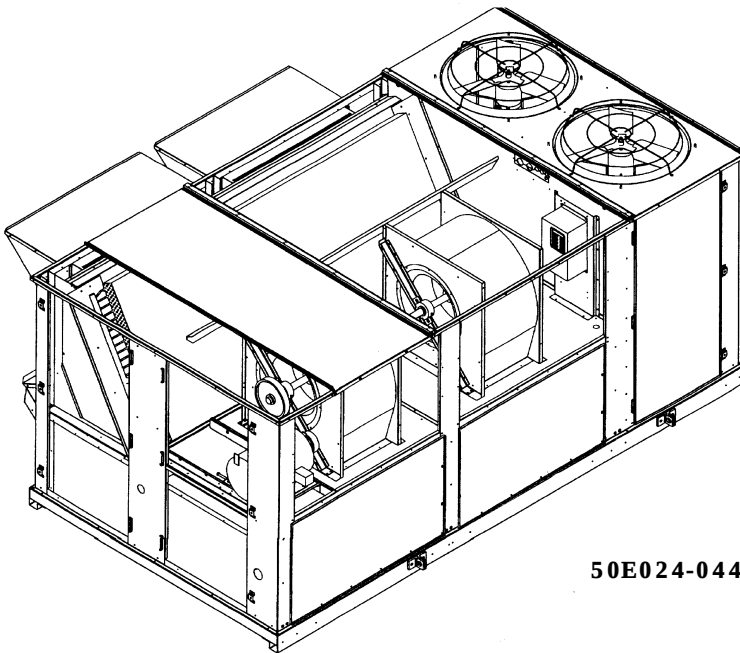




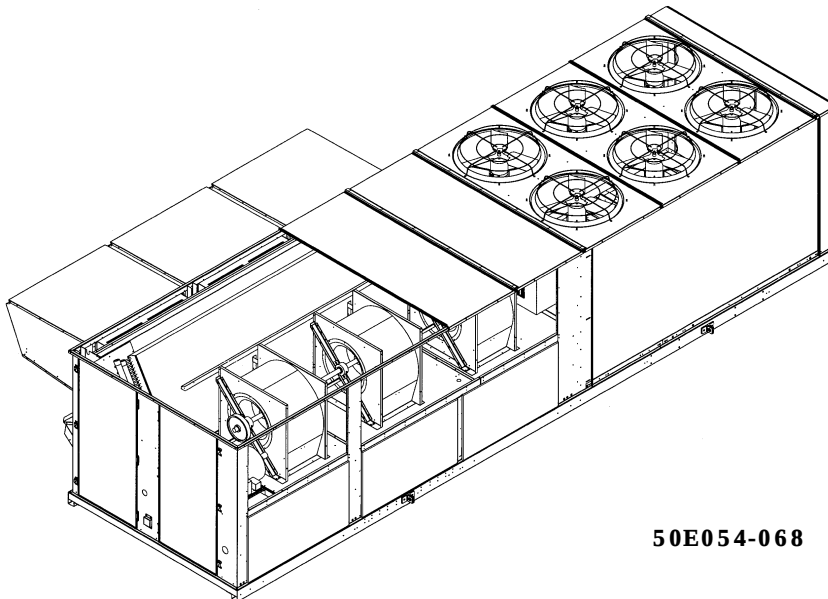
Product Data

50EJ,EK,EW,EY Single-Package Rooftop Electric Cooling Units With Optional Electric Heat 50 Hz

Nominal Capacity: 70 to 229 kW (20 to 65 Tons)



50E024-044



50E054-068

Single-Package Rooftop Units with:

- dedicated vertical and horizontal discharge configurations.
- constant and variable volume controls
- standard cooling operation at outdoor ambient temperatures as low as 2 C (35 F)
- aluminized steel, sloped condensate pan
- all internal surfaces are sheet metal lined or anti-microbial insulation
- fifty-one mm (2-in.) return air filters
- single power entry to unit
- commercial duty, totally enclosed, 3-phase condenser motors with permanently lubricated bearings
- pre-painted, galvanized steel cabinet
- commercial strength base rails (full perimeter, 14 gage)
- communicating DDC (Direct Digital Controls) unit controllers
- semi-hermetic compressors with service valves as standard
- dual independent refrigerant circuits with intertwined evaporator coils
- hinged access panels
- short cycle protection
- service diagnostics
- integrated economizer utilizing direct-drive actuators and opposed blade dampers
- IAQ (indoor air quality) options
- VFD (variable frequency drives) on all VAV units

Design flexibility

Dedicated vertical supply/return units (50EJ,EK) are ideal for new construction or retrofit to existing installations. The low unit profile is maintained when the unit is installed on the accessory roof curb, which is approved by the National Roofing Contractors Association (NRCA, U.S.A. Standard). The roof curb is made watertight by the roofer.

The ducts are attached directly to the roof curb to allow all ductwork to be completed before the unit is positioned.

Dedicated horizontal units (50EW,EY) are ideal for replacement or applications such as through-the-wall jobs or jobs where sound must be attenuated before the duct penetrates the roof. Ducts connect directly to the unit. Horizontal units may be curb or slab mounted.

Direct Digital Controls (DDC) — standard

Unit features (50EJ,EK,EY,EW units)

- heating/cooling operation
- fan cycling head pressure control
- integrated economizer
- outdoor-air thermistor (OAT) and supply-air thermistor (SAT) for economizer control
- remote start/stop for non-thermostat applications
- accessory power exhaust output
- LED diagnostic capability
- field test checkout
- timed override from accessory remote sensor
- space temperature averaging from accessory remote sensor
- unoccupied heating or cooling from accessory remote sensor

Unit features (50EJ,EW units only)

- heating/cooling via thermostat
- heating/cooling during unoccupied periods using accessory remote sensor
- support supply air reset using accessory remote sensor
- control of two stages of power exhaust
- control of modulating power exhaust with field installed accessory
- two steps of capacity control (up to 4 steps with accessory unloader packages)

Unit features (50EJ,EY units only)

- up to 6 steps of capacity control
- supply air pressure via variable frequency drive
- control of heat interlock relay
- occupied heat
- nighttime heating/cooling
- morning warm-up
- return-air thermistor (RAT) for VAV heat control

Additional features are available with accessory expansion board

- indoor air quality control
- inputs for fan status, filter status and field applied status
- demand limit input and function
- external alarm light function
- smoke control modes
- control of power exhaust under fire outputs

The Direct Digital Controls also have pre-loaded software that is available through the use of a computer and the associated software. The computer used to access the DDC may be permanent or used only during set-up and commissioning of the unit.

Unit features with unit software access (50EJ,EK,EY,EW units)

- CCN (Carrier Comfort Network) protocol
- compatible with a computer equipped with Building Supervisor, Service Tool, ComfortWorks™ software or an accessory LID-2B hand-held interface
- perform demand limit functions
- alarm monitoring
- timeclock with back-up
- daylight savings time function
- occupancy control
- holiday table
- temperature compensated start
- Configuration, Maintenance, Service and Set Point data table display

Unit features with computer access (50EJ,EY units only)

- DAV (Digital Air Volume) interface linkage
- support supply-air temperature reset (with space sensor)

Quality and reliability

Dual serviceable, semi-hermetic compressors on intertwined evaporator coil ensures excellent full and part load efficiency. Dual refrigerant circuits, both electrically and mechanically independent, provide standby capability should one circuit require service. Reliable Carlyle 06D/E compressors are proven performers.

Solid core dessicant filter driers are sized at 491 cc (30 cubic in.) to assure longer compressor life. Solid core filters prevent erosion and dispersion of dessicant.

Totally enclosed outdoor-fan motors ensure many years of trouble-free operation.

Positive-locking bearings for the indoor fan ensure vibration-free operation of the supply fan assembly and remain locked during the life of the bearing.

Variable frequency drive (VFD) and unit unloading

Variable air volume (VAV) units utilize state of the art variable frequency drive (VFD) to control airflow.

VAV units have up to 6 steps of unloading for low load operation. Constant volume (CV) units come equipped with 2 stages of capacity. Field installed accessory unloaders are available to increase this to up to 4 stages of operation. The unit operation will closely match the load and maintain comfort in the most energy-efficient manner.

Factory-installed economizer (standard)

All units come equipped with an integrated economizer which permits cooling utilizing an outdoor air sensor (OAT). The direct gear driven, low leakage blades eliminate conventional inter-blade linkages and the associated adjustments.

The economizer operates in conjunction with mechanical cooling when required and is factory-installed for either vertical or horizontal operation. The factory-supplied and field-installed rain hood/filter assembly prevents moisture or objects from entering the unit.

Exhaust air relief is available for all units:

- barometric relief (CV or VAV)
- power exhaust (CV)
- 100% modulating power exhaust (VAV)

Field-adjustable set points on modulating power exhaust prevent space pressurization problems. Factory-installed relief options are unit mounted on downflow units. Accessories must be duct mounted for horizontal applications.

Installation/serviceability

Dedicated design (vertical or horizontal) requires no alteration time to convert in the field. Single point electrical connections are standard on all units. Electrical service access can be made through roof curb or side of unit.

High static capability of standard units minimize the need to convert to higher static, oversized motors. The unit is less sensitive to distribution ductwork design.

The standard microprocessor controls replace the need for field installed anti-short cycle timers. The

controls are compatible with either a room sensor or conventional thermostat with no need to install an accessory interface. In addition, no special tools are required to run the unit through its operational steps. It's as simple as throwing a DIP (dual in-line package) switch to activate the automatic test mode. After the test cycle, the unit automatically returns to normal operation.

Hinged access panels are located for easy access to standard serviceable components for maintenance. No fasteners need to be removed, which reduces servicing time and prevents roof leaks caused by discarded screws.

Color coded wiring permits easy tracing and diagnostics.

The thermal insulation contains an EPA (Environmental Protection Agency) (U.S.A. Standard) registered immobilized antimicrobial agent to inhibit the growth of bacteria and fungi.

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Model number nomenclature



50 EJ B 034 -- -- 9 1 3 E C

50 — Cooling Unit with
Optional Electric Heat

EJ — CV Vertical
EK — VAV Vertical
EW — CV Horizontal
EY — VAV Horizontal

Heat Options (kW)

	— 0 kW	B 25 kW	C 50 kW	D 37.5 kW	E 75 kW
024	O	O	X	N/A	N/A
028	O	O	X	N/A	N/A
030	O	O	X	N/A	N/A
034	O	O	X	N/A	N/A
038	O	O	X	N/A	N/A
044	O	O	X	N/A	N/A
054	O	N/A	N/A	O	X
058	O	N/A	N/A	O	X
064	O	N/A	N/A	O	X
068	O	N/A	N/A	O	X

X = Available CV only (EJ/EW)
O = Available CV and VAV Models

Nominal Capacity

024	—	70.3 kW (20 Tons)
028	—	87.9 kW (25 Tons)
030	—	95.0 kW (27 Tons)
034	—	105.5 kW (30 Tons)
038	—	123.0 kW (35 Tons)
044	—	140.7 kW (40 Tons)
054	—	175.9 kW (50 Tons)
058	—	193.4 kW (55 Tons)
064	—	211.0 kW (60 Tons)
068	—	228.6 kW (65 Tons)

Filter Option

-- — Std. 51-mm (2-in.) Throwaway

Coil Material

— — Al/Cu Condenser and Evaporator
C — Cu/Cu Condenser, Al/Cu Evaporator
E — Al/Cu Condenser with Precoated Fins

Economizer/Relief Options

A — Economizer Only (all)
B — Economizer with Non-Modulating Power
Exhaust (EJ Only)
C — Economizer with Barometric Relief
(EJ/EK Only)
D — Economizer with Modulating Power
Exhaust (EK Only)

Motor Options

STD	kW	HP	UNIT									
			024	028	030	034	038	044	054	058	064	068
A	3.7	5	X									
B	5.6	7.5		X								
C	7.5	10	X	X	X	X	X					
D	11.1	15	X	X	X	X	X	X	X			
E	14.8	20			X	X	X	X	X	X		
F	18.5	25						X	X	X	X	X
G	22.2	30								X	X	X
H	29.6	40									X	X

NOTE: VAV Models (EK and EY) Equipped with Variable Frequency Drive (VFD)

Packaging

3 — Export Crate

Design Series

0 — 054-068 Sizes
1 — 024-044 Sizes

Voltage

9 — 400-3-50

Quality Assurance



Certificate No FM 21837

Approvals:

ISO 9002
EN 29002
BS5750 PART 2
ANSI/ASQC Q92

LEGEND

Al — Aluminum
Cu — Copper
CV — Constant Volume
VAV — Variable Air Volume

Physical data (SI)



UNIT 50EJ,EK,EW,EY	024	028	030
NOMINAL CAPACITY (kW) 50 Hz	67	81	91
OPERATING WEIGHT	For operating weights see page 13.		
COMPRESSOR			
Type Ckt 1	06D328	06D328	06D537
Ckt 2	06D818	06D328	06D328
Number of Refrigerant Circuits	2	2	2
Oil (ml) (Ckt1, Ckt 2)	3400, 2600	3400 ea.	3400 ea.
REFRIGERANT TYPE	R-22		
Operating Charge (kg)			
Circuit 1*	11.34	11.34	11.34
Circuit 2	14.06	11.34	11.34
CONDENSER COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Lanced, Aluminum Precoated, or Copper Fins		
Quantity	1	1	1
Rows...Fins/m	4...590	4...590	4...590
Total Face Area (sq m)	3.09	3.09	3.09
CONDENSER FAN	Propeller Type		
Nominal L/s 50 Hz	5470	5470	5470
Quantity...Diameter (mm)	2...762	2...762	2...762
Motor kW	.75	.75	.75
EVAPORATOR COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Plate Fins, Intertwined Circuits		
Rows...Fins/mm	4...590	4...590	4...590
Total Face Area (sq m)	2.94	2.94	2.94
EVAPORATOR FAN	Centrifugal Type		
Quantity...Size (mm)	2...508 x 381	2...508 x 381	2...508 x 381
Type Drive	Belt	Belt	Belt
Nominal L/s 50 Hz	3540	4340	4815
Motor kW	3.73	5.60	7.46
Motor Frame Size	184T	213T	215T
Motor Bearing Type	7.46†	7.46†	11.19†
Maximum Allowable r/s	215T	215T	254T
Motor Pulley Pitch Diameter (mm)	Ball	Ball	Ball
Nominal Motor Shaft Diameter (mm)	20	20	20
Fan Pulley Pitch Diameter (mm)	124	137	112
Nominal Fan Shaft Diameter (mm)	112	155	124
Belt, Quantity...Type	145	140	150
Belt Length (mm)	28	35	35
Pulley Center Line Distance (mm)	315	315	239
Factory Speed Setting (r/s) 50 Hz	218	282	206
	49	49	49
	1...BX56	1...BX56	2...BX50
	1422	1422	1270
	406-475	396-467	396-467
	10.1	10.8	11.8
	12.8	13.3	14.7
	15.1	15.6	16.4
HIGH-PRESSURE SWITCH (kPa)			
Cutout	2951	2951	2951
Reset (Auto.)	2206	2206	2206
LOW-PRESSURE SWITCH (kPa)			
Cutout	48	48	48
Reset (Auto.)	152	152	152
RETURN-AIR FILTERS			
Quantity...Size (mm) (W x H x T)	10...508x610x51	10...508x610x51	10...508x610x51
OUTDOOR-AIR FILTERS			
Quantity...Size (mm)		8...406 x 635	
		4...508 x 635	
POWER EXHAUST	Direct Drive, 3-Speed, Single Phase Motor (Factory Wired For High Speed) and Forward Curved Fan		
Motor Quantity...kW		4...0.75	
Fan, Diameter...Width (mm)		279...254	

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes

038-068: Circuit 1 uses the left condenser coil, Circuit 2, the right. All units have intertwined evaporator coils.

†Motor and drive shown will deliver approximately 17.2 kPa (2.5 in. wg) net external static pressure.

Physical data (SI) (cont)



UNIT 50EJ,EK,EW,EY	034	038	044
NOMINAL CAPACITY (kW) 50 Hz	98	116	123
OPERATING WEIGHT	For operating weights see page 13.		
COMPRESSOR			
Type Ckt 1	06D537	06D537	06EA250
Ckt 2	06D537	06D537	06EA250
Number of Refrigerant Circuits	2	2	2
Oil (ml) (Ckt1, Ckt 2)	3400 ea.	3400 ea.	6625 ea.
REFRIGERANT TYPE	R-22		
Operating Charge (kg)			
Circuit 1*	11.34	15.42	15.88
Circuit 2	11.34	15.42	15.88
CONDENSER COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Lanced, Aluminum Precoated, or Copper Fins		
Quantity	1	2	2
Rows...Fins/m	4...590	3...590	3...590
Total Face Area (sq m)	3.09	5.42	5.42
CONDENSER FAN	Propeller Type		
Nominal L/s 50 Hz	5470	11,740	11,740
Quantity...Diameter (mm)	2...762	4...762	4...762
Motor kW	.75	1	.75
EVAPORATOR COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Plate Fins, Intertwined Circuits		
Rows...Fins/mm	4...590	3...590	3...590
Total Face Area (sq m)	2.94	3.22	3.22
EVAPORATOR FAN	Centrifugal Type		
Quantity...Size (mm)	2...508 x 381		
Type Drive	Belt		
Nominal L/s 50 Hz	5290		
Motor kW	7.46	11.19†	14.92
Motor Frame Size	215T	254T	256T
Motor Bearing Type	Ball		
Maximum Allowable r/s	20		
Motor Pulley Pitch Diameter (mm)	112	145	150
Nominal Motor Shaft Diameter (mm)	35	41	41
Fan Pulley Pitch Diameter (mm)	229	231	221
Nominal Fan Shaft Diameter (mm)	49		
Belt, Quantity...Type	2...BX50	2...5VX530	2...5VX530
Belt Length (mm)	1270	1346	1346
Pulley Center Line Distance (mm)	396-467	381-455	381-455
Factory Speed Setting (r/s) 50 Hz	12.4	15.1	16.4
HIGH-PRESSURE SWITCH (kPa)			
Cutout	2951	2951	2951
Reset (Auto.)	2206	2206	2206
LOW-PRESSURE SWITCH (kPa)			
Cutout	48	48	48
Reset (Auto.)	152	152	152
RETURN-AIR FILTERS			
Quantity...Size (mm) (W x H x T)	10...508 x 610 x 51	10...508 x 610 x 51	10...508 x 610 x 51
OUTDOOR-AIR FILTERS			
Quantity...Size (mm)	8...406 x 635		
	4...508 x 635		
POWER EXHAUST			
Motor Quantity...kW	Direct Drive, 3-Speed, Single Phase Motor (Factory Wired For High Speed) and Forward Curved Fan		
Fan, Diameter...Width (mm)	4...0.75		
	279...254		

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes

038-068: Circuit 1 uses the left condenser coil, Circuit 2, the right. All units have intertwined evaporator coils.

†Motor and drive shown will deliver approximately 17.2 kPa (2.5 in. wg) net external static pressure.



UNIT 50EJ,EK,EW,EY	054	058
NOMINAL CAPACITY (kW) 50 Hz	143	159
OPERATING WEIGHT	For operating weights see page 13.	
COMPRESSOR Quantity...Type (Ckt 1, Ckt 2) Number of Refrigerant Circuits Oil (ml) (Ckt 1, Ckt 2)	1...06EA265, 1...06EA250 2 9990, 6625	1...06EA275, 1...06A250 2 9990, 6625
REFRIGERANT TYPE Operating Charge (kg) Circuit 1* Circuit 2	R-22 23.0 21.1	25.9 21.9
CONDENSER COIL Quantity Rows...Fins/m Total Face Area (sq m)	Cross-Hatched 3/8-in. Copper Tubes, Aluminum Lanced, Aluminum Pre-Coated, or Copper Plate Fins 1 3...590 6.19	1 3...590 9.29
CONDENSER FAN Nominal L/s 50 Hz Quantity...Diameter (mm) Motor kW	Propeller Type 11 960 4...762 0.746	17 940 6...762 0.746
EVAPORATOR COIL Rows...Fins/m Total Face Area (sq m)	Cross-Hatched 1/2-in. Copper Tubes, Aluminum Plate Fins, Intertwined Circuits 4...669 4.18	4...669 4.18
EVAPORATOR FAN Quantity...Size (mm) Type Drive Nominal L/s Motor kW Motor Frame Size Motor Bearing Type Maximum Allowable r/s Motor Pulley Pitch Diameter (mm) Nominal Motor Shaft Diameter (mm) Fan Pulley Pitch Diameter (mm) Nominal Shaft Diameter (mm) Belt, Quantity...Type Belt, Length (mm) Pulley Center Distance (mm) Factory Speed Setting (r/s)	Centrifugal Type 3...508 x 381 Belt 7931 11.19 S254T 14.92† S256T 18.65 D284T 20 119.38 41.28 281.94 49 2...5VX550 1397 386-444 10.3	3...508 x 381 Belt 8781 14.92 S256T 18.65† S284T 22.38 D286T 20 170.18 47.63 281.94 49 2...5VX570 1448 386-444 12.9
HIGH-PRESSURE SWITCH (kPa) Cutout Reset (Auto.)	2937 2206	2937 2206
LOW-PRESSURE SWITCH (kPa) Cutout Reset (Auto.)	48 152	48 152
RETURN-AIR FILTERS Quantity...Size (mm) (W x H x T)	16...508 x 610 x 51	16...508 x 610 x 51
OUTDOOR-AIR FILTERS Quantity...Size (mm)	8...406 x 635 4...508 x 635	
POWER EXHAUST Motor Quantity...kW Fan, Diameter...Width (mm)	Direct Drive, 3-Speed, Single-Phase Motor (Factory-Wired for High Speed) and Forward Curved Fan 6...0.75 279...254	

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes 038-068: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.

