.62	1180	0.68	1255	0.76
1400	747	0.27	800	0.34	865	0.41	945	0.52	1050	0.62	1090	0.63	1132	0.68	1212	0.72	1280	0.78
1500	792	0.33	847	0.40	901	0.47	960	0.56	1091	0.67	1130	0.70	1165	0.72	1242	0.82	1310	0.89
1600	836	0.39	897	0.46	947	0.55	1000	0.61	1132	0.72	1170	0.75	1205	0.82	1275	0.91	1330	0.98
1700	881	0.47	945	0.54	983	0.62	1065	0.67	1172	0.77	1207	0.86	1238	0.92	1310	1.05	1350	1.08
1800	925	0.55	981	0.61	1020	0.68	1103	0.72	1202	0.88	1243	0.98	1270	1.05	1350	1.16	1372	1.19
1900	964	0.63	1024	0.72	1084	0.75	1140	0.82	1230	0.97	1268	1.07	1300	1.15	1390	1.25	1450	1.35
2000	1011	0.73	1068	0.79	1120	0.82	1172	0.91	1256	1.18	1310	1.13	1323	1.27	1400	1.38	1445	1.49
2100	1058	0.81	1100	0.85	1160	0.90	1237	1.20	1285	1.25	1320	1.31	1400	1.38	1445	1.57	1550	1.65

LEGEND

Bhp — Brake Horsepower

NOTES:

1 **Boldface** indicates field-supplied motor and drive required (See Note 5)

2 **Shaded** indicates field-supplied motor and drive required

3 *Maximum usable bhp is 1.2* 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

4 Values include losses for filters, unit casing, and wet coils

5 Alternate motor drive range: 970 to 1310 rpm. All other rpms require field-supplied drive

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

7 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 79$$

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	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp
1500	0.80	0.64	1.05	0.71	1.05	0.68	1.15	0.75	1.20	0.82	1.25	0.90
1600	0.60	0.64	0.95	0.71	0.95	0.70	1.07	0.77	1.12	0.84	1.18	0.93
1700	0.38	0.64	0.80	0.71	0.80	0.75	0.98	0.83	1.04	0.86	1.10	0.95
1800	0.16	0.64	0.67	0.71	0.67	0.79	0.88	0.87	0.93	0.88	1.02	0.97
1900	0.05	0.64	0.50	0.70	0.50	0.83	0.76	0.92	0.81	0.92	0.93	1.02
2000	—	—	0.34	0.64	0.34	0.84	0.65	0.93	0.70	0.94	0.83	1.04
2100	—	—	0.15	0.57	0.15	0.86	0.50	0.96	0.57	0.99	0.73	1.09
2200	—	—	0.05	0.53	0.05	0.87	0.37	0.95	0.45	1.02	0.62	1.12
2300	—	—	—	—	—	—	0.23	0.92	0.30	1.04	0.51	1.15
2400	—	—	—	—	—	—	0.15	0.89	0.17	1.06	0.40	1.18
2500	—	—	—	—	—	—	0.05	0.87	0.05	1.08	0.28	1.19

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure (in. wg)

NOTE: Values include losses for filters, unit casing, and wet coils

48TJ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)

External Static Pressure (in. wg)																				
Airflow (Cfm)	0.1		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	720	0.34	776	0.39	886	0.53	978	0.66	1059	0.80	1142	0.96	1207	1.11	1245	1.20	1251	1.21	1174	1.22
1600	760	0.40	814	0.46	915	0.59	1010	0.74	1089	0.89	1165	1.04	1240	1.22	1296	1.37	1329	1.46	1330	1.61
1700	801	0.47	853	0.54	950	0.68	1044	0.84	1120	0.99	1190	1.14	1266	1.33	1331	1.50	1381	1.65	1424	1.89
1800	842	0.55	891	0.62	985	0.77	1075	0.94	1151	1.09	1221	1.26	1287	1.42	1358	1.63	1417	1.81	1480	2.00
1900	883	0.64	931	0.72	1019	0.87	1103	1.03	1184	1.21	1252	1.38	1315	1.55	1380	1.74	1446	1.95	1517	2.25
2000	924	0.74	970	0.82	1054	0.97	1134	1.14	1217	1.34	1283	1.51	1346	1.69	1405	1.87	1469	2.08	1544	2.40
2100	965	0.85	1010	0.93	1090	1.09	1170	1.27	1247	1.47	1315	1.65	1377	1.84	1435	2.06	1492	2.22	1569	2.55
2200	1007	0.97	1050	1.06	1128	1.22	1205	1.40	1275	1.59	1349	1.81	1409	1.99	1466	2.22	1521	2.40	—	—
2300	1049	1.10	1090	1.19	1166	1.36	1239	1.55	1306	1.74	1380	1.96	1448	2.16	1497	2.37	—	—	—	—
2400	1090	1.24	1131	1.34	1204	1.51	1273	1.70	1342	1.91	1409	2.13	1474	2.36	—	—	—	—	—	—
2500	1132	1.39	1172	1.49	1243	1.68	1309	1.87	1377	2.09	1438	2.29	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

1 **Boldface** indicates field-supplied drive required (See Note 4)

2 **Shaded** indicates field-supplied motor and drive required

3 *Maximum usable bhp is 1.80* 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 horsepower rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

4 Alternate motor drive range: 900 to 1300 rpm. All other rpms require field-supplied drive.

5 Values include losses for filters, unit casing, and wet coils.

6 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 81$$

FAN PERFORMANCE – 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		1.2		1.4	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	852	0.55	905	0.62	1002	0.78	1084	0.93	1163	1.10	1235	1.29	1303	1.48	1371	1.69
1900	894	0.64	945	0.72	1037	0.88	1119	1.04	1194	1.21	1266	1.40	1330	1.59	1396	1.81
2000	936	0.74	984	0.82	1072	0.98	1154	1.16	1226	1.33	1297	1.53	1362	1.73	1422	1.94
2100	978	0.85	1024	0.93	1108	1.10	1190	1.29	1259	1.47	1327	1.66	1393	1.87	1452	2.08
2200	1021	0.97	1064	1.05	1145	1.22	1225	1.43	1294	1.62	1359	1.81	1423	2.02	1483	2.24
2300	1064	1.10	1104	1.18	1183	1.36	1260	1.57	1330	1.78	1392	1.97	1454	2.18	1515	2.39
2400	1107	1.24	1145	1.32	1222	1.52	1296	1.73	1365	1.94	1426	2.15	1485	2.36	1544	2.58
2500	1150	1.39	1186	1.48	1262	1.68	1331	1.89	1400	2.12	1461	2.34	1518	2.55	1575	2.77
2600	1193	1.56	1228	1.65	1301	1.86	1367	2.07	1435	2.31	1497	2.54	1552	2.75	1607	2.98
2700	1237	1.74	1269	1.83	1341	2.05	1404	2.26	1471	2.51	1532	2.73	1587	2.96	1641	3.19
2800	1280	1.94	1311	2.03	1381	2.25	1442	2.47	1506	2.72	1567	2.96	1621	3.19	1675	3.43
2900	1324	2.15	1354	2.24	1422	2.45	1481	2.68	1542	2.94	1601	3.19	1655	3.43	1709	3.67
3000	1368	2.37	1395	2.46	1462	2.65	1519	2.88	1579	3.19	1637	3.43	1691	3.67	1745	3.91

LEGEND

Bhp – Brake Horsepower

NOTES:

- 1 **Boldface** indicates field-supplied drive required (See Note 6)
- 2 **Shading** indicates field-supplied motor and drive required
- 3 *Maximum usable bhp is 2.4* Extensive motor and electrical testing on these units has ensured that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 4 Values include losses for filters, unit casing, and wet coils.
- 5 Use of a field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 6 Standard motor drive range is 1070 to 1460 rpm. All other rpms require field-supplied drive.
- 7 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 81$$

