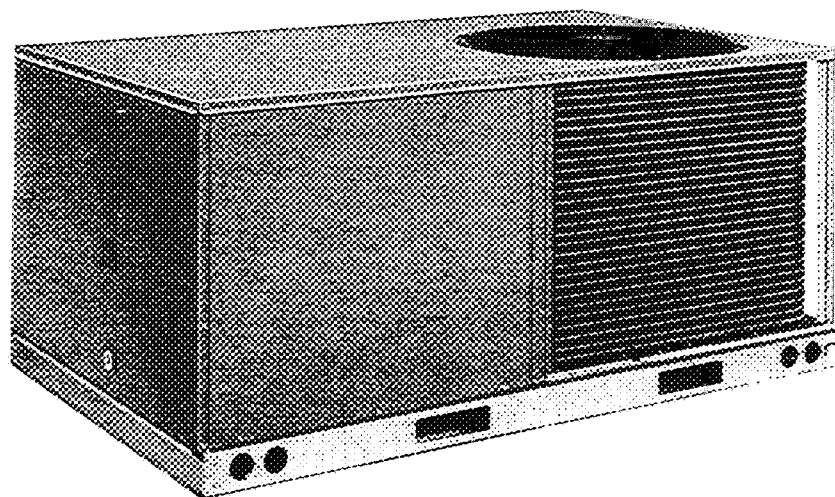




Product Data

48LJD/LJE Single-Package Rooftop Units Electric Cooling/Gas Heating

3 to 12-1/2 Nominal Tons



Single-Package Rooftop Units with the Following Features as Standard:

- 2-in. return-air filters
- direct spark ignition
- induced-draft fan
- Turbo-tubular™ heat exchangers
- full-perimeter base rails
- corrosion resistant condensate pan
- refrigerant strainers
- galvanized steel cabinet with painted protection
- motors with permanently lubricated ball bearings
- multi-pass heat exchanger
- totally enclosed condenser-fan motors

Features/Benefits

Compact, vertical discharge units convert to horizontal discharge, combining installation flexibility with efficient performance and easy maintenance

Easy maintenance and installation

All units are factory shipped in the vertical discharge configuration for fit-up to standard roof curbs. (One accessory curb fits sizes 004-007; another accessory curb fits sizes 008-014.) The contractor can order and install the roof curbs early in the construction stage, before decisions on size requirements are made.

All units feature roll-formed baserail design with forklift slots and rigging holes for easier maneuvering. Stretch-wrap packaging protects the unit during shipment and storage.

Imprints on side panel of unit provide location for convenient conversion from vertical to horizontal discharge at the jobsite.

Ductwork connections are made easy by the logical 2 to 1 aspect ratio. On vertical discharge units, ductwork attaches directly to the roof curb. Accessory thru-the-curb service connections allow power, gas and control wiring to be routed through the curb, thereby minimizing roof penetrations. Both power and control connections are made on the same side of the unit to simplify installation.

Rounded corners on panels help to prevent damage or puncture of roof materials. Weather-resistant cabinet is coated with a prepainted enamel finish to ensure long life and attractive appearance, and can withstand Federal test method Standard No. 141 (Method 6061) 500-hour salt spray test.

Quiet, efficient operation and dependable performance

Compressors are fully hermetic with internal vibration isolators and mufflers for extremely quiet operation. Efficient condenser fan and motor design permits operation at a low sound power of 8.2 bels for sizes 004-007, 8.6 bels for sizes 008 and 009, and 8.8 bels for sizes 012 and 014.

All coils use state-of-the-art internally enhanced copper tubing. Condenser coils have louvered aluminum fins providing maximum heat transfer for optimum efficiency.

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, turbolators inside the heat exchanger tube act as baffles, forcing the hot gases to stay in close contact with the cell walls and improving heat transfer.

The induced-draft combustion system eliminates the unsightly appearance of flue stacks, and diminishes the effects of winds on heating operation. The inducer fan draws hot combustion gas through the heat exchanger at the optimum rate for the most effective heat transfer.

The direct-spark ignition system saves operating expense when compared to old-style pilot ignition systems. No crossover tube is required, therefore no sooting or pilot fouling problems can occur. All ignition components are contained in a compact module that is easily accessi-

ble for service. Standard units are designed for natural gas. An LP (liquid propane) conversion kit is available as an accessory, if required.

The control system is readily adaptable to all conventional and programmable thermostats. In addition, units are suitable for integration into monitor control systems if required.

Compressor overcurrent and overtemperature protection assures dependability. Crankcase heater prevents refrigerant dilution of oil during off cycles, ensuring proper lubrication at startup and prolonging compressor life. Carrier's exclusive Acutrol™ metering device precisely

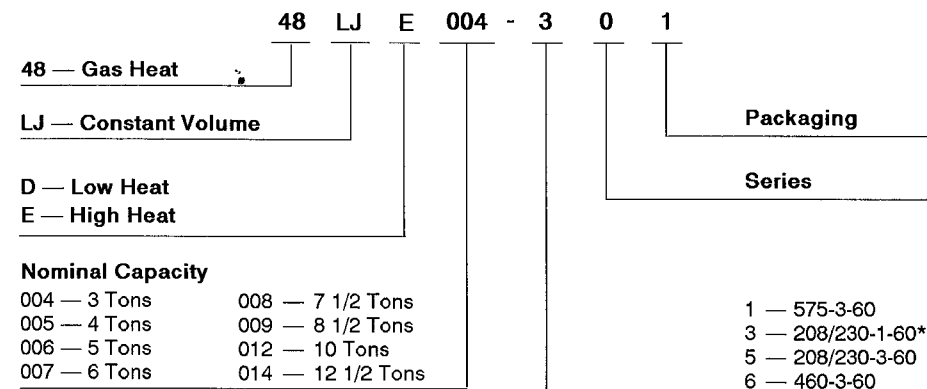
controls refrigerant flow, preventing slugging and floodback, while maintaining optimum unit performance.

Accessory Varislide™ economizer permits low-cost operation by utilizing cool outdoor air for free cooling. Reliable sliding plate damper is easily adjusted for 100% outdoor air, 100% return air or any proportions of mixed air. Economizer operation is controlled by Accusensor™ I dry-bulb thermostat which senses outdoor-air temperature. Optional accessory upgrade kits include Accusensor™ II solid-state enthalpy control and Accusensor™ III differential enthalpy control.

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Model number nomenclature



*5-Ton unit motor is 230-1-60 only.

ARI* capacities

UNIT MODEL 48	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITY (Btuh)		TOTAL kW	SEER†		EER	SOUND RATING (Bels)
			Single-Phase Units	Three-Phase Units		With Timer**	Without Timer		
LJE004	3	1200	36,000	35,800	4.0	10.30	10.00	9.00	8.2
LJD/LJE005	4	1600	48,500	48,500	5.4	10.15	9.80	8.95	8.2
LJD/LJE006	5	2000	61,000	60,500	6.8	10.20	9.95	8.95	8.2

UNIT MODEL 48	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITY (Btuh)	TOTAL kW	EER	SOUND RATING (Bels)	IPLV
LJD/LJE007	6	2100	72,000	8.0	9.00	8.2	††
LJD/LJE008	7½	2600	90,000	9.9	9.10	8.6	9.70
LJD/LJE009	8½	3000	100,000	10.9	9.15	8.6	9.45
LJD/LJE012	10	3500	119,000	13.2	9.00	8.8	9.75
LJD014	12½	4500	142,000	16.5	8.60	8.8	8.85

LEGEND

Bels — Sound Levels (1 bel = 10 decibels)
EER — Energy Efficiency Ratio
IPLV — Integrated Part-Load Value
SEER — Seasonal Energy Efficiency Ratio

*Air-Conditioning & Refrigeration Institute.

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

**SEER ratings with timer are made using time delay relay part number HN67SK031.

††The IPLV does not apply to single-compressor units.

Rated in accordance with ARI Standards 210/240-89 or 360-86 (014 units) 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 outdoor entering-air temperature.

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 MODEL 48	HEATING INPUT (Btuh)	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (°F)	AFUE (%)	STEADY-STATE EFFICIENCY (%)	CALIFORNIA SEASONAL EFFICIENCY (%)
LJE004	74,000	59,200	25-55	80	80	77.2
LJD005	74,000	59,200	25-55	80	80	77.2
LJE005	115,000	92,000	35-65	80	80	77.1
LJD006	74,000	59,200	25-55	80	80	77.2
LJE006	115,000	92,000	35-65	80	80	77.1
LJD007	74,000	59,200	25-55	80	80	77.2
LJE007	115,000	92,000	35-65	80	80	77.1

UNIT MODEL 48	HEATING INPUT (Btuh)	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (°F)	AFUE (%)	STEADY-STATE EFFICIENCY (%)	CALIFORNIA SEASONAL EFFICIENCY (%)
	First Stage/Second Stage	First Stage/Second Stage				
LJD008	125,000	100,000	20-50	80	80	75.8
LJE008	120,000/180,000	96,000/144,000	35-65	80	80	77.1
LJD009	125,000	100,000	20-50	80	80	75.8
LJE009	120,000/180,000	96,000/144,000	35-65	80	80	77.1
LJD012	120,000/180,000	96,000/144,000	35-65	80	80	77.1
LJE012	180,000/225,000	144,000/180,000	35-65	80	80	77.1
LJD014	180,000/225,000	144,000/180,000	35-65	80	80	77.1

LEGEND

AFUE — Annual Fuel Utilization Efficiency

NOTE: NO_x levels are 40 nanograms/joule with accessory kit



Physical data

BASE UNIT 48	LJE004	LJD/LJE005	LJD/LJE006	LJD/LJE007
NOMINAL CAPACITY	3	4	5	6
OPERATING WEIGHT (lb)				
Unit	530	540	560	615
With Economizer	564	574	594	649
Roof Curb	115	115	115	115
COMPRESSOR			Hermetic	
Quantity	1	1	1	1
Oil (oz)	55	55	70	65
REFRIGERANT TYPE			R-22	
Operating Charge (lb-oz)	6-0	7-6	8-3	9-12
CONDENSER FAN			Propeller	
Quantity...Diameter (in.)	1.. 26	1.. 26	1.. 26	1.. 26
Nominal Cfm	4600	4100	4100	4100
Motor Hp...Rpm	1/3 .850	1/3 .850	1/3 .850	1/3 .850
CONDENSER COIL		Enhanced Copper Tubes, Aluminum Lanced Fin		
Rows...Fins/in.	1.. 17	2.. 17	2.. 17	2.. 17
Total Face Area (sq ft)	12 25	12 25	12 25	12 25
EVAPORATOR FAN			Centrifugal	
Size (in.)	10 x 10	10 x 10	10 x 10	10 x 10
Type Drive	Direct	Direct	Belt	Belt
Nominal Cfm	1200	1600	2000	2400
Maximum Continuous Bhp	34	81	1.70	2.40
Motor Frame	48	48	56	56
Nominal Rpm High/Low	860/845	1080/970	—	—
Fan Rpm Range	—	—	875-1190	1070-1460
Motor Bearing Type	Ball	Ball	Ball	Ball
Maximum Fan Rpm	2100	2100	2100	2100
Motor Pulley Pitch Diameter A/B (in.)	—	—	2 8/3 8	2 8/3 8
Fan Pulley Pitch Diameter (in.)	—	—	5 5	4 5
Belt — Type...Length (in.)	—	—	A.. 40	A.. 39
Pulley Center Line Distance (in.)	—	—	14 7-15 5	14 7-15 5
Speed Change Per Full Turn of	—	—	—	—
Movable Pulley Flange (rpm)	—	—	63	79
Movable Pulley Maximum Full	—	—	5	5
Turns from Closed Position	—	—	—	—
Factory Setting — Full Turns Open	—	—	3	3
Factory Speed Setting (rpm)	—	—	1005	1230
Fan Shaft Diameter at Pulley (in.)	—	—	5/8	5/8
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
FURNACE SECTION				
Burner Orifice Diameter (in. ...drill size)*				
Natural Gas — Std	113. 33	113 33	113 33	113 33
Liquid Propane — Alt	089 43	.089.. 43	.089 43	089 43
Thermostat Heat Anticipator Setting (amps)				
208/230/460 v	1.0	1 0	1 0	1 0
Gas Input	74,000	74,000/115,000	74,000/115,000	74,000/115,000
Efficiency (Steady State) (%)	80	80	80	80
Temperature Rise Range	25-55	25-55/35-65	25-55/35-65	25-55/35-65
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
Maximum Static Pressure (in. wg)	.75	.75	.75	.75
Field Gas Connection Size (in.)	5	5	5	5
OUTDOOR-AIR INLET SCREENS			Cleanable	
Quantity...Size (in.)			1 20 x 24 x 1	
RETURN-AIR FILTERS			Disposable	
Quantity...Size (in.)			2 16 x 25 x 2	

LEGEND

Bhp — Brake Horsepower

*The 48LJD005-007 and 48LJE004 (74,000 Btuh) units have 2 burners.
The 48LJE005-007 (115,000 Btuh) units have 3 burners