†Motor and drive shown will deliver approximately 17.2 kPa (2.5 in. wg) net external static pressure.

Physical data (SI) (cont)



UNI T 50EJ,EK,EW,EY	064	068
NOMINAL CAPACITY (kW) 50 Hz	182	194
OPERATING WEIGHT	For operating weights see page 13.	
COMPRESSOR Quantity...Type (Ckt 1, Ckt 2) Number of Refrigerant Circuits Oil (ml) (Ckt 1, Ckt 2)	1...06EA275, 1...06EA265 2 9990, 9990	2...06EA275 2 9990, 9990
REFRIGERANT TYPE Operating Charge (kg) Circuit 1* Circuit 2	R-22 30.8 30.8	36.7 33.1
CONDENSER COIL Quantity Rows...Fins/m Total Face Area (sq m)	Cross-Hatched 3/8-in. Copper Tubes, Aluminum Lanced, Aluminum Pre-Coated, or Copper Plate Fins 2 3...590 9.29	2 4...590 9.29
CONDENSER FAN Nominal L/s 50 Hz Quantity...Diameter (mm) Motor kW	Propeller Type 17 940 6...762 0.746	17 940 6...762 0.746
EVAPORATOR COIL Rows...Fins/m Total Face Area (sq m)	Cross-Hatched 1/2-in. Copper Tubes, Aluminum Plate Fins, Intertwined Circuits 4...669 4.47	4...669 4.47
EVAPORATOR FAN Quantity...Size (mm) Type Drive Nominal L/s Motor kW Motor Frame Size Motor Bearing Type Maximum Allowable r/s Motor Pulley Pitch Diameter (mm) Nominal Motor Shaft Diameter (mm) Fan Pulley Pitch Diameter (mm) Nominal Shaft Diameter (mm) Belt, Quantity...Type Belt, Length (mm) Pulley Center Distance (mm) Factory Speed Setting (r/s)	Centrifugal Type 3...508 x 381 Belt 10 103 22.38† S284T 29.84 S324T Ball 20 205.74 47.63 317.50 49 2...5VX630 1600 373-437 15.8	3...508 x 381 Belt 10 764 22.38† S286T 29.84 S324T Ball 20 149.86 47.63 241.30 49 3...5VX550 1397 373-437 15.1
HIGH-PRESSURE SWITCH (kPa) Cutout Reset (Auto.)	2937 2206	2937 2206
LOW-PRESSURE SWITCH (kPa) Cutout Reset (Auto.)	48 152	48 152
RETURN-AIR FILTERS Quantity...Size (mm) (W x H x T)	16...508 x 610 x 51	16...508 x 610 x 51
OUTDOOR-AIR FILTERS Quantity...Size (mm)	8...406 x 635 4...508 x 635	
POWER EXHAUST Motor Quantity...kW Fan, Diameter...Width (mm)	Direct Drive, 3-Speed, Single-Phase Motor (Factory-Wired for High Speed) and Forward Curved Fan 6...0.75 279...254	

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes 038-068: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.
†Motor and drive shown will deliver approximately 17.2 kPa (2.5 in. wg) net external static pressure.

Physical data (English)



UNIT 50EJ,EK,EW,EY	024			028			030		
NOMINAL CAPACITY (tons) 50 Hz	19			23			26		
OPERATING WEIGHT	For operating weights see page 14.								
COMPRESSOR									
Type Ckt 1	06D328			06D328			06D537		
Ckt 2	06D818			06D328			06D328		
Number of Refrigerant Circuits	2			2			2		
Oil (oz) (Ckt 1, Ckt 2)	115, 88			115 ea.			115 ea.		
REFRIGERANT TYPE	R-22								
Operating Charge (lb-oz)									
Circuit 1**	25-0			25-0			25-0		
Circuit 2	31-0			25-0			25-0		
CONDENSER COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Lanced, Aluminum Precoated or Copper Fins								
Quantity	1			1			1		
Rows...Fins/in.	4...15			4...15			4...15		
Total Face Area (sq ft)	33.3			33.3			33.3		
CONDENSER FAN				Propeller Type					
Nominal Cfm 50 Hz	11,590			11,590			11,590		
Quantity...Diameter (in.)	2...30			2...30			2...30		
Motor Hp (1075 Rpm)	1			1			1		
EVAPORATOR COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Plate Fins, Intertwined Circuits								
Rows...Fins/in.	4...15			4...15			4...15		
Total Face Area (sq ft)	31.7			31.7			31.7		
EVAPORATOR FAN	Centrifugal Type								
Quantity...Size (in.)	2...20x15			2...20x15			2...20x15		
Type Drive	Belt			Belt			Belt		
Nominal Cfm 50 Hz	7,500			9,200			10,200		
Motor Hp	5	10†	15	7.5	10†	15	10	15†	20
Motor Frame Size	S184T	S215T	S254T	S213T	S215T	S254T	S215T	S254T	256T
Motor Bearing Type	Ball			Ball			Ball		
Maximum Allowable Rpm	1200			1200			1200		
Motor Pulley Pitch Diameter	4.9	4.4	5.7	5.4	6.1	5.5	4.4	4.9	5.9
Nominal Motor Shaft Diameter (in.)	1 1/8	1 3/8	1 7/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Fan Pulley Pitch Diameter (in.)	12.4	8.6	9.1	12.4	11.1	8.7	9.4	8.1	8.7
Nominal Fan Shaft Diameter (in.)	1 15/16			1 15/16			1 15/16		
Belt, Quantity...Type	1...BX56	2...BX50	2...5VX530	1...BX56	1...5VX570	2...5VX530	2...BX50	2...5VX500	2...5VX530
Belt, Length (in.)	56	50	53	56	57	53	50	50	53
Pulley Center Line Distance (in.)	16.0-18.7	15.6-18.4	15.0-17.9	15.6-18.4	15.6-18.4	15.0-17.9	15.6-18.4	15.0-17.9	
Factory Speed Setting (rpm) 50 Hz	558	770	913	644	802	922	707	883	989
HIGH-PRESSURE SWITCH (psig)									
Cutout	426			426			426		
Reset (Auto.)	320			320			320		
LOW-PRESSURE SWITCH (psig)									
Cutout	7			7			7		
Reset (Auto.)	22			22			22		
RETURN-AIR FILTERS									
Quantity...Size (in.) (W x H x T)	10...20x24x2			10...20x24x2			10...20x24x2		
OUTDOOR-AIR FILTERS									
Quantity...Size (in.)	8...16x25			8...16x25			8...16x25		
	4...20x25			4...20x25			4...20x25		
POWER EXHAUST	Direct Drive, 3-Speed, Single-Phase Motor (Factory-Wired For High Speed) and Forward Curved Fan								
Motor, Quantity...Hp	4...1			4...1			4...1		
Fan, Diameter...Width (in.)	11...10			11...10			11...10		

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes

038-068: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.

†Motor and drive shown will deliver approximately 2.5 in. wg (17.2 kPa) net external static pressure.

Physical data (English) (cont)



UNIT 50EJ,EK,EW,EY	034	038	044
NOMINAL CAPACITY (tons) 50 Hz	28	33	35
OPERATING WEIGHT	For operating weights see page 14.		
COMPRESSOR			
Type Ckt 1	06D537	06D537	06EA250
Ckt 2	06D537	06D537	06EA250
Number of Refrigerant Circuits	2	2	2
Oil (oz) (Ckt 1, Ckt 2)	115 ea.	115 ea.	224 ea.
REFRIGERANT TYPE	R-22		
Operating Charge (lb-oz)			
Circuit 1*	25-0	34-0	35-0
Circuit 2	25-0	34-0	35-0
CONDENSER COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Lanced, Aluminum Precoated or Copper Fins		
Quantity	1	2	2
Rows...Fins/in.	4...15	3...15	3...15
Total Face Area (sq ft)	33.3	58.3	58.3
CONDENSER FAN	Propeller Type		
Nominal Cfm 50 Hz	11,590	22,544	24,880
Quantity...Diameter (in.)	2...30	4...30	4...30
Motor Hp (1075 Rpm)	1	1	1
EVAPORATOR COIL	Cross-Hatched 3/8" Copper Tubes, Aluminum Plate Fins, Intertwined Circuits		
Rows...Fins/in.	4...15	3...15	3...15
Total Face Area (sq ft)	31.7	34.7	34.7
EVAPORATOR FAN	Centrifugal Type		
Quantity...Size (in.)	2...20 x 15		
Type Drive	Belt		
Nominal Cfm 50 Hz	11,200		
Motor Hp	15†		
Motor Frame Size	10 S215T	15 S254T	20 S256T
Motor Bearing Type	Ball		
Maximum Allowable Rpm	1200		
Motor Pulley Pitch Diameter	4.4	5.7	5.9
Nominal Motor Shaft Diameter (in.)	1 3/8	1 5/8	1 5/8
Fan Pulley Pitch Diameter (in.)	9.0	9.1	8.7
Nominal Fan Shaft Diameter (in.)	1 15/16		
Belt, Quantity...Type	2...BX50	2...5VX530	2...5VX530
Belt, Length (in.)	50	53	53
Pulley Center Line Distance (in.)	15.6-18.4	15.0-17.9	15.0-17.9
Factory Speed Setting (rpm) 50 Hz	747	907	985
HIGH-PRESSURE SWITCH (psig)			
Cutout	426		
Reset (Auto.)	320		
LOW-PRESSURE SWITCH (psig)			
Cutout	7		
Reset (Auto.)	22		
RETURN-AIR FILTERS			
Quantity...Size (in.) (W x H x T)	10...20 x 24 x 2		
OUTDOOR-AIR FILTERS			
Quantity...Size (in.)	8...16 x 25		
	4...20 x 25		
POWER EXHAUST	Direct Drive, 3-Speed, Single-Phase Motor (Factory-Wired For High Speed) and Forward Curved Fan		
Motor, Quantity...Hp	4...1		
Fan, Diameter...Width (in.)	11...10		

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes

038-068: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.

†Motor and drive shown will deliver approximately 2.5 in. wg (17.2 kPa) net external static pressure.



UNIT 50EJ,EK,EW,EY	054	058
NOMINAL CAPACITY (tons) 50 Hz	42	46.5
OPERATING WEIGHT (lb)	For operating weights see page 14.	
COMPRESSOR Quantity...Type (Ckt 1, Ckt 2) Number of Refrigerant Circuits Oil (oz) (Ckt 1, Ckt 2)	1...06EA265, 1...06EA250 2 304, 224	1...06EA275, 1...06EA250 2 304, 224
REFRIGERANT TYPE Operating Charge (lb-oz) Circuit 1* Circuit 2	R-22 50-11 46- 8	57-0 48-6
CONDENSER COIL Quantity Rows...Fins/in. Total Face Area (sq ft)	Cross-Hatched 3/8-in. Copper Tubes, Aluminum Lanced, Aluminum Pre-Coated, or Copper Plate Fins 1 3...15 66.6	1 3...15 100
CONDENSER FAN Nominal Cfm Quantity...Diameter (in.) Motor Hp (885 Rpm)	Propeller Type 25,333 4...30 1	38,000 6...30 1
EVAPORATOR COIL Rows...Fins/in. Total Face Area (sq ft)	Cross-Hatched 1/2-in. Copper Tubes, Aluminum Plate Fins, Intertwined Circuits 4...17 45	4...17 45
EVAPORATOR FAN Quantity...Size (in.) Type Drive Nominal Cfm 50 Hz Motor Hp Motor Frame Size Motor Bearing Type Maximum Allowable Rpm Motor Pulley Pitch Diameter Nominal Motor Shaft Diameter (in.) Fan Pulley Pitch Diameter (in.) Nominal Fan Shaft Diameter (in.) Belt, Quantity...Type Length (in.) Belt, Length (in.) Pulley Center Line Distance (in.) Factory Speed Setting (rpm) 50 Hz	Centrifugal Type 3...20 x 15 Belt 16,800 20† S254T 6.1 1 7/8 11.1 1 15/16 2...5VX550 55 15.2-17.5 618	3...20 x 15 Belt 18,600 25† S284T 6.7 1 7/8 11.1 1 15/16 2...5VX590 59 14.7-17.2 880
HIGH-PRESSURE SWITCH (psig) Cutout Reset (Auto.)	426 320	426 320
LOW-PRESSURE SWITCH (psig) Cutout Reset (Auto.)	7 22	7 22
RETURN-AIR FILTERS (W x H x T) Quantity...Size (in.)	16...20 x 24 x 2	16...20 x 24 x 2
OUTDOOR-AIR FILTERS Quantity...Size (in.)	8...16 x 25 4...20 x 25	8...16 x 25 4...20 x 25
POWER EXHAUST Motor, Quantity...Hp Fan, Diameter...Width (in.)	Direct Drive, 3-Speed, Single-Phase Motor (Factory-Wired for High Speed) and Forward Curved Fan 6...1 11...10	

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes 038-068: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.
†Motor and drive shown will deliver approximately 2.5 in. wg (17.2 kPa) net external static pressure.

Physical data (English) (cont)



UNIT 50EJ,EK,EW,EY	064	068
NOMINAL CAPACITY (tons) 50 Hz	53.5	57
OPERATING WEIGHT (lb)	For operating weights see page 14.	
COMPRESSOR Quantity...Type (Ckt 1, Ckt 2) Number of Refrigerant Circuits Oil (oz) (Ckt 1, Ckt 2)	1...06EA275, 1...06EA265 2 304, 304	2...06EA275 2 304, 304
REFRIGERANT TYPE Operating Charge (lb-oz) Circuit 1* Circuit 2	R-22 68-0 68-0	
CONDENSER COIL Quantity Rows...Fins/in. Total Face Area (sq ft)	Cross-Hatched 3/8-in. Copper Tubes, Aluminum Lanced, Aluminum Pre-Coated, or Copper Plate Fins 2 3...15 100	
CONDENSER FAN Nominal Cfm Quantity...Diameter (in.) Motor Hp (885 Rpm)	Propeller Type 38,000 6...30 1	
EVAPORATOR COIL Rows...Fins/in. Total Face Area (sq ft)	Cross-Hatched 1/2-in. Copper Tubes, Aluminum Plate Fins, Intertwined Circuits 4...17 48.1	
EVAPORATOR FAN Quantity...Size (in.) Type Drive Nominal Cfm 50 Hz Motor Hp Motor Frame Size Motor Bearing Type Maximum Allowable Rpm Motor Pulley Pitch Diameter Nominal Motor Shaft Diameter (in.) Fan Pulley Pitch Diameter (in.) Nominal Fan Shaft Diameter (in.) Belt, Quantity...Type Length (in.) Belt, Length (in.) Pulley Center Line Distance (in.) Factory Speed Setting (rpm) 50 Hz	Centrifugal Type 3...20 x 15 Belt 21,400 30† 40 S284T S286T S324T Ball 1200 8.1 1 7/8 12.5 1 15/16 2...5VX630 63 14.7-17.2 945 9.4 2 3/8 13.6 2...5VX650 65 14.2-17.0 1012	
HIGH-PRESSURE SWITCH (psig) Cutout Reset (Auto.)	426 320	
LOW-PRESSURE SWITCH (psig) Cutout Reset (Auto.)	7 22	
RETURN-AIR FILTERS (W x H x T) Quantity...Size (in.)	16...20 x 24 x 2	
OUTDOOR-AIR FILTERS Quantity...Size (in.)	8...16 x 25 4...20 x 25	
POWER EXHAUST Motor, Quantity...Hp Fan, Diameter...Width (in.)	Direct Drive, 3-Speed, Single-Phase Motor (Factory-Wired for High Speed) and Forward Curved Fan 6...1 11...10	

*Sizes 024-034: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion. Sizes

038-068: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.

†Motor and drive shown will deliver approximately 2.5 in. wg (17.2 kPa) net external static pressure.

Physical data (cont)



50E_024-068 OPERATING WEIGHTS (SI)

BASE UNIT WEIGHTS

UNIT	BASE UNIT WEIGHTS (Kg)*									
	024	028	030	034	038	044	054	058	064	068
50EJ/EK	1854	1893	1893	1893	2131	2233	2978	3091	3205	3284
50EW/EY	1889	1928	1928	1928	2218	2233	3071	3184	3298	3377

*Outdoor-air hoods and filters included in base unit weights; indoor-fan motors are NOT included.

OPTIONS AND ACCESSORIES

(Weight Adders)

OPTION/ ACCESSORY	OPTION/ACCESSORY WEIGHTS (Kg)									
	024	028	030	034	038	044	054	058	064	068
Barometric Relief	136	136	136	136	136	136	204	204	204	204
Power Exhaust	204	204	204	204	204	204	306	306	306	306
Modular Power Exhaust	227	227	227	227	227	227	329	329	329	329
Electric Heat	50	50	50	50	50	50	75	75	75	75
Cu Tube/Cu Fin Condenser Coil	100	100	100	100	129	129	123	185	222	295
Roof Curb (365 mm)	166	166	166	166	186	186	265	265	265	265

CV MOTOR WEIGHTS (400 V) (Kg)

MOTOR kW	STANDARD EFFICIENCY IFM
3.73	35
5.6	49
7.46	54
11.19	68
14.92	96
18.65	109
22.38	128
29.84	169

VAV MOTOR WEIGHTS (400 V) (Kg)

MOTOR kW	STANDARD EFFICIENCY IFM
3.73	57
5.6	83
7.46	93
11.19	108
14.92	158
18.65	171
22.38	218
29.84	289

LEGEND

Cu	— Copper
CV	— Constant Volume
FIOP	— Factory-Installed Option
IFM	— Indoor-Fan Motor
VAV	— Variable Air Volume
VFD	— Variable Frequency Drive

NOTES:

1. Base unit weight includes outdoor-air hoods. Base unit weight does NOT include indoor-fan motor. ADD indoor-fan motor, FIOPs, and accessories for TOTAL operating weight.
2. The VAV motor weights include indoor-fan motor and the VFD (Variable Frequency Drive), compressor electric unloaders, VFD transducers, and associated wiring.

Physical data (cont)



50E_024-068 OPERATING WEIGHTS (ENGLISH)

BASE UNIT WEIGHTS

UNIT	BASE UNIT WEIGHTS (Lb)*									
	024	028	030	034	038	044	054	058	064	068
50EJ/EK	4087	4173	4173	4173	4697	4923	6565	6815	7065	7240
50EW/EY	4165	4251	4251	4251	4890	4923	6770	7020	7270	7445

*Outdoor-air hoods and filters included in base unit weights; indoor-fan motors are NOT included.

OPTIONS AND ACCESSORIES

(Weight Adders)

OPTION/ ACCESSORY	OPTION/ACCESSORY WEIGHTS (lb)									
	024	028	030	034	038	044	054	058	064	068
Barometric Relief	300	300	300	300	300	300	450	450	450	450
Power Exhaust	450	450	450	450	450	450	675	675	675	675
Modular Power Exhaust	500	500	500	500	500	500	725	725	725	725
Electric Heat	110	110	110	110	110	110	165	165	165	165
Cu Tube/Cu Fin Condenser Coil	220	220	220	220	285	285	271	407	489	651
Roof Curb (14-in. curb)	365	365	365	365	410	410	585	585	585	585

CV MOTOR WEIGHTS (400 V) (Lb)

MOTOR HP	STANDARD EFFICIENCY IFM
5	78
7.5	107
10	118
15	150
20	212
25	240
30	283
40	372

VAV MOTOR WEIGHTS (400 V) (Lb)

MOTOR HP	STANDARD EFFICIENCY IFM
5	125
7.5	183
10	204
15	238
20	348
25	377
30	480
40	637

LEGEND

Cu — Copper
CV — Constant Volume
FIOP — Factory-Installed Option
HP — Horsepower
IFM — Indoor Fan Motor
VAV — Variable Air Volume
VFD — Variable Frequency Drive

NOTES:

1. Base unit weight includes outdoor-air hoods. Base unit weight does NOT include indoor-fan motor. ADD indoor-fan motor, FIOPs, and accessories for TOTAL operating weight.
2. The VAV motor weights include indoor-fan motor and the VFD (Variable Frequency Drive), compressor electric unloaders, VFD transducers, and associated wiring.



RIGGING WEIGHTS (SI)
50E_024-068 UNIT WEIGHTS

UNIT	MAXIMUM UNIT WEIGHTS (Kg)*									
	024	028	030	034	038	044	054	058	064	068
50EJ/EK	2292	2440	2365	2365	2603	2736	3608	3766	3937	4017
50EW/EY	2327	2534	2400	2400	2690	2736	3701	3859	4030	4110

*Includes outdoor-air hoods, filters, indoor-fan motor, modulating power exhaust, and Variable Frequency Drive (VFD).

NOTES:

1. Sizes 024-044 includes 227 kg and sizes 054-068 includes 325 kg for modulating power exhaust.
2. Sizes 024-044 includes 77 kg and sizes 054-068 includes 116 kg for economizer hoods.
3. Economizer hood packaging includes 84 kg.
4. 50E()024-044 includes 50 kg and 50E()054-068 includes 75 kg for electric heaters.
5. For sizes 024-034 add 100 kg for copper coil.
6. For sizes 038-044 add 129 kg for copper coil.
7. For 054 size add 123 kg for copper coil.
8. For 058 size add 185 kg for copper coil.
9. For 064 size add 222 kg for copper coil.
10. For 068 size add 295 kg for copper coil.