48TJ008 (7½ TONS) – STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)															
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2200	499	0.50	580	0.70	652	0.94	717	1.17	779	1.43	839	1.78	905	2.21	964	2.57
2250	507	0.53	586	0.73	658	0.97	722	1.22	783	1.46	843	1.81	908	2.25	965	2.60
2300	513	0.55	592	0.76	663	1.00	727	1.26	786	1.49	846	1.84	910	2.28	967	2.63
2400	528	0.60	606	0.83	674	1.06	738	1.34	795	1.58	853	1.88	912	2.31	967	2.66
2500	542	0.66	619	0.90	686	1.13	748	1.41	806	1.68	859	1.94	919	2.37	971	2.70
2550	550	0.69	627	0.94	692	1.17	754	1.45	812	1.74	864	1.99	920	2.39	974	2.73
2600	557	0.72	634	0.97	698	1.21	759	1.49	816	1.79	868	2.04	921	2.37	976	2.76
2700	573	0.79	648	1.05	711	1.29	770	1.58	827	1.88	878	2.16	928	2.45	982	2.86
2800	588	0.86	662	1.13	723	1.38	782	1.66	837	1.98	889	2.29	937	2.57	986	2.90
2900	604	0.94	676	1.21	737	1.48	794	1.76	848	2.08	900	2.41	947	2.70	993	3.01
3000	620	1.02	690	1.30	750	1.58	806	1.86	859	2.18	910	2.52	958	2.85	1002	3.15
3100	636	1.11	704	1.39	764	1.69	818	1.97	870	2.29	920	2.64	968	2.99	1012	3.26
3200	652	1.21	718	1.49	778	1.80	831	2.09	882	2.40	931	2.76	979	3.13	1023	3.37
3300	668	1.31	732	1.59	793	1.92	844	2.21	894	2.53	942	2.89	989	3.26	1034	3.48
3400	684	1.41	747	1.70	807	2.04	857	2.35	907	2.66	954	3.02	1000	3.40	1044	3.72
3500	701	1.53	762	1.82	821	2.16	870	2.48	919	2.80	966	3.15	1011	3.55	1054	3.84
3600	717	1.65	777	1.94	835	2.29	885	2.63	932	2.95	978	3.30	1022	3.69	1065	3.99
3700	733	1.77	792	2.07	849	2.42	899	2.78	945	3.11	990	3.45	1034	3.84	1076	4.16
3750	742	1.84	800	2.14	856	2.49	907	2.86	952	3.20	997	3.54	1040	3.93	1082	4.27
3800	750	1.90	807	2.21	863	2.56	914	2.93	959	3.28	1003	3.62	1045	4.01	1087	4.33
3900	767	2.04	822	2.35	877	2.71	928	3.09	972	3.45	1015	3.80	1057	4.18	1098	4.48
4000	783	2.18	838	2.49	891	2.86	942	3.26	986	3.63	1028	3.99	1070	4.35	1110	4.65
4100	800	2.34	854	2.64	905	3.02	956	3.43	1000	3.81	1042	4.18	1082	4.55	1122	4.93
4200	817	2.49	869	2.80	919	3.18	970	3.60	1015	4.00	1055	4.39	1095	4.75	1134	5.15
4250	826	2.53	874	2.84	924	3.22	975	3.65	1020	4.04	1060	4.43	1100	4.79	1140	5.23
4300	834	2.58	880	2.89	930	3.27	980	3.70	1025	4.09	1065	4.50	1105	4.83	1145	5.28

LEGEND

Bhp – Brake Horsepower

NOTES:

- 1 **Boldface** indicates field-supplied drive required (See Note 7)
- 2 **Shading** indicates alternate drive required (See Note 7)
- 3 **Shading** indicates field-supplied motor and drive required
- 4 *Maximum usable bhp is 2.4* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 5 Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 6 Values include losses for filters, unit casing, and wet coils.
- 7 Standard motor drive range: 590 to 840 rpm. Alternate drive range: 690 to 935 rpm. All other rpms require field-supplied drive.
- 8 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 83$$

FAN PERFORMANCE — 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		1.2		1.4	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	852	0.55	905	0.62	1002	0.78	1084	0.93	1163	1.10	1235	1.29	1303	1.48	1371	1.69
1900	894	0.64	945	0.72	1037	0.88	1119	1.04	1194	1.21	1266	1.40	1330	1.59	1396	1.81
2000	936	0.74	984	0.82	1072	0.98	1154	1.16	1226	1.33	1297	1.53	1362	1.73	1422	1.94
2100	978	0.85	1024	0.93	1108	1.10	1190	1.29	1259	1.47	1327	1.66	1393	1.87	1452	2.08
2200	1021	0.97	1064	1.05	1145	1.22	1225	1.43	1294	1.62	1359	1.81	1423	2.02	1483	2.24
2300	1064	1.10	1104	1.18	1183	1.36	1260	1.57	1330	1.78	1392	1.97	1454	2.18	1515	2.41
2400	1107	1.24	1145	1.32	1222	1.52	1296	1.73	1365	1.94	1426	2.15	1485	2.36	1544	2.59
2500	1150	1.39	1186	1.48	1262	1.68	1331	1.89	1400	2.12	1461	2.34	1518	2.56	1575	2.79
2600	1193	1.56	1228	1.65	1301	1.86	1367	2.07	1435	2.31	1497	2.54	1552	2.76	1607	2.98
2700	1237	1.74	1269	1.83	1341	2.05	1404	2.26	1472	2.51	1532	2.75	1587	2.98	1641	3.21
2800	1280	1.94	1311	2.03	1381	2.25	1442	2.47	1509	2.72	1567	2.96	1621	3.20	1674	3.43
2900	1324	2.15	1354	2.24	1422	2.45	1481	2.68	1547	2.94	1603	3.19	1656	3.43	1708	3.66
3000	1368	2.37	1397	2.46	1464	2.66	1521	2.90	1577	3.16	1631	3.41	1683	3.65	1734	3.89

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1** **Boldface** indicates field-supplied drive required (See Note 6)
- 2** **Shading** indicates field-supplied motor and drive required.
- 3** *Maximum usable bhp is 2.4* Extensive motor and electrical testing on these units has ensured that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 4** Values include losses for filters, unit casing, and wet coils.
- 5** Use of a field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 6** Standard motor drive range is 1070 to 1460 rpm. All other rpms require field-supplied drive.
- 7** To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = .81$$

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

Airflow (Cfm)	External Static Pressure (in. wg)															
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2200	499	0.50	580	0.70	652	0.94	717	1.17	779	1.43	839	1.78	905	2.21	961	2.67
2250	507	0.53	586	0.73	658	0.97	722	1.22	783	1.46	843	1.81	908	2.25	965	2.70
2300	513	0.55	592	0.76	663	1.00	727	1.26	786	1.49	846	1.84	910	2.28	968	2.73
2400	528	0.60	606	0.83	674	1.06	738	1.34	795	1.58	853	1.88	912	2.31	967	2.76
2500	542	0.66	619	0.90	686	1.13	748	1.41	806	1.68	859	1.94	919	2.37	971	2.79
2550	550	0.69	627	0.94	692	1.17	754	1.45	812	1.74	864	1.99	920	2.39	974	2.76
2600	557	0.72	634	0.97	698	1.21	759	1.49	816	1.79	868	2.04	921	2.37	976	2.79
2700	573	0.79	648	1.05	711	1.29	770	1.58	827	1.88	878	2.16	928	2.45	980	2.86
2800	588	0.86	662	1.13	723	1.38	782	1.66	837	1.98	889	2.29	937	2.57	986	2.99
2900	604	0.94	676	1.21	737	1.48	794	1.76	848	2.08	900	2.41	947	2.70	993	3.10
3000	620	1.02	690	1.30	750	1.58	806	1.86	859	2.18	910	2.52	958	2.85	1002	3.13
3100	636	1.11	704	1.39	764	1.69	818	1.97	870	2.29	920	2.64	968	2.99	1012	3.16
3200	652	1.21	718	1.49	778	1.80	831	2.09	882	2.40	931	2.76	979	3.13	1022	3.19
3300	668	1.31	732	1.59	793	1.92	844	2.21	894	2.52	942	2.89	989	3.26	1034	3.26
3400	684	1.41	747	1.70	807	2.04	857	2.35	907	2.66	954	3.02	1000	3.40	1044	3.73
3500	701	1.53	762	1.82	821	2.16	871	2.48	919	2.80	965	3.15	1011	3.55	1054	3.89
3600	717	1.65	777	1.94	835	2.29	885	2.62	932	2.95	978	3.30	1022	3.69	1065	4.00
3700	733	1.77	792	2.07	849	2.42	899	2.76	945	3.11	990	3.45	1034	3.89	1076	4.26
3750	742	1.84	800	2.14	856	2.49	907	2.83	952	3.20	997	3.54	1040	3.93	1082	4.27
3800	750	1.90	807	2.21	863	2.56	914	2.90	958	3.28	1003	3.62	1045	4.01	1087	4.30
3900	767	2.04	822	2.35	877	2.71	928	3.05	972	3.45	1015	3.80	1057	4.18	1098	4.40
4000	783	2.18	838	2.49	891	2.85	942	3.20	986	3.63	1029	3.99	1070	4.36	1112	4.58
4100	800	2.34	854	2.63	905	3.00	956	3.35	1000	3.81	1042	4.18	1082	4.55	1122	4.67
4200	817	2.50	870	2.80	919	3.15	970	3.50	1015	4.00	1055	4.36	1095	4.70	1134	4.86
4250	826	2.56	877	2.87	926	3.22	977	3.57	1022	4.10	1062	4.45	1102	4.82	1140	4.92
4300	834	2.63	885	2.95	933	3.30	984	3.75	1029	4.20	1069	4.52	1108	4.89	1147	4.99

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1** **Boldface** indicates field-supplied drive required (See Note 7)
- 2** **Shading** indicates alternate drive required (See Note 7)
- 3** **Shading** indicates field-supplied motor and drive required.
- 4** *Maximum usable bhp is 2.4* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 5** Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 6** Values include losses for filters, unit casing, and wet coils.
- 7** Standard motor drive range: 590 to 840 rpm. Alternate drive range: 690 to 935 rpm. All other rpms require field-supplied drive.
- 8** To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = .83$$