BASE UNIT 48	LJD/LJE008	LJD/LJE009	LJD/LJE012	LJD014
NOMINAL CAPACITY (tons)	7½	8½	10	12½
OPERATING WEIGHT (lb)				
Unit	870	880	1035	1050
With Economizer	914	924	1079	1094
Roof Curb	143	143	143	143
COMPRESSOR			Hermetic	
Quantity	2	2	2	2
Oil (oz) (each compr)	55	55	70	65
REFRIGERANT TYPE			R-22	
Operating Charge (lb-oz)				
Circuit 1	7- 0	7-0	9-7	8- 3
Circuit 2	5-12	6-2	8-6	8-11
CONDENSER FAN			Propeller	
Quantity...Diameter (in.)	1 .26	1 .26	1 .26	1 .26
Nominal Cfm	6500	6500	7000	8200
Motor Hp...Rpm	¾ ..1100	¾ 1100	¾ 1100	¾ 1100
CONDENSER COIL		Enhanced Copper Tubes, Aluminum Lanced Fins		
Rows...Fins/in.	2 ..17	2...17	2...17	2...17
Total Face Area (sq ft)	18 0	20 5	25 0	25 0
EVAPORATOR FAN		Centrifugal		
Size (in.)	15 x 15	15 x 15	15 x 15	15 x 15
Type Drive	Belt	Belt	Belt	Belt
Nominal Cfm	3000	3400	4000	5000
Maximum Continuous Bhp	2.40	2.40	2.40	4.20
Motor Frame	56	56	56	56
Fan Rpm Range	590-840	690-935	690-935	860-1080
Motor Bearing Type	Ball	Ball	Ball	Ball
Maximum Fan Rpm	2100	2100	2100	2100
Motor Pulley Pitch Diameter				
A/B (in.)	2 4/3 4	2 4/3 4	2 8/3 8	4 0/5 0
Fan Pulley Pitch Diameter (in.)	7.0	7 0	7 0	8.0
Belt — Type...Length (in.)	A.. 48	A...48	A.. 51	A.. 57
Pulley Center Line Distance (in.)	16 75-19 25	16 75-19.25	18 25-20 75	18 25-20 75
Speed Change per Full Turn of Movable Pulley Flange (rpm)	50	50	50	44
Movable Pulley Maximum Full Turns from Closed Position	5	5	5	5
Factory Setting — Full Turns Open	5	5	5	5
Factory Speed Setting (rpm)	590	690	690	860
Fan Shaft Diameter at Pulley (in.)	1	1	1	1
EVAPORATOR COIL		Enhanced Copper Tubes, Aluminum Double-Wavy Fins		
Rows...Fins/in.	3...15	3.. 15	3 . 15	4 15
Total Face Area (sq ft)	8 0	8 0	10 0	11 1
FURNACE SECTION				
Burner Orifice Diameter (in. ...drill size)				
Natural Gas — Std	120 .31/ 120 31	120 31/ 120 31	120 31/ 120 31	120 31
Liquid Propane — Alt	096 41/ 096 41	096 41/ 096. 41	096 41/ 096 41	096 41
Thermostat Heat Anticipator Setting (amps)				
208/230/460-v Stage 1	1 0	1 0	1 0	1 0
Stage 2	0 6	0 6	0 6	0 6
Gas Input	125,000/120,000-180,000	125,000/120,000-180,000	120,000-180,000/180,000-225,000	180,000-225,000
Efficiency (Steady State) (%)	80	80	80	80
Temperature Rise Range	20-50/35-65	20-50/35-65	20-50/35-65	35-65
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
Maximum Static Pressure (in. wg)	1.0	1 0	1 0	1.0
Field Gas Connection Size (in.)	5/ 75	5/ 75	75/ 75	75
OUTSIDE-AIR INLET SCREENS			Cleanable	
Quantity...Size (in.)			1 20 x 25 x 1	
			1. 16 x 25 x 1	
RETURN-AIR FILTERS			Disposable	
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

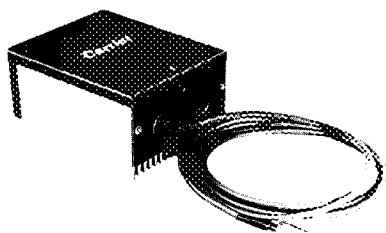
Field-installed accessories

ITEM
Economizer
Manual Outdoor-Air Damper
Two-Position Damper
Filter Access Panel Kit
Roof Curb
Thru-the-Curb Service Connections
Flue Shield
Thermostat and Subbase
Electronic Programmable Thermostat
Time Guard® II Control Circuit
Motormaster® Head Pressure Control (004-007)
Motormaster® II Head Pressure Control (004-014)
Accusensor™ II Enthalpy Control
Accusensor™ III Differential Enthalpy Sensor
LP Conversion Kit
Hail Guard
Remote Control Panel
No _x Reduction Kit
External Filter Package
Cycle-LOC™ Compressor Protection Device
Duct Cover Package

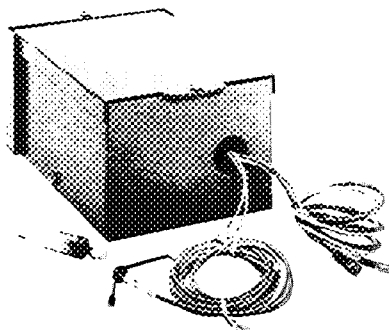
NOTE: Alternate motors and drives are available through Replacement Components Division. Contact your local Carrier representative for more information.

HEAD PRESSURE CONTROL

The 48LJ004-014 standard units are designed to operate in cooling at outdoor temperatures down to 25 F. With accessory Motormaster (48LJ004-007) control (condenser-fan speed modulation) or Motormaster II (48LJ004-014) 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.

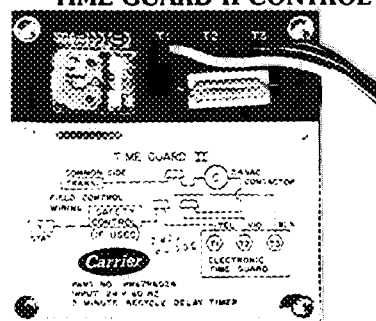


Motormaster (unit sizes 004-007)



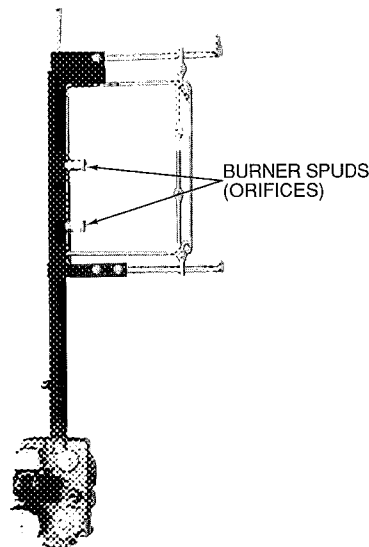
Motormaster II (unit sizes 004-014)

TIME GUARD II CONTROL



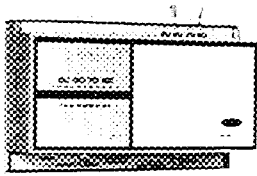
Time Guard II control automatically prevents compressor from restarting for at least 5 minutes after a shutdown. Accessory prevents short cycling of compressor if thermostat is changed rapidly. Time Guard II mounts in the control compartment of unit.

LP CONVERSION KIT



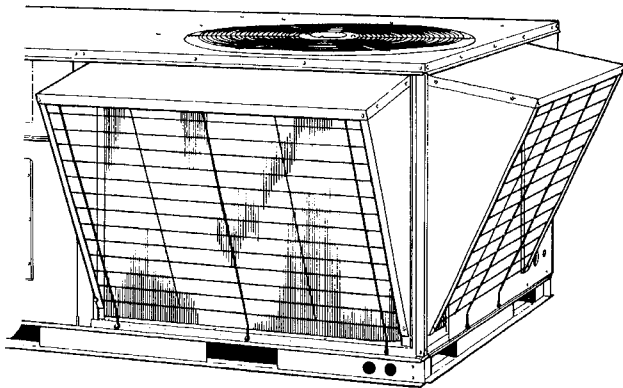
The LP conversion kit allows the unit to utilize a liquid propane fuel supply in areas where natural gas is unavailable.

THERMOSTAT



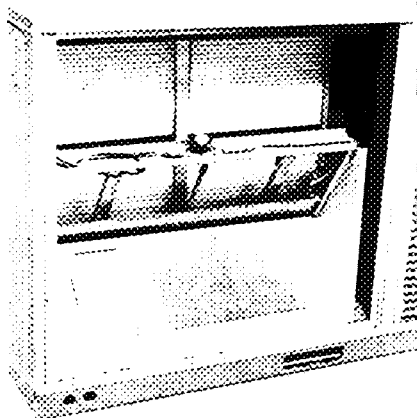
Zone thermostat (24 v) provides one- or 2-stage cooling for control of unit. Matching subbases are available with or without tamperproof switches and automatic changeover.

HAIL GUARD



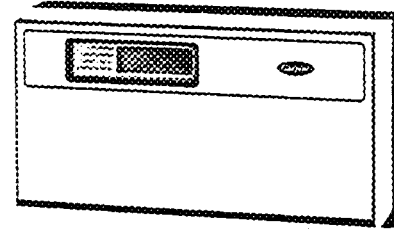
Hail guard accessory protects coils against damage from hail and other flying debris.

VARISLIDE™ ECONOMIZER

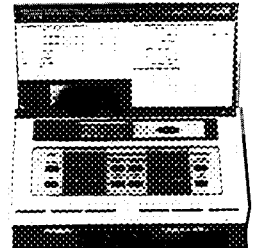


Exclusive Varislide™ economizer damper design saves energy while providing economical and reliable cooling. A sliding plate on the face of the economizer controls the amount of outdoor air entering the system. Closed, it provides a leakproof seal which prevents ambient air from seeping in or conditioned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

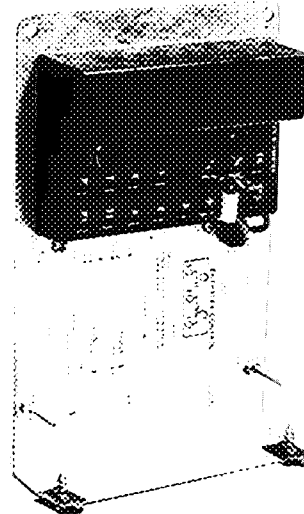
ELECTRONIC PROGRAMMABLE THERMOSTAT



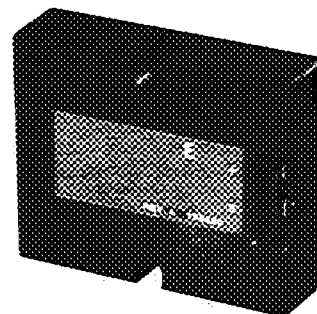
Electronic programmable thermostat provides efficient temperature control by allowing you to program heating and cooling setbacks and setups with provisions for weekends and holidays. Accessory remote sensing package is also available to provide tamperproof control in high traffic spaces.



ACCUSENSOR™ II

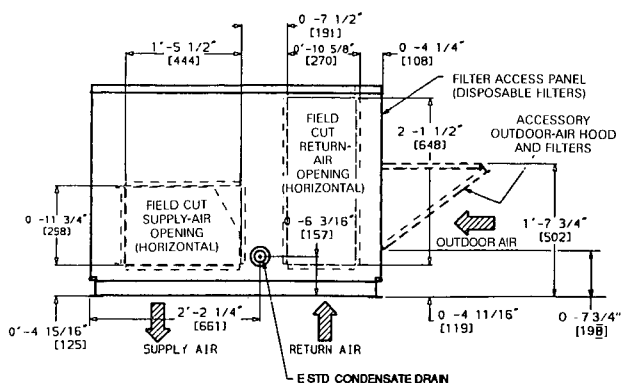


ACCUSENSOR™ III



Accusensor economizer controls help provide efficient, economical economizer operation. Accusensor I standard dry-bulb sensor measures outdoor temperature. Accusensor II solid-state enthalpy control senses both dry- and wet-bulb of the outdoor air to provide an accurate enthalpy reading. Accusensor III differential enthalpy sensor compares outdoor temperature and humidity to return-air temperature and humidity and determines the most economical mixture of air.

Base unit dimensions — 48LJ004-007

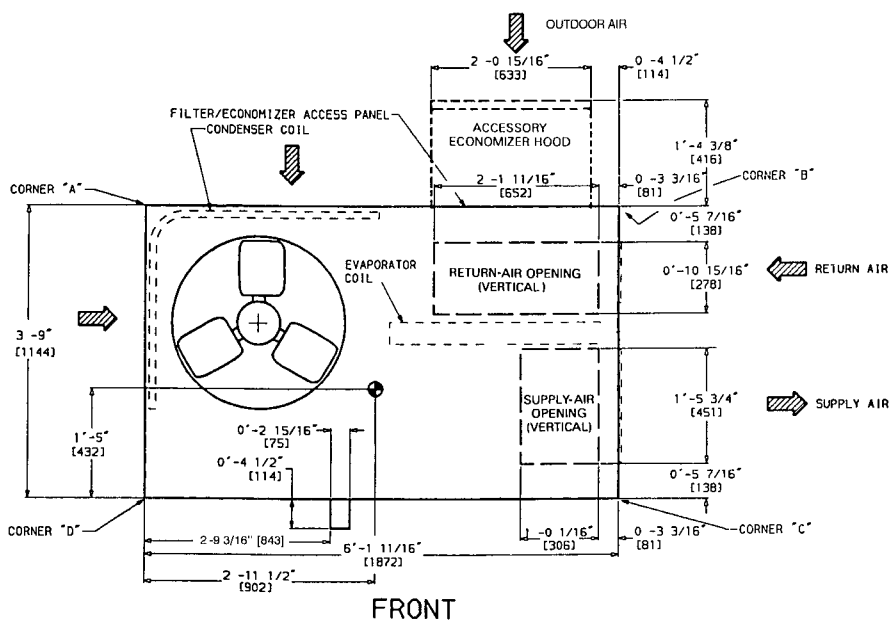


RIGHT SIDE

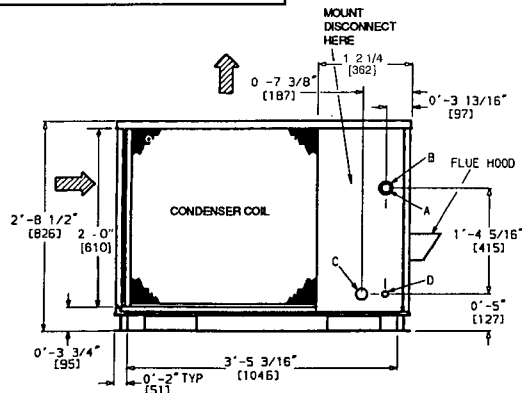
NOTES:

- Dimensions in [] are in millimeters
- Center of Gravity
- Direction of airflow
- On vertical discharge units, ductwork is to be attached to accessory roof curb only. For horizontal discharge units, field-supplied flanges should be attached to horizontal discharge openings, and all ductwork should be attached to the flanges
- Minimum clearance (local codes or jurisdiction may prevail):
 - Between unit, flue side and combustible surfaces, 36 inches
 - Bottom to combustible surfaces (when not using curb), zero 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
 - Horizontal supply and return end, zero inches.
 - Between units, control box side, 42 in. per NEC
 - 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
- With the exception of the clearance for the condenser coil and combustion side, as stated in Notes 5a, b, and c, a removable fence or barricade requires no clearance
- Units may be installed on combustible floors made from wood or class A, B, or C roof covering material

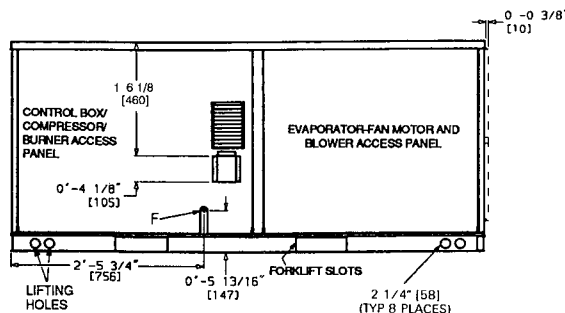
Connection Sizes	
A	1 3/8" Dia [35] Field Power Supply Hole
B	2" Dia [50.5] Power Supply Knockout
C	2 3/8" Dia [55] Charging-Port Hole
D	7/8" [22] Field Control Wiring Hole
E	3/4" Condensate Drain
F	1/2"-14 NPT Gas Connection