RIGGING WEIGHTS (ENGLISH)
50E_024-068 UNIT WEIGHTS

UNIT	MAXIMUM UNIT WEIGHTS (Lb)*									
	024	028	030	034	038	044	054	058	064	068
50EJ/EK	5052	5380	5214	5214	5738	6032	7954	8302	8680	8855
50EW/EY	5130	5586	5292	5292	5931	6032	8159	8507	8885	9060

*Includes outdoor-air hoods, filters, indoor-fan motor, modulating power exhaust, and Variable Frequency Drive (VFD).

NOTES:

1. Sizes 024-044 includes 500 lb and sizes 054-068 includes 725 lb for modulating power exhaust.
2. Sizes 024-044 includes 170 lb and sizes 054-068 includes 255 lb for economizer hoods.
3. Economizer hood packaging includes 45 lb.
4. 50E()024-044 includes 110 lb and 50E()054-068 includes 165 lb for electric heaters.
5. For sizes 024-034 add 220 lb for copper coil.
6. For sizes 038-044 add 284 lb for copper coil.
7. For 054 size add 271 lb for copper coil.
8. For 058 size add 407 lb for copper coil.
9. For 064 size add 489 lb for copper coil.
10. For 068 size add 651 lb for copper coil.

CENTER OF GRAVITY AND CORNER WEIGHT PERCENTAGES

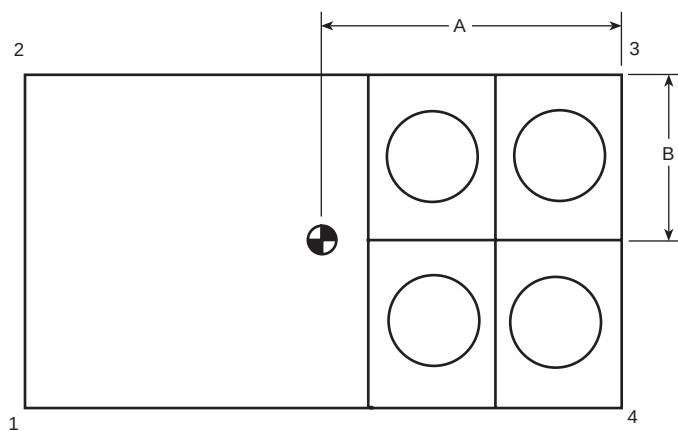
UNIT	CENTER OF GRAVITY				PERCENT OF TOTAL WEIGHT AT EACH CORNER (%)			
	Inches		Millimeters		1	2	3	4
	A	B	A	B				
50EJ,EW,EK,EY024	71.4	41.7	1814	1059	20.5	22.8	29.8	26.9
50EJ,EW,EK,EY028	68.5	43.6	1740	1107	20.6	20.9	29.5	29.0
50EJ,EW,EK,EY030	68.5	43.6	1740	1107	20.6	20.9	29.5	29.0
50EJ,EW,EK,EY034	68.5	43.6	1740	1107	20.6	20.9	29.5	29.0
50EJ,EW,EK,EY038	91.3	46.5	2319	1181	22.4	20.0	27.1	30.4
50EJ,EW,EK,EY044	87.8	46.5	2230	1181	21.6	19.3	27.9	31.3
50EJ,EW,EK,EY054	128.1	46.1	3254	1171	21.6	19.6	28.0	30.8
50EJ,EW,EK,EY058	124.6	45.4	3164	1153	20.6	19.4	29.0	30.9
50EJ,EW,EK,EY064	122.2	44.7	3104	1135	19.9	19.3	29.9	30.8
50EJ,EW,EK,EY068	120.6	44.6	3063	1133	19.6	19.1	30.2	31.1

LEGEND

VFD — Variable Frequency Drive

NOTES:

- Center of gravity.
- Do not locate adjacent units with flue discharge facing economizer inlet. Minimum clearances to be:
Adjacent Units: 15'-0" [4572]
Top of Units: No overhang
Condenser Coil: 4'-0" [1219]
Economizer Side: 6'-0" [1829]
Heat Side: 4'-0" [1219]
Filter Access Side: 15'-0" [4572] (For Removal of Evaporator Coil)
- For smaller service and operational clearances, contact Carrier Application Engineering department.
- Bottom ducts designed to be attached to accessory roof curb. It is recommended that the ducts must be supported by cross braces as done on accessory roof curb.
- Dimensions [] are in millimeters.
- Dimensions are in inches.
- Variable frequency drive (VFD) is only available for VAV (variable air volume) units.
- For side supply/return applications, a single return and supply duct-work connection is recommended for covering all return and supply openings.



COOLING OPERATING RANGE (50 Hz)

UNIT	MIN L/s	MAX L/s*	MIN CFM	MAX CFM*
50EJ,EW024	2,360	3,920	5,000	8,300
50EK,EY024	1,560	3,920	3,300	8,300
50EJ,EW028	2,970	4,910	6,300	10,400
50EK,EY028	1,980	4,910	4,200	10,400
50EJ,EW030	3,210	5,330	6,800	11,300
50EK,EY030	2,120	5,330	4,500	11,300
50EJ,EW034	3,540	5,900	7,500	12,500
50EK,EY034	2,360	5,900	5,000	12,500
50EJ,EW038	4,150	6,890	8,800	14,600
50EK,EY038	2,740	6,890	5,800	14,600
50EJ,EW044	4,720	7,880	10,000	16,700
50EK,EY044	3,160	7,880	6,700	16,700
50EJ,EW054	5,900	9,820	12,500	20,800
50EK,EY054	3,920	9,820	8,300	20,800
50EJ,EW058	6,560	10,950	13,900	23,200
50EK,EY058	4,390	10,950	9,300	23,200
50EJ,EW064	7,550	12,610	16,000	26,700
50EK,EY064	5,050	12,610	10,700	26,700
50EJ,EW068	8,070	13,450	17,100	28,500
50EK,EY068	5,380	13,450	11,400	28,500

*Operation at these levels may be limited by entering evaporator air wet bulb temperatures. See Cooling Capacities tables on pages 36-55 for further details.

ELECTRIC RESISTANCE HEATER DATA

UNIT	HEATER kW	HEATER STAGES	% HEAT PER STAGE	DESIGN RANGE		DESIGN RANGE	
	400 V			Min L/s	Max L/s	Min CFM	Max CFM
50EJ,EW024-034	25	1	100	2,830	7,080	6,000	15,000
50EK,EY024-034	50	2	50/100	2,830	7,080	6,000	15,000
50EJ,EW038-044	25	1	100	4,960	10,620	10,500	22,500
50EK,EY038-044	50	2	50/100	4,960	10,620	10,500	22,500
50EJ,EW054-068	38	1	100	7,080	12,750	15,000	27,000
50EK,EY054-068	75	2	50/100	7,080	12,750	15,000	27,000

Physical data (cont)



VAV STAGING SEQUENCE

STAGES	0	1	2	3	4	5	6
COMP NO. 1	OFF	ON	ON	ON	ON	ON	ON
UNLOADER NO. 1	OFF	ON	ON	OFF	ON	ON	OFF
UNLOADER NO. 2	OFF	ON	OFF	OFF	ON	OFF	OFF
COMP NO. 2	OFF	OFF	OFF	OFF	ON	ON	ON
Unit Capacity							
024	0%	21%	31%	62%	59%	69%	100%
028	0%	17%	25%	50%	67%	75%	100%
030	0%	19%	28%	56%	63%	72%	100%
034	0%	17%	25%	50%	67%	75%	100%
038	0%	17%	25%	50%	67%	75%	100%
044	0%	25%	25%	50%	75%	75%	100%
054	0%	19%	28%	56%	63%	72%	100%
058	0%	20%	30%	60%	60%	70%	100%
064	0%	18%	27%	55%	64%	73%	100%
068	0%	17%	25%	50%	67%	75%	100%

CV STAGING SEQUENCE (Standard)

STAGES	0	1	2
COMP NO. 1	OFF	ON	ON
COMP NO. 2	OFF	OFF	ON
Unit Capacity			
024	0%	62%	100%
028	0%	50%	100%
030	0%	56%	100%
034	0%	50%	100%
038	0%	50%	100%
044	0%	50%	100%
054	0%	56%	100%
058	0%	60%	100%
064	0%	55%	100%
068	0%	50%	100%

CV ONE UNLOADER STAGING SEQUENCE*

STAGES	0	1	2	3
COMP NO. 1	OFF	ON	ON	ON
UNLOADER NO. 1	OFF	ON	OFF	OFF
COMP NO. 2	OFF	OFF	OFF	ON
Unit Capacity				
024	0%	41%	62%	100%
028	0%	33%	50%	100%
030	0%	37%	56%	100%
034	0%	33%	50%	100%
038	0%	33%	50%	100%
044	0%	25%	50%	100%
054	0%	37%	56%	100%
058	0%	40%	60%	100%
064	0%	36%	55%	100%
068	0%	33%	50%	100%

CV TWO UNLOADER STAGING SEQUENCE*

STAGES	0	1	2	3	4
COMP NO. 1	OFF	ON	ON	ON	ON
UNLOADER NO. 1	OFF	ON	ON	OFF	OFF
UNLOADER NO. 2	OFF	ON	OFF	OFF	OFF
COMP NO. 2	OFF	OFF	OFF	OFF	ON
Unit Capacity					
024	0%	21%	41%	62%	100%
028	0%	17%	33%	50%	100%
030	0%	19%	37%	56%	100%
034	0%	17%	33%	50%	100%
038	0%	17%	33%	50%	100%
044	0%	25%	n/a	50%	100%
054	0%	19%	37%	56%	100%
058	0%	20%	40%	60%	100%
064	0%	18%	36%	55%	100%
068	0%	17%	33%	50%	100%

LEGEND

 Indicates a 4-cylinder compressor; there is no unloading at this step.

CV — Constant Volume

VAV — Variable Air Volume

*On lead compressor no. 1 (field-supplied).

NOTE: Staging sequence is approximate and dependent upon unloader settings.

INDOOR FAN SOUND POWER
SIZES 024-044

TOTAL CFM (L/s)	8,000 (3,780)	10,000 (4,720)	12,000 (5,670)	14,000 (6,610)	16,000 (7,550)	18,000 (8,500)
RPM (C/s)	571 (9.5)	651 (10.9)	738 (12.3)	830 (13.8)	925 (15.4)	1,023 (17.1)
BHP (kW)	3.49 (2.60)	5.46 (4.07)	8.10 (6.04)	11.51 (8.59)	15.74 (11.74)	20.88 (15.58)
in. wg (kPa)	0.60 (0.15)	0.60 (0.15)	0.60 (0.15)	0.60 (0.15)	0.60 (0.15)	0.60 (0.15)

FREQUENCY	Discharge LW	Inlet LW	Discharge LW	Inlet LW	Discharge LW	Inlet LW	Discharge LW	Inlet LW	Discharge LW	Inlet LW	Discharge LW	Inlet LW
31.5	88	88	91	91	94	94	96	96	97	97	98	98
63	88	88	89	84	91	91	93	89	95	95	97	94
125	75	75	79	77	84	84	88	84	91	91	93	88
250	71	71	77	68	83	83	88	81	93	93	97	93
500	70	70	75	63	80	80	84	71	87	87	90	77
1000	68	68	73	59	78	78	83	68	86	86	89	75
2000	66	66	71	55	76	76	81	65	84	84	86	73
4000	63	63	68	51	73	73	77	61	81	81	83	71
8000	58	58	62	46	67	67	71	55	74	74	77	63

LEGEND

LW — Sound Power

INDOOR FAN SOUND POWER
SIZES 054-068

TOTAL CFM (L/s)	20,000 (9,440)	22,000 (10,384)	24,000 (11,328)	26,000 (12,272)
RPM (C/s)	752 (12.5)	801 (13.4)	851 (14.2)	901 (15.0)
BHP (kW)	15.18 (11.33)	18.70 (13.95)	22.70 (16.93)	27.21 (20.30)
in. wg (kPa)	0.60 (0.15)	0.60 (0.15)	0.60 (0.15)	0.60 (0.15)

FREQUENCY	Discharge LW	Inlet LW	Discharge LW	Inlet LW	Discharge LW	Inlet LW	Discharge LW	Inlet LW
63	93	91	94	92	95	94	96	95
125	88	86	90	88	92	89	93	90
250	88	82	91	86	94	90	97	94
500	84	73	86	75	88	77	89	78
1000	82	70	85	72	87	74	88	76
2000	81	66	83	69	85	71	86	73
4000	77	62	79	66	81	69	82	72
8000	71	56	73	59	75	62	76	64

LEGEND

LW — Sound Power

OUTDOOR SOUND POWER LEVELS
SIZES 024-068

SIZE	NO. OF FANS	OCTAVE BAND SOUND POWER LEVEL dB re 1pW							
		125	250	500	1000	2000	4000	8000	LwA
024-034	2	94	90	88	88	86	81	81	88.9
038-054	4	97	93	91	91	89	84	84	91.9
058-068	6	98	93	91	91	90	85	85	92.4

Options and accessories



ITEM	OPTION*	ACCESSORY†
Barometric Relief	X	X
Copper/Copper Condenser Coil	X	
Pre-Coated Aluminum Fin Condenser Coil	X	
Modulating Power Exhaust (VAV Only)**	X	
Non-Modulating Power Exhaust (CV Only)**	X	X
Power Exhaust Conversion, Non-Modulating to Modulating (CV Only)**		X
Electric Heat	X	X
Roof Curb		X
Motormaster® III Head Pressure Control		X
Condenser Coil Hail Guard Assembly		X
Electric Programmable Thermostat		X
Thermostat and Subbase		X
Space Temperature Sensor (T-55)		X
Space Temperature Sensor with Offset (T-56) (CV Only)		X
IAQ (CO ₂) Sensor		X
Enthalpy Control for Integrated Economizer		X
Differential Enthalpy Sensor		X
Compressor Unloaders (CV Only)		X
Expansion Electronic Board (IAQ, Smoke Control, Demand Limit)		X
Roof Curb Adapter Kit		X
Roof Curb Retrofit Kit (50DL054,064 Applications for 50EJ,EK054-068 Only)		X
Roof Curb Retrofit Kit (50DD,DF054-064 Applications for 50EJ,EK054-068 only)		X
LID-2B Interface Device		X

LEGEND

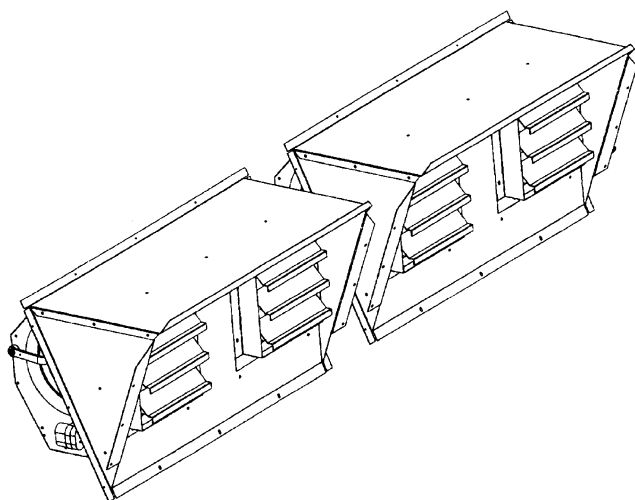
CV — Constant Volume
IAQ — Indoor Air Quality
VAV — Variable Air Volume

*Factory installed.

†Field Installed.

**Accessory must be installed in the ductwork on horizontal supply/return units.
Not available as a factory installed option on horizontal units.

POWER EXHAUST FANS



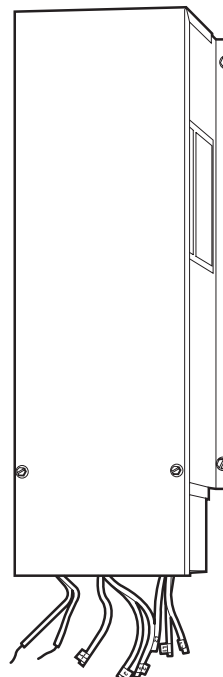
When combined with the economizer, the power exhaust can be used to exhaust the return air and eliminate over-pressurization of the building. The power exhaust utilizes multiple forward-curved fans, each driven by its own motor.

The constant volume power exhaust stages the motors according to economizer position to control the building pressure.

The modulating power exhaust stages the motors according to interior space pressure.

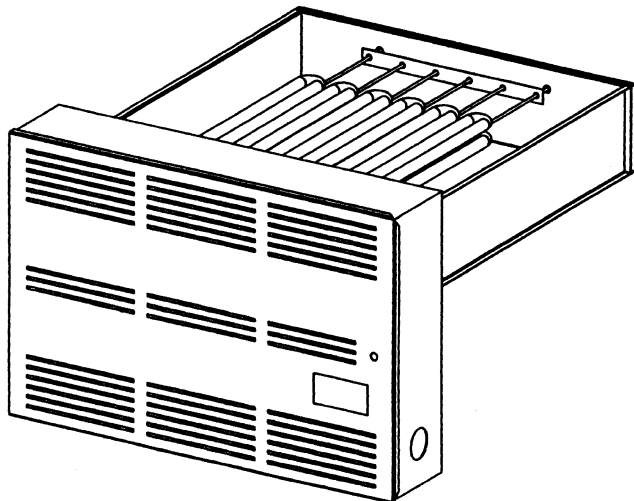
NOTE: The factory mounted power exhaust/barometric relief is shipped tilted into the unit cabinet. Power exhaust/barometric relief is fully assembled and only needs to be rotated into operating position for start-up.

HEAD PRESSURE CONTROL



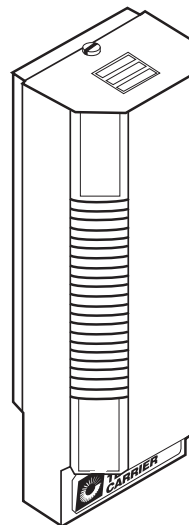
The standard units are designed to operate in cooling at outdoor temperatures down to 1.7 C (35 F). With accessory Motormaster III control (condenser fan speed modulation) units can operate at outdoor temperatures down to -28.9 C (-20 F). The head pressure controls, which mount in the condenser section, control the condenser-fan motor to maintain correct condensing temperature. Refer to price pages or contact your local Carrier representative for appropriate accessory combinations for desired outdoor ambient temperature operation.

ELECTRIC HEATER



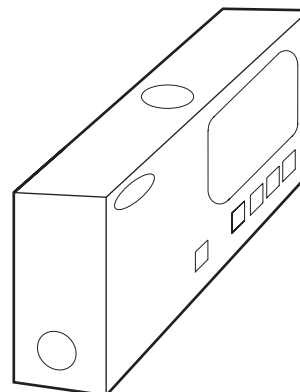
Electric heaters are available in a wide range of capacities for factory or field installation.

CO₂ SENSOR



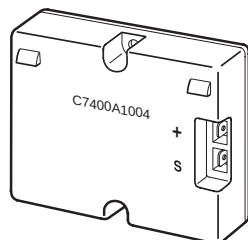
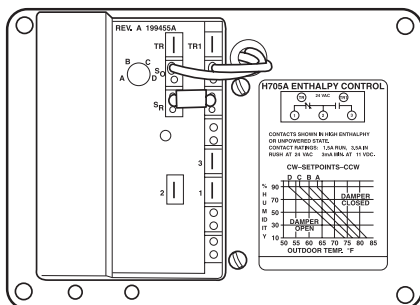
This sensor monitors building interior or return air carbon dioxide levels and automatically activates the outdoor fan and opens the economizer for rapid dilution of CO₂ levels above an adjustable set point.

LID-2B FIELD-INSTALLED INTERFACE DEVICE



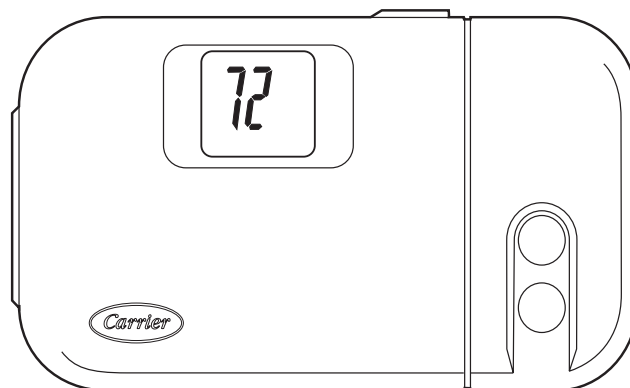
The LID-2B (30HX900007) enhanced display provides access to the unit software for specific application time schedules and control configurations. The LID-2B requires a separate dedicated 24-v power source.