Performance data (cont)

FAN PERFORMANCE — 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		1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2200	499	0.50	580	0.70	652	0.94	717	1.17	779	1.43	839	1.78	905	2.21	963	2.67
2250	507	0.53	586	0.73	658	0.97	722	1.22	783	1.46	843	1.81	908	2.25	965	2.70
2300	513	0.55	592	0.76	663	1.00	727	1.26	786	1.49	846	1.84	910	2.28	969	2.73
2400	528	0.60	606	0.83	674	1.06	738	1.34	795	1.58	853	1.88	912	2.31	967	2.76
2500	542	0.66	619	0.90	686	1.13	748	1.41	806	1.68	859	1.94	919	2.37	974	2.79
2550	550	0.69	627	0.94	692	1.17	754	1.45	812	1.74	864	1.99	920	2.39	974	2.78
2600	557	0.72	634	0.97	698	1.21	759	1.49	816	1.79	868	2.04	921	2.37	973	2.78
2700	573	0.79	648	1.05	711	1.29	770	1.58	827	1.88	878	2.16	928	2.45	983	2.86
2800	588	0.86	662	1.13	723	1.38	782	1.66	837	1.98	889	2.29	937	2.53	993	2.93
2900	604	0.94	676	1.21	737	1.48	794	1.76	848	2.08	900	2.41	947	2.70	995	3.00
3000	620	1.02	690	1.30	750	1.58	806	1.86	859	2.18	910	2.52	958	2.85	995	3.02
3100	636	1.11	704	1.39	764	1.69	818	1.97	870	2.29	920	2.64	969	2.98	1012	3.23
3200	652	1.21	718	1.49	778	1.80	831	2.09	882	2.40	931	2.76	979	3.13	1023	3.27
3300	668	1.31	732	1.59	793	1.92	844	2.21	894	2.53	942	2.89	989	3.26	1034	3.36
3400	684	1.41	747	1.70	807	2.04	857	2.35	907	2.66	954	3.02	1000	3.40	1044	3.39
3500	701	1.53	762	1.82	821	2.16	871	2.48	919	2.80	965	3.15	1011	3.55	1054	3.54
3600	717	1.65	777	1.94	835	2.29	885	2.63	932	2.95	979	3.30	1022	3.69	1065	3.59
3700	733	1.77	792	2.07	849	2.42	899	2.78	945	3.11	990	3.45	1033	3.84	1076	3.64
3750	742	1.84	800	2.14	856	2.49	907	2.86	952	3.20	997	3.54	1040	3.92	1082	3.67
3800	750	1.90	807	2.21	863	2.56	914	2.93	959	3.28	1003	3.62	1045	4.01	1087	3.72
3900	767	2.04	822	2.35	877	2.71	928	3.09	972	3.45	1015	3.80	1057	4.18	1099	3.80
4000	783	2.18	838	2.50	891	2.86	942	3.25	986	3.62	1028	3.99	1070	4.36	1110	3.88
4100	800	2.34	854	2.66	905	3.02	956	3.43	1000	3.81	1042	4.17	1082	4.55	1127	4.07
4200	817	2.49	869	2.82	920	3.19	970	3.60	1015	4.00	1055	4.36	1095	4.76	1134	4.16
4250	826	2.58	877	2.91	928	3.28	977	3.69	1022	4.10	1062	4.46	1102	4.87	1140	4.27
4300	834	2.66	885	3.00	935	3.37	984	3.78	1029	4.20	1069	4.59	1109	4.98	1147	4.38

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1 **Shading** indicates field-supplied drive required (See Note 7)
- 2 **Shading** indicates field-supplied motor required (See Note 7)
- 3 **Shading** indicates field-supplied motor and drive required
- 4 **Maximum usable bhp is 2.4** Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 5 Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 6 Values include losses for filters, unit casing, and wet coils.
- 7 Standard motor drive range: 690 to 935 rpm. All other rpms require field-supplied drive.
- 8 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 83$$

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

Airflow (Cfm)	External Static Pressure (in. wg)															
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	552	0.68	632	0.87	701	1.05	761	1.22	816	1.36	871	1.54	918	1.67	967	1.89
3100	565	0.74	644	0.93	711	1.12	772	1.31	825	1.45	879	1.63	928	1.78	973	1.94
3200	578	0.81	656	1.00	723	1.20	782	1.39	835	1.55	887	1.71	937	1.90	981	2.04
3300	591	0.88	668	1.08	734	1.28	793	1.47	845	1.65	895	1.80	946	2.00	991	2.16
3400	605	0.96	680	1.16	745	1.36	803	1.56	856	1.75	904	1.91	953	2.10	1000	2.29
3500	619	1.04	691	1.23	755	1.44	813	1.65	867	1.86	914	2.03	961	2.20	1009	2.41
3600	633	1.13	703	1.31	766	1.52	824	1.74	877	1.97	924	2.15	970	2.32	1017	2.53
3700	648	1.23	714	1.39	777	1.61	835	1.85	887	2.07	935	2.28	980	2.45	1024	2.64
3800	662	1.33	726	1.51	789	1.72	846	1.95	897	2.18	946	2.40	989	2.58	1033	2.76
3900	677	1.44	738	1.61	801	1.82	857	2.06	908	2.29	956	2.53	1000	2.73	1042	2.91
4000	692	1.55	750	1.73	813	1.94	868	2.17	918	2.40	967	2.66	1010	2.87	1052	3.06
4100	707	1.67	762	1.84	825	2.05	878	2.28	929	2.53	977	2.78	1021	3.02	1062	3.22
4200	722	1.80	775	1.97	837	2.16	889	2.40	941	2.66	987	2.91	1032	3.17	1072	3.38
4300	737	1.94	787	2.09	848	2.27	900	2.52	952	2.80	999	3.04	1042	3.32	—	—
4400	752	2.08	800	2.21	860	2.39	912	2.65	962	2.98	1008	3.19	—	—	—	—
4500	768	2.24	814	2.35	871	2.51	924	2.80	973	3.07	1019	3.34	—	—	—	—
4600	783	2.40	827	2.50	883	2.64	937	2.98	983	3.21	—	—	—	—	—	—
4700	799	2.56	841	2.64	894	2.77	949	3.10	994	3.36	—	—	—	—	—	—
4800	814	2.74	855	2.80	906	2.91	961	3.26	—	—	—	—	—	—	—	—
4900	829	2.92	869	2.95	918	3.05	972	3.40	—	—	—	—	—	—	—	—
5000	—	—	883	3.10	931	3.21	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1 **Shading** indicates field-supplied drive required.
- 2 **Shading** indicates alternate motor and drive required (See Note 7.)
- 3 **Shading** indicates field-supplied motor and drive required
- 4 **Maximum usable bhp is 2.4 with standard motor; 2.9 with alternate motor** Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
- 5 Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 6 Values include losses for filters, unit casing, and wet coils.
- 7 Standard motor drive range: 690 to 935 rpm. Alternate motor drive range: 840 to 1085 rpm. All other rpms require field-supplied drive.
- 8 To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