FRONT



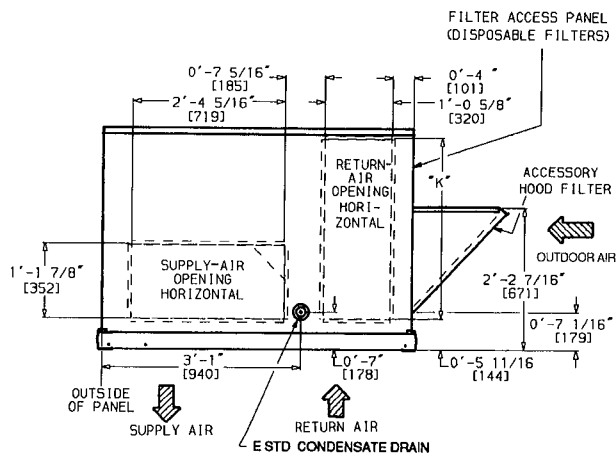
LEFT SIDE



FRONT

Base unit dimensions — 48LJ008-014

UNIT	STD. UNIT WEIGHT		ECONOMIZER WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"H"		"J"		"K"		"L"	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm
48LJE/LJD008	870	395	44	20	189	86	161	73	239	109	280	127	2-0 ⁷ / ₈	632	3-5 ⁵ / ₁₆	1050	2-9 ¹¹ / ₁₆	856	2- 2 ¹ / ₈	663
48LJE/LJD009	880	399	44	20	191	87	163	74	242	110	284	129	1-2 ⁷ / ₈	378	3-5 ⁵ / ₁₆	1050	2-9 ¹¹ / ₁₆	856	2- 2 ¹ / ₈	663
48LJE/LJD012	1035	469	44	20	225	102	192	87	285	129	333	151	1-2 ⁷ / ₈	378	4-1 ⁵ / ₁₆	1253	3-0 ⁹ / ₁₆	924	2-10 ¹ / ₁₆	866
48LJD014	1050	476	44	20	228	103	195	88	289	131	338	153	1-2 ⁷ / ₈	378	4-1 ⁵ / ₁₆	1253	3-0 ⁹ / ₁₆	924	2-10 ¹ / ₁₆	866



RIGHT SIDE

CONNECTION SIZES	
A	1 ³ / ₈ " Dia [35] Field Power Supply Hole
B	2 ¹ / ₂ " Dia [64] Power Supply Knockout
C	1 ³ / ₄ " 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 48LJ008 & 009 3/4"-14 NPT Gas Connection 48LJE008,009,012, 48LJD012 & 014
G	2" Dia [51] Power Supply Knockout

NOTES:

1 Dimensions in [] are in millimeters.

2 Center of gravity.

3 Direction of airflow

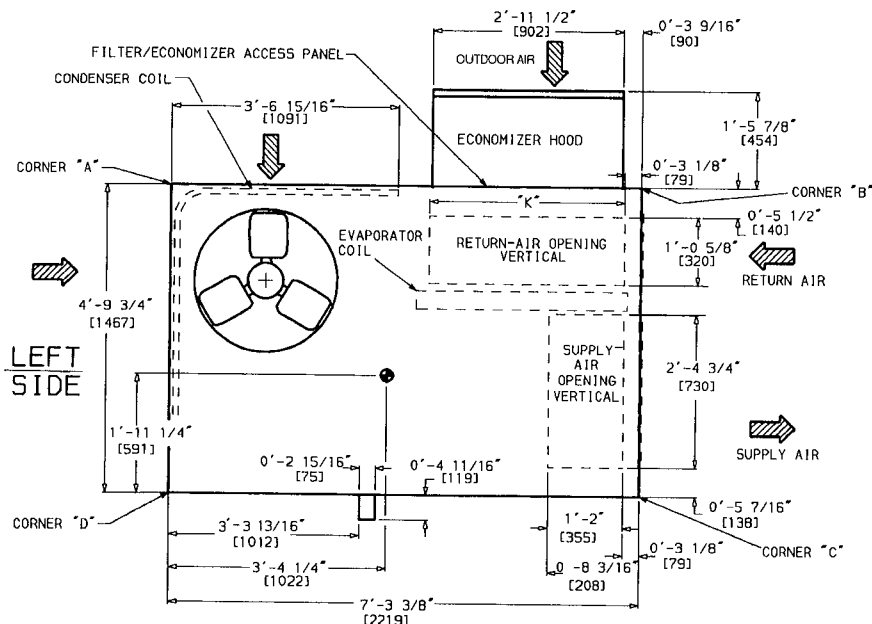
4 On vertical discharge units, ductwork to be attached to accessory roof curb only. For horizontal discharge units, field-supplied flanges should be attached to horizontal discharge openings and all ductwork should be attached to the flanges.

5 Minimum clearance (local codes or jurisdiction may prevail):

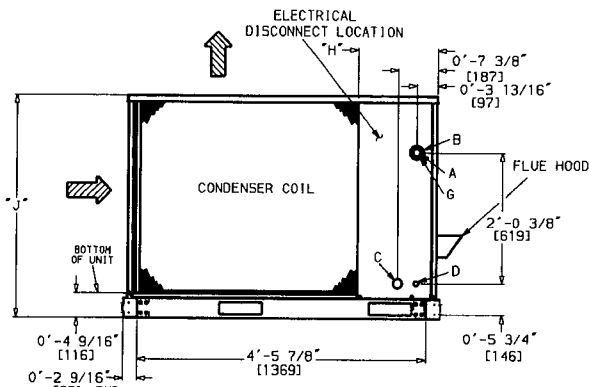
- Between unit, flue side and combustible surfaces, 48 inches.
- Bottom to combustible surfaces (when not using curb), zero inches.
- Condenser coil, for proper airflow, 36 in. one side, 12 in. the other. The side getting the greater clearance is optional.
- Overhead, 60 in. to assure proper condenser fan operation.
- Horizontal supply and return end, zero inches.
- Between units, control box side, 42 in. per NEC.
- 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.

6. With the exception of the clearance for the condenser coil and combustion side as stated in Notes 5a, b and c, a removable fence or barricade requires no clearance.

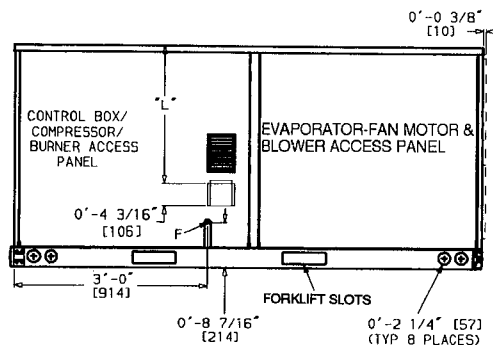
7 Units may be installed on combustible floors made from wood or class A, B, or C roof covering material.



FRONT



LEFT SIDE



FRONT

Accessory dimensions

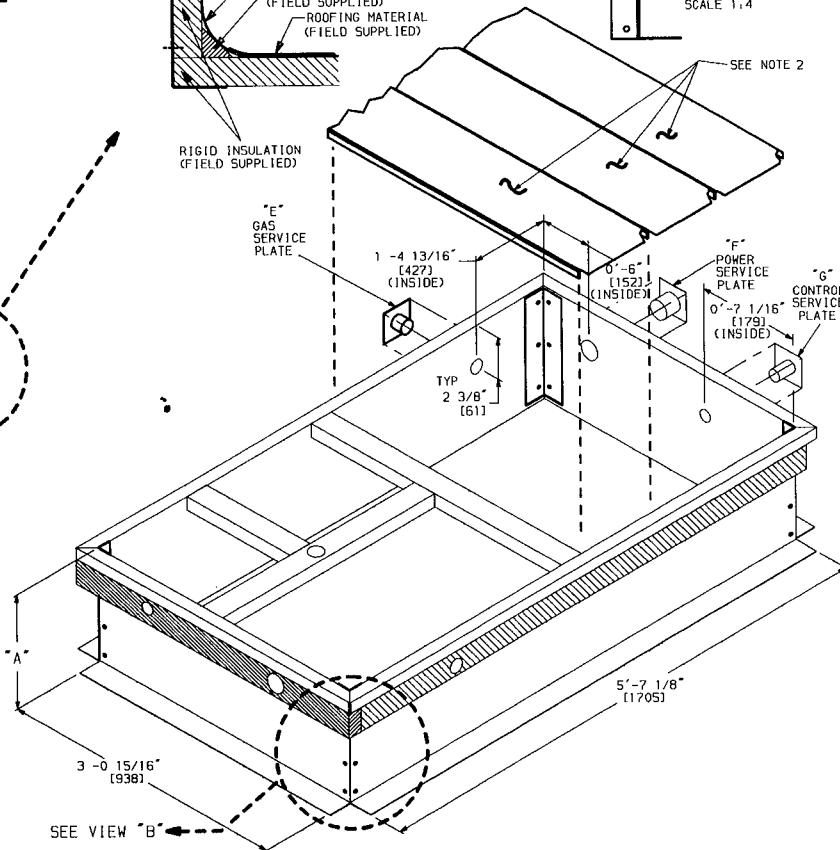
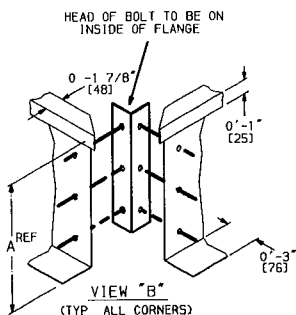
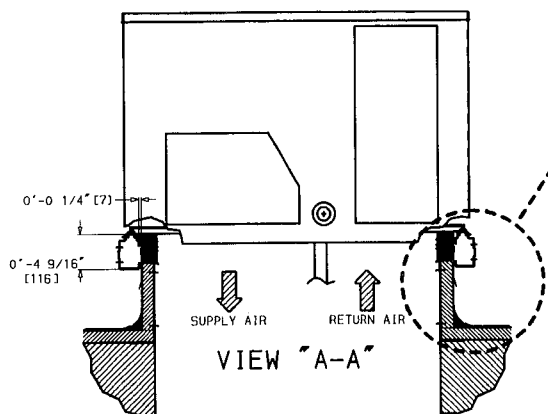
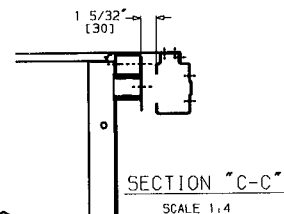
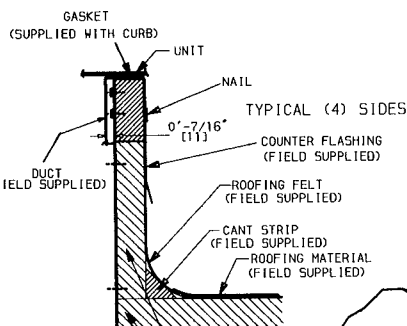
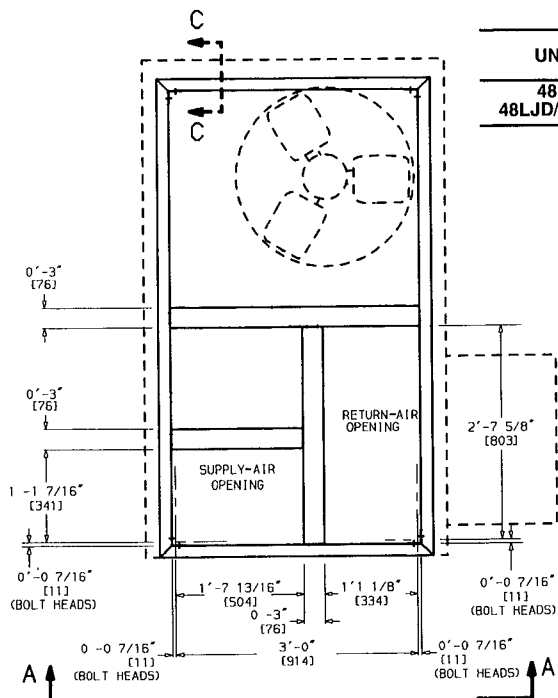
ROOF CURB — 48LJ004-007

ROOF CURB ACCESSORY	"A"	UNIT SIZE
50DJ900771	1'-2" [356]	48LJE004 48LJD/LJE005-007
50DJ900781	2'-0" [610]	

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

UNIT SIZE	"E" GAS	"F" POWER	"G" CONTROL	CONNECTOR PKG ACC.
48LJE004 48LJD/LJE005-007	3/4" [19] NPT	3/4" [19] NPT	3/4" [19] NPT	50DJ900791



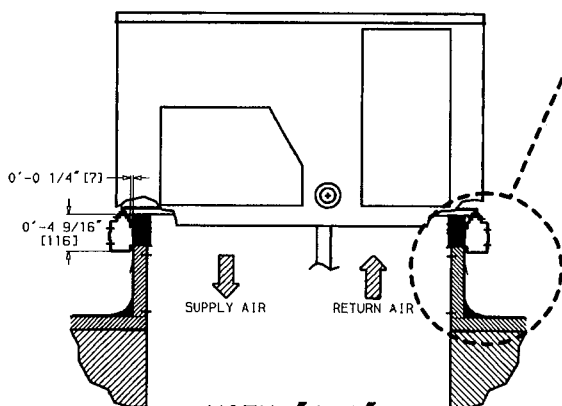
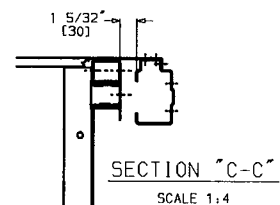
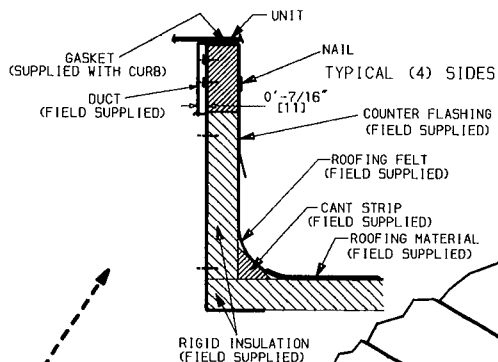
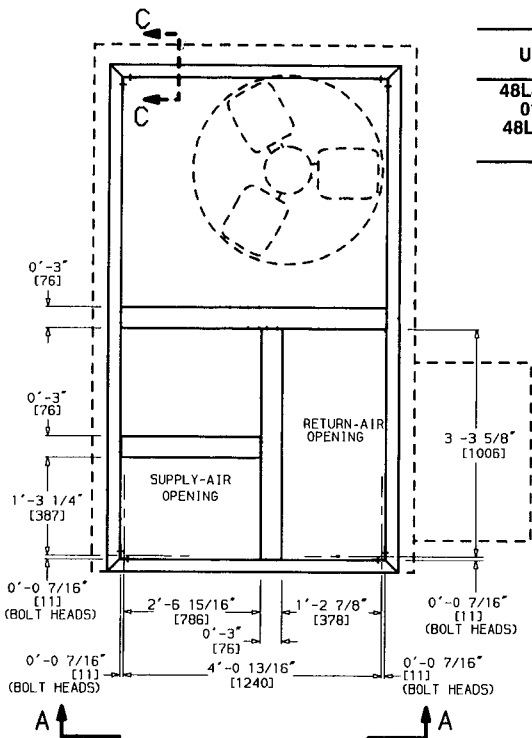
ROOF CURB – 48LJ008-014