ENTHALPY CONTROL FOR INTEGRATED ECONOMIZER



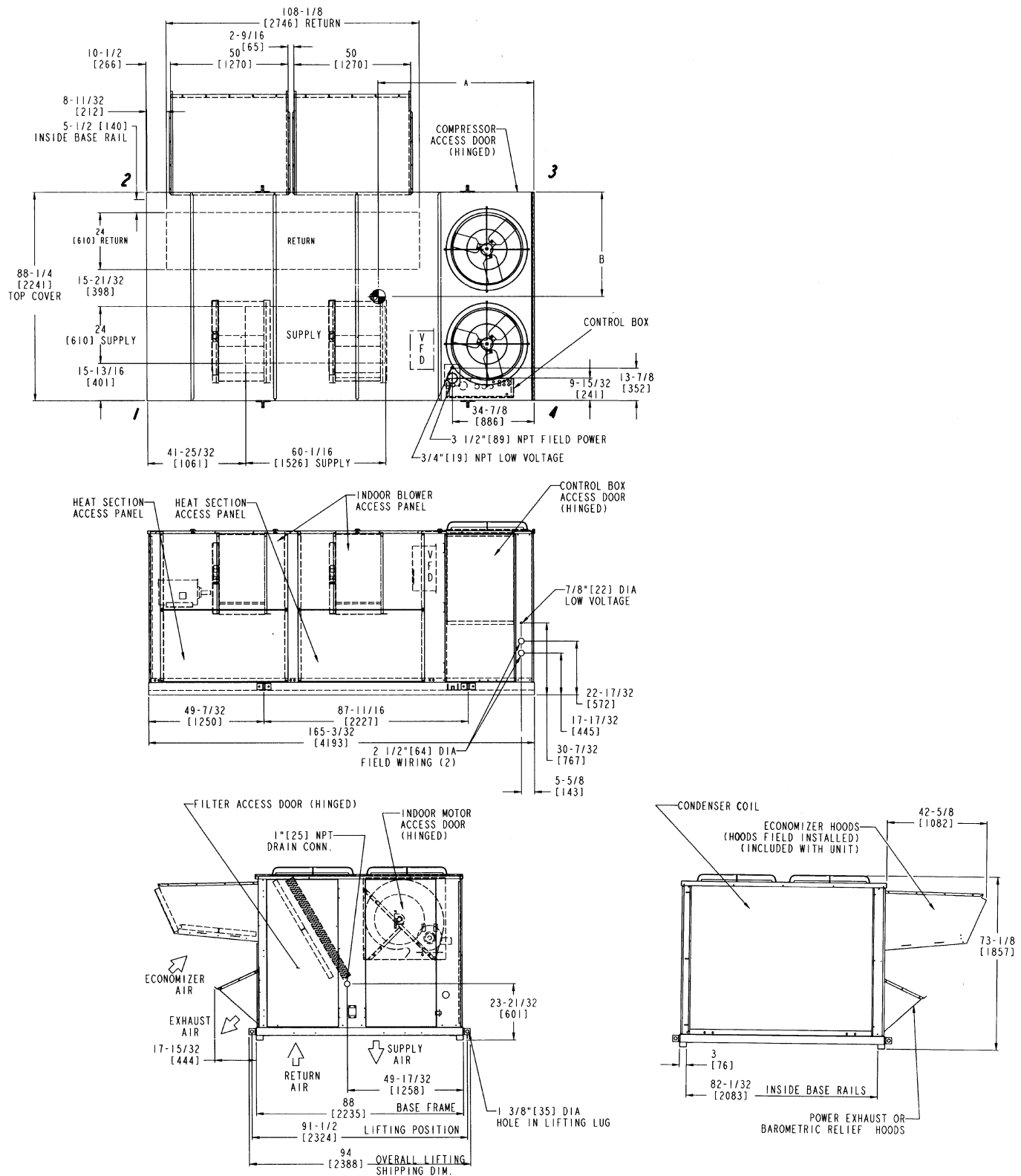
Enthalpy economizer controls help provide efficient, economical economizer operation. Solid-state enthalpy control includes the logic and one sensor to calculate both dry and wet bulb of the outdoor air to provide an accurate enthalpy reading. It then decides when to energize the economizer based on this reading. A second sensor provides information for comparison of outdoor temperature and humidity to return-air temperature and humidity and determines the most economical mixture of air (purchased in addition to first solid-state enthalpy sensor for differential enthalpy sensing).

ELECTRONIC PROGRAMMABLE THERMOSTAT



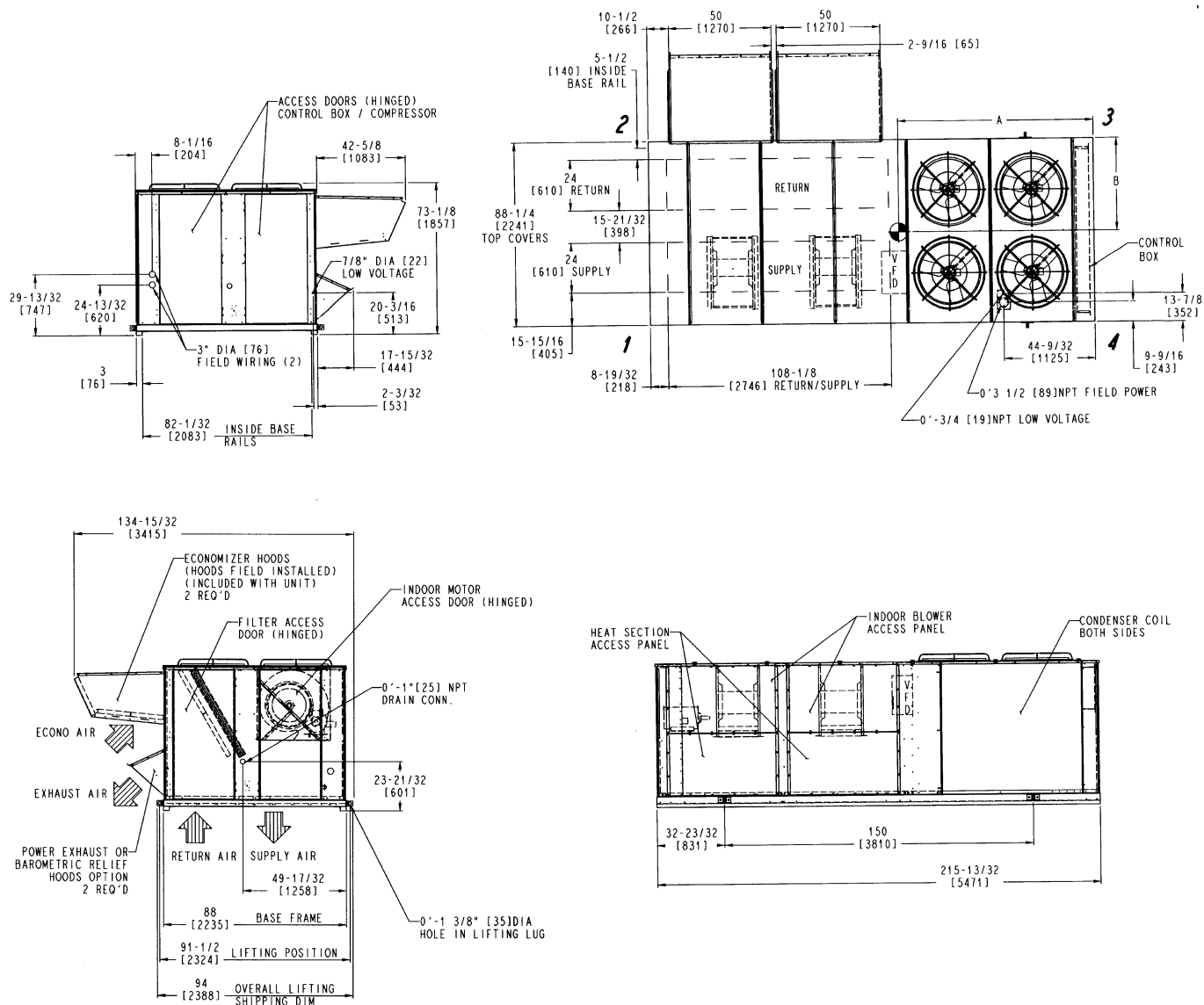
Carrier's electronic programmable thermostat provides efficient temperature control by allowing you to program heating and cooling set-backs and set ups with provisions for weekends and holidays.

Base unit dimensions, 50EJ,EK024-034



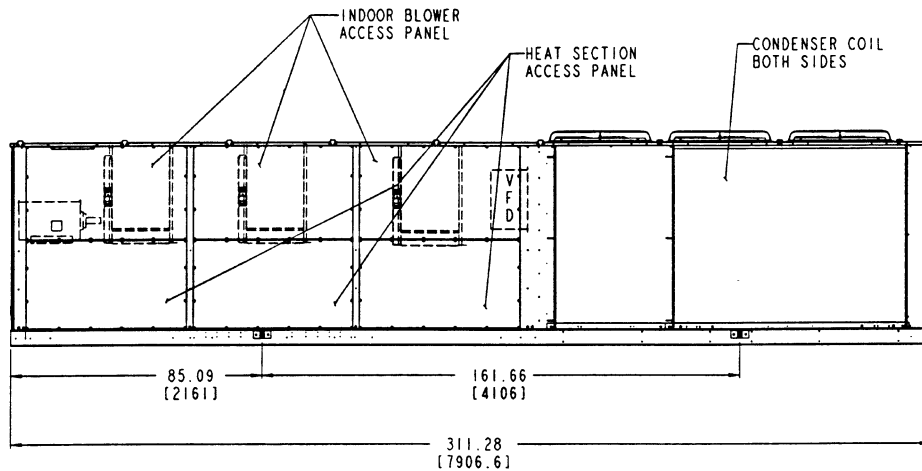
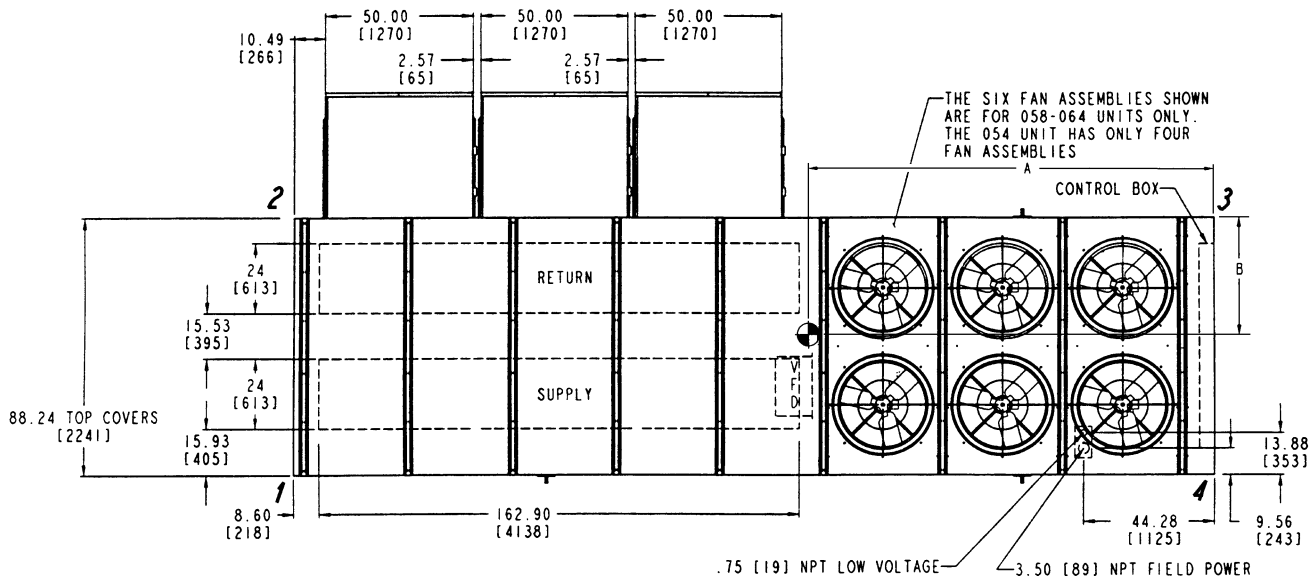
FOR CENTERS OF GRAVITY, CORNER WEIGHT PERCENTAGES, LEGEND AND NOTES, SEE CENTER OF GRAVITY AND CORNER WEIGHT PERCENTAGES SECTION ON PAGE 16.

Base unit dimensions, 50EJ,EK038,044

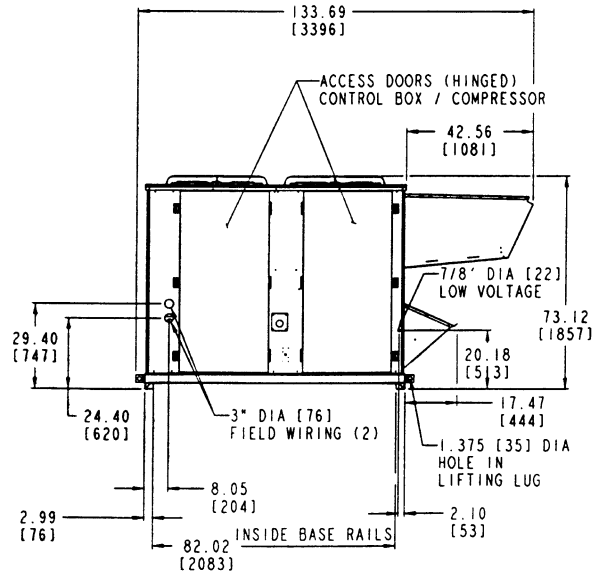
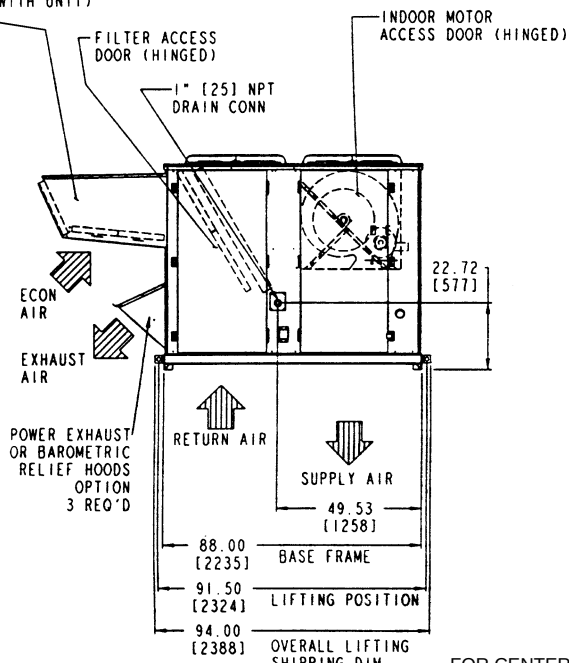


FOR CENTERS OF GRAVITY, CORNER WEIGHT PERCENTAGES, LEGEND AND NOTES, SEE CENTER OF GRAVITY AND CORNER WEIGHT PERCENTAGES SECTION ON PAGE 16.

Base unit dimensions, 50EJ,EK054-068



ECONOMIZER HOODS
(HOODS FIELD INSTALLED)
(INCLUDED WITH UNIT)
3 REQ'D

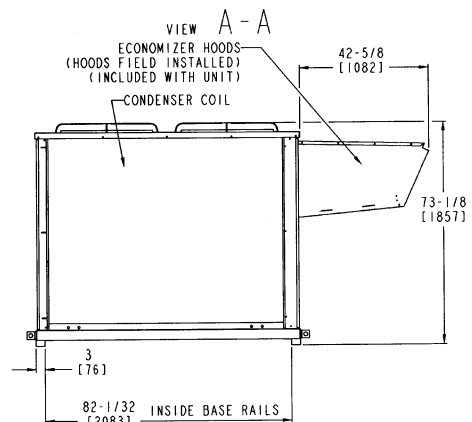
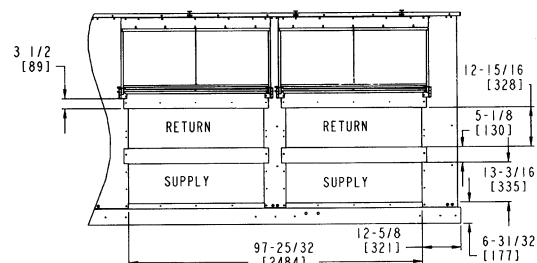
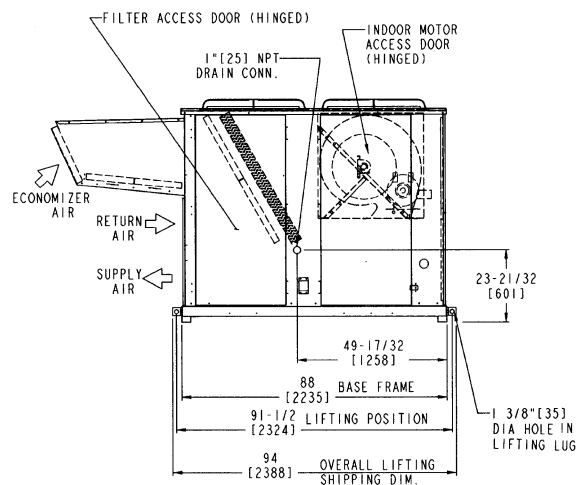
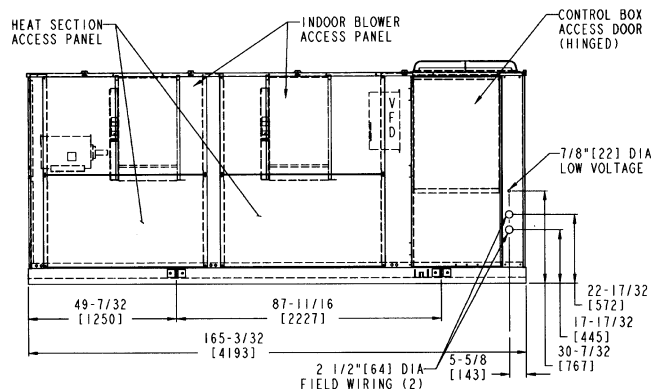
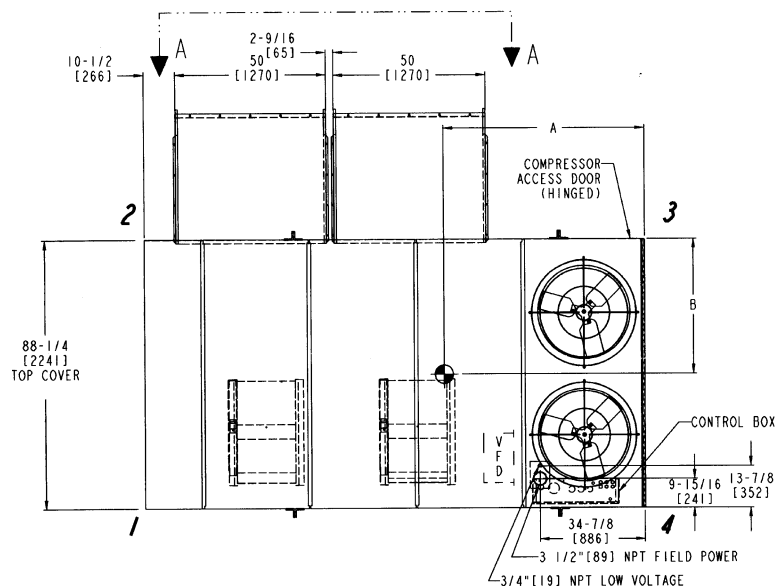


FOR CENTERS OF GRAVITY, CORNER WEIGHT PERCENTAGES, LEGEND AND NOTES, SEE CENTER OF GRAVITY AND CORNER WEIGHT PERCENTAGES SECTION ON PAGE 16.

Base unit dimensions, 50EW,EY024-034



NOTE: For side supply/return applications, a single return and supply ductwork connection is recommended for covering all return and supply openings.

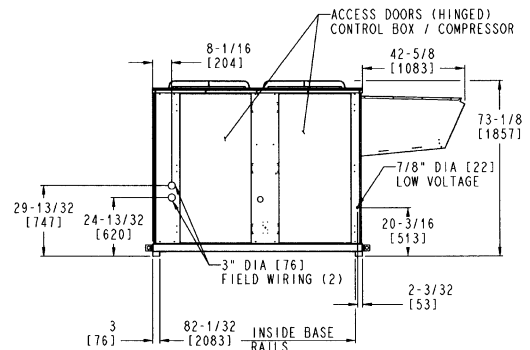
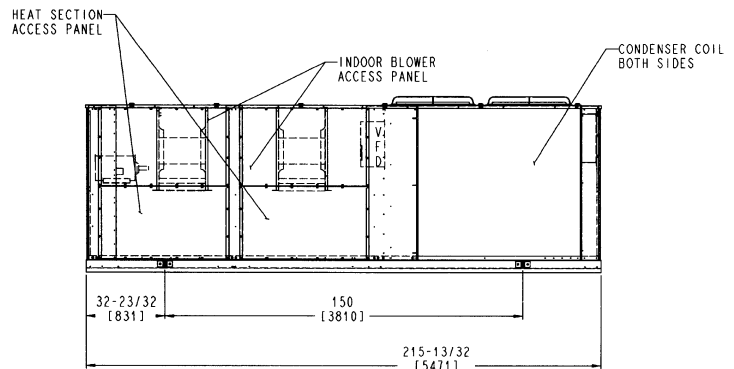
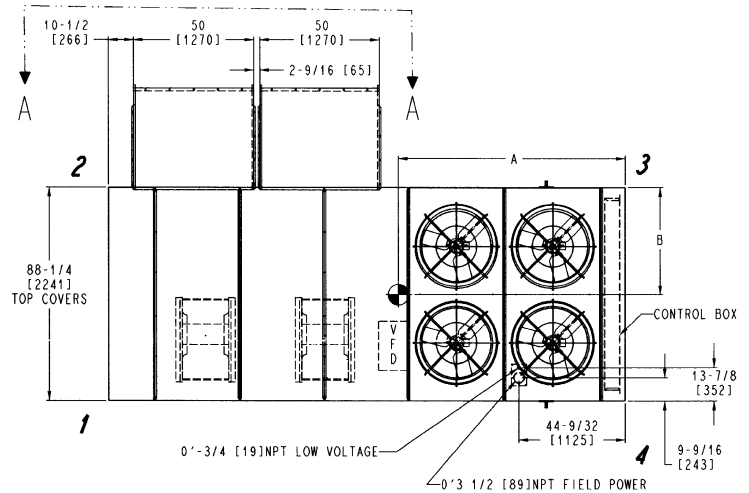
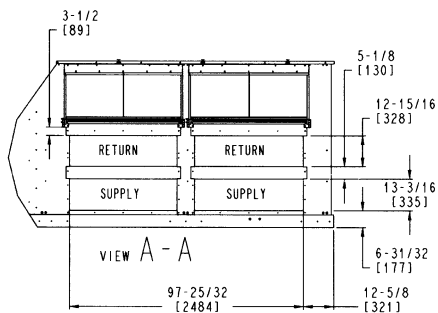
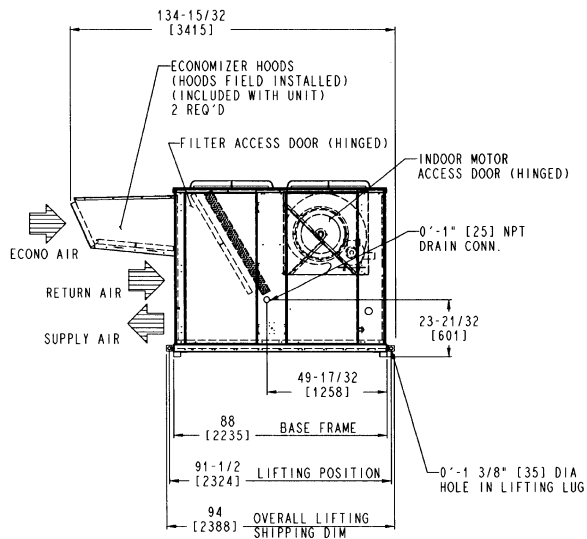


FOR CENTERS OF GRAVITY, CORNER WEIGHT PERCENTAGES, LEGEND AND NOTES, SEE CENTER OF GRAVITY AND CORNER WEIGHT PERCENTAGES SECTION ON PAGE 16.