$$\text{Motor efficiency} = 83$$

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TJ014 (12½ TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3700	677	1.20	748	1.43	810	1.65	869	1.89	928	2.17	984	2.43	1036	2.68	1080	2.90	1114	3.07	1135	3.17
3800	691	1.28	761	1.52	822	1.75	880	1.98	937	2.28	993	2.55	1046	2.81	1092	3.05	1129	3.25	1156	3.39
3900	705	1.37	773	1.62	834	1.86	891	2.08	947	2.39	1002	2.66	1055	2.94	1102	3.20	1143	3.42	1174	3.59
4000	720	1.47	786	1.71	847	1.97	902	2.19	957	2.50	1011	2.79	1064	3.07	1112	3.34	1155	3.59	1190	3.80
4100	734	1.56	800	1.82	860	2.09	914	2.31	967	2.60	1021	2.91	1072	3.20	1121	3.49	1165	3.76	1203	3.99
4200	749	1.66	813	1.92	873	2.21	926	2.44	978	2.71	1030	3.04	1081	3.34	1130	3.64	1175	3.92	1215	4.18
4300	764	1.77	826	2.04	886	2.33	938	2.57	989	2.83	1040	3.18	1090	3.48	1139	3.79	1185	4.08	1226	4.33
4400	778	1.88	840	2.16	899	2.46	951	2.71	1000	2.96	1050	3.31	1100	3.63	1148	3.94	1194	4.25	1236	4.54
4500	793	1.99	854	2.28	912	2.59	963	2.86	1012	3.09	1061	3.43	1109	3.78	1157	4.09	1203	4.42	1246	4.72
4600	808	2.11	868	2.42	925	2.73	975	3.00	1024	3.25	1071	3.56	1119	3.93	1166	4.25	1212	4.58	1255	4.91
4700	822	2.24	882	2.56	937	2.86	988	3.16	1036	3.42	1082	3.70	1129	4.09	1175	4.43	1221	4.76	1264	5.09
4800	837	2.37	896	2.71	950	3.00	1001	3.32	1048	3.59	1093	3.86	1139	4.24	1185	4.60	1230	4.93	1273	5.28
4900	852	2.51	910	2.86	963	3.15	1014	3.48	1060	3.76	1105	4.02	1150	4.36	1194	4.77	1239	5.12	1282	5.47
5000	867	2.65	924	3.01	977	3.30	1027	3.65	1073	3.94	1117	4.20	1161	4.54	1204	4.95	1248	5.31	1291	5.66
5100	882	2.79	938	3.17	990	3.46	1040	3.82	1085	4.12	1129	4.40	1172	4.71	1214	5.13	1257	5.51	—	—
5200	896	2.95	952	3.33	1003	3.63	1053	4.00	1098	4.30	1141	4.60	1183	4.93	1225	5.29	1267	5.70	—	—
5300	911	3.11	967	3.50	1017	3.80	1066	4.18	1111	4.50	1153	4.80	1194	5.08	1236	5.47	—	—	—	—
5400	926	3.27	981	3.68	1030	3.98	1079	4.35	1124	4.70	1166	5.01	1206	5.29	1247	5.65	—	—	—	—
5500	940	3.44	995	3.86	1044	4.17	1092	4.54	1137	4.91	1178	5.22	1218	5.52	—	—	—	—	—	—
5600	955	3.62	1010	4.04	1058	4.38	1105	4.73	1150	5.12	1190	5.44	1230	5.75	—	—	—	—	—	—
5700	970	3.80	1024	4.22	1072	4.59	1119	4.93	1163	5.34	1203	5.67	—	—	—	—	—	—	—	—
5800	985	3.99	1038	4.42	1085	4.80	1131	5.14	1176	5.56	—	—	—	—	—	—	—	—	—	—
5900	1000	4.18	1052	4.62	1100	5.02	1144	5.36	—	—	—	—	—	—	—	—	—	—	—	—
6000	1015	4.39	1066	4.83	1114	5.25	1158	5.58	—	—	—	—	—	—	—	—	—	—	—	—
6100	1030	4.59	1080	5.04	1128	5.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6200	1046	4.81	1094	5.26	1142	5.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

1. **Shaded** indicates field-supplied drive required (See Note 6)
2. **Shaded** indicates field-supplied motor and drive required
3. *Maximum usable bhp is 4.2* Extensive motor and electrical 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 horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
4. Values include losses for filters, unit casing, and wet coils
5. Use of a field-supplied motor may affect wire sizing. Contact Carrier representative to verify
6. Standard motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive
7. To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

Motor efficiency = 85

48TJ014 (12½ TONS) — ALTERNATE MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3700	677	1.20	748	1.43	810	1.65	869	1.89	928	2.17	984	2.43	1036	2.68	1080	2.90	1114	3.07	1135	3.17
3800	691	1.28	761	1.52	822	1.75	880	1.98	937	2.28	993	2.55	1046	2.81	1092	3.05	1129	3.25	1156	3.39
3900	705	1.37	773	1.62	834	1.86	891	2.08	947	2.39	1002	2.66	1055	2.94	1102	3.20	1143	3.42	1174	3.59
4000	720	1.47	786	1.71	847	1.97	902	2.19	957	2.50	1011	2.79	1064	3.07	1112	3.34	1155	3.59	1190	3.80
4100	734	1.56	800	1.82	860	2.09	914	2.31	967	2.60	1021	2.91	1072	3.20	1121	3.49	1165	3.76	1203	3.99
4200	749	1.66	813	1.92	873	2.21	926	2.44	978	2.71	1030	3.04	1081	3.34	1130	3.64	1175	3.92	1215	4.18
4300	764	1.77	826	2.04	886	2.33	938	2.57	989	2.83	1040	3.18	1090	3.48	1139	3.79	1185	4.08	1226	4.33
4400	778	1.88	840	2.16	899	2.46	951	2.71	1000	2.96	1050	3.31	1100	3.63	1148	3.94	1194	4.25	1236	4.54
4500	793	1.99	854	2.28	912	2.59	963	2.86	1012	3.09	1061	3.43	1109	3.78	1157	4.09	1203	4.42	1246	4.72
4600	808	2.11	868	2.42	925	2.73	975	3.00	1024	3.25	1071	3.56	1119	3.93	1166	4.25	1212	4.58	1255	4.91
4700	822	2.24	882	2.56	937	2.86	988	3.16	1036	3.42	1082	3.70	1129	4.09	1175	4.43	1221	4.76	1264	5.09
4800	837	2.37	896	2.71	950	3.00	1001	3.32	1048	3.59	1093	3.86	1139	4.24	1185	4.60	1230	4.93	1273	5.28
4900	852	2.51	910	2.86	963	3.15	1014	3.48	1060	3.76	1105	4.02	1150	4.36	1194	4.77	1239	5.12	1282	5.47
5000	867	2.65	924	3.01	977	3.30	1027	3.65	1073	3.94	1117	4.20	1161	4.54	1204	4.95	1248	5.31	1291	5.66
5100	882	2.79	938	3.17	990	3.46	1040	3.82	1085	4.12	1129	4.40	1172	4.71	1214	5.13	1257	5.51	—	—
5200	896	2.95	952	3.33	1003	3.63	1053	4.00	1098	4.30	1141	4.60	1183	4.93	1225	5.29	1267	5.70	—	—
5300	911	3.11	967	3.50	1017	3.80	1066	4.18	1111	4.50	1153	4.80	1194	5.08	1236	5.47	—	—	—	—
5400	926	3.27	981	3.68	1030	3.98	1079	4.35	1124	4.73	1166	5.01	1206	5.29	1247	5.65	—	—	—	—
5500	940	3.44	995	3.86	1044	4.17	1092	4.54	1137	4.91	1178	5.22	1218	5.52	—	—	—	—	—	—
5600	955	3.62	1010	4.04	1058	4.38	1105	4.73	1150	5.12	1190	5.44	1230	5.75	—	—	—	—	—	—
5700	970	3.80	1024	4.22	1072	4.59	1119	4.93	1163	5.34	1203	5.67	—	—	—	—	—	—	—	—
5800	985	3.99	1038	4.42	1085	4.80	1131	5.14	1176	5.56	—	—	—	—	—	—	—	—	—	—
5900	1000	4.18	1052	4.62	1100	5.02	1144	5.36	—	—	—	—	—	—	—	—	—	—	—	—
6000	1015	4.39	1066	4.83	1114	5.25	1158	5.58	—	—	—	—	—	—	—	—	—	—	—	—
6100	1030	4.59	1080	5.04	1128	5.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6200	1046	4.81	1094	5.26	1142	5.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

1. **Shaded** indicates field-supplied drive required (See Note 4)
2. **Shaded** indicates field-supplied motor and drive required
3. *Maximum usable bhp is 5.25* 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 horsepower rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
4. Alternate motor drive range: 900 to 1260 rpm. All other rpms require field-supplied drive
5. Values include losses for filters, unit casing, and wet coils
6. To convert bhp to watts:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

Motor efficiency = 85

FAN PERFORMANCE (cont)

48TJ028 (25 TONS) — STANDARD AND ALTERNATE MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)															
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
7,000	948	3.52	1016	3.82	1082	4.15	1150	4.51	1218	4.92	1284	5.36	1350	5.82	1412	6.29
7,500	1006	4.03	1070	4.36	1132	4.71	1194	5.10	1258	5.52	1321	5.98	1383	6.46	1443	6.97
8,000	1065	4.62	1125	4.98	1183	5.36	1242	5.76	1301	6.20	1360	6.68	1419	7.18	1477	7.72
8,500	1124	5.30	1181	5.69	1236	6.09	1291	6.51	1346	6.97	1402	7.45	1458	7.96	—	—
9,000	1183	6.06	1238	6.48	1290	6.91	1342	7.36	1393	7.83	1446	8.34	1499	8.88	—	—
9,500	1242	6.92	1295	7.38	1345	7.83	1394	8.30	1443	8.79	1492	9.32	—	—	—	—
10,000	1302	7.88	1353	8.37	1401	8.85	1447	9.34	1493	9.86	—	—	—	—	—	—
10,500	1362	8.94	1411	9.47	1457	9.98	—	—	—	—	—	—	—	—	—	—
11,000	1421	10.11	1469	10.67	—	—	—	—	—	—	—	—	—	—	—	—
11,250	1451	10.74	1498	11.32	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake horsepower input to fan

NOTES:

- Boldface** indicates factory-supplied 7½ hp motor and drive
- Shaded** indicates factory-supplied 10 hp motor and drive
- Fan performance data that is not shaded or in boldface indicates field-supplied drive
- Fan performance is based on wet coils, clean filters, and casing losses
- Refer to Physical Data table for condenser fan watts input
- Static pressure losses must be added to external static pressure before entering Fan Performance table
- To convert Bhp to watts use the following equation:

$$\text{Watts input} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

Motor efficiencies: Horsepower — Maximum Continuous Bhp

7½ Hp — 0.83 7½ — 8.7 (208/230 v)