ROOF CURB ACCESSORY	"A"	UNIT SIZE
50DJ901371	1'-2" [356]	48LJD/LJE008-012 48LJD014
50DJ901381	2'-0" [610]	

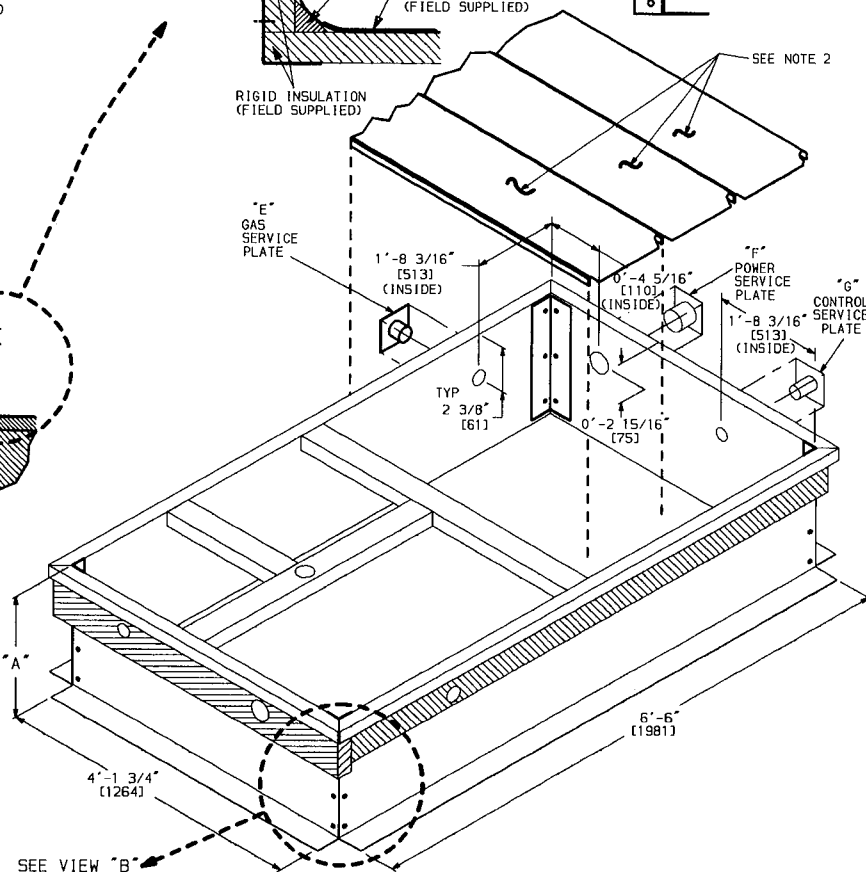
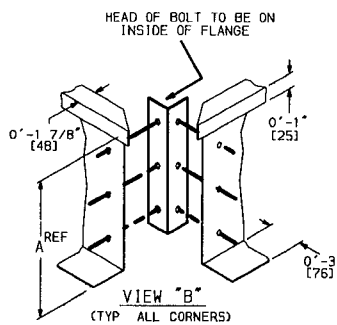
NOTES:

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

UNIT SIZE	"E" GAS	"F" POWER	"G" CONTROL	CONNECTOR PKG ACC.
48LJD008,009, 012 & 014 48LJE008,009 & 012	¾" [19] NPT	1" [25] NPT	¾" [19] NPT	50DJ901551



VIEW "A-A"



Selection procedure (with 48LJE005 example)

I Determine cooling and heating requirements at design conditions.

Given:

Required Cooling Capacity (TC) 47,000 Btuh
Sensible Heat Capacity (SHC) 32,000 Btuh
Required Heating Capacity 85,000 Btuh
Condenser Entering-Air Temperature. 95 F
Evaporator Entering-Air
Temperature 80 F edb, 67 F ewb
Evaporator Air Quantity 1600 cfm
External Static Pressure (ESP) 35 in. wg
Electrical Characteristics (V-Ph-Hz)..... 230-1-60

II Select unit based on required cooling capacity.

Enter Cooling Capacities table (page 13) at condenser entering temperature of 95 F, evaporator air at 1600 cfm and 80 F edb and 67 F ewb. The 48LJE005 unit will provide a total cooling capacity of 50,700 Btuh and a sensible heat capacity of 34,900 Btuh. For evaporator-air temperature other than 80 F edb, calculate sensible heat capacity correction, as required, using the formula found in Notes 2 and 3 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 3) note that unit 48LJE005 will provide output capacity of 92,000 Btuh, which is adequate for the given application.

IV Determine fan speed and power requirements at design conditions.

Before entering the Fan Performance tables, calculate the total static pressure required based on unit components. From the given and the Economizer Static Pressure Drop tables (page 23), find:

External static pressure	.35 in. wg
Economizer	.05 in. wg
Total static pressure =	.40 in. wg

Enter the Fan Performance table for 48LJ005 vertical discharge units. At 1600 cfm and 230-v high speed, the standard motor will deliver .50-in. wg static pressure and .74 bhp (brake horsepower). This will handle the job requirements adequately.

To determine the input power to the motor, convert bhp to Watts using the Evaporator-Fan Motor Efficiency table (page 23).

For example:

$$\begin{aligned}\text{IFM Watts} &= \frac{\text{Bhp} \times 746}{\text{Motor Efficiency}} \\ &= \frac{.79 \times 746}{.79}\end{aligned}$$

$$\text{IFM Watts} = 746$$

V Determine net cooling capacity.

Cooling capacities are gross capacities and do not include indoor-fan motor (IFM) heat. Determine net capacity using the following formula:

Net capacity = gross capacity - IFM heat

$$= 50,700 \text{ Btuh} - 746 \text{ Watts} \left(3.413 \frac{\text{Btuh}}{\text{Watts}} \right)$$

$$= 50,700 \text{ Btuh} - 2546 \text{ Btuh}$$

$$\text{Net capacity} = 48,154 \text{ Btuh}$$

$$\text{Net sensible capacity} = 34,900 \text{ Btuh} - 2546 \text{ Btuh}$$

$$\text{Net sensible capacity} = 32,354 \text{ Btuh}$$

Performance data

COOLING CAPACITIES

48LJ004 (3 Tons)

TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		900/0.11			1200/0.14			1500/0.17		
		Evap Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	40.9	36.7	32.8	42.9	38.6	34.7	43.9	39.8	35.8
	SHC	19.1	23.3	27.4	20.9	26.4	31.3	22.4	29.2	34.7
	KW	3.17	3.05	2.94	3.25	3.12	3.02	3.28	3.17	3.07
95	TC	38.9	34.7	30.5	40.7	36.4	32.5	41.7	37.5	33.6
	SHC	18.3	22.6	26.2	20.2	24.9	30.4	21.9	28.5	33.6
	KW	3.39	3.26	3.13	3.47	3.32	3.22	3.51	3.39	3.27
105	TC	36.5	32.5	28.2	38.1	34.1	29.9	39.1	35.0	31.8
	SHC	17.5	21.7	25.0	19.3	24.9	29.2	21.0	27.6	31.8
	KW	3.60	3.46	3.33	3.67	3.55	3.42	3.72	3.60	3.48
115	TC	34.1	30.2	25.7	35.5	31.6	27.7	36.2	32.6	30.0
	SHC	16.7	20.9	23.9	18.5	23.9	27.7	20.0	26.6	30.0
	KW	3.81	3.66	3.53	3.89	3.74	3.62	3.92	3.80	3.70

48LJ005 (4 Tons)

TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		1200/0.11			1600/0.14			2000/0.17		
		Evap Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	56.6	50.8	45.1	59.6	53.5	48.0	60.6	55.2	49.6
	SHC	26.1	31.7	37.0	28.5	35.9	42.6	30.3	39.5	47.1
	kW	4.11	3.97	3.84	4.20	4.06	3.94	4.23	4.12	4.00
95	TC	53.9	48.3	42.1	56.3	50.2	44.9	57.9	52.3	46.7
	SHC	25.1	30.7	35.5	27.4	33.7	41.1	29.6	38.6	45.9
	kW	4.41	4.25	4.09	4.48	4.33	4.20	4.54	4.41	4.26
105	TC	50.9	45.4	39.0	52.9	47.5	41.7	53.9	49.0	44.0
	SHC	24.0	29.6	33.9	26.2	33.7	39.6	28.1	37.3	44.0
	kW	4.68	4.51	4.35	4.75	4.60	4.45	4.79	4.67	4.53
115	TC	47.8	41.9	35.6	49.6	44.2	37.8	50.6	45.6	41.5
	SHC	22.9	28.3	32.3	25.1	32.5	37.7	27.0	36.0	41.5
	kW	4.94	4.76	4.60	5.02	4.85	4.70	5.07	4.92	4.80

48LJ006 (5 Tons)

TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		1500/0.05			2000/0.07			2500/0.08		
		Evap Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	72.3	65.8	59.3	75.8	69.4	62.8	77.8	71.4	65.4
	SHC	34.8	43.1	50.7	38.5	49.3	58.9	41.6	54.8	65.4
	KW	5.30	5.13	4.96	5.40	5.25	5.08	5.47	5.31	5.17
95	TC	69.1	62.6	55.8	72.4	65.9	59.3	74.5	67.7	62.6
	SHC	33.8	41.8	49.0	37.5	47.4	57.4	41.0	53.7	62.6
	KW	5.72	5.54	5.32	5.84	5.69	5.46	5.93	5.73	5.59
105	TC	65.9	59.2	52.0	68.7	62.2	55.4	70.5	64.0	59.6
	SHC	32.7	40.5	47.2	36.3	46.7	55.2	39.7	52.5	59.6
	KW	6.15	5.92	5.68	6.26	6.04	5.83	6.34	6.13	5.98
115	TC	62.2	55.4	48.1	64.7	58.4	52.1	66.4	60.0	56.6
	SHC	31.3	38.9	45.3	35.0	45.3	52.1	38.4	50.8	56.6
	KW	6.53	6.27	6.02	6.65	6.40	6.21	6.74	6.50	6.36

48LJ007 (6 Tons)

TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		1800/0.02			2400/0.04			3000/0.05		
		Evap Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	85.2	77.6	69.9	89.8	81.9	73.8	92.0	84.3	77.9
	SHC	41.9	51.8	61.0	46.9	59.9	71.6	50.9	67.3	77.8
	kW	6.25	6.14	6.00	6.35	6.23	6.09	6.39	6.27	6.17
95	TC	81.9	73.8	66.2	85.8	77.2	70.1	88.0	80.0	74.7
	SHC	40.7	50.3	59.4	45.5	58.4	69.5	50.1	65.8	74.6
	kW	6.72	6.58	6.40	6.82	6.67	6.51	6.88	6.73	6.63
105	TC	77.9	69.5	60.6	81.3	73.6	65.4	83.4	75.6	71.3
	SHC	39.2	48.6	56.7	44.0	56.9	65.4	48.7	64.3	71.3
	kW	7.18	7.00	6.80	7.28	7.12	6.96	7.35	7.19	7.07
115	TC	73.9	64.7	54.9	76.8	69.3	62.0	78.9	71.2	67.6
	SHC	37.8	46.7	53.9	42.5	55.3	62.0	47.2	62.7	67.6
	kW	7.65	7.43	7.22	7.74	7.56	7.40	7.82	7.64	7.54

Standard Ratings

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
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 $\times$ cfm) from SHC.

Above 80 F edb, add (corr factor $\times$ cfm) to SHC.

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

Performance data (cont)

COOLING CAPACITIES (cont)

48LJ008 (7½ Tons)										
TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		2250/0.08			3000/0.105			3750/0.125		
		Evap Air — 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	95.4	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	7.99	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

48LJ009 (8½ Tons)										
TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		2550/0.08			3400/0.105			4250/0.125		
		Evap Air — 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	107.2	94.9	122.6	111.1	101.4
	SHC	56.0	68.6	79.8	62.2	77.3	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

48LJ012 (10 Tons)										
TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		3000/0.07			4000/0.11			5000/0.15		
		Evap Air — 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 2	112 0	143 7	130 9	118 8
	SHC	64 1	79 0	91 8	71 1	88 3	107 1	77 4	102 6	118 8
	kW	11 36	10 94	10 53	11 64	11 29	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

48LJ014 (12½ Tons)										
TEMP (F) AIR ENT COND (Edb)		EVAP AIR — CFM/BF								
		3750/0.075			5000/0.10			6250/0.125		
		Evap Air — 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	152.6	137.2	169.9	156.3	146.0
	SHC	79.6	99.6	116.9	88.1	113.7	136.7	96.4	128.7	145.7
	kW	13.38	13.09	12.79	13.53	13.30	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
 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 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 = $1.10 \times (1 - BF) \times (edb - 80)$.