Base unit dimensions, 50EW,EY038,044



NOTE: For side supply/return applications, a single return and supply ductwork connection is recommended for covering all return and supply openings.

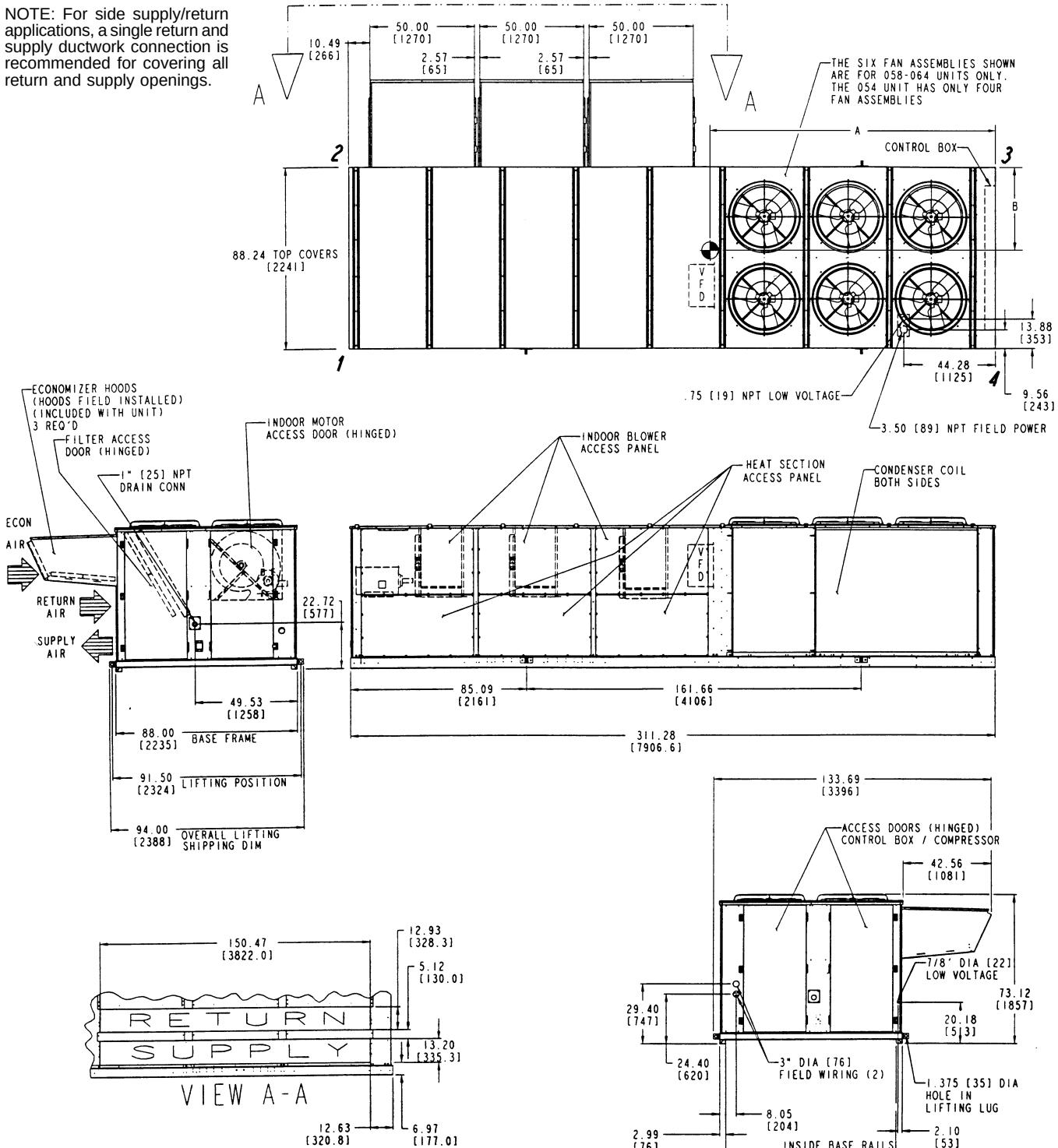


FOR CENTERS OF GRAVITY, CORNER WEIGHT PERCENTAGES, LEGEND AND NOTES, SEE CENTER OF GRAVITY AND CORNER WEIGHT PERCENTAGES SECTION ON PAGE 16.

Base unit dimensions, 50EW,EY054-068

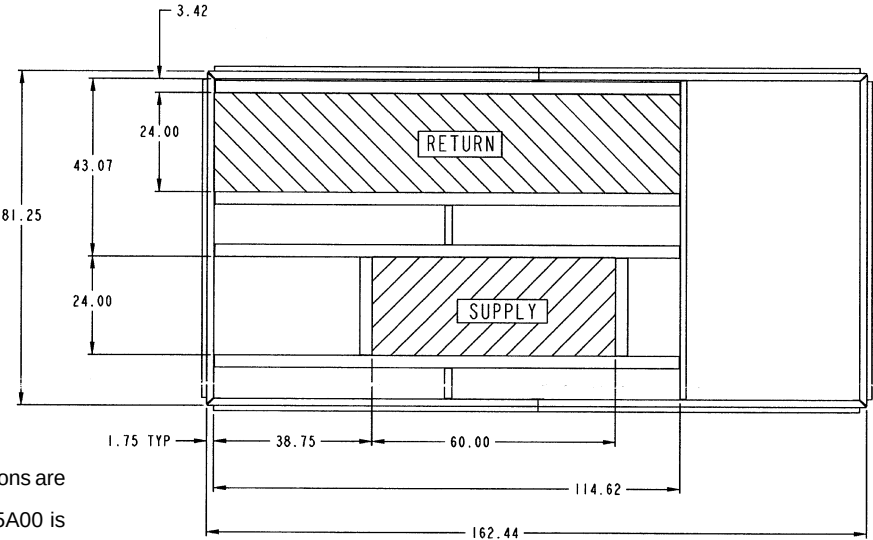


NOTE: For side supply/return applications, a single return and supply ductwork connection is recommended for covering all return and supply openings.

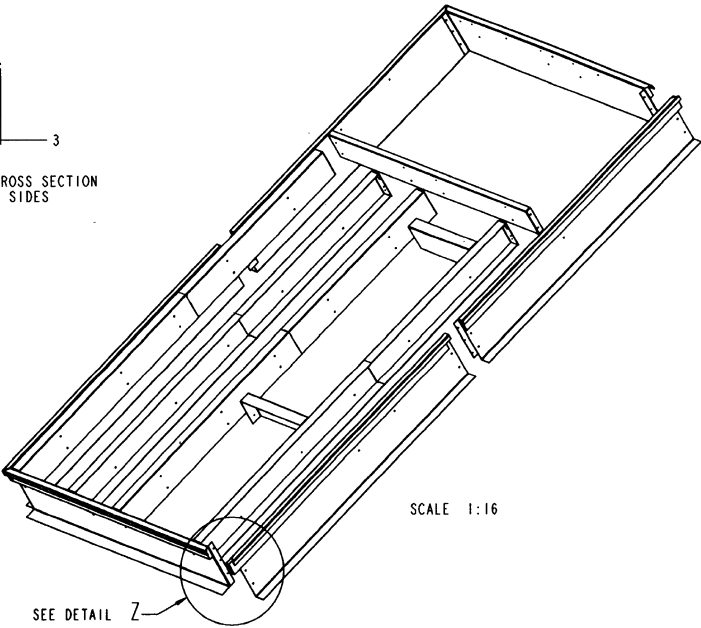
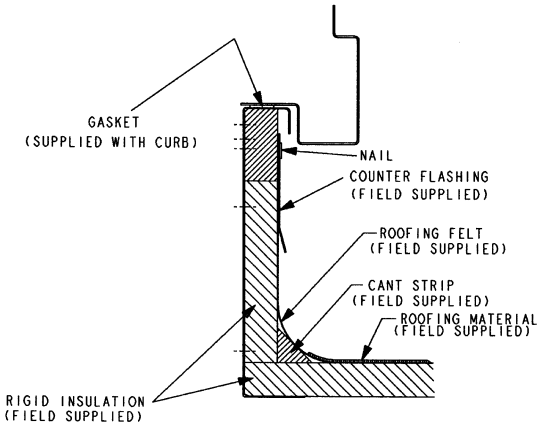
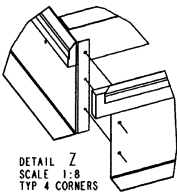
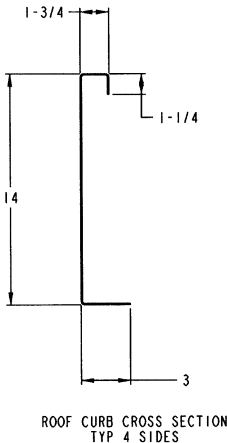
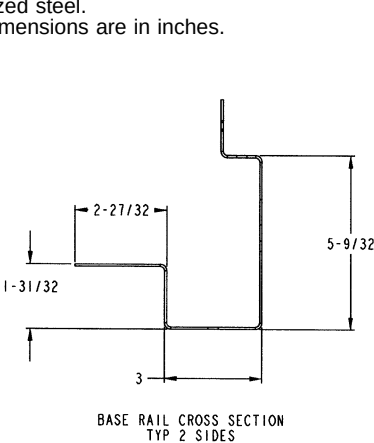


FOR CENTERS OF GRAVITY, CORNER WEIGHT PERCENTAGES, LEGEND AND NOTES, SEE CENTER OF GRAVITY AND CORNER WEIGHT PERCENTAGES SECTION ON PAGE 16.

ROOF CURB (SIZES 024-034)



- NOTES:
- 1. Unless otherwise specified, all dimensions are to outside of part.
 - 2. Roof curb accessory CRRFCURB005A00 is shipped disassembled.
 - 3. All roof curb parts are to be 14 gage galvanized steel.
 - 4. Dimensions are in inches.

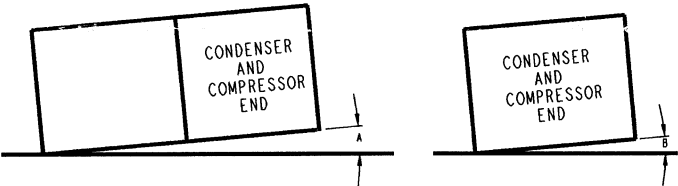


DIMENSIONS*
(degrees and inches)

A		B	
Deg.	in.	Deg.	in.
1.0	2.9	.50	.75

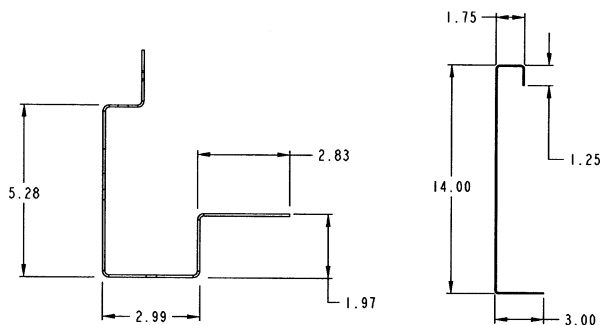
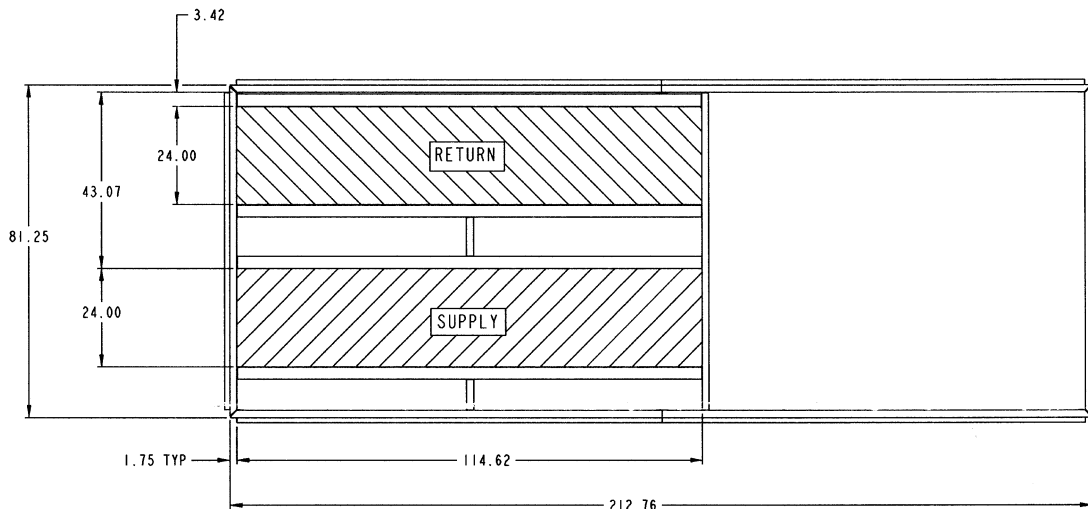
UNIT LEVELING TOLERANCES

*From edge of unit to horizontal.



NOTE: To prevent standing water in the drain pan of the indoor section and the heat exchangers, **UNIT CAN ONLY BE PITCHED AS SHOWN.**

ROOF CURB (SIZES 038 AND 044)

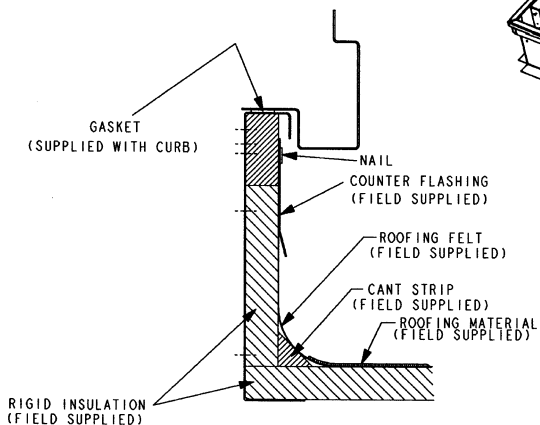
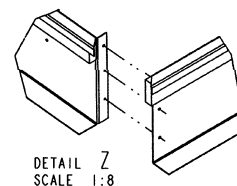
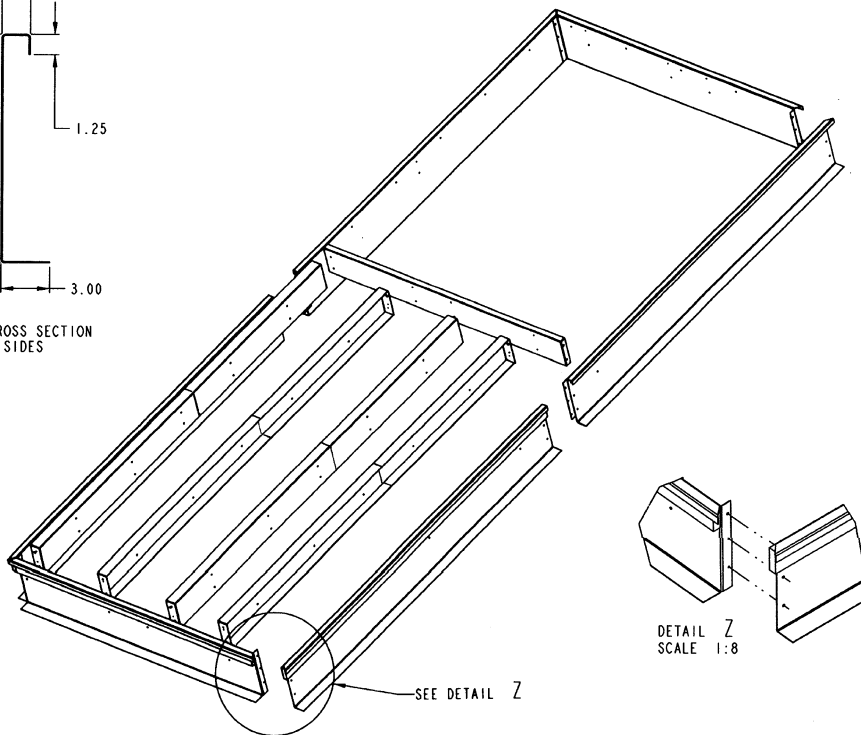


BASE RAIL CROSS SECTION
TYP (2) SIDES

ROOF CURB CROSS SECTION
TYP 4 SIDES

NOTES:

1. Unless otherwise specified, all dimensions are to outside of part.
2. Roof curb accessory CRRFCURB006A00 is shipped disassembled.
3. All roof curb parts are to be 14 gage galvanized steel.
4. Dimensions are in inches.

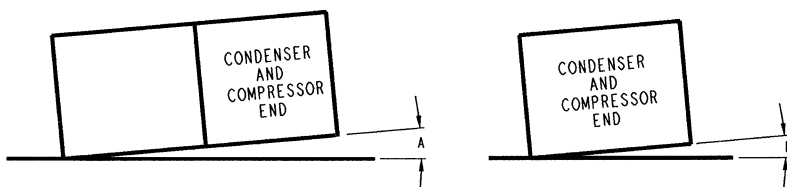


DIMENSIONS*
(degrees and inches)

A		B	
Deg.	in.	Deg.	in.
1.0	2.9	.50	.75

UNIT LEVELING TOLERANCES

*From edge of unit to horizontal.



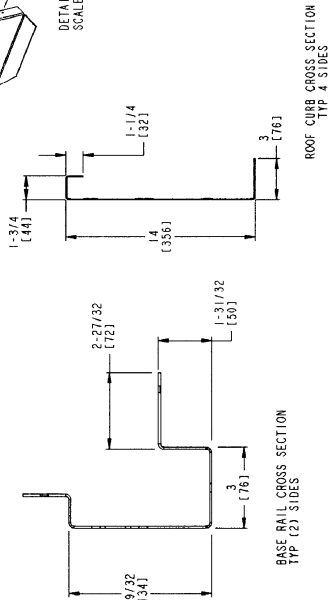
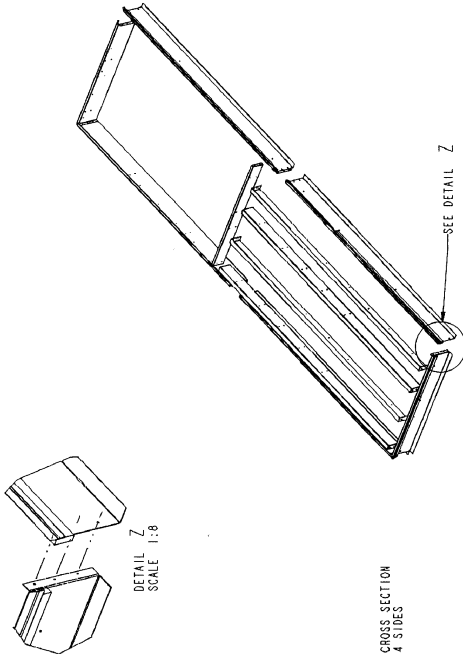
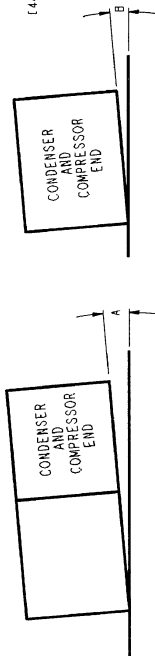
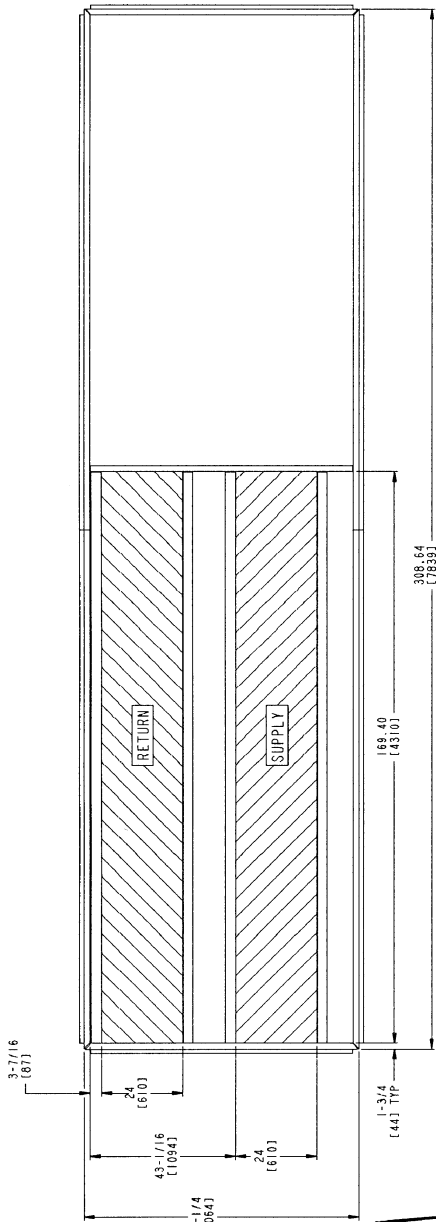
NOTE: To prevent standing water in the drain pan of the indoor section and the heat exchangers, **UNIT CAN ONLY BE PITCHED AS SHOWN.**



ROOF CURB (50EJ,EK054-068, FULL SUPPLY AIR)

- NOTES:
- 1. Unless otherwise specified, all dimensions are to outside of part.
 - 2. Roof curb accessory CRRFCURB014A00 is shipped disassembled.
 - 3. All roof curb parts are to be 14 gage galvanized steel.
 - 4. Dimensions are in inches.
 - 5. Dimensions in [] are millimeters.