10 Hp — 0.87 9.5 (460 v)

10 — 10.2 (208/230 v)

11.8 (460 v)

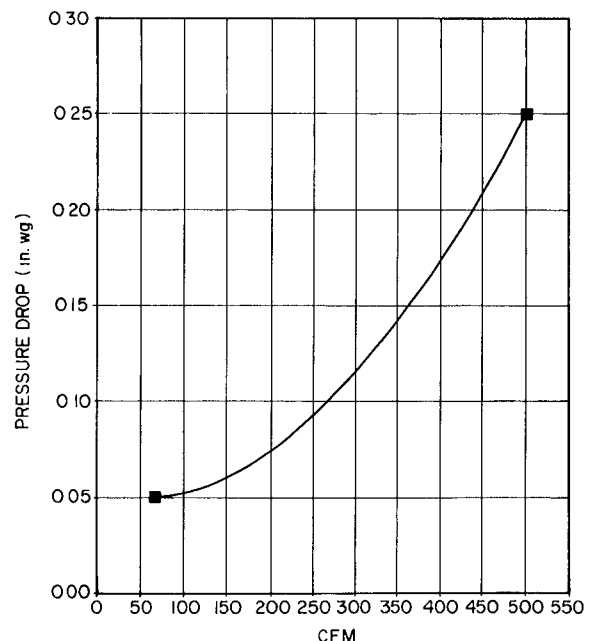
- Extensive motor and drive testing on these units ensures that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the horsepower rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

ACCESSORY/FIOP ECONOMIZER STATIC PRESSURE DROP (in. wg)

UNIT 48TJ	UNIT VOLTAGE	CFM	ECONOMIZER
004-007	All	900	.05
		1,200	.05
		1,400	.05
		1,600	.05
		1,800	.05
		2,000	.05
		2,200	.05
		2,400	.05
008-014	All	2,600	.05
		2,200	.02
		2,500	.02
		3,000	.03
		3,500	.04
		4,000	.05
		4,500	.06
		5,000	.07
016	All	5,500	.08
		6,000	.09
		4,000	.03
		5,000	.05
020-028	All	6,000	.07
		7,000	.09
		8,000	.10
		9,000	.11
		10,000	.12
		11,000	.13

FIOP — Factory-Installed Option

ECONOMIZER BAROMETRIC RELIEF DAMPER CHARACTERISTICS — 48TJ004-014



Performance data (cont)

FAN RPM AT FAN PULLEY SETTINGS, 48TJ004 – VARIABLE MOTOR PULLEY

UNIT 48TJ	MOTOR/DRIVE	MOTOR PULLEY TURNS OPEN										
		0	½	1	1½	2	2½	3	3½	4	4½	5
004	Alt	790	767	744	721	697	674	651	628	604	581	558

FAN RPM AT FAN PULLEY SETTINGS, 48TJ004 – VARIABLE FAN PULLEY

UNIT 48TJ	MOTOR/DRIVE	FAN PULLEY TURNS OPEN										
		0	½	1	1½	2	2½	3	3½	4	4½	5
004	Alt	936	964	994	1026	1061	1097	1136	1179	1224	1273	1326

FAN RPM AT MOTOR PULLEY SETTINGS* – 48TJ005-016

UNIT 48TJ	MOTOR PULLEY TURNS OPEN												
	0	½	1	1½	2	2½	3	3½	4	4½	5	5½	6
005†	1310	1275	1240	1210	1175	1140	1106	1070	1040	1005	970	—	—
006†	1300	1260	1220	1180	1140	1100	1060	1020	980	940	900	—	—
007**	1460	1421	1382	1343	1304	1265	1230	1187	1148	1109	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**	1161	1134	1108	1081	1055	1028	1002	975	949	922	896	—	—
016†	1407	1380	1353	1327	1300	1274	1274	1221	1194	1168	1141	—	—

*Approximate fan rpm shown

†Indicates alternate motor and drive package.

**Indicates standard motor and drive package.

††Indicates alternate drive package only

SOUND POWER (Total Unit) – 48TJ004-014

UNIT 48TJ	SOUND RATING (60 Hz)	OCTAVE BANDS							
		63	125	250	500	1000	2000	4000	8000
004-006	8.2 Bels	56.8	75.8	72.4	72.9	74.8	75.4	71.3	69.1
007	8.4 Bels	56.0	69.8	72.9	75.9	78.3	76.5	72.6	67.9
008-009	8.6 Bels	83.2	87.4	83.5	82.8	83.0	77.7	71.8	67.0
012	8.8 Bels	97.6	90.4	85.7	84.8	83.9	77.5	71.3	65.8
014	8.8 Bels	83.7	87.2	83.4	82.8	83.0	77.7	71.8	67.0

LEGEND

ARI — Air Conditioning & Refrigeration Institute

Bels — Sound Levels (1 bel = 10 decibels)

Electrical data — 48TJ016-028

UNIT 48TJ	NOMINAL VOLTAGE (60 Hz)	IFM TYPE	VOLTAGE RANGE		COMPRESSOR				OFM		IFM		COMBUSTION FAN MOTOR††	POWER SUPPLY		
					NO. 1		NO. 2									
			Min	Max	RLA	LRA	RLA	LRA	QUANTITY	FLA (ea)	Hp*	FLA		FLA	MCA	MOCP†
016	208/230 (3 phase)	Std	187	254	61.0	266	—	—	2	5.4	3.0	10.5/10.5	90	98/98	150/150	
		Alt									3.7	12.0/12.0	.90	99/99	150/150	
	460 (3 phase)	Std	414	508	28.6	120	—	—	2	2.7	3.0	4.8	.57	46	70	
		Alt									3.7	5.0	.57	46	70	
	575 (3 phase)	Std	518	632	22.9	96	—	—	2	2.6	3.0	3.8	90	38	60	
		Alt														
	020,024	208/230 (3 phase)	Std	187	254	34.5	239	28.3	205	2	5.5	5	16.7/15.2	.57	99/98	125/125
			Alt									7½**	24.2/22.0	.57	107/104	125/125
460 (3 phase)		Std	414	508	17.0	119	14.4	104	2	2.8	5	7.6	.57	49	60	
		Alt									7½**	11.0	.57	52	60	
575 (3 phase)		Std	518	632	15.2	111	11.4	78	2	3.4	5	6.1	.57	43	50	
		Alt									7½**	9.0	.57	46	60	
028		208/230 (3 phase)	Std	187	254	43.6	228	—	—	2	5.5	7½	24.2/22.0	.57	133/131	175/150
			Alt									10	30.8/28.0	.57	140/137	175/175
	460 (3 phase)	Std	414	508	22.1	114	—	—	2	2.8	7½	11.0	.57	66	80	
		Alt									10	14.0	.57	69	90	
	575 (3 phase)	Std	518	632	17.9	91	—	—	2	3.4	7½	9.0	.57	56	70	
		Alt									10	11.0	.57	57	70	

LEGEND

CSA — Canadian Standards Association
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

*Used to determine minimum disconnect size per NEC.

†Fuse or HACR circuit breaker.

**The 7½ hp motor is not available on the 48TJ020 units. The 5 hp motor is standard.

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

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.

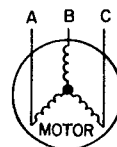
$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60

AB = 452 v

BC = 464 v

AC = 455 v



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

NOTE: The 575-v units are CSA only

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.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457} = 1.53\%$$

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.