FAN PERFORMANCE – VERTICAL DISCHARGE UNITS

48LJ004 (3 Tons) – FACTORY-INSTALLED MOTOR (Direct Drive)

AIRFLOW (Cfm)	LOW SPEED				HIGH SPEED			
	208		230, 460, 575		208		230, 460, 575	
	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

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

48LJ004 (3 Tons) – FIELD-INSTALLED MOTOR (Direct Drive)

AIRFLOW (Cfm)	LOW SPEED				HIGH SPEED			
	208		230, 460, 575		208		230, 460, 575	
	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp
900	0.74	0.34	0.80	0.38	0.95	0.46	1.10	0.53
1000	0.68	0.37	0.73	0.41	0.87	0.50	0.98	0.58
1100	0.60	0.40	0.66	0.45	0.79	0.53	0.91	0.62
1200	0.52	0.45	0.59	0.48	0.72	0.57	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	0.66	0.70
1500	0.26	0.54	0.34	0.57	0.48	0.65	0.58	0.72

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure

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

48LJ005 (4 Tons) – FACTORY-INSTALLED MOTOR (Direct Drive)

AIRFLOW (Cfm)	LOW SPEED				HIGH SPEED			
	208		230, 460, 575		208		230, 460, 575	
	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

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

48LJ005 (4 Tons) – FIELD-INSTALLED 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
1200	596	0.20	665	0.25	779	0.36	872	0.48	957	0.60	1028	0.69	1083	0.74	—	—	—	—	—	—
1300	633	0.24	699	0.30	809	0.42	902	0.55	984	0.67	1058	0.80	1121	0.89	1171	0.94	—	—	—	—
1400	672	0.30	735	0.36	840	0.48	933	0.62	1011	0.75	1086	0.89	1153	1.02	1210	1.12	1257	1.17	—	—
1500	711	0.35	770	0.42	873	0.55	963	0.69	1041	0.84	1113	0.99	1180	1.13	1241	1.27	1295	1.37	1339	1.43
1600	751	0.42	806	0.49	907	0.63	993	0.77	1072	0.93	1141	1.09	1207	1.25	1269	1.40	1326	1.54	1376	1.65
1700	791	0.49	843	0.57	941	0.72	1024	0.87	1103	1.04	1171	1.20	1235	1.37	1296	1.53	1354	1.70	1407	1.84
1800	831	0.58	881	0.66	976	0.81	1057	0.97	1132	1.14	1202	1.32	1263	1.49	1323	1.67	1381	1.85	1436	2.02
1900	872	0.67	919	0.75	1011	0.92	1091	1.08	1162	1.25	1232	1.45	1294	1.63	1351	1.81	1408	2.00	1463	2.19
2000	913	0.77	958	0.86	1046	1.03	1125	1.21	1195	1.38	1262	1.58	1325	1.78	1382	1.97	1436	2.16	1489	2.36

LEGEND

Bhp — Brake Horsepower

NOTES:

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

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

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48LJ006 (5 Tons) — FACTORY-INSTALLED 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
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	—	—
1600	794	0.44	846	0.50	950	0.65	1034	0.78	1111	0.93	1194	1.11	1263	1.28	1275	1.35	—	—
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
1800	885	0.61	924	0.67	1018	0.82	1105	0.99	1179	1.15	1246	1.32	1319	1.51	1375	1.68	1432	1.86
1900	932	0.72	965	0.77	1057	0.94	1143	1.12	1212	1.27	1280	1.45	1343	1.63	1400	1.81	1457	2.00
2000	979	0.83	1008	0.88	1096	1.06	1177	1.24	1247	1.41	1314	1.59	1372	1.77	1429	1.95	1486	2.13
2100	1026	0.96	1051	1.01	1136	1.19	1210	1.37	1284	1.57	1347	1.75	1404	1.93	1461	2.11	1518	2.29
2200	1074	1.10	1095	1.15	1173	1.33	1245	1.51	1318	1.70	1380	1.89	1437	2.11	1494	2.29	1551	2.47
2300	1122	1.25	1140	1.30	1210	1.47	1284	1.67	1356	1.86	1418	2.05	1475	2.24	1532	2.43	1589	2.62
2400	1170	1.42	1185	1.46	1249	1.64	1323	1.85	1385	2.06	1447	2.27	1504	2.47	1561	2.66	1618	2.85
2500	1218	1.61	1231	1.64	1299	1.81	1373	2.04	1434	2.24	1495	2.45	1556	2.66	1617	2.86	1678	3.06

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 1.7. Extensive motor and electrical testing on the Weathermaker® I 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. Motor drive range is 875 to 1190 rpm. All other rpms require field-supplied drive.

48LJ007 (6 Tons) — FACTORY-INSTALLED 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	1578	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	1614	2.77
2300	1171	1.33	1209	1.43	1283	1.64	1350	1.84	1414	2.04	1478	2.27	1537	2.50	1593	2.73	1649	2.96
2400	1219	1.51	1255	1.61	1326	1.82	1392	2.03	1453	2.24	1515	2.46	1574	2.69	1631	2.92	1688	3.15
2500	1267	1.70	1301	1.80	1370	2.02	1435	2.25	1495	2.48	1554	2.69	1612	2.91	1669	3.13	1726	3.36
2600	1315	1.90	1348	2.00	1414	2.23	1479	2.47	1538	2.69	1596	2.92	1653	3.15	1710	3.38	1767	3.61
2700	1363	2.12	1395	2.23	1463	2.43	1529	2.67	1587	2.90	1645	3.13	1702	3.36	1759	3.59	1816	3.82
2800	1411	2.36	1442	2.47	1513	2.67	1579	2.91	1637	3.14	1694	3.37	1751	3.60	1808	3.83	1865	4.06
2900	1459	2.60	1489	2.72	1563	2.93	1630	3.17	1688	3.40	1745	3.63	1802	3.86	1859	4.09	1916	4.32

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 2.4. Extensive motor and electrical testing on the Weathermaker I 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. Motor drive range is 1070 to 1460 rpm. All other rpms require field-supplied drive.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48LJ008 (7½ Tons) — FACTORY-INSTALLED 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	951	2.57
2250	507	0.53	586	0.73	658	0.97	722	1.22	783	1.46	843	1.81	908	2.25	955	2.59
2300	513	0.55	592	0.76	663	1.00	727	1.26	786	1.49	846	1.84	910	2.28	958	2.61
2400	528	0.60	606	0.83	674	1.06	738	1.34	795	1.58	853	1.88	912	2.31	967	2.68
2500	542	0.66	619	0.90	686	1.13	748	1.41	806	1.68	859	1.94	919	2.37	971	2.73
2550	550	0.69	627	0.94	692	1.17	754	1.45	812	1.74	864	1.99	920	2.39	973	2.75
2600	557	0.72	634	0.97	698	1.21	759	1.49	816	1.79	868	2.04	921	2.37	976	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	2.57	986	2.91
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	2.95	1012	3.30
3200	652	1.21	718	1.49	778	1.80	831	2.09	882	2.40	931	2.76	979	3.13	1023	3.47
3300	668	1.31	732	1.59	793	1.92	844	2.21	894	2.53	942	2.89	990	3.26	1034	3.63
3400	684	1.41	747	1.70	807	2.04	857	2.35	907	2.66	954	3.02	1000	3.40	1044	3.79
3500	701	1.53	762	1.82	821	2.16	871	2.48	919	2.80	965	3.15	1011	3.55	1054	3.94
3600	717	1.65	777	1.94	835	2.29	885	2.63	932	2.95	978	3.30	1022	3.69	1065	4.10
3700	733	1.77	792	2.07	849	2.42	899	2.78	945	3.11	990	3.45	1034	3.84	1076	4.26
3750	742	1.84	800	2.14	855	2.49	907	2.86	952	3.20	997	3.54	1040	3.93	1082	4.37
3800	750	1.90	807	2.21	863	2.56	914	2.93	958	3.28	1003	3.62	1045	4.01	1087	4.43
3900	767	2.04	822	2.35	877	2.71	928	3.08	972	3.45	1015	3.80	1057	4.18	1098	4.60
4000	783	2.18	838	2.50	891	2.86	942	3.25	986	3.63	1028	3.99	1070	4.36	1110	4.78
4100	800	2.34	854	2.65	905	3.02	956	3.43	1000	3.81	1042	4.18	1082	4.56	1122	4.97
4200	817	2.49	869	2.82	920	3.19	970	3.60	1015	4.00	1055	4.38	1095	4.76	1134	5.16
4250	826	2.58	877	2.91	928	3.28	977	3.69	1022	4.10	1062	4.49	1102	4.87	1140	5.27
4300	834	2.66	885	3.00	935	3.37	984	3.78	1029	4.20	1069	4.59	1108	4.98	1147	5.38

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 the Weathermaker® I 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. Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
5. Values include losses for filters, unit casing and wet coils.
6. Motor drive range is 590 to 840 rpm. All other rpms require field-supplied drive.

48LJ009 (8½ Tons) — FACTORY-INSTALLED 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	951	2.57
2250	507	0.53	586	0.73	658	0.97	722	1.22	783	1.46	843	1.81	908	2.25	955	2.59
2300	513	0.55	592	0.76	663	1.00	727	1.26	786	1.49	846	1.84	910	2.28	958	2.61
2400	528	0.60	606	0.83	674	1.06	738	1.34	795	1.58	853	1.88	912	2.31	967	2.68
2500	542	0.66	619	0.90	686	1.13	748	1.41	806	1.68	859	1.94	919	2.37	971	2.73
2550	550	0.69	627	0.94	692	1.17	754	1.45	812	1.74	864	1.99	920	2.39	973	2.75
2600	557	0.72	634	0.97	698	1.21	759	1.49	816	1.79	868	2.04	921	2.37	976	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	2.57	986	2.91
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	2.95	1012	3.30
3200	652	1.21	718	1.49	778	1.80	831	2.09	882	2.40	931	2.76	979	3.13	1023	3.47
3300	668	1.31	732	1.59	793	1.92	844	2.21	894	2.53	942	2.89	990	3.26	1034	3.63
3400	684	1.41	747	1.70	807	2.04	857	2.35	907	2.66	954	3.02	1000	3.40	1044	3.79
3500	701	1.53	762	1.82	821	2.16	871	2.48	919	2.80	965	3.15	1011	3.55	1054	3.94
3600	717	1.65	777	1.94	835	2.29	885	2.63	932	2.95	978	3.30	1022	3.69	1065	4.10
3700	733	1.77	792	2.07	849	2.42	899	2.78	945	3.11	990	3.45	1034	3.84	1076	4.26
3750	742	1.84	800	2.14	855	2.49	907	2.86	952	3.20	997	3.54	1040	3.93	1082	4.37
3800	750	1.90	807	2.21	863	2.56	914	2.93	958	3.28	1003	3.62	1045	4.01	1087	4.43
3900	767	2.04	822	2.35	877	2.71	928	3.08	972	3.45	1015	3.80	1057	4.18	1098	4.60
4000	783	2.18	838	2.50	891	2.86	942	3.25	986	3.63	1028	3.99	1070	4.36	1110	4.78
4100	800	2.34	854	2.65	905	3.02	956	3.43	1000	3.81	1042	4.18	1082	4.56	1122	4.97
4200	817	2.49	869	2.82	920	3.19	970	3.60	1015	4.00	1055	4.38	1095	4.76	1134	5.16
4250	826	2.58	877	2.91	928	3.28	977	3.69	1022	4.10	1062	4.49	1102	4.87	1140	5.27
4300	834	2.66	885	3.00	935	3.37	984	3.78	1029	4.20	1069	4.59	1108	4.98	1147	5.38

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 the Weathermaker® I 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. Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
5. Values include losses for filters, unit casing and wet coils.
6. Motor drive range is 690 to 935 rpm. All other rpms require field-supplied drive.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48LJ012 (10 Tons) — FACTORY-INSTALLED 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
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	1010	2.09	1063	2.46
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	1018	2.17	1070	2.53
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	1026	2.26	1075	2.57
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	1032	2.32	1080	2.64
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	1041	2.44	1085	2.65
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	1051	2.57	1090	2.74
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	1060	2.72	1099	2.88
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	1069	2.87	1109	3.03
3800	662	1.33	726	1.47	789	1.72	846	1.95	897	2.18	946	2.40	989	2.58	1033	2.76	1077	2.99	1118	3.20
3900	677	1.44	738	1.56	801	1.82	857	2.06	908	2.29	956	2.53	1000	2.73	1042	2.91	1085	3.12	1127	3.35
4000	692	1.55	750	1.66	813	1.94	868	2.17	918	2.40	967	2.66	1010	2.87	1052	3.06	1093	3.24	—	—
4100	707	1.67	762	1.76	825	2.05	878	2.28	929	2.52	977	2.78	1021	3.02	1062	3.22	1102	3.41	—	—
4200	722	1.80	775	1.87	837	2.16	889	2.40	941	2.66	987	2.91	1032	3.17	1072	3.38	—	—	—	—
4300	737	1.94	787	1.99	848	2.27	900	2.52	952	2.80	999	3.04	1042	3.32	—	—	—	—	—	—
4400	752	2.08	800	2.12	860	2.39	912	2.66	962	2.93	1008	3.19	—	—	—	—	—	—	—	—
4500	768	2.24	814	2.25	877	2.51	924	2.80	973	3.07	1019	3.34	—	—	—	—	—	—	—	—
4600	783	2.40	827	2.39	882	2.64	937	2.95	982	3.21	—	—	—	—	—	—	—	—	—	—
4700	799	2.56	841	2.54	894	2.77	949	3.10	994	3.36	—	—	—	—	—	—	—	—	—	—
4800	814	2.74	855	2.69	906	2.91	961	3.26	—	—	—	—	—	—	—	—	—	—	—	—
4900	830	2.92	868	2.85	918	3.05	972	3.40	—	—	—	—	—	—	—	—	—	—	—	—
5000	—	—	883	3.03	931	3.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES

- 1 Boldface** indicates field-supplied drive required (See Note 6.)
- 2 Shading** indicates field-supplied motor and drive required.
- Maximum usable bhp is 2.4. Extensive motor and electrical testing on the Weathermaker I 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.
- Motor drive range is 690 to 935 rpm. All other rpms require field-supplied drive.

48LJ014 (12½ Tons) — FACTORY-INSTALLED 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	1293	5.33
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	4.43	1194	4.77	1234	5.09	1274	5.40	—	—
5000	942	3.11	993	3.41	1039	3.73	1082	3.99	1125	4.25	1166	4.59	1207	4.97	1247	5.30	1286	5.62	—	—
5100	959	3.29	1009	3.60	1055	3.92	1097	4.19	1139	4.46	1180	4.78	1220	5.18	1259	5.52	—	—	—	—
5200	976	3.47	1025	3.78	1071	4.12	1112	4.38	1153	4.67	1194	4.98	1233	5.36	1272	5.74	—	—	—	—
5300	993	3.67	1041	3.98	1086	4.33	1127	4.63	1168	4.90	1208	5.19	1246	5.58	—	—	—	—	—	—
5400	1010	3.87	1057	4.18	1102	4.54	1142	4.84	1182	5.13	1221	5.41	—	—	—	—	—	—	—	—
5500	1027	4.07	1073	4.38	1118	4.76	1157	5.07	1197	5.36	1235	5.64	—	—	—	—	—	—	—	—
5600	1043	4.29	1089	4.61	1133	4.98	1173	5.37	1211	5.61	—	—	—	—	—	—	—	—	—	—
5700	1060	4.51	1106	4.83	1149	5.22	1189	5.55	—	—	—	—	—	—	—	—	—	—	—	—
5800	1077	4.74	1122	5.07	1165	5.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5900	1094	4.98	1139	5.31	1181	5.70	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6000	1111	5.22	1155	5.55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6100	1128	5.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6200	1145	5.74	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTES:

- 1 Boldface** indicates field-supplied drive required (See Note 6.)
- 2 Shading** indicates field-supplied motor and drive required.
- Maximum usable bhp is 4.2. Extensive motor and electrical testing on the Weathermaker® I 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.
- Use of a field-supplied motor may affect wire sizing. Contact a Carrier representative to verify.
- Motor drive range is 860 to 1080 rpm. All other rpms require field-supplied drive.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48LJ004 (3 Tons) — FACTORY-INSTALLED MOTOR (Direct Drive)

AIRFLOW (Cfm)	LOW SPEED				HIGH SPEED			
	208		230, 460, 575		208		230, 460, 575	
	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

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

48LJ004 (3 Tons) — FIELD-INSTALLED MOTOR (Direct Drive)