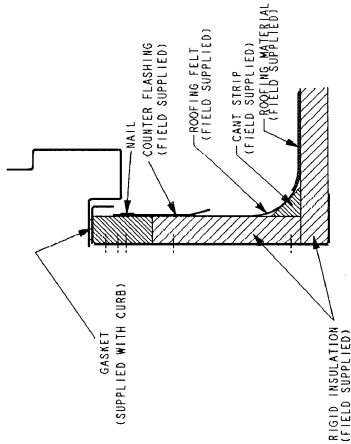
NOTE:
TO PREVENT STANDING WATER IN THE DRAIN PAN OF THE
INDOOR SECTION, AND THE HEAT EXCHANGERS
UNIT CAN ONLY BE PITCHED AS SHOWN.



DIMENSIONS *
(DEGREES AND INCHES)

A		B	
DEG.	IN.	DEG.	IN.
1.0	5.43	1.38	.50
			.75
			1.9

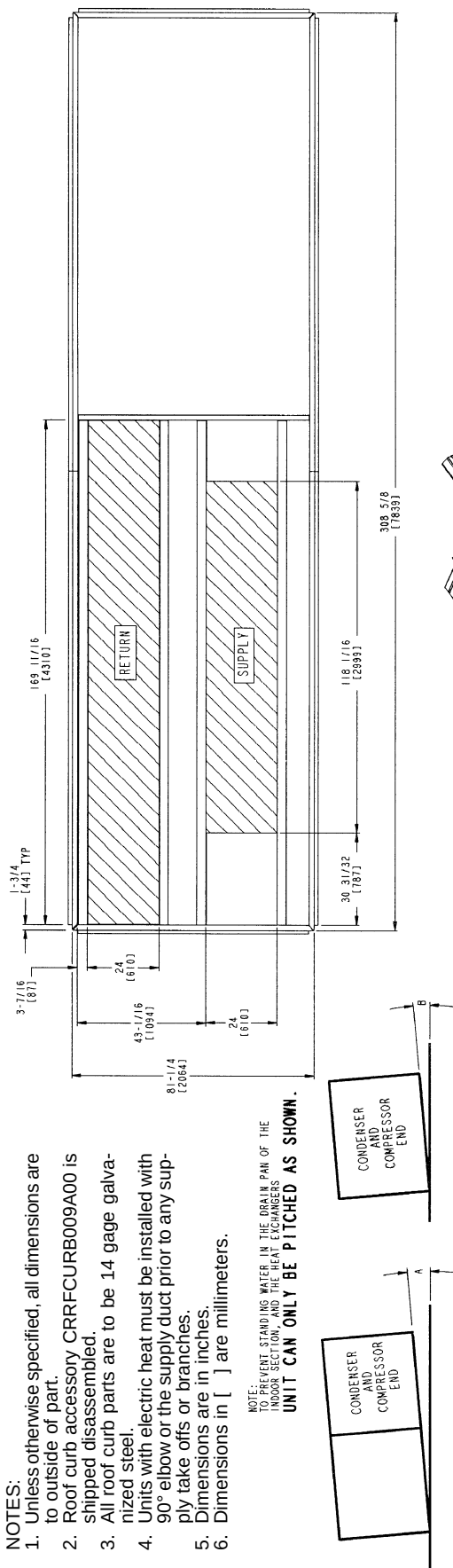
UNIT LEVELING TOLERANCES
* FROM EDGE OF UNIT TO HORIZONTAL



NOTES:

1. Unless otherwise specified, all dimensions are to outside of part.
2. Roof curb accessory CRRFCURB009A00 is shipped disassembled.
3. All roof curb parts are to be 14 gage galvanized steel.
4. Units with electric heat must be installed with 90° elbow or the supply duct prior to any supply take offs or branches.
5. Dimensions are in inches.
6. Dimensions in [] are millimeters.

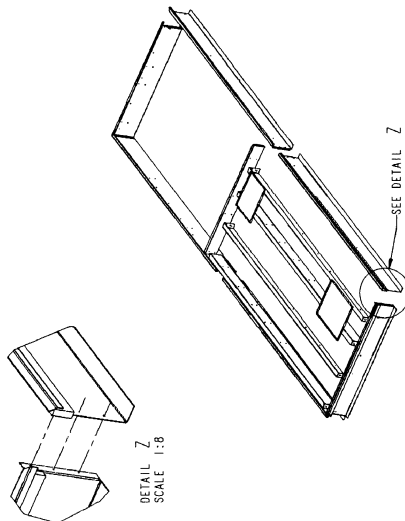
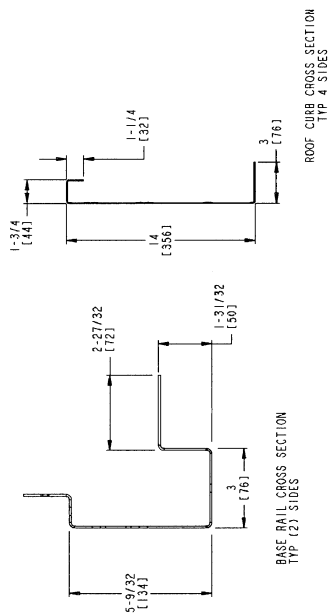
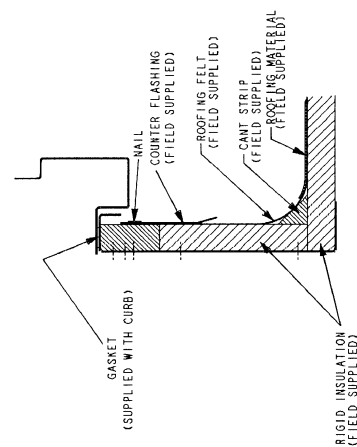
NOTE:
TO PREVENT STANDING WATER IN THE DRAIN PAN OF THE
INDOOR SECTION, AND THE HEAT EXCHANGERS
UNIT CAN ONLY BE PITCHED AS SHOWN.



DIMENSIONS*
(DEGREES AND INCHES)

A			B		
DEG.	IN.	mm	DEG.	IN.	mm
1.0	5.43	138	.50	.75	19

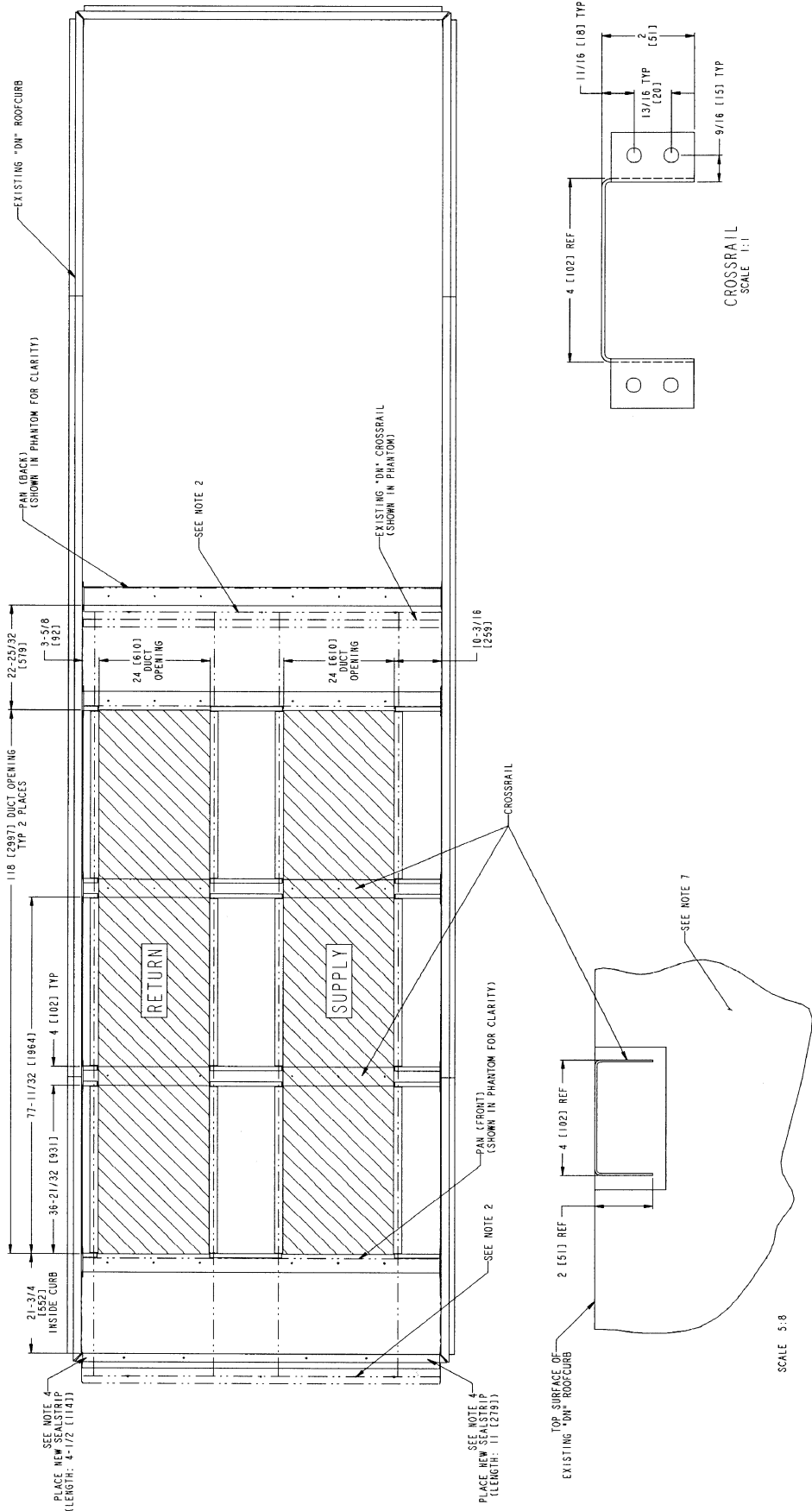
UNIT LEVELING TOLERANCES
* FROM EDGE OF UNIT TO HORIZONTAL



ROOF CURB RETROFIT KIT (50EJ,EK054-068 ON 50DL054,064 RETROFITS ONLY)

NOTES:

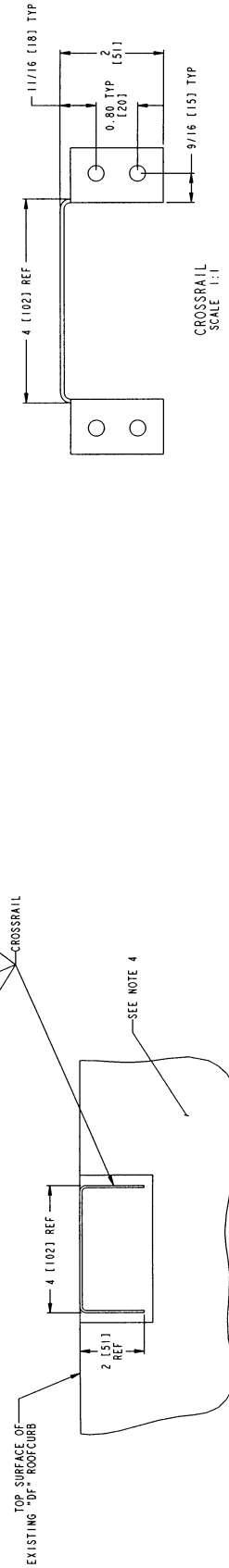
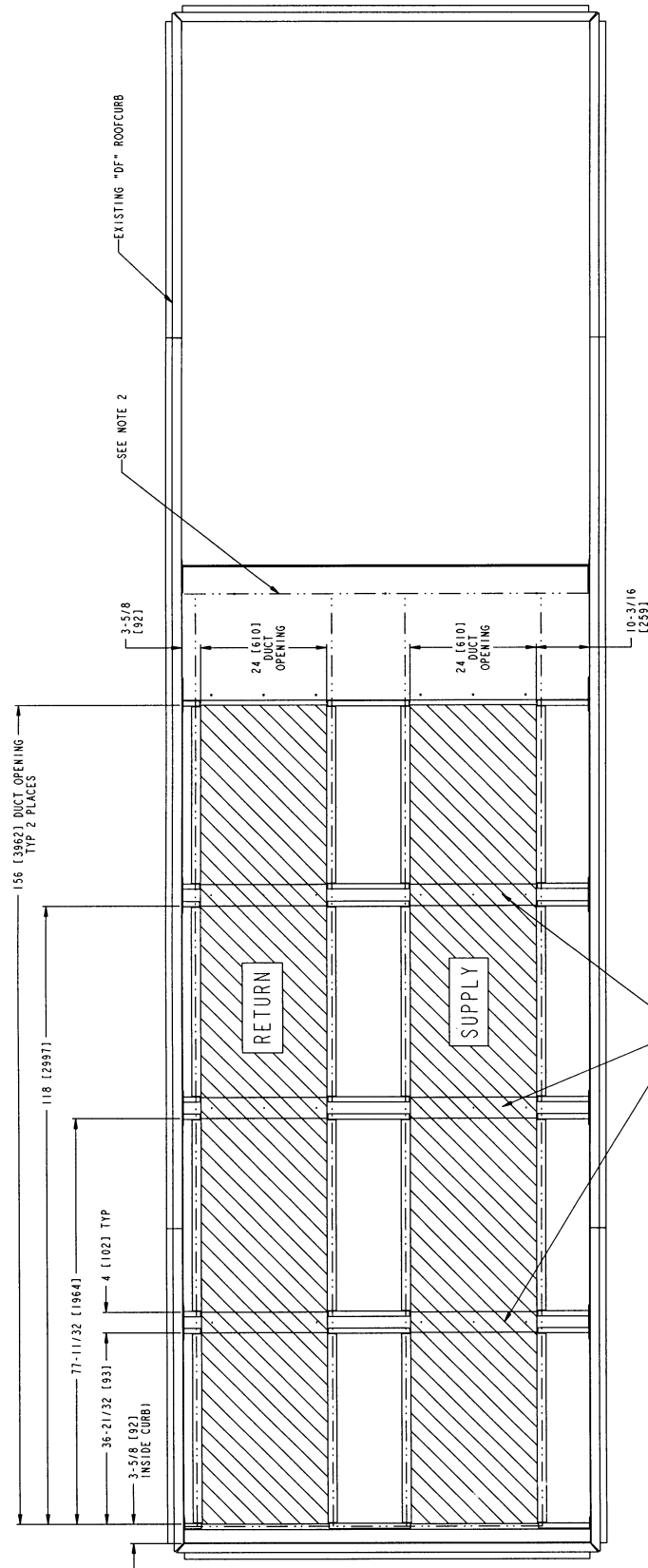
1. Unless otherwise specified, all dimensions are to outside of part.
2. Seal strip to be placed covering reference holes.
3. Phantom lines represent seal strip. Total length required is 22.86 m (75 linear ft).
4. If existing seal strip around roof curb seems damaged, replace it. Total length required is 18.9 m (62 linear ft). At indoor motor end, remove existing seal strip on roof curb and place new seal strip as shown.
5. Five crossrails are field located per dimensions shown and secured using self-tapping screws.
6. 50E series units will overhang existing "DN" roof curbs by 253.24 mm (9.97") at indoor motor end and 205.49 mm (8.09") at compressor end.
7. Ductwork (field supplied) must be notched to clear two crossrails.
8. Dimensions are in inches.
9. Dimensions in [] are millimeters.



ROOF CURB RETROFIT KIT (50EJ,EK054-068 ON 50DD,DF054-064 RETROFITS ONLY)

NOTES:

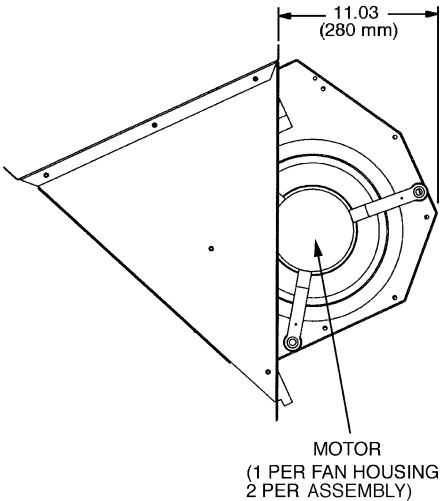
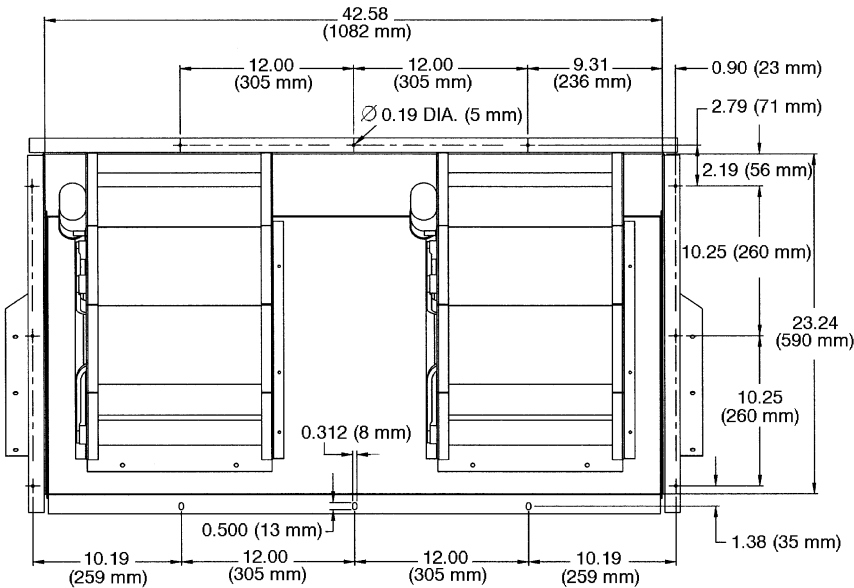
1. Unless otherwise specified all dimensions are to outside of part.
2. Seal strip to be placed covering reference holes.
3. Phantom lines represent seal strip. Total length required is 22.86 m (75 linear ft).
4. If existing seal strip around roof curb seems damaged, replace it. Total length required is 18.90 m (62 linear ft).
5. Five crossrails are field located per dimensions shown and secured using self-tapping screws.
6. 50E series units will overhang existing "DF" roof curbs by 75.69 mm (2.98") at indoor motor end and 383.03 mm (15.08") at compressor end.
7. Ductwork (field supplied) must be notched to clear three crossrails.
8. Dimensions in [] are millimeters.



SCALE 5:8



POWER EXHAUST AND BAROMETRIC RELIEF



LEGEND

Ø — Diameter

NOTES:

1. Unless otherwise specified, all dimensions are to outside of part.
2. Dimensions are in inches.
3. Units 024-044 have 2 assemblies per unit. Units 054-068 have 3 assemblies per unit.
4. For 50EW,EY units, the accessory power exhaust or barometric relief must be mounted in the field-supplied return ductwork.

Selection procedure (SI) — 50EJ028 example



I Determine cooling and heating requirements at design conditions.

Given:

Required Cooling Capacity (TC) 80 kW
Sensible Heat Capacity (SHC) 60 kW
Required Heating Capacity 45 kW
Condenser Entering Air Temperature 36 C
Indoor Air Temperature 26.7 C edb,
20 C ewb
Evaporator Air Quantity 4,700 L/s
External Static Pressure 350 Pa
Electrical Characteristics (V-Ph-Hz) 400-3-50
Unit Type Electric Heating,
Vertical Discharge

II Select unit based on required cooling capacity.

Enter 50 Hz Cooling Capacities table at condenser entering temperature of 36 C. Unit 50EJ028 at 4,700 L/s and 20 C ewb will provide a total capacity of 81.6 kW and a SHC of 61 kW. Calculate SHC correction, if required, using notes under cooling capacities tables.

III Select heating capacity of unit to provide design condition requirement.

In the Electric Resistance Heater Data table on page 17, note that unit 50EJ028, high heat will provide 50 kW capacity.

IV Determine fan speed and power requirements at design conditions.

Tabulated fan performance includes 51-mm throw-away filters, wet evaporator coil, economizer, cabinet losses, and roof curb. Find fan r/s and BkW at 350 Pa and 4,700 L/s on 50EJ/EK024-034 Fan Performance table for vertical applications. Find that the fan speed is 13.9 r/s and the power required is 5.90 BkW. Referring to the Motor Limitations table on page 64, the 5.60 kW motor will deliver up to 7.1 BkW. The 5.60 kW motor is required.

V Select unit that corresponds to power source available.

The Electrical Data table shows that a 400-3-50 unit is available.

Selection procedure (English) — 50EJ044 example

I Determine cooling and heating requirements at design conditions.