004-014 Only



016-028 Only



020-028 Only



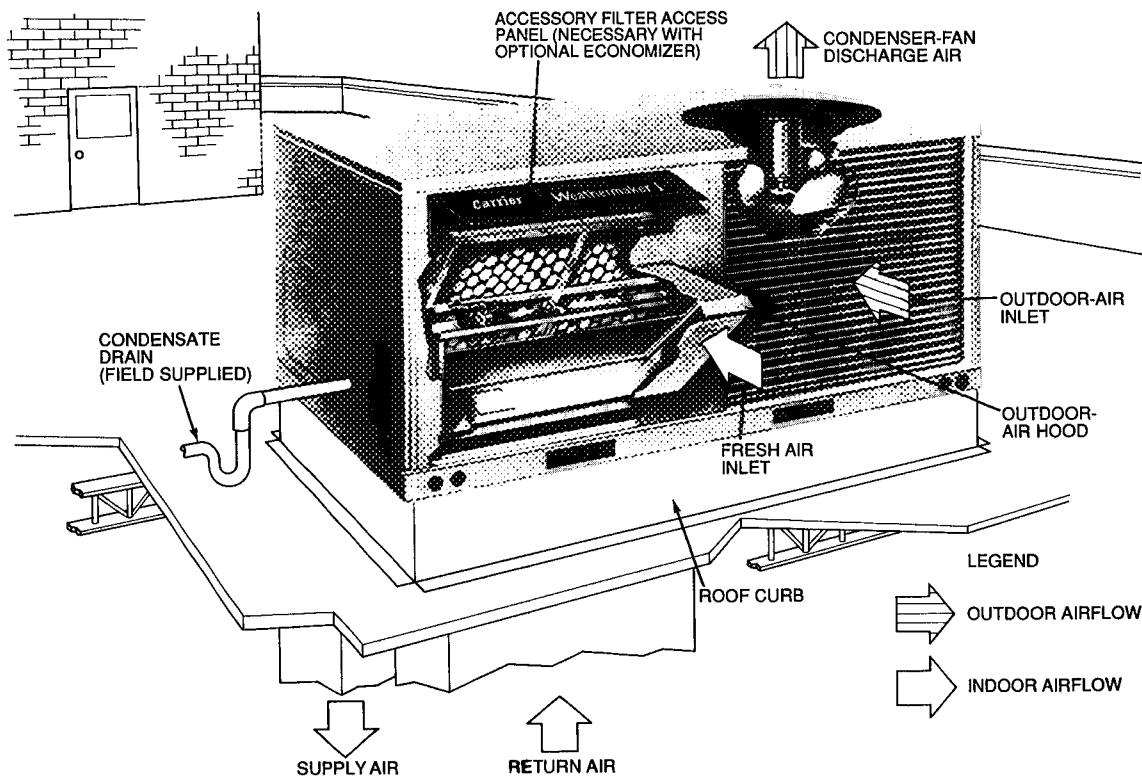
016 Only

NOTES:

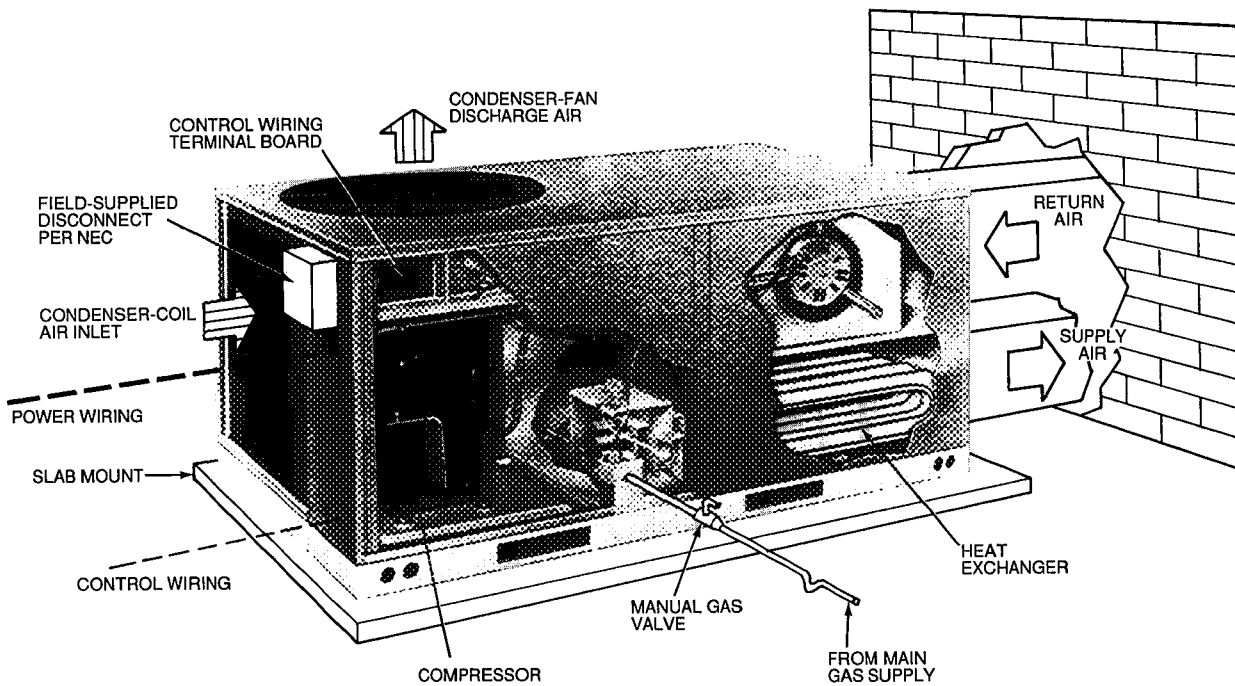
- In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. CSA units may be fuse or circuit breaker.