AIRFLOW (Cfm)	LOW SPEED				HIGH SPEED			
	208		230, 460, 575		208		230, 460, 575	
	ESP	Bhp	ESP	Bhp	ESP	Bhp	ESP	Bhp
900	0.99	0.34	1.06	0.38	1.16	0.46	1.24	0.53
1000	0.93	0.37	0.99	0.41	1.08	0.50	1.17	0.58
1100	0.85	0.40	0.92	0.45	1.00	0.53	1.10	0.62
1200	0.77	0.45	0.85	0.48	0.92	0.57	1.02	0.65
1300	0.69	0.48	0.77	0.50	0.85	0.60	0.94	0.68
1400	0.62	0.50	0.68	0.54	0.77	0.63	0.86	0.70
1500	0.52	0.54	0.58	0.57	0.68	0.65	0.77	0.72

LEGEND

Bhp — Brake Horsepower

ESP — External Static Pressure

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

48LJ005 (4 Tons) — FACTORY-INSTALLED MOTOR (Direct Drive)

AIRFLOW (Cfm)	LOW SPEED				HIGH SPEED			
	208		230, 460, 575		208		230, 460, 575	
	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

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

48LJ005 (4 Tons) — FIELD-INSTALLED 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
1200	569	0.18	641	0.23	761	0.34	859	0.46	943	0.58	1030	0.70	1155	0.87	—	—	—	—	—	—
1300	604	0.22	673	0.28	788	0.39	887	0.52	968	0.65	1044	0.77	1128	0.91	1245	1.10	—	—	—	—
1400	640	0.27	705	0.33	817	0.45	914	0.59	996	0.72	1069	0.86	1139	0.99	1218	1.14	1325	1.34	—	—
1500	676	0.32	738	0.38	847	0.51	940	0.65	1024	0.81	1095	0.95	1162	1.09	1228	1.24	1303	1.40	1398	1.60
1600	713	0.38	772	0.44	877	0.58	967	0.73	1051	0.89	1123	1.05	1188	1.20	1250	1.35	1312	1.51	1382	1.68
1700	750	0.45	806	0.51	908	0.66	997	0.81	1077	0.98	1151	1.15	1215	1.31	1276	1.48	1334	1.64	1393	1.80
1800	788	0.52	841	0.59	939	0.75	1026	0.91	1104	1.07	1178	1.26	1243	1.43	1303	1.61	1359	1.78	1414	1.95
1900	826	0.60	876	0.68	971	0.84	1056	1.01	1132	1.18	1204	1.37	1271	1.56	1330	1.74	1386	1.93	1439	2.11
2000	864	0.70	912	0.77	1004	0.94	1087	1.12	1162	1.30	1231	1.48	1298	1.69	1358	1.89	1413	2.08	1466	2.27

LEGEND

Bhp — Brake Horsepower

NOTES:

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

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

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48LJ006 (5 Tons) — FACTORY-INSTALLED 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
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
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
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
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	1.83
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
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
2100	965	0.85	1010	0.93	1090	1.09	1170	1.27	1247	1.47	1315	1.65	1377	1.84	1435	2.03	1492	2.22
2200	1007	0.97	1050	1.06	1128	1.22	1205	1.40	1275	1.59	1343	1.81	1408	1.99	1466	2.19	1521	2.40
2300	1049	1.10	1090	1.19	1166	1.36	1239	1.55	1306	1.74	1360	1.98	1440	2.16	1497	2.37	—	—
2400	1090	1.24	1131	1.34	1204	1.51	1273	1.70	1342	1.91	1409	2.12	1474	2.26	—	—	—	—
2500	1132	1.39	1172	1.49	1243	1.68	1309	1.87	1377	2.09	1436	2.29	—	—	—	—	—	—

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 1.7. Extensive motor and electrical testing on the Weathermaker® I 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. Motor drive range is 875 to 1190 rpm. All other rpms require field-supplied drive.

48LJ007 (6 Tons) — FACTORY-INSTALLED 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	852	0.55	905	0.62	1002	0.78	1084	0.93	1163	1.10	1235	1.29	1303	1.48	1371	1.69	1433	1.90
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	1450	2.03
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	1485	2.16
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	1510	2.31
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	1538	2.46
2300	1064	1.10	1104	1.18	1183	1.36	1260	1.57	1330	1.78	1392	1.97	1454	2.18	1515	2.40	1569	2.64
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	1601	2.84
2500	1150	1.39	1186	1.48	1262	1.68	1331	1.89	1400	2.12	1461	2.34	1518	2.55	1575	2.76	—	—
2600	1193	1.56	1228	1.65	1301	1.86	1367	2.07	1435	2.31	1497	2.54	1552	2.76	1607	2.99	—	—
2700	1237	1.74	1269	1.83	1341	2.05	1404	2.26	1471	2.50	1532	2.75	1587	2.98	—	—	—	—
2800	1280	1.94	1311	2.03	1381	2.25	1442	2.47	1500	2.72	1567	2.98	—	—	—	—	—	—
2900	1324	2.15	1354	2.24	1420	2.47	1481	2.69	1542	2.94	—	—	—	—	—	—	—	—
3000	1368	2.37	1396	2.46	1460	2.69	1521	2.93	—	—	—	—	—	—	—	—	—	—

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 Weathermaker I 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. Motor drive range is 1070 to 1460 rpm. All other rpms require field-supplied drive.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48LJ008 (7½ Tons) — FACTORY-INSTALLED 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	936	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	2.66
2300	521	0.57	600	0.79	668	1.02	730	1.26	786	1.50	843	1.83	905	2.28	943	2.69
2400	536	0.63	613	0.85	680	1.09	741	1.34	796	1.59	849	1.88	910	2.31	953	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	2.81
2550	559	0.72	634	0.97	700	1.21	759	1.48	814	1.74	864	2.01	915	2.34	958	2.81
2600	567	0.75	641	1.00	706	1.25	764	1.52	819	1.79	869	2.06	918	2.37	963	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	2.58	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	992	3.03
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	2.61	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	963	3.30	—	—	—	—	—	—
3800	762	1.98	821	2.31	875	2.66	924	3.03	970	3.38	—	—	—	—	—	—
3900	779	2.12	836	2.45	890	2.82	938	3.19	—	—	—	—	—	—	—	—
4000	796	2.27	852	2.61	905	2.98	953	3.37	—	—	—	—	—	—	—	—
4100	813	2.42	868	2.78	920	3.15	—	—	—	—	—	—	—	—	—	—
4200	830	2.59	884	2.95	935	3.33	—	—	—	—	—	—	—	—	—	—
4250	839	2.65	892	3.04	—	—	—	—	—	—	—	—	—	—	—	—
4300	847	2.76	900	3.13	—	—	—	—	—	—	—	—	—	—	—	—

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 2.4 with standard motor. Extensive motor and electrical testing on the Weathermaker® I 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 Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 5 Values include losses for filters, unit casing and wet coils.
- 6 Motor drive range is 590 to 840 rpm. All other rpms require field-supplied drive.

48LJ009 (8½ Tons) — FACTORY-INSTALLED 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	936	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	2.66
2300	521	0.57	600	0.79	668	1.02	730	1.26	786	1.50	843	1.83	905	2.28	943	2.69
2400	536	0.63	613	0.85	680	1.09	741	1.34	796	1.59	849	1.88	910	2.31	953	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	2.81
2550	559	0.72	634	0.97	700	1.21	759	1.48	814	1.74	864	2.01	915	2.34	958	2.81
2600	567	0.75	641	1.00	706	1.25	764	1.52	819	1.79	869	2.06	918	2.37	963	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	2.58	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	992	3.03
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	2.61	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	963	3.30	—	—	—	—	—	—
3800	762	1.98	821	2.31	875	2.66	924	3.03	970	3.38	—	—	—	—	—	—
3900	779	2.12	836	2.45	890	2.82	938	3.19	—	—	—	—	—	—	—	—
4000	796	2.27	852	2.61	905	2.98	953	3.37	—	—	—	—	—	—	—	—
4100	813	2.42	868	2.78	920	3.15	—	—	—	—	—	—	—	—	—	—
4200	830	2.59	884	2.95	935	3.33	—	—	—	—	—	—	—	—	—	—
4250	839	2.65	892	3.04	—	—	—	—	—	—	—	—	—	—	—	—
4300	847	2.76	900	3.13	—	—	—	—	—	—	—	—	—	—	—	—

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 2.4 with standard motor. Extensive motor and electrical testing on the Weathermaker® I 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 Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 5 Values include losses for filters, unit casing and wet coils.
- 6 Motor drive range is 690 to 935 rpm. All other rpms require field-supplied drive.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48LJ012 (10 Tons) — FACTORY-INSTALLED 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
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	1066	2.30
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	1073	2.44
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	1075	2.51
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	1082	2.68
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	1091	2.79
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	1095	2.94
3600	684	1.24	747	1.44	800	1.64	850	1.82	900	2.03	945	2.22	988	2.41	1030	2.61	1069	2.80	1106	2.98
3700	700	1.33	760	1.54	814	1.75	863	1.92	912	2.14	957	2.34	999	2.54	1040	2.74	1081	2.94	1117	3.19
3800	715	1.43	774	1.64	828	1.86	875	2.04	924	2.26	969	2.47	1010	2.67	1050	2.87	1091	3.08	1126	3.29
3900	731	1.54	787	1.74	843	1.98	888	2.16	936	2.38	981	2.60	1022	2.81	1063	3.02	1103	3.22	—	—
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	3.36	—	—
4100	763	1.76	816	1.97	872	2.23	918	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	1016	3.03	1056	3.26	—	—	—	—	—	—
4300	794	2.00	846	2.23	900	2.50	943	2.73	985	2.93	1028	3.17	—	—	—	—	—	—	—	—
4400	810	2.13	861	2.37	913	2.64	956	2.89	999	3.08	1040	3.32	—	—	—	—	—	—	—	—
4500	826	2.27	876	2.52	927	2.78	970	3.04	1012	3.26	—	—	—	—	—	—	—	—	—	—
4600	842	2.41	892	2.67	940	2.92	983	3.21	—	—	—	—	—	—	—	—	—	—	—	—
4700	858	2.55	907	2.83	954	3.08	1002	3.36	—	—	—	—	—	—	—	—	—	—	—	—
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 6)
- 2 **Shading** indicates field-supplied motor and drive required
- 3 Maximum usable bhp is 2.4 with standard motor. Extensive motor and electrical testing on the Weathermaker I 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 Use of field-supplied motor may affect wire sizing. Contact Carrier representative to verify.
- 5 Values include losses for filters, unit casing and wet coils.
- 6 Motor drive range is 690 to 935 rpm. All other rpms require field-supplied drive.

48LJ014 (12½ Tons) — FACTORY-INSTALLED 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	4.38
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	1165	4.26	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	5.26
4900	852	2.51	910	2.86	963	3.15	1014	3.48	1060	3.76	1105	4.02	1150	4.38	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	4.73	1214	5.13	1257	5.50	—	—
5200	896	2.95	952	3.33	1003	3.63	1053	4.00	1098	4.30	1141	4.60	1183	4.89	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	4.23	1072	4.59	1118	4.93	1163	5.34	1203	5.67	—	—	—	—	—	—	—	—
5800	985	3.99	1039	4.42	1086	4.80	1131	5.14	1176	5.56	—	—	—	—	—	—	—	—	—	—
5900	1000	4.18	1053	4.62	1100	5.02	1144	5.36	—	—	—	—	—	—	—	—	—	—	—	—
6000	1015	4.39	1068	4.83	1114	5.25	1158	5.58	—	—	—	—	—	—	—	—	—	—	—	—
6100	1030	4.59	1083	5.04	1128	5.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6200	1045	4.81	1097	5.26	1142	5.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6300	1061	5.03	1112	5.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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 4.2. Extensive motor and electrical testing on the Weathermaker® I 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 a Carrier representative to verify.
- 6 Motor drive range is 860 to 1080 rpm. All other rpms require field-supplied drive.

FAN RPM AT MOTOR PULLEY SETTINGS

UNIT 48LJ	MOTOR PULLEY TURNS OPEN										
	0	½	1	1½	2	2½	3	3½	4	4½	5
006	1190	1160	1130	1100	1065	1035	1005	970	940	910	875
007	1460	1420	1380	1340	1300	1265	1230	1190	1130	1110	1070
008	840	815	790	765	740	715	690	665	640	615	590
009,012	935	910	890	865	840	815	790	765	740	715	690
014	1080	1060	1035	1015	990	970	950	930	905	885	860

EVAPORATOR-FAN MOTOR EFFICIENCY

MOTOR	EFFICIENCY (%)
48LJ004	63
48LJ005	79
48LJ006,007	81
48LJ008-012	80
48LJ014	85

NOTE: Convert bhp to Watts using the following formula

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

ECONOMIZER STATIC PRESSURE DROP (in. wg) – 48LJ004-007

CFM								
900	1200	1400	1600	1800	2000	2200	2400	2600
.05	.05	.05	.05	.05	.05	.05	.05	.05

ECONOMIZER STATIC PRESSURE DROP (in. wg) – 48LJ008-014

CFM								
2200	2500	3000	3500	4000	4500	5000	5500	6000
.02	.02	.03	.04	.05	.06	.07	.08	.09

ALTITUDE COMPENSATION* — 48LJ004-007

ELEVATION	NATURAL GAS Orifice Size†	LIQUID PROPANE Orifice Size
0-2,000	33	43
2,000	34	43
3,000	35	44
4,000	36	44
5,000	36	44
6,000	37	45
7,000	37	45
8,000	38	46
9,000	39	47
10,000	41	48
11,000	43	48
12,000	44	49
13,000	44	49
14,000	45	50

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

†Orifices available through your Carrier Distributor.

ALTITUDE COMPENSATION* — 48LJ008-014

ELEVATION	NATURAL GAS Orifice Size†	LIQUID PROPANE Orifice Size
0-2,000	31	41
2,000	32	42
3,000	32	42
4,000	32	42
5,000	33	43
6,000	34	43
7,000	35	44
8,000	36	44
9,000	37	45
10,000	38	46
11,000	39	47
12,000	40	47
13,000	41	48
14,000	42	48

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

†Orifices available through your Carrier Distributor.