Given:

Required Cooling Capacity (TC) 400,000 Btuh
Sensible Heat Capacity (SHC) 310,000 Btuh
Required Heating Capacity 163,800 Btuh
Condenser Entering Air Temperature 95 F
Indoor Air Temperature 80 F ewb,
67 F ewb
Evaporator Air Quantity 16,000 cfm
External Static Pressure 1.4 in. wg
Electrical Characteristics (V-Ph-Hz) 400-3-50
Unit Type Electric Heating,
Vertical Discharge

II Select unit based on required cooling capacity.

Enter Cooling Capacities table at condenser entering temperature of 95 F. Unit 50EJ044 at 16,000 cfm and 67 F ewb will provide a total capacity of 417,000 Btuh and a SHC of 328,000 Btuh. Calculate SHC correction, if required, using notes under cooling capacities tables.

III Select electric heat to provide design condition requirement.

The heating load requirement is 163,800.

$$\frac{163,800 \text{ Btuh}}{3413 \text{ Btuh/kW}} = 48.0 \text{ kW}$$

Enter the Electric Resistance Heater Data table on page 17 for the 50EJ044 unit at 400-3-50. The 50 kW heater most closely satisfies the heating requirements.

IV Determine fan speed and power requirements at design conditions.

Tabulated fan performance includes 2-in. throwaway filters, wet evaporator coil, economizer, cabinet losses, and roof curb. Find fan rpm and bhp at 1.4 in. wg and 16,000 cfm on 50EJ044 Fan Performance table for vertical applications. Find that the fan speed is 971 rpm and the power required is 16.81 bhp. Refer to the Motor Limitations table on page 64. The 15 hp motor is required.

V Select unit that corresponds to power source available.

The Electrical Data table shows that a 400-3-50 unit is available.

COOLING CAPACITIES (50 Hz) (SI)

50EJ,EK,EW,EY024 (70.3 kW) (50 Hz UNIT)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		2400/0.055					2800/0.09					3300/0.150				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC	54.5	58.8	63.1	67.5	72.2	56.2	60.7	65.2	69.8	74.7	58.4	63.0	67.6	72.2	77.2
	SHC	54.1	52.3	46.9	41.5	35.9	56.2	56.1	50.5	44.4	38.1	58.4	60.6	55.5	48.6	40.9
	KW	11.36	11.59	11.82	12.06	12.29	11.49	11.72	11.95	12.19	12.42	11.63	11.86	12.09	12.31	12.54
28	TC	52.7	56.9	61.1	65.4	70.0	54.4	58.8	63.1	67.6	72.5	56.9	61.1	65.5	69.8	74.7
	SHC	52.7	51.3	45.9	40.5	35.1	54.4	54.8	49.6	43.6	37.2	56.9	59.2	54.3	47.6	40.0
	KW	12.17	12.46	12.75	13.03	13.31	12.33	12.61	12.90	13.18	13.47	12.52	12.79	13.05	13.33	13.62
32	TC	50.9	55.1	59.2	63.3	67.8	52.6	56.8	61.1	65.4	70.1	55.3	59.3	63.3	67.5	72.3
	SHC	50.9	50.3	45.0	39.7	34.3	52.6	53.5	48.7	42.6	36.3	55.3	58.0	53.1	46.7	39.2
	KW	12.98	13.32	13.66	14.00	14.32	13.15	13.49	13.83	14.16	14.50	13.39	13.70	14.02	14.34	14.67
36	TC	49.2	53.2	57.2	61.3	65.5	50.7	54.9	59.0	63.2	67.7	53.6	57.4	61.2	65.1	69.8
	SHC	49.2	49.2	44.1	38.9	33.3	50.7	52.2	47.6	41.8	35.4	53.6	56.6	52.1	45.8	38.4
	KW	13.78	14.16	14.56	14.94	15.32	13.95	14.35	14.74	15.13	15.51	14.25	14.60	14.96	15.33	15.71
40	TC	47.4	51.3	55.2	59.2	63.3	49.1	53.0	56.8	60.9	65.3	52.0	55.5	59.0	62.8	67.2
	SHC	47.4	47.8	43.1	37.9	32.5	49.1	50.8	46.5	40.8	34.5	52.0	55.3	50.9	45.0	37.4
	KW	14.53	14.97	15.41	15.85	16.27	14.77	15.19	15.62	16.05	16.52	15.10	15.48	15.87	16.23	16.67
44	TC	45.5	49.4	53.2	57.1	61.1	47.4	51.2	54.9	58.7	62.8	50.2	53.5	56.8	60.4	64.7
	SHC	45.5	46.5	42.2	37.1	31.6	47.4	49.5	45.4	40.0	33.6	50.3	53.5	49.8	44.0	36.6
	KW	15.28	15.77	16.26	16.72	17.27	15.55	16.02	16.52	16.97	17.43	15.93	16.35	16.72	17.23	17.69
46	TC	43.8	47.5	51.1	55.0	58.8	45.9	49.3	52.7	56.4	60.4	48.7	51.6	54.7	58.0	62.1
	SHC	43.8	45.1	41.3	36.3	30.7	45.9	48.3	44.4	39.1	32.8	48.7	51.6	48.6	43.0	35.7
	KW	16.01	16.51	17.10	17.59	18.17	16.33	16.83	17.39	17.85	18.43	16.79	17.19	17.59	18.11	18.60

50EJ,EK,EW,EY024 (70.3 kW) (50 Hz UNIT) (cont)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		3800/0.215					4200/0.270					4700/0.330				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC SHC kW	60.4	64.7	69.0	73.5	78.6	62.2	66.2	70.2	74.5	79.6	64.3	68.0	71.8	75.9	81.0
		60.4	63.5	58.2	51.2	42.8	62.2	66.2	60.9	53.7	44.6	64.3	68.0	64.7	57.3	47.2
		11.71	11.94	12.17	12.40	12.61	11.81	12.03	12.24	12.45	12.68	11.89	12.10	12.30	12.52	12.74
28	TC SHC kW	58.8	62.8	66.8	71.0	76.0	60.5	64.2	67.9	72.0	77.0	62.7	66.1	69.4	73.2	78.2
		58.8	62.3	57.2	50.2	42.0	60.5	64.2	59.7	52.8	43.7	62.8	66.1	63.3	56.3	46.4
		12.65	12.91	13.15	13.42	13.70	12.74	12.99	13.23	13.48	13.76	12.87	13.10	13.32	13.56	13.84
32	TC SHC kW	57.2	61.0	64.6	68.6	73.5	58.8	62.2	65.7	69.5	74.4	61.4	64.3	67.2	70.6	75.5
		57.2	61.0	56.1	49.4	41.1	58.8	62.2	58.6	51.8	42.8	61.4	64.3	61.9	55.4	45.4
		13.55	13.84	14.13	14.43	14.76	13.67	13.95	14.21	14.51	14.83	13.87	14.09	14.33	14.59	14.92
36	TC SHC kW	55.5	59.0	62.4	66.2	70.8	57.0	60.3	63.4	67.0	71.7	60.1	62.5	64.9	68.0	72.7
		55.5	59.0	54.8	48.4	40.2	57.0	60.3	57.2	50.9	41.9	60.1	62.5	60.3	54.4	44.5
		14.44	14.75	15.08	15.42	15.80	14.58	14.89	15.18	15.50	15.89	14.86	15.09	15.33	15.60	15.99
40	TC SHC kW	53.7	57.0	60.1	63.7	68.3	55.4	58.3	61.1	64.5	69.0	58.5	60.6	62.7	65.4	70.0
		53.7	57.0	53.6	47.5	39.3	55.4	58.2	55.8	49.9	41.0	58.5	60.6	58.7	53.2	43.6
		15.30	15.65	16.00	16.36	16.79	15.48	15.79	16.11	16.48	16.91	15.84	16.06	16.26	16.61	17.03
44	TC SHC kW	52.1	55.0	57.9	61.3	65.6	54.0	56.5	58.9	62.0	66.3	56.9	58.7	60.5	62.9	67.3
		52.1	55.0	52.3	46.5	38.4	54.0	56.5	54.4	48.9	40.2	57.0	58.7	57.2	52.3	42.6
		16.17	16.50	16.87	17.36	17.82	16.41	16.77	17.01	17.38	17.94	16.83	17.05	17.26	17.52	17.97
46	TC SHC kW	50.5	53.2	55.7	58.8	63.0	52.6	54.7	56.7	59.4	63.7	55.5	56.8	58.1	60.4	64.5
		50.5	53.2	51.0	45.6	37.6	52.6	54.7	53.0	47.9	39.3	55.5	56.9	55.6	51.2	41.8
		17.03	17.39	17.85	18.25	18.73	17.33	17.66	18.00	18.37	18.85	17.75	17.96	18.16	18.41	18.98

LEGEND

- BF** — Bypass Factor
Edb — Entering Dry-Bulb Temperature (C)
Ewb — Entering Wet-Bulb Temperature (C)
kW — Compressor Input (kW)
TC — Total Capacity (kW)
SHC — Sensible Heat Capacity (kW)
VAV — Variable Air Volume

NOTES:

1. Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

4. Formulas:

$$\text{C}_{\text{db}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{Lwb}).

$$h_{\text{Lwb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

5. VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY028 (87.9 kW) (50 Hz UNIT)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		2900/0.05					3500/0.08					4100/0.10				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC	68.0	73.2	78.6	84.0	89.6	70.6	76.0	81.4	87.0	92.8	72.4	78.0	83.6	89.2	95.0
	SHC	67.8	65.6	58.6	51.8	44.6	70.6	72.2	64.2	56.2	47.8	72.4	78.0	69.4	60.4	50.6
	KW	14.32	14.70	15.06	15.44	15.82	14.52	14.90	15.28	15.66	16.02	14.68	15.06	15.44	15.80	16.20
28	TC	65.6	70.8	76.0	81.4	86.8	68.2	73.6	78.8	84.0	89.8	70.2	75.4	80.8	86.2	91.8
	SHC	65.6	64.4	57.6	50.6	43.6	68.2	71.0	63.0	55.0	46.6	70.2	75.4	68.2	59.2	49.6
	KW	15.28	15.70	16.12	16.56	17.00	15.52	15.94	16.36	16.80	17.22	15.70	16.12	16.54	16.96	17.40
32	TC	63.4	68.4	73.4	78.6	84.0	66.0	71.0	76.0	81.2	86.8	68.0	73.0	78.0	83.0	88.6
	SHC	63.4	63.4	56.4	49.6	42.6	66.0	69.8	61.8	54.0	45.6	68.0	73.0	66.8	58.0	48.4
	KW	16.24	16.72	17.20	17.68	18.18	16.52	16.98	17.46	17.94	18.42	16.72	17.18	17.64	18.12	18.62
36	TC	61.0	66.0	71.0	76.0	81.2	63.8	68.6	73.4	78.4	83.8	65.8	70.4	75.2	80.0	85.6
	SHC	61.0	62.2	55.2	48.4	41.4	63.8	68.4	60.6	52.8	44.6	65.8	70.4	65.4	57.0	47.4
	KW	17.18	17.72	18.24	18.78	19.34	17.48	18.00	18.54	19.06	19.62	17.74	18.24	18.74	19.26	19.80
40	TC	59.0	63.6	68.4	73.2	78.2	61.4	66.0	70.8	75.6	80.8	64.0	68.2	72.6	77.2	82.4
	SHC	59.0	61.0	54.2	47.4	40.4	61.4	66.0	59.4	51.6	43.4	64.0	68.2	64.0	55.8	46.2
	KW	18.08	18.66	19.26	19.84	20.40	18.42	18.98	19.56	20.20	20.80	18.78	19.28	19.80	20.40	21.00
44	TC	56.8	61.4	66.0	70.6	75.4	59.0	63.6	68.0	72.6	77.6	62.0	66.0	70.0	74.2	79.2
	SHC	56.8	59.6	53.0	46.2	39.2	59.0	63.6	58.2	50.6	42.4	62.0	66.0	62.4	54.8	45.2
	KW	18.98	19.62	20.20	21.00	21.60	19.34	19.96	20.60	21.20	21.80	19.80	20.40	20.80	21.40	22.00
46	TC	54.6	59.0	63.4	67.8	72.6	56.8	61.2	65.4	69.8	74.6	60.2	63.8	67.2	71.2	76.2
	SHC	54.6	58.4	51.8	45.2	38.2	56.8	61.2	56.8	49.4	41.4	60.4	63.8	60.8	53.6	44.2
	KW	19.88	20.60	21.20	22.00	22.60	20.20	21.00	21.60	22.20	23.00	20.80	21.40	22.00	22.60	23.20

50EJ,EK,EW,EY028 (87.9 kW) (50 Hz UNIT) (cont)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		4700/0.16					5300/0.25					5900/0.32				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC	74.8	80.0	85.2	90.8	96.8	77.4	82.2	86.8	92.0	98.2	79.8	84.0	88.2	93.0	99.0
	SHC	74.8	80.0	74.2	64.4	53.6	77.4	82.2	77.8	68.2	56.2	79.8	84.0	80.0	70.6	58.0
	KW	14.86	15.22	15.56	15.92	16.32	15.06	15.36	15.68	16.02	16.40	15.22	15.50	15.78	16.08	16.46
28	TC	72.8	77.6	82.6	87.6	93.6	75.8	80.0	84.2	88.8	94.8	78.0	81.6	85.4	89.6	95.6
	SHC	72.8	77.6	72.6	63.2	52.4	75.8	80.0	76.0	67.0	55.2	78.0	81.6	78.2	69.4	57.0
	KW	15.94	16.32	16.70	17.10	17.54	16.20	16.52	16.84	17.20	17.64	16.40	16.66	16.94	17.26	17.70
32	TC	70.6	75.2	79.8	84.6	90.4	74.0	77.8	81.4	85.8	91.4	76.2	79.4	82.6	86.4	92.2
	SHC	70.6	75.2	71.0	62.0	51.4	74.0	77.8	74.2	65.8	54.0	76.2	79.4	76.2	68.2	55.8
	KW	17.00	17.42	17.84	18.26	18.76	17.36	17.68	18.00	18.38	18.88	17.56	17.84	18.12	18.44	18.94
36	TC	68.8	72.8	77.0	81.6	87.0	72.4	75.6	78.8	82.6	88.0	74.4	77.2	79.8	83.2	88.8
	SHC	68.8	72.8	69.2	61.0	50.2	72.4	75.6	72.4	64.6	52.8	74.4	77.0	74.4	67.0	54.8
	KW	18.10	18.52	18.96	19.42	19.96	18.50	18.84	19.16	19.54	20.00	18.74	19.00	19.26	19.62	20.20
40	TC	67.2	70.8	74.4	78.4	83.8	70.6	73.2	76.0	79.4	84.8	72.6	74.8	77.0	80.0	85.4
	SHC	67.2	70.8	67.6	59.8	49.2	70.6	73.2	70.6	63.4	51.8	72.6	74.8	72.4	65.8	53.6
	KW	19.20	19.62	20.00	20.60	21.20	19.64	19.96	20.20	20.60	21.20	19.90	20.20	20.40	20.80	21.40
44	TC	65.6	68.6	71.8	75.4	80.4	68.8	71.0	73.2	76.2	81.4	70.8	72.4	74.0	76.8	82.0
	SHC	65.6	68.6	65.8	58.6	48.0	68.8	71.0	68.8	62.4	50.8	70.8	72.4	70.6	64.6	52.6
	KW	20.40	20.80	21.20	21.60	22.20	20.80	21.00	21.40	21.80	22.40	21.00	21.20	21.40	21.80	22.40
46	TC	64.0	66.6	69.0	72.2	77.2	66.8	68.6	70.4	73.0	78.0	68.8	70.0	71.2	73.6	78.6
	SHC	64.0	66.6	64.0	57.4	47.0	66.8	68.6	66.8	61.2	49.8	68.8	70.0	68.6	63.4	51.4
	KW	21.40	21.80	22.20	22.60	23.40	22.00	22.20	22.40	22.80	23.60	22.20	22.40	22.60	23.00	23.60

LEGEND

- BF — Bypass Factor
- Edb — Entering Dry-Bulb Temperature (C)
- Ewb — Entering Wet-Bulb Temperature (C)
- kW — Compressor Input (kW)
- TC — Total Capacity (kW)
- SHC — Sensible Heat Capacity (kW)
- VAV — Variable Air Volume

NOTES:

- Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
- Direct interpolation is permissible. Do not extrapolate.
- SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

4. Formulas:

$$\text{C}_{\text{idb}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{lwb}).

$$h_{\text{lwb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

- VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY030 (95.0 kW) (50 Hz UNIT)																
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		3200/0.04					3900/0.06					4500/0.10				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC SHC kW	78.3	84.4	90.6	96.9	103.4	81.5	87.8	94.0	100.5	107.4	84.4	90.9	97.5	104.2	111.3
		78.2	74.2	66.7	59.2	51.3	81.5	81.8	72.8	64.0	54.8	84.4	89.0	80.4	70.1	59.2
		18.40	18.99	19.58	20.17	20.65	18.80	19.38	19.87	20.46	21.05	19.11	19.69	20.28	20.87	21.45
28	TC SHC kW	75.9	81.8	87.8	93.9	100.4	78.8	84.8	91.0	97.3	104.0	81.9	88.0	94.3	100.7	107.6
		75.8	73.0	65.4	57.9	50.1	78.8	80.3	71.5	62.7	53.5	81.9	86.9	78.9	68.8	57.9
		19.60	20.32	20.93	21.54	22.16	20.00	20.61	21.23	21.95	22.57	20.34	21.05	21.65	22.26	22.98
32	TC SHC kW	73.4	79.2	85.0	90.9	97.4	76.0	82.0	88.0	94.1	100.6	79.4	85.2	91.1	97.2	104.0
		73.4	71.7	64.1	56.6	49.0	76.0	78.6	70.2	61.4	52.3	79.4	85.0	77.4	67.6	56.8
		20.80	21.54	22.28	22.92	23.68	21.20	21.94	22.59	23.34	24.09	21.68	22.30	23.03	23.76	24.51
36	TC SHC kW	71.0	76.6	82.2	87.9	94.2	73.3	79.1	85.0	90.9	97.2	76.9	82.4	88.0	93.8	100.3
		71.0	70.5	62.8	55.3	47.8	73.3	76.5	68.9	60.1	51.1	76.9	82.4	75.9	66.3	55.5
		21.99	22.76	23.52	24.29	25.18	22.40	23.17	23.94	24.72	25.50	22.92	23.66	24.40	25.14	26.00
40	TC SHC kW	68.3	73.9	79.2	84.9	90.8	70.7	76.3	81.9	87.6	93.6	74.7	79.8	84.9	90.3	96.5
		68.3	69.0	61.5	54.0	46.5	70.7	74.5	67.3	58.9	49.8	74.7	79.8	74.2	64.9	54.1
		23.13	23.93	24.83	25.60	26.60	23.59	24.38	25.27	26.10	27.00	24.18	24.92	25.70	26.50	27.40
44	TC SHC kW	65.5	70.9	76.3	81.7	87.3	68.1	73.5	78.9	84.3	90.0	72.4	77.0	81.8	86.7	92.6
		65.5	67.6	60.2	52.8	45.2	68.1	72.5	65.9	57.6	48.5	72.4	77.0	72.4	63.5	52.7
		24.28	25.11	26.00	27.00	27.90	24.69	25.60	26.50	27.40	28.40	25.40	26.30	27.00	27.90	28.80
46	TC SHC kW	62.9	68.1	73.2	78.5	84.0	65.6	70.6	75.7	80.9	86.4	70.1	74.3	78.5	83.2	88.8
		62.9	65.6	58.9	51.5	43.8	65.5	70.6	64.4	56.2	47.2	70.1	74.3	70.5	62.3	51.4
		25.30	26.30	27.20	28.20	28.30	25.90	26.80	27.70	28.80	29.70	26.70	27.50	28.30	29.20	30.20

50EJ,EK,EW,EY030 (95.0 kW) (50 Hz UNIT) (cont)																
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		5200/0.15					5800/0.23					6500/0.315				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC SHC kW	86.7	93.2	99.6	106.2	113.4	89.9	95.7	101.6	107.8	114.9	93.7	98.6	103.5	109.0	116.3
		86.7	93.2	85.5	74.5	62.3	89.9	95.7	90.1	79.0	65.2	93.7	98.6	93.7	82.7	68.1
		19.29	19.87	20.44	21.02	21.60	19.63	20.07	20.61	21.16	21.74	19.96	20.36	20.76	21.29	21.87
28	TC SHC kW	84.5	90.5	96.4	102.6	109.5	87.9	93.1	98.4	104.1	111.0	91.7	96.0	100.3	105.3	112.3
		84.5	90.5	83.8	73.2	61.0	87.9	93.1	88.1	77.6	63.9	91.7	96.0	91.7	81.5	66.8
		20.68	21.26	21.83	22.52	23.13	21.03	21.57	22.11	22.67	23.28	21.48	21.88	22.27	22.80	23.41
32	TC SHC kW	82.2	87.7	93.2	99.1	105.8	85.7	90.4	95.2	100.4	107.1	89.6	93.3	97.0	101.4	108.2
		82.3	87.8	82.2	71.9	59.8	85.8	90.5	86.1	76.2	62.5	89.8	93.3	89.6	80.1	65.5
		22.06	22.65	23.33	23.93	24.67	22.42	22.96	23.51	24.18	24.82	22.90	23.39	23.79	24.22	24.95
36	TC SHC kW	80.0	85.1	90.0	95.4	101.9	83.7	87.8	92.0	96.7	103.1	87.6	90.6	93.8	97.7	104.2
		80.0	85.1	80.4	70.6	58.5	83.7	87.9	84.1	74.8	61.3	87.6	90.6	87.5	78.8	64.2
		23.35	24.03	24.72	25.42	26.20	23.91	24.46	25.00	25.58	26.30	24.41	24.80	25.19	25.72	26.50
40	TC SHC kW	77.9	82.4	86.8	91.8	98.0	81.8	85.2	88.8	93.0	99.2	85.4	87.9	90.4	94.0	100.1
		77.9	82.4	78.3	69.2	57.1	81.8	85.2	81.9	73.4	60.0	85.4	87.9	85.2	77.3	63.1
		24.73	25.40	26.10	26.80	27.60	25.30	25.80	26.40	26.90	27.80	25.90	26.30	26.70	27.10	28.00
44	TC SHC kW	75.8	79.7	83.7	88.1	94.0	79.8	82.7	85.6	89.3	95.2	83.2	85.2	87.2	90.2	96.0
		75.8	79.7	76.2	67.7	55.7	79.8	82.7	79.8	71.9	58.8	83.2	85.2	82.9	75.9	61.7
		26.10	26.80	27.40	28.10	29.10	26.80	27.20	27.70	28.30	29.20	27.30	27.70	28.00	28.50	29.40
46	TC SHC kW	73.6	77.1	80.4	84.5	90.1	77.6	79.8	82.2	85.4	91.1	80.7	82.2	83.7	86.4	91.9
		73.6	77.0	74.1	66.4	54.4	77.4	79.8	77.5	70.5	57.6	80.7	82.2	80.5	74.3	60.4
		27.50	28.10	28.70	29.40	30.40	28.20	28.60	29.10	29.70	30.60	28.80	29.00	29.40	29.80	30.80