Typical piping and wiring — 48TJ004-014

VERTICAL DISCHARGE DUCTING

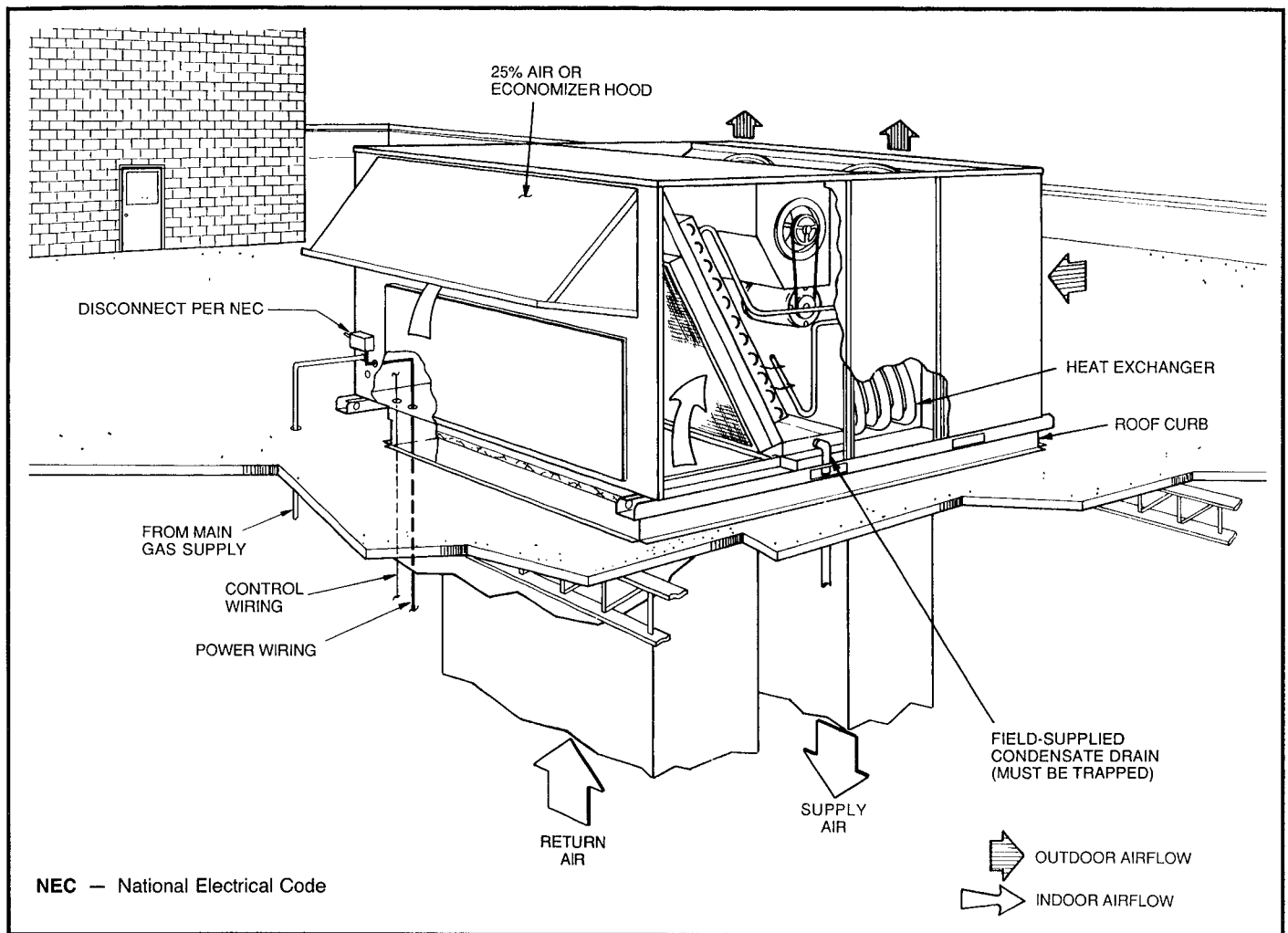


HORIZONTAL DISCHARGE DUCTING



NEC — National Electrical Code

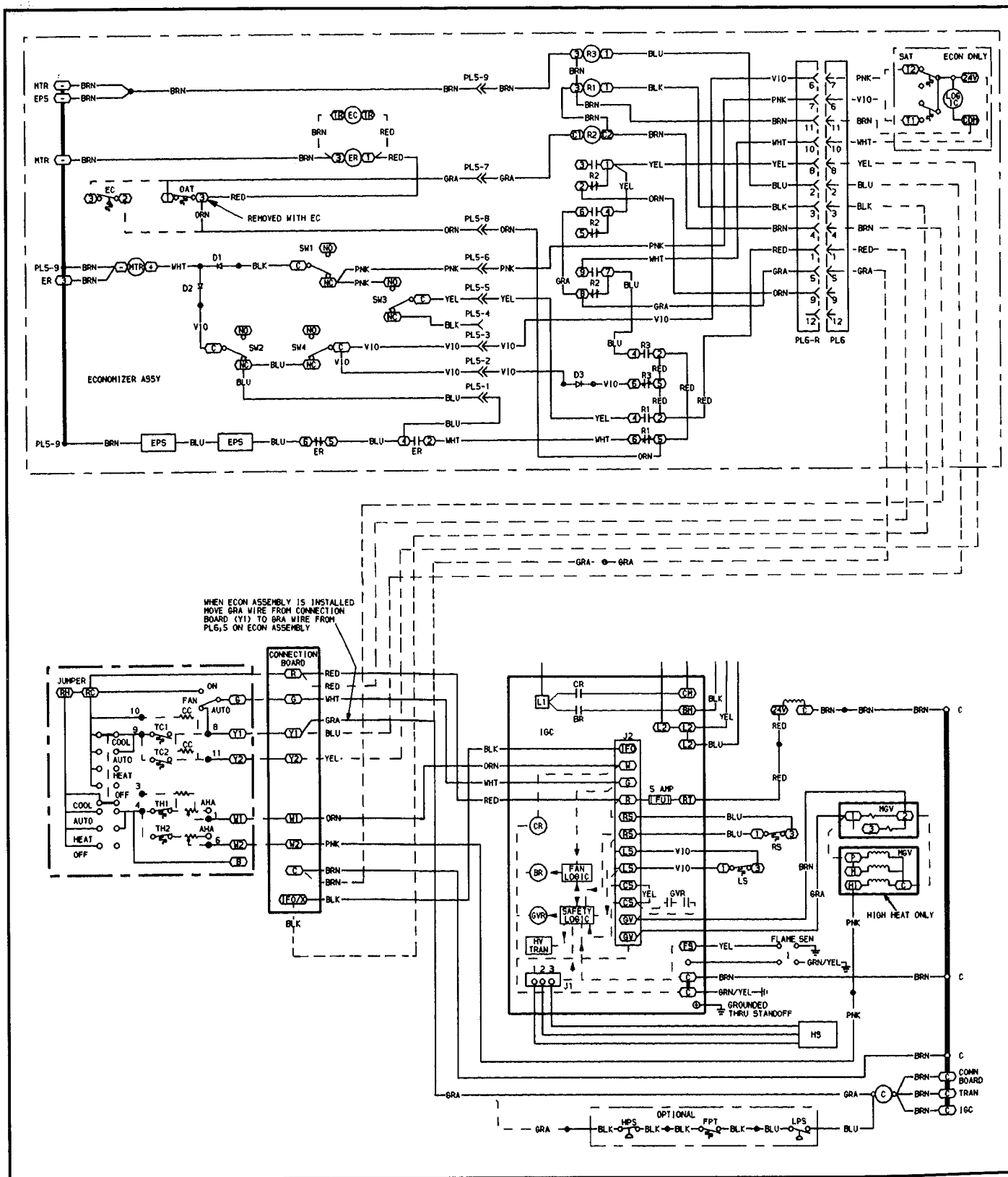
Typical piping and wiring — 48TJ016-028



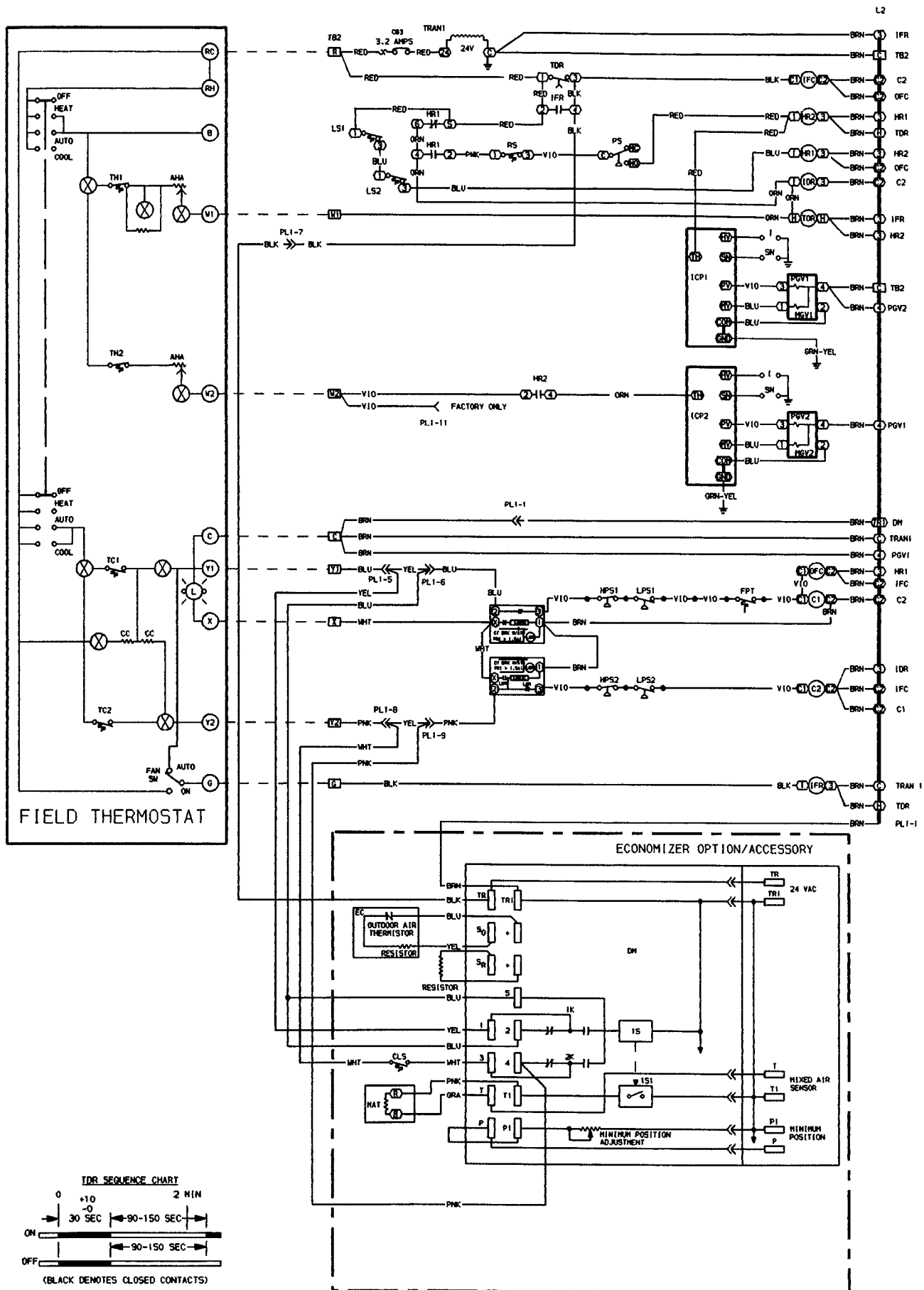
LEGEND FOR TYPICAL CONTROL WIRING SCHEMATIC

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

Typical wiring schematic — 48TJ004-014



Typical wiring schematic — 48TJ016-028



Controls

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 start. The condenser-fan motor 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 (48TJ004-014 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.

Turn unit power on. Open manual gas line valve. Set thermostat system switch at HEAT or AUTO. position and set fan switch to AUTO. position for heating.

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

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 igniter 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 — 48TJE024,028HIGH-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 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 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. 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 economizer (48TJ016-028) — Upon a call for cooling, when outdoor ambient is above the enthalpy 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 enthalpy control setting, the evaporator fan starts and the economizer is fully open. 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.

Application data

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 48 for information on field-installed concentric ductwork when applicable.

To convert 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.

IMPORTANT: On horizontal discharge units equipped with economizer, the air filters **MUST** be installed external to the unit, or economizer will have to be partially removed.

Thru-the-curb service connections — Roof curb connections allow field power wires, control wires, and gas supply to enter through the roof curb opening.

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.

Minimum ambient cooling operation temperature (48TJ004-014) — The cooling temperature for size 004-014 standard units is 25 F. With accessory Motormaster® control (for unit sizes 004-007) or Motormaster II control (for unit sizes 004-014), 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, 25 F for 48TJ020 and 024, and 48 F for 48TJ028. To operate at lower outdoor-air temperatures, accessory outdoor-air thermostat or outdoor-air thermostat and accessory Motormaster® head pressure control device are required. See Minimum-Ambient Temperature Cooling Operation table on next page for operating limits.

Maximum operating outdoor-air temperature — For cooling, this temperature is 115 F.

High altitude — A change to the gas orifice may be required at high altitudes. Refer to Altitude Compensation charts on page 39.

Minimum temperature — Air entering the heat exchanger in heating is 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.