SOUND POWER (Total Unit)

48LJ	ARI RATING (60 Hz)	OCTAVE BANDS							
		63	125	250	500	1000	2000	4000	8000
004-007	8.2 Bels	78.5	84.0	77.5	73.0	70.5	72.0	65.0	58.5
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

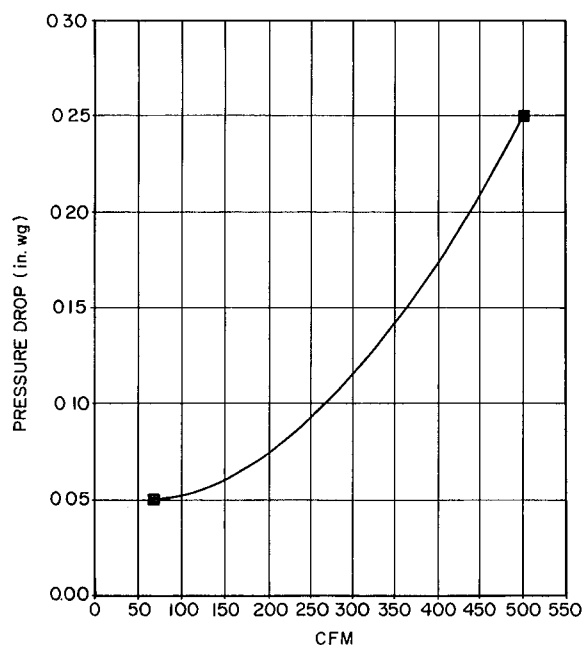
ARI — Air-Conditioning & Refrigeration Institute
Bels — Sound Levels (1 bel = 10 decibels)

ALTITUDE DERATING FACTOR* — 48LJ004-014

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

*Derating of the unit is not required unless the heating value of the gas exceeds the values listed in the table above, or if the elevation exceeds 6000 ft. Derating conditions must be 4% per thousand ft above sea level. For example, at 4000 ft, if the heating value of the gas exceeds 1000 Btu/ft³, the unit will require a 16% derating. For elevations above 6000 ft, the same formula applies. For example, at 7000 ft, the unit will require a 28% derating of the maximum heating value per the National Fuel Gas Code.

ECONOMIZER/TWO-POSITION DAMPER BAROMETRIC RELIEF DAMPER CHARACTERISTICS — 48LJ004-014



Electrical data

UNIT	NOMINAL V-PH-HZ	VOLTAGE RANGE		COMPR (each)		OFM	IFM	COMBUSTION FAN MOTOR	POWER SUPPLY		DISCONNECT SIZE*	
		Min	Max	RLA	LRA	FLA	FLA	FLA	MCA	MOCPT	FLA	LRA
48LJE004 (3 Tons)	208/230-1-60	187	254	17.9	93	1.9	2.8	.57	27.1/27.1	35/35	26/26	105/105
	208/230-3-60	187	254	11.2	80	1.9	2.8	.57	18.7/18.7	25/25	18/18	92/92
	460-3-60	414	508	6.1	40	1.0	1.5	.30	10.1	15	10	46
	575-3-60	518	632	4.5	29	1.9	2.8	.57	10.3	15	11	41
48LJD/LJE 005 (4 Tons)	208/230-1-60	187	254	24.8	127	1.9	3.8	.57	36.7/36.7	45/45	35/35	141/141
	208/230-3-60	187	254	15.7	99	1.9	3.8	.57	25.3/25.3	30/30	25/25	113/113
	460-3-60	414	508	7.8	50	1.0	1.9	.30	12.6	20	12	106
	575-3-60	518	632	5.5	40	1.9	3.8	.57	12.6	20	13	94
48LJD/LJE 006 (5 Tons)	230-1-60	207	254	27.8	135	1.9	8.8	.57	45.5	60	44	184
	208/230-3-60	187	254	19.2	105	1.9	4.0	.57	29.9/29.9	40/40	29/29	136/136
	460-3-60	414	508	9.6	55	1.0	1.8	.30	14.8	20	14	75
	575-3-60	518	632	8.3	45	1.9	8.8	.57	21.1	25	22	94
48LJD/LJE 007 (6 Tons)	208/230-3-60	187	254	21.9	137	1.9	5.8	.57	35.1/35.1	45/45	34/34	183/183
	460-3-60	414	508	10.4	69	1.0	2.6	.30	16.6	20	16	91
	575-3-60	518	632	9.6	55	1.9	11.0	.57	24.9	30	26	110
	208/230-3-60	187	254	13.7	82	3.0	5.8	.57	39.7/39.7	45/45	42/42	223/223
48LJD/LJE 008 (7½ Tons)	460-3-60	414	508	6.9	41	1.5	2.6	.30	19.6	25	21	112
	575-3-60	518	632	4.9	30	1.5	2.6	.30	15.1	20	16	90
	208/230-3-60	187	254	16.2	84	3.0	5.8	.57	45.4/45.4	50/50	47/47	227/227
	460-3-60	414	508	8.0	42	1.5	5.8	.30	22.1	25	23	114
48LJD/LJE 009 (8½ Tons)	575-3-60	518	632	6.1	33	1.5	2.6	.30	17.8	20	19	96
	208/230-3-60	187	254	19.2	105	3.0	5.8	.57	52.1/52.1	60/60	54/54	269/269
	460-3-60	414	508	9.6	55	1.5	2.6	.30	25.7	30	27	140
	575-3-60	518	632	8.3	45	1.5	2.6	.30	22.8	25	24	120
48LJD 012 (10 Tons)	208/230-3-60	187	254	22.3	137	3.0	12.0	.57	65.3/65.3	80/80	69/69	376/376
	460-3-60	414	508	10.4	69	1.5	5.4	.30	30.3	35	32	189
	575-3-60	518	632	9.6	55	1.5	5.4	.30	28.5	30	30	161
	208/230-3-60	187	254	22.3	137	3.0	12.0	.57	65.3/65.3	80/80	69/69	376/376

LEGEND

FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
Hp — Nominal Horsepower
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MOCPT — Maximum Overcurrent Protection
MCA — Minimum Circuit Amps
OFM — Outdoor (Condenser) Fan Motor
RLA — Rated Load Amps

*Used to determine minimum disconnect size per NEC.

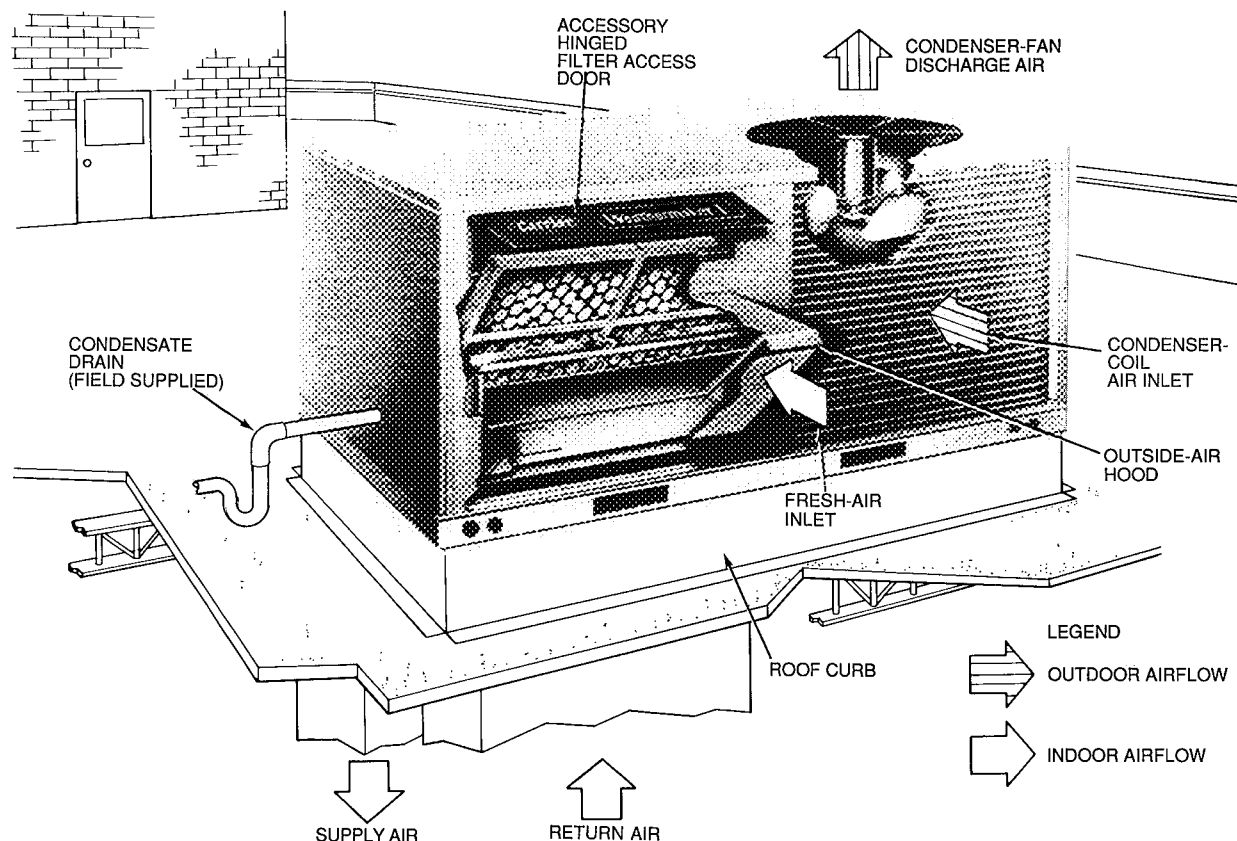
†Fuse or HACR circuit breaker

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

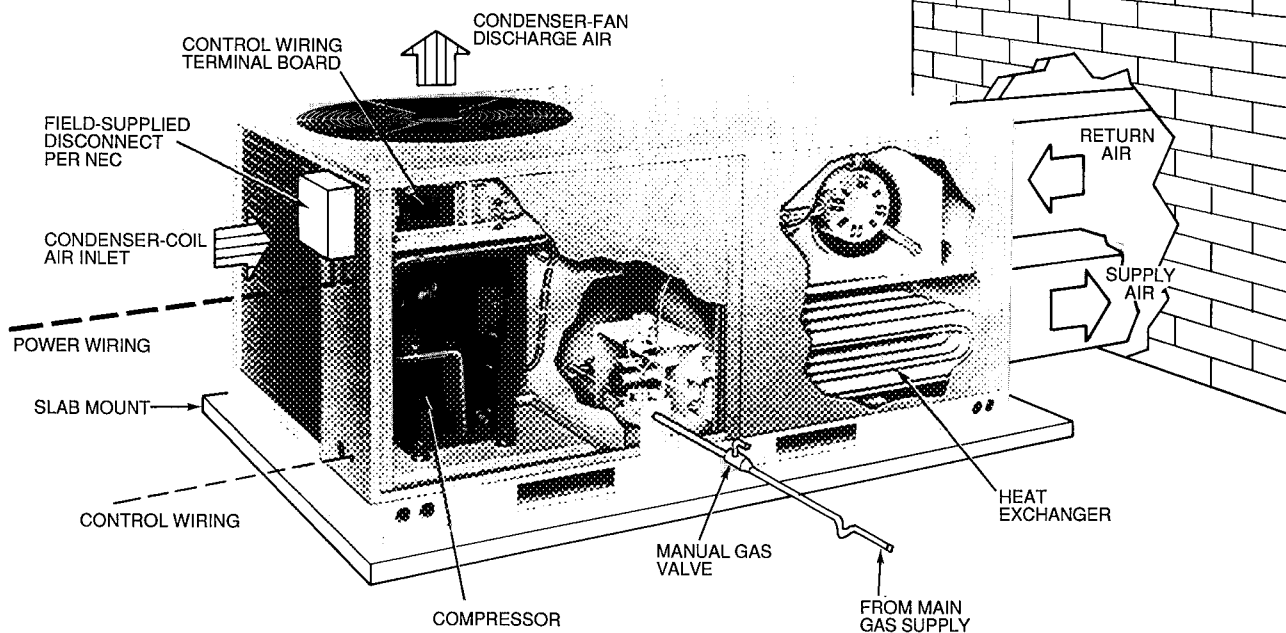


Typical piping and wiring

VERTICAL DISCHARGE DUCTING



HORIZONTAL DISCHARGE DUCTING



LEGEND

NEC — National Electrical Code

Application data

Ductwork — 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.

To convert from vertical discharge to horizontal discharge:

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

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

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 possibility of condensate blow-off from evaporator, airflow through units should not exceed 500 cfm/ton.

Minimum airflow for cooling is 300 cfm/ton.

Minimum ambient operating temperature for cooling 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.

Maximum operating outdoor-air temperature for cooling is 125 F.

High altitude may require a change to the gas orifice. Refer to Altitude Compensation charts on page 24.

Minimum temperature of air entering the heat exchanger in heating is 50 F continuous and 45 F intermittent.

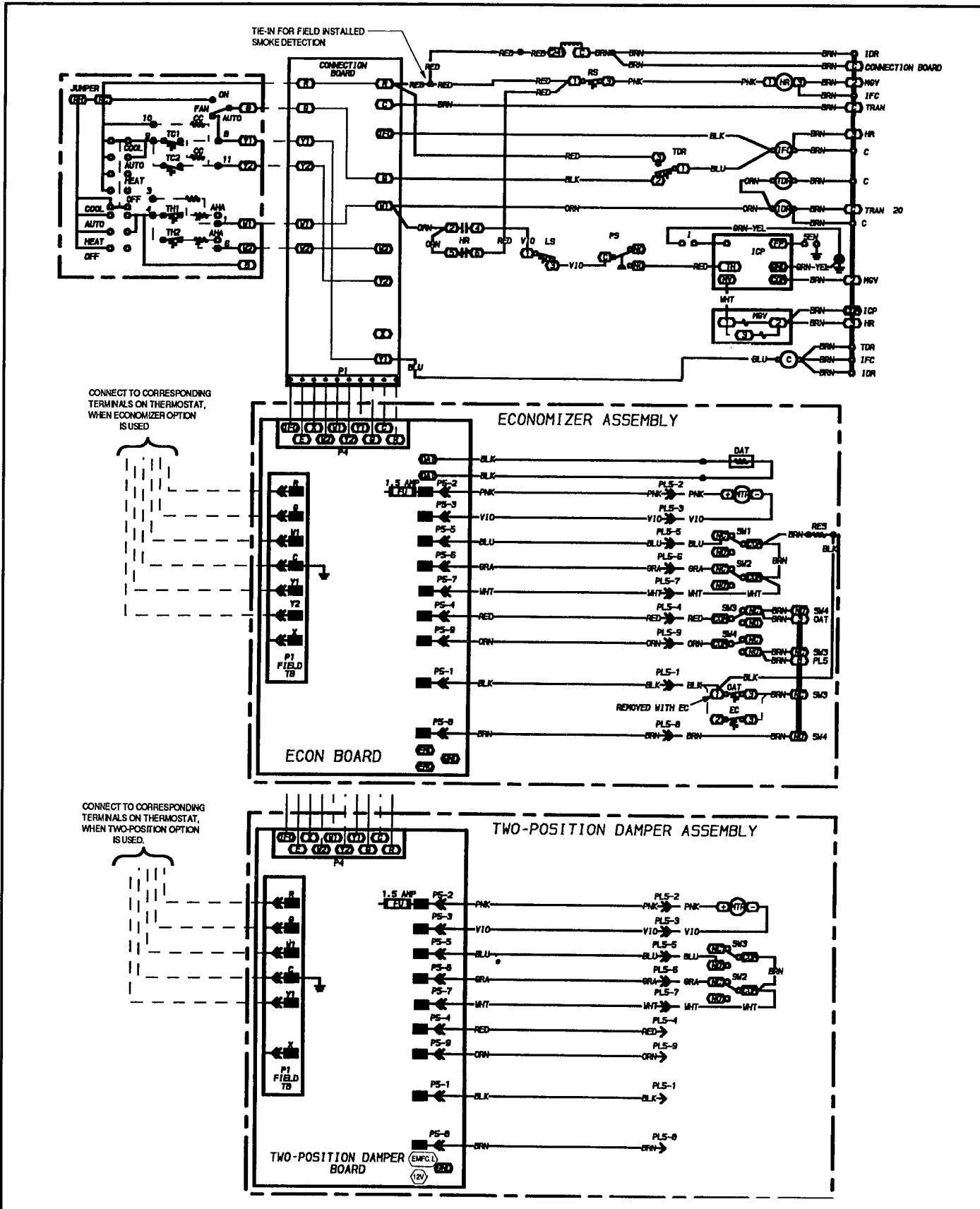
Internal unit design — Due to Carrier's internal unit design (draw-thru over the motor), air path, and specially designed motors, the full horsepower (maximum continuous bhp) listed in the Physical Data table and the notes following each Fan Performance table can be utilized with extreme confidence.