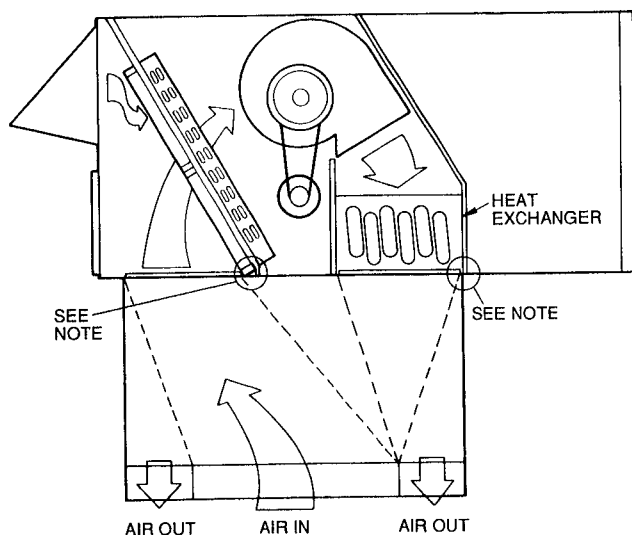
Application data (cont)

MINIMUM-AMBIENT TEMPERATURE COOLING OPERATION

UNIT 48TJ	OUTDOOR COOLING TEMPERATURE (F)		
	Base Unit	With Accessory OAT.	With Accessory OAT. and Motormaster® Head Pressure Control
016	40	25	-20
020,024	25	—	-20
028	48	35	-20

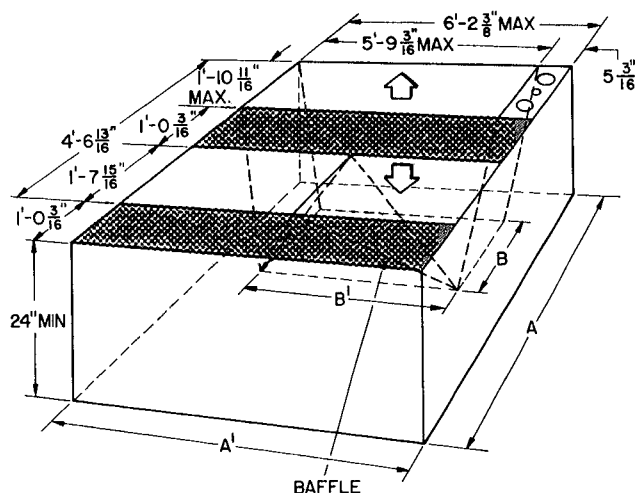
OAT. — Outdoor-Air Thermostat

CONCENTRIC DUCT AIR DISTRIBUTION



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

CONCENTRIC DUCT DETAILS



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

Shaded area indicates block-off panels

Guide specifications — 48TJ004-014 (cont)

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.

I. Controls and Safeties:

1. Unit Controls:

Unit shall be complete with self-contained low-voltage control circuit protected by a manual-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 suction 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. Roof Curb:

- a. Formed galvanized steel with wood nailer strip and capable of supporting entire unit weight.
- b. Allows for installing and securing ductwork to curb prior to mounting unit on the curb.

* 2. Integrated Economizer:

- a. Integrated type capable of simultaneous economizer and compressor operation.
- b. Includes all hardware and controls to provide cooling with outdoor air.
- c. Equipped with a single sliding-plate, gravity relief, low-leakage type damper.
- d. Capable of introducing up to 100% outdoor air.

* 3. Manual Outdoor-Air Damper:

Manual damper package shall consist of damper, birdscreen, and rainhood which can be preset to admit up to 25% outdoor air for year round ventilation.

* 4. 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 fan shutoff.

* 5. Solid-State Enthalpy Control:

- a. For use with 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.

* 6. 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.

* 7. 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 either condenser-fan speed modulation (004-007) or condenser-fan cycling (004-014).

* 8. 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.

9. 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.
- * 10. Thru-the-Curb Service Connections:
Allow gas and electrical connections to be brought to the unit through the roof curb.
- * 11. Electronic Programmable Thermostat:
Capable of using deluxe full-featured electronic thermostat.
- * 12. Flue Shield
Provides protection from the hot sides of the gas flue hood.
- * 13. Thermostat and Subbase:
Provides staged cooling and heating automatic (or manual) changeover, fan control, and indicator light.
14. Condenser Coil Hail Guard Assembly:
Hail guard shall protect against damage from hail and flying debris.
15. NO_x Reduction Kit.
Package shall contain all necessary hardware and instructions to convert a standard natural gas unit to reduce the nitrous oxide (NO_x) emissions to a level of 40 nanograms/joule.
- * 16. Filter Door Access Panel Kit.
Package shall contain all necessary hardware and instructions to install hinged access door and shall provide filter access with no panel or screw removal.
17. 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.
- * 18. Economizer Upgrade Package:
Damper blade shall close automatically when power failure occurs.
19. Alternate Motor(s) and Drive(s):
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. External Filter Package:
a. For use with economizer on horizontal discharge units
b. Package shall contain all necessary hardware and instructions to install filter external to the unit.
22. Condenser Coil Grille:
The grille protects the condenser coil from damage by large objects without increasing unit clearances

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Hail guard shall protect against damage from hail and flying debris.

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The grille protects the condenser coil from damage by large objects without increasing unit clearances.

Guide specifications — 48TJ016-028

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

HVAC Guide Specifications

Size Range: **15 to 25 Tons, Nominal (Cooling)**
115,500 — 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 (016,028) or hermetic (020,024) compressor(s) for cooling duty and gas combustion for heating duty. Supply air shall be discharged downward or horizontally (with horizontal supply/return adapter curb assembly), as shown on contract drawings. Standard unit shall include a manual outdoor-air inlet.

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standards 270 and 360 and designed with UL 1995.
- B. Unit shall be designed to conform to ANSI B9.1.
- C. Unit shall be ETL-tested and certified in accordance with ANSI Z21.47 Standards as a total package
- D. Unit shall be CSA (016) or Warnock Hersey (020-028) listed
- E. Roof curb shall be designed to conform to NRCA Standards
- F. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation
- G. Unit casing shall be capable of withstanding Federal test method Standard No. 141 (Method 6061) 500-hour salt spray test

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. Unit shall be mounted on full perimeter roof curb.

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 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 (016) or a fixed-pitch (020-028) 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
 - c. Lubricate fan shaft bearings at least once a year.
2. Condenser fan shall be of the direct-driven propeller type, with corrosion-resistant blades riveted to corrosion-resistant steel supports. It 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 or hermetic compressor(s) has factory-installed external spring vibration isolation (016,028), or shall be factory rubber-shock mounted and internally spring mounted (020,024) for vibration isolation.
2. Factory-installed crankcase heater prevents refrigerant dilution of oil (016,028)
3. The semi-hermetic compressor shall have unloading capability (016 only).
4. 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 12 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 gage connection on suction, discharge, and liquid lines
- 3 Acutrol™ feed system

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 (020-028)
- 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 protector 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 (020-028).
- c Heating section shall be provided with the following minimum protections.
 - 1) High-temperature limit switch.
 - 2) Induced-draft motor pressure switch.
 - 3) Flame rollout switch (manual reset)
 - 4) Flame proving controls
 - 5) Redundant gas valve(s).

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 to 40 F on 48TJ016 units, to 25 F ambient on 020 and 024 units, and to 48 F ambient on 028 units
3. Unit 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. The 48TJ016 and 028 compressor motors shall be of the refrigerant cooled type with thermal and current overload protection. The 48TJ020 and 024 compressor motors shall be cooled by refrigerant passing through motor windings and shall have line break thermal and current 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, your local Carrier Sales Office should be contacted

1. Roof Curb:

- a. Formed of 16-gage galvanized steel with wood nailer strip and capable of supporting entire unit weight.
- b Allows for installing and securing ductwork to curb prior to mounting unit on the curb.

* 2. 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

* 3. 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.

4. Accessory Compressor Cycle Delay:

Compressor shall be prevented from restarting for a minimum of 5 minutes after shutdown

* 5. Thermostat and Subbase:

To provide staged heating and cooling in addition to automatic (or manual) changeover and fan control.

* 6. 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.

* 7. Power Exhaust:

Package shall include an exhaust fan, motor, and damper for vertical flow units with economizer to control overpressurization of building.

* 8. 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

Guide specifications — 48TJ016-028

- 9. Outdoor-Air Thermostat:
When used either alone or in conjunction with head pressure control package, allows unit to operate at lower outdoor ambient temperatures.
- * 10 Solid-State Enthalpy Control:
 - a. For use with economizer package only.
 - b. Capable of sensing outdoor-air enthalpy content (temperature and humidity) and controlling economizer cut-in point to have minimum heat content air passing over the evaporator coil for most efficient system operation.
- * 11 Differential 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.
- * 12 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.
- * 13. Electronic Programmable Thermostat:
Capable of using deluxe full-featured electronic thermostat.
- 14 Alternate Motors and Drives:
Alternate motors and drives shall be factory-installed to provide additional performance range.

Carrier Corporation • Syracuse, New York 13221

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Form 48TJ-2APD
Replaces: 48TJ-1APD