Using Carrier motors to the values listed in the Physical and Fan Performance Data tables *will not* result in nuisance tripping or premature motor failure, and the unit warranty will not be affected. Refer to the table below for nominal horsepower.

MOTOR NOMINAL HORSEPOWER

UNIT 48LJ	NOMINAL HORSEPOWER
004	.33
005	.75
006	1.5
007	2.0
008,009	2.0
012	2.0
014	4.0

Typical control wiring schematic



LEGEND FOR TYPICAL CONTROL WIRING SCHEMATIC

AHA	— Adjustable Heat Anticipator
C	— Contactor, Compressor
CC	— Cooling Compensator
DAT	— Discharge-Air Thermostat
EC	— Enthalpy Control
ECON	— Economizer
EMC/EMFC	— Energy Management Closed (Economizer)
EMFC.L	— Energy Management Fully Closed (Two-Position Damper)
EMO/EMFO	— Energy Management Open
FU	— Fuse
GND	— Ground
HR	— Holding Relay
I	— Ignitor
ICP	— Ignitor Control Pack
IDR	— Induced-Draft Relay
IFC	— Indoor-Fan Contactor
IFR	— Indoor-Fan Relay
LS	— Limit Switch
MGV	— Main Gas Valve
MTR	— Motor
NC	— Normally Closed
NO	— Normally Open
OAT	— Outdoor-Air Thermostat
P	— Plug
PL	— Plug Assembly
PS	— Pressure Switch
RES	— Resistor
RS	— Rollout Switch
SEN	— Sensor
SW	— Switch
SW1	— Switch, Fully Open
SW2	— Switch, Fully Closed
SW3	— Switch, Minimum Vent Position
SW4	— Switch, Maximum Vent Position
TB	— Terminal Block

TC	— Thermostat-Cooling
TDR	— Time Delay Relay
TH	— Thermostat-Heating
TRAN	— Transformer
	Circuit Board Run
	Field Splice
	Marked Wire
	Terminal (Marked)
	Terminal (Unmarked)
	Terminal Block
	Terminal Econ Two-Position Board
	Splice
	Splice (Marked)
	Factory Wiring
	Field Control Wiring
	Field Power Wiring
	Accessory or Optional Wiring
	To indicate common potential only, not to represent wiring

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 indoor (evaporator) fan motor (IFM), Compressor no. 1 and condenser fan start. The outdoor (condenser) fan motor (OFM) runs continuously while unit is cooling. On sizes 48LJ008-014, 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.

Heating, units without economizer — When thermostat calls for heating, terminal W1 is energized, induced-draft relay (IDR) and time delay relay (TDR) are energized and burner ignition sequence begins. The IFC is energized in 20 to 40 seconds and the IFM starts. On size 008-014 units equipped for 2 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.

Cooling, units with economizer — When the outdoor ambient temperature is above the outdoor-air thermostat (OAT) or enthalpy control (EC) setting and the thermostat calls for cooling, terminals G and Y1 are energized. The IFC is energized and the economizer damper blade opens to the minimum position, compressor contactor no. 1 (C1) and evaporator-fan motor, compressor no. 1 and condenser fan start. On 48LJ008-014 units, if thermostat calls for a second

stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

If the outdoor ambient temperature is below the OAT setting and the thermostat calls for cooling, the IFC is energized, the evaporator fan is started and the economizer modulates open. The economizer acts as the first stage of cooling, providing free cooling with outdoor air. The position of the damper blade is determined by the discharge temperature sensor.

If outdoor air alone cannot satisfy the cooling requirements of the conditioned space, Y2 on the thermostat is energized and Compressor no. 1 starts. The damper blade opens for 5 seconds and stops for 30 seconds until fully open.

As conditioned-space temperature approaches the thermostat's cooling set point, the mechanical cooling stage cycles off. After mechanical cooling shuts off, the economizer modulates to the minimum position.

Heating, units with economizer — Upon a call for heat through W1, the IDR is energized to start the induced draft motor. The main burner lights, the IFC energizes to start the evaporator fan, and the economizer damper blade opens to the minimum position. If the two-position damper is used, the outdoor-air damper opens to the minimum position whenever the evaporator fan runs.

After W1 is deenergized, the IDM stops.

As space temperature approaches the heating temperature set point, heating stage cycles off. Economizer or two-position damper returns to a fully closed position when fan shuts off.

Guide specifications — 48LJ004-007

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

HVAC Guide Specifications

Size Range: **3 to 6 Tons, Nominal (Cooling)**
74,000 — 115,000 Btuh, Nominal
(Input Heating)

Carrier Model Number: **48LJD**
48LJE

Part 1 — General

1.01 SYSTEM DESCRIPTION

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

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standards 210/240 and 270. Designed in accordance with UL Standard 1995.
- B. Unit shall be designed to conform to ANSI/ASHRAE 15, latest revision.
- C. Unit shall be UL tested and certified in accordance with ANSI Z21.47 Standards and CSA or CGA certified as a total package.
- D. Roof curb shall be designed to conform to NRCA Standards.
- E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
- F. Unit casing shall be capable of withstanding Federal test method Standard No. 141 (Method 6061) 500-hour salt spray test.

1.03 DELIVERY, STORAGE AND HANDLING

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

Part 2 — Products

2.01 EQUIPMENT (STANDARD)

A. General:

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

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
2. Evaporator fan compartment interior cabinet surfaces shall be insulated with a minimum 1/2-in. thick, flexible glass fiber insulation, coated on the air side. Aluminum foil faced glass fiber insulation shall be used in the furnace compartment.
3. Cabinet panels shall be easily removable for servicing.
4. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.

5. Unit shall have a factory-installed condensate drain pan made of a non-corrosive material, providing a minimum 3/4-in connection.

C. Fans:

1. Evaporator Fan
 - a. Fan shall be direct or belt driven as shown on the equipment drawings. Belt drive shall include an adjustable-pitch motor pulley.
 - b. Fan wheel shall be double-inlet type with forward-curved blades.
 - c. Bearings shall be sealed, permanently lubricated ball-bearing type for longer life and lower maintenance
2. Evaporator fan shall be made from steel with a corrosion-resistant finish and shall be dynamically balanced.
3. Condenser fan shall be of the direct-driven propeller type and shall discharge air vertically.
4. Condenser fan shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.
5. Induced draft blower shall be of the direct driven, single inlet, forward-curved centrifugal type, made from steel with a corrosion-resistant finish and shall be dynamically balanced.

D. Compressor:

1. Fully hermetic type, internally protected.
2. Factory rubber shock mounted and internally spring mounted for vibration isolation.
3. Equipped with a factory-installed crankcase heater to minimize liquid refrigerant accumulation in compressor during shutdown and prevent refrigerant dilution of oil

E. Coils:

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

F. Heating Section.

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

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, disposable 2-in. thick glass fiber 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 an automatic-reset circuit breaker.

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 pressure switch.
 - 3) Flame rollout switch (manual reset).
 - 4) Flame proving controls

J. Operating Characteristics.

1. Unit shall be capable of starting and running at 125 F ambient outdoor temperature, exceeding maximum load criteria of ARI Standard 210/240.
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 low-leakage type damper
- d. Capable of introducing up to 100% outdoor air.
- e. Equipped with a gravity relief damper

* 3. Manual Damper:

Manual damper package shall consist of damper, birdscreen and rainhood which can be preset to admit up to 50% outdoor air for year round ventilation.

* 4. Two-Position Damper

- a. Two-position damper package shall include single blade damper and motor. Admits up to 50% outdoor air.
- b. Damper shall close upon indoor fan shutoff.

* 5. Optional Compressor Cycle Delay.

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

* 6. 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

* 7. 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.

* 8. 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 or condenser-fan cycling.

Guide specifications — 48LJ004-007 (cont)

- * 9 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.
- * 10. LP Gas Kit:
Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane gas.
- 11. Thru-the-curb Service Connections:
Allow gas and electrical connections to be brought to the unit through the roof curb.
- * 12. Electronic Programmable Thermostat:
Capable of using deluxe full-featured electronic thermostat.
- 13. Flue Shield.
Provides protection from the hot sides of the gas flue hood.
- * 14. Thermostat and Subbase:
Provides staged cooling and heating automatic (or manual) changeover, fan control and indicator light
- 15. Hail Guard:
Hail guard shall protect against damage from hail and flying debris.
- 16. 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.
- 17. Filter 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.
- 18. External Filter Package:
 - a. For use with economizer or two-position damper on horizontal discharge units.
 - b. Package shall contain all necessary hardware and instructions to install filters external to the unit.
- 19. Compressor Protection Device:
Prevents short cycling of compressor by shutting off the compressor when any safety device trips.
- 20. Duct Cover:
Package shall contain panels necessary to close off vertical supply/return duct openings when unit is adapted for horizontal supply/return.

Guide specifications — 48LJ008-014

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

HVAC Guide Specifications

Size Range: **7½ to 12½ Tons, Nominal (Cooling)**
120,000 to 225,000 Btuh, Nominal (Input Heating)

Carrier Model Number: **48LJD**
48LJE

Part 1 — General

1.01 SYSTEM DESCRIPTION

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

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standards 210/240 or 360 and 270. Designed in accordance with UL Standard 1995.
- B. Unit shall be designed to conform to ANSI/ASHRAE 15, latest revision.
- C. Unit shall be UL tested and certified in accordance with ANSI Z21.47 Standards and CSA certified as a total package
- D. Roof curb shall be designed to conform to NRCA Standards.
- E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
- F. Unit casing shall be capable of withstanding Federal test method Standard No. 141 (Method 6061) 500-hour salt spray test

1.03 DELIVERY, STORAGE AND HANDLING

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

Part 2 — Products

2.01 EQUIPMENT (STANDARD)

A. General:

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

B. Unit Cabinet:

- 1. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
- 2. Evaporator-fan compartment interior cabinet surfaces shall be insulated with a minimum ½-in. thick, flexible glass fiber insulation, coated on the air side. Aluminum foil faced glass fiber insulation shall be used in the furnace compartment.
- 3. Cabinet panels shall be easily removable for servicing.
- 4. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.

- 5. Unit shall have a factory-installed condensate drain pan made of a non-corrosive material, providing a minimum ¾-in connection.

C. Fans:

1 Evaporator Fan:

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

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

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

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

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

D. Compressor:

- 1. Fully hermetic type, on independent circuits and internally protected.
- 2. Factory rubber shock mounted and internally spring mounted for vibration isolation.
- 3. Equipped with a factory-installed crankcase heater to minimize liquid refrigerant accumulation in compressor during shutdown and prevent refrigerant dilution of oil

E. Coils:

- 1. Evaporator and condenser coils shall have aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed and degreased at the factory.
- 2. Tube sheet openings shall be belled to prevent tube wear.

F. Heating Section:

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

G. Refrigerant Components:

Refrigerant circuit components shall include.

- 1. Acutrol™ feed system.
- 2. Refrigerant strainer.

4. Service gage connections on suction, discharge and liquid lines.
- H. Filter Section.
1. Standard filter section shall consist of factory-installed, low velocity, disposable 2-in. thick glass fiber 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 an automatic-reset circuit breaker.
 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 pressure switch.
 - 3) Flame rollout switch (manual reset).
 - 4) Flame proving controls.
- J. Operating Characteristics:
1. Unit shall be capable of starting and running at 125 F ambient outdoor temperature, exceeding 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 low-leakage dampers not to exceed 3% leakage, at 1.0-in. wg pressure differential
 - d. Capable of introducing up to 100% outside air.
 - e. Equipped with a gravity relief damper
- * 3. Manual Damper:
- Manual damper package shall consist of damper, birdscreen and rainhood which can be preset to admit up to 50% outdoor air for year round ventilation.
- * 4 Two-Position Damper:
- a. Two-position damper package shall include single blade damper and motor. Admits up to 100% outdoor air.
 - b. Damper shall close upon indoor fan shutoff.
- * 5. Optional Compressor Cycle Delay:
- Compressor shall be prevented from restarting for a minimum of 5 minutes after shutdown
- * 6 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.
- * 7 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
- * 8. Head Pressure Control Package.
- a. Consists of solid-state control and condenser temperature sensor for head pressure control.
 - b. Capable of controlling outdoor-fan motor cycling to maintain condensing temperature between 90 F and 110 F at outdoor ambient temperatures down to -20 F.
- * 9. 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.
- * 10. LP Gas Kit:
Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane gas.
 - 11. Thru-the-curb Service Connections:
Allow gas and electrical connections to be brought to the unit through the roof curb.
 - * 12. Electronic Programmable Thermostat:
Capable of using deluxe full-featured electronic thermostat.
 - 13. Flue Shield:
Provides protection from the hot sides of the gas flue hood.
 - * 14. Thermostat and Subbase:
Provides staged cooling and heating automatic (or manual) changeover, fan control and indicator light.
 - 15. Hail Guard:
Hail guard shall protect against damage from hail and flying debris.
- 16. 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.
 - 17. Filter Access Panel Kit:
Package shall contain all necessary hardware and instructions to install hinged access door and provide filter access with no panel or screw removal.
 - 18. External Filter Package:
 - a. For use with economizer or two-position damper on horizontal discharge units
 - b. Package shall contain all necessary hardware and instructions to install filters external to the unit.
 - 19. Compressor Protection Device:
Prevents short cycling of compressor by shutting off the compressor when any safety device trips.
 - 20. Duct Cover:
Package shall contain panels necessary to close off vertical supply/return duct openings when unit is adapted for horizontal supply/return.