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb Temperature (C)
Ewb — Entering Wet-Bulb Temperature (C)
kW — Compressor Input (kW)
TC — Total Capacity (kW)
SHC — Sensible Heat Capacity (kW)
VAV — Variable Air Volume

NOTES:

1. Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

4. Formulas:

$$\text{C}_{\text{ldb}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{ldb}).

$$h_{\text{ldb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

5. VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY034 (105.5 kW) (50 Hz UNIT)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF																
		3500/0.06					4200/0.07					5000/0.09						
		Evaporator Air — Ewb (C)																
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22		
24	TC SHC kW	83.4 83.4 22.80	89.6 79.7 23.60	95.7 71.4 24.40	102.0 63.1 25.20	109.0 54.5 26.00	85.6 85.6 23.10	91.9 86.5 23.90	98.3 77.0 24.70	105.0 67.5 25.50	112.0 57.6 26.40	88.5 88.6 23.50	95.1 95.1 24.30	102.0 84.4 25.20	108.0 73.3 26.00	115.0 61.8 26.80		
		28	TC SHC kW	80.7 80.7 24.10	86.7 78.5 25.00	92.8 70.2 25.90	99.0 61.9 26.70	106.0 53.3 27.60	82.9 82.9 24.50	89.0 85.1 25.30	95.2 75.7 26.20	102.0 66.2 27.10	108.0 56.4 28.00	85.9 85.9 24.90	92.1 92.1 25.80	98.4 83.0 26.70	105.0 72.0 27.60	112.0 60.5 28.50
				32	TC SHC kW	77.9 77.9 25.40	83.9 77.4 26.40	89.9 69.0 27.30	95.9 60.6 28.30	102.0 52.1 29.30	80.1 80.2 25.80	86.1 83.8 26.80	92.1 74.4 27.70	98.3 64.9 28.70	105.0 55.1 29.70	83.2 83.2 26.40	89.2 89.2 27.30	95.1 81.5 28.20
36	TC SHC kW					75.2 75.2 26.70	81.1 76.1 27.80	86.9 67.8 28.80	92.8 59.3 29.80	99.0 50.8 30.90	77.5 77.5 27.20	83.3 82.3 28.20	89.1 73.1 29.20	95.0 63.7 30.20	101.0 53.8 31.30	80.7 80.7 27.80	86.3 86.3 28.80	92.0 80.0 29.80
		40	TC SHC kW			72.7 72.7 28.00	78.3 74.6 29.10	84.0 66.4 30.20	89.6 58.0 31.30	95.3 49.4 32.40	75.2 75.2 28.50	80.6 80.4 29.60	86.1 71.5 30.60	91.6 62.3 31.70	97.4 52.4 32.80	78.6 78.6 29.30	83.7 83.7 30.20	88.9 78.2 31.20
				44	TC SHC kW	70.2 70.2 29.30	75.6 73.1 30.40	81.0 65.0 31.60	86.4 56.8 32.80	91.7 48.0 33.90	72.8 72.8 29.90	78.0 78.0 31.00	83.1 70.0 32.10	88.3 61.0 33.20	93.5 51.1 34.40	76.5 76.4 30.70	81.2 81.1 31.70	85.8 76.4 32.70
46	TC SHC kW					67.9 67.9 30.50	72.9 71.7 31.80	77.9 63.6 33.00	82.9 55.3 34.20	87.9 46.7 35.40	70.8 70.8 31.30	75.3 75.3 32.40	79.9 68.3 33.50	84.6 59.6 34.60	89.6 49.7 35.90	74.6 74.6 32.30	78.6 78.6 33.20	82.5 74.4 34.20

50EJ,EK,EW,EY034 (105.5 kW) (50 Hz UNIT) (cont)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		5600/0.15					6400/0.23					7100/0.33				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC SHC kW	182.6	194.6	206.0	220.0	234.0	189.8	200.0	212.0	224.0	238.0	196.2	206.0	216.0	226.0	240.0
		182.6	194.6	177.8	154.8	129.2	189.8	200.0	189.8	165.8	136.8	196.2	206.0	196.0	173.6	142.2
		47.80	49.40	50.80	52.40	54.00	48.80	50.20	51.40	53.00	54.60	49.60	50.80	52.00	53.20	55.00
28	TC SHC kW	177.8	189.0	200.0	212.0	226.0	185.8	195.6	206.0	216.0	230.0	192.2	200.0	208.0	218.0	232.0
		177.8	189.0	174.4	152.2	126.6	185.8	195.6	185.4	163.0	134.0	192.2	200.0	191.6	170.6	139.6
		50.80	52.40	54.00	55.60	57.40	52.00	53.40	54.80	56.20	58.00	53.00	54.20	55.20	56.60	58.40
32	TC SHC kW	173.0	183.4	194.0	206.0	218.0	181.8	190.4	198.8	208.0	222.0	188.0	195.0	202.0	210.0	224.0
		173.0	183.4	170.8	149.4	123.8	181.8	190.4	181.2	160.2	131.2	188.0	195.0	187.2	167.8	137.0
		53.80	55.40	57.20	58.80	60.80	55.40	56.60	58.00	59.40	61.40	56.40	57.40	58.40	59.80	61.80
36	TC SHC kW	168.4	178.0	187.6	198.0	210.0	177.8	185.0	192.4	202.0	214.0	183.8	189.6	195.4	204.0	216.0
		168.4	178.0	167.2	146.8	121.2	177.8	185.0	176.8	157.4	128.6	183.8	189.6	182.8	165.0	134.4
		56.80	58.60	60.20	62.00	64.20	58.60	59.80	61.20	62.60	64.80	59.80	60.80	61.60	63.00	65.20
40	TC SHC kW	164.2	172.8	181.4	190.8	202.0	173.6	179.8	186.0	193.8	206.0	179.4	184.2	188.8	195.4	208.0
		164.2	172.8	163.4	144.2	118.4	173.4	179.8	172.6	154.8	126.0	179.4	184.2	178.4	162.2	131.8
		60.00	61.60	63.20	65.00	67.20	61.80	63.00	64.20	65.60	67.80	63.00	64.00	64.80	66.00	68.20
44	TC SHC kW	160.0	167.6	175.2	183.6	194.0	169.2	174.4	179.6	186.2	196.8	175.0	178.6	182.2	187.8	198.4
		159.8	167.4	159.6	141.4	115.8	169.2	174.4	168.4	152.0	123.4	175.0	178.6	174.0	159.4	129.0
		63.00	64.60	66.20	68.00	70.40	65.20	66.20	67.20	68.60	71.00	66.40	67.20	67.80	69.00	71.40
46	TC SHC kW	156.2	162.2	168.2	175.4	185.6	165.2	168.8	172.6	178.0	188.0	169.6	172.2	174.6	179.4	189.4
		156.0	162.2	155.2	138.4	113.0	165.0	168.8	163.8	149.0	120.6	169.6	172.2	168.8	156.0	126.0
		66.20	67.60	69.20	71.00	73.40	68.40	69.40	70.20	71.60	74.00	69.80	70.20	70.80	72.00	74.40

LEGEND

- BF** — Bypass Factor
Edb — Entering Dry-Bulb Temperature (C)
Ewb — Entering Wet-Bulb Temperature (C)
kW — Compressor Input (kW)
TC — Total Capacity (kW)
SHC — Sensible Heat Capacity (kW)
VAV — Variable Air Volume

NOTES:

- Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
- Direct interpolation is permissible. Do not extrapolate.
- SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

4. Formulas:

$$\text{C}_{\text{ldb}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{ldb}).

$$h_{\text{ldb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

- VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY038 (123.0 kW) (50 Hz UNIT)																
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		5000/0.155					5800/0.17					6600/0.17				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC SHC kW	93.6	98.7	105.5	113.2	121.6	99.6	103.6	110.1	118.0	126.6	104.7	107.0	113.1	121.2	129.9
		97.4	91.9	83.8	74.2	64.4	104.6	100.3	91.5	80.2	68.8	110.1	107.5	98.6	86.3	73.1
		20.90	21.40	22.00	22.60	23.30	21.40	21.80	22.40	23.00	23.80	21.90	22.20	22.60	23.40	24.10
28	TC SHC kW	90.9	95.8	102.2	109.7	117.8	96.9	100.3	106.5	114.3	122.6	101.8	103.8	109.4	117.2	125.6
		94.9	90.0	82.1	72.6	63.0	101.9	98.3	89.8	78.7	67.3	107.3	105.1	96.6	84.6	71.5
		22.10	22.60	23.30	23.90	24.70	22.80	23.10	23.70	24.40	25.20	23.30	23.40	24.00	24.70	25.50
32	TC SHC kW	88.3	92.6	98.8	106.2	114.1	94.2	97.0	102.9	110.4	118.6	98.9	100.4	105.7	113.2	121.5
		92.5	88.2	80.6	71.1	61.5	99.1	96.2	88.2	77.0	65.6	104.2	102.7	94.7	82.9	69.9
		23.30	23.80	24.50	25.30	26.20	24.10	24.30	25.00	25.80	26.60	24.60	24.70	25.30	26.10	27.00
36	TC SHC kW	85.7	89.6	95.4	102.5	110.3	91.5	93.8	99.2	106.7	114.6	96.0	97.1	102.1	109.2	117.3
		90.1	86.3	78.9	69.4	59.9	96.4	94.2	86.4	75.5	64.1	101.3	100.2	92.7	81.3	68.3
		24.60	25.00	25.80	26.60	27.50	25.40	25.60	26.20	27.10	28.10	25.90	26.10	26.60	27.40	28.40
40	TC SHC kW	83.1	86.3	91.9	98.9	106.3	88.7	90.3	95.4	102.5	110.3	93.1	93.7	98.3	105.0	112.8
		87.4	84.3	77.1	67.9	58.2	93.5	92.1	84.6	73.8	62.5	98.1	97.5	90.5	79.7	66.7
		25.70	26.20	27.00	27.90	28.90	26.60	26.80	27.50	28.50	29.40	27.20	27.40	27.90	28.80	29.80
44	TC SHC kW	80.3	83.1	88.3	95.0	102.2	85.8	86.9	91.6	98.5	105.7	89.9	90.5	94.4	100.7	108.2
		84.6	82.0	75.2	66.2	56.7	90.3	89.4	82.5	72.1	60.8	94.8	94.4	88.2	78.0	65.0
		26.90	27.40	28.20	29.10	30.20	27.80	28.00	28.60	29.70	30.70	28.50	28.60	29.10	30.10	31.00
48	TC SHC kW	77.5	79.7	84.5	91.0	97.9	82.7	83.4	87.8	94.3	101.3	86.8	87.0	90.6	96.4	103.4
		81.6	79.7	73.3	64.6	55.0	87.3	86.6	80.3	70.4	59.1	91.6	91.2	85.7	76.3	63.3
		28.00	28.40	29.30	30.40	31.50	29.00	29.10	29.80	30.90	32.00	29.80	29.80	30.40	31.20	32.30
52	TC SHC kW	74.8	76.4	80.9	87.1	93.8	79.7	80.0	84.0	90.0	96.8	83.5	83.6	86.9	92.1	98.7
		78.8	77.3	71.4	63.0	53.4	84.2	84.0	78.1	68.8	57.6	88.2	88.2	83.3	74.5	61.6
		29.10	29.40	30.40	31.50	32.70	30.20	30.20	31.00	32.20	33.30	30.90	31.00	31.50	32.50	33.60

50EJ,EK,EW,EY038 (123.0 kW) (50 Hz UNIT) (cont)											
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF									
		7450/0.20					8300/0.21				
		Evaporator Air — Ewb (C)									
		14	16	18	20	22	14	16	18	20	22
24	TC	109.4	110.4	116.0	124.1	132.8	112.8	113.2	118.2	125.8	134.7
	SHC	115.4	114.5	105.5	92.2	77.2	118.9	118.5	110.2	97.1	80.8
	kW	22.30	22.50	23.00	23.60	24.30	22.60	22.70	23.10	23.80	24.50
28	TC	106.5	107.1	112.2	120.0	128.5	109.6	110.0	114.4	121.6	130.1
	SHC	112.3	111.6	103.3	90.4	75.7	115.7	115.3	107.8	95.4	79.1
	kW	23.80	23.80	24.20	25.00	25.80	24.10	24.10	24.50	25.10	25.90
32	TC	103.4	103.8	108.5	115.7	124.1	106.5	106.7	110.7	117.3	125.7
	SHC	109.2	108.8	101.1	88.8	74.1	112.4	112.2	105.4	93.7	77.6
	kW	25.10	25.10	25.60	26.40	27.20	25.40	25.40	25.90	26.60	27.40
36	TC	100.4	100.4	104.8	111.6	119.8	103.2	103.3	106.9	113.0	121.2
	SHC	105.9	105.8	98.8	87.1	72.5	109.0	109.0	102.9	92.1	75.9
	kW	26.50	26.50	27.00	27.80	28.70	26.80	26.90	27.30	28.00	28.90
40	TC	97.2	97.2	101.1	107.3	115.2	100.0	100.0	103.1	108.7	116.6
	SHC	102.6	102.6	96.3	85.4	70.9	105.5	105.5	100.3	90.3	74.4
	kW	27.80	27.80	28.30	29.10	30.10	28.20	28.20	28.60	29.30	30.30
44	TC	94.0	94.0	97.2	102.9	110.3	96.5	96.6	99.1	104.1	111.6
	SHC	99.1	99.2	93.7	83.7	69.2	101.8	101.8	97.6	88.4	72.6
	kW	29.10	29.10	29.60	30.40	31.40	29.50	29.50	29.90	30.60	31.60
48	TC	90.5	90.5	93.3	98.4	105.4	93.1	93.1	95.2	99.5	106.6
	SHC	95.6	95.6	91.0	82.0	67.5	98.2	98.2	94.7	86.5	70.9
	kW	30.40	30.40	30.90	31.70	32.60	30.90	30.90	31.20	31.80	33.00
52	TC	87.2	87.2	89.6	93.9	100.5	89.6	89.6	91.3	94.9	101.6
	SHC	92.1	92.1	88.4	80.2	65.7	94.6	94.6	92.0	84.7	69.0
	kW	31.70	31.70	32.20	32.80	34.00	32.20	32.20	32.50	33.10	34.20

See legend and notes on page 39.

COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY044 (140.7 kW) (50 Hz UNIT)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		4700/0.21					5600/0.295					6600/0.355				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC	104.0	109.7	117.2	125.8	135.1	110.7	115.1	122.3	131.1	140.7	116.3	118.9	125.7	134.7	144.3
	SHC	102.5	96.7	88.2	78.1	67.8	110.1	105.6	96.3	84.4	72.4	115.9	113.2	103.8	90.8	76.9
	KW	26.10	26.70	27.50	28.30	29.10	26.80	27.30	28.00	28.80	29.70	27.40	27.70	28.30	29.20	30.10
28	TC	101.0	106.4	113.6	121.9	130.9	107.7	111.4	118.3	127.0	136.2	113.1	115.3	121.5	130.2	139.6
	SHC	99.9	94.7	86.4	76.4	66.3	107.3	103.5	94.5	82.2	70.8	112.9	110.6	101.7	89.0	75.3
	KW	27.60	28.20	29.10	29.90	30.90	28.50	28.90	29.60	30.50	31.50	29.10	29.30	30.00	30.90	31.90
32	TC	98.1	102.9	109.8	118.0	126.8	104.7	107.8	114.3	122.7	131.8	109.9	111.6	117.4	125.8	135.0
	SHC	97.4	92.8	84.8	74.8	64.7	104.3	101.3	92.8	81.1	69.1	109.7	108.1	99.7	87.3	73.6
	KW	29.10	29.70	30.60	31.60	32.70	30.10	30.40	31.20	32.20	33.30	30.70	30.90	31.60	32.60	33.70
36	TC	95.2	99.5	106.0	113.9	122.5	101.7	104.2	110.2	118.5	127.3	106.7	107.9	113.4	121.3	130.3
	SHC	94.8	90.8	83.0	73.1	63.1	101.5	99.2	90.9	79.5	67.5	106.6	105.5	97.6	85.6	71.9
	KW	30.70	31.30	32.20	33.30	34.40	31.70	32.00	32.80	33.90	35.10	32.40	32.60	33.30	34.30	35.50
40	TC	92.3	95.9	102.1	109.9	118.1	98.5	100.3	106.0	113.9	122.5	103.4	104.1	109.2	116.7	125.3
	SHC	92.0	88.7	81.2	71.5	61.3	98.4	96.9	89.0	77.7	65.8	103.3	102.6	95.3	83.9	70.2
	KW	32.10	32.80	33.70	34.90	36.10	33.20	33.50	34.40	35.60	36.80	34.00	34.20	34.90	36.00	37.20
44	TC	89.2	92.3	98.1	105.5	113.5	95.3	96.5	101.8	109.4	117.4	99.9	100.5	104.9	111.9	120.2
	SHC	89.0	86.3	79.2	69.7	59.7	95.1	94.1	86.8	75.9	64.0	99.8	99.4	92.8	82.1	68.4
	KW	33.60	34.20	35.20	36.40	37.80	34.80	35.00	35.80	37.10	38.40	35.60	35.70	36.40	37.60	38.80
48	TC	86.1	88.5	93.9	101.1	108.8	91.9	92.7	97.5	104.8	112.5	96.4	96.7	100.7	107.1	114.9
	SHC	85.9	83.9	77.2	68.0	57.9	91.9	91.2	84.5	74.1	62.2	96.4	96.0	90.2	80.3	66.6
	KW	35.00	35.50	36.60	38.00	39.40	36.20	36.40	37.20	38.60	40.00	37.20	37.20	38.00	39.00	40.40
52	TC	83.1	84.9	89.9	96.8	104.2	88.6	88.9	93.3	100.0	107.5	92.8	92.9	96.5	102.3	109.7
	SHC	82.9	81.4	75.2	66.3	56.2	88.6	88.4	82.2	72.4	60.6	92.8	92.8	87.7	78.4	64.8
	KW	36.40	36.80	38.00	39.40	40.90	37.80	37.80	38.80	40.20	41.60	38.60	38.80	39.40	40.60	42.00

50EJ,EK,EW,EY044 (140.7 kW) (50 Hz UNIT) (cont)

Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF														
		7600/0.425					8500/0.465					9400/0.505				
		Evaporator Air — Ewb (C)														
		14	16	18	20	22	14	16	18	20	22	14	16	18	20	22
24	TC	112.8	116.2	123.1	131.9	141.3	118.1	120.4	126.8	135.5	145.2	122.7	123.9	129.7	138.2	143.0
	SHC	112.0	108.7	99.7	87.6	74.5	117.7	115.2	106.2	93.3	78.7	122.5	121.2	112.5	99.0	82.8
	KW	27.00	27.40	28.10	28.90	29.80	27.50	27.90	28.40	29.20	30.20	28.00	28.20	28.70	29.50	30.50
28	TC	109.6	112.7	119.2	127.7	136.8	114.8	116.8	122.7	131.1	140.4	119.3	120.3	125.5	133.6	143.1
	SHC	109.1	106.2	97.6	85.8	73.0	114.6	112.6	104.0	91.6	77.0	119.2	118.0	110.0	97.2	81.2
	KW	28.60	28.90	29.70	30.60	31.60	29.30	29.50	30.10	31.00	32.00	29.80	29.90	30.40	31.30	32.30
32	TC	106.5	109.1	115.2	123.3	132.3	111.5	113.1	118.6	126.6	135.7	115.8	116.6	121.4	129.0	138.2
	SHC	106.2	103.8	95.6	84.1	71.4	111.3	109.8	101.9	89.9	75.4	115.7	115.0	107.6	95.5	79.4
	KW	30.30	30.60	31.30	32.30	33.40	31.00	31.10	31.80	32.70	33.80	31.50	31.60	32.10	33.00	34.10
36	TC	103.4	105.6	111.2	119.0	127.8	108.2	109.5	114.5	122.1	131.0	112.4	112.9	117.3	124.3	133.3
	SHC	103.2	101.2	93.5	82.4	69.7	108.1	107.0	99.7	88.2	73.7	112.4	111.8	105.2	93.7	77.7
	KW	31.90	32.20	32.90	34.00	35.10	32.60	32.80	33.40	34.50	35.60	33.20	33.30	33.90	34.80	35.90
40	TC	100.1	101.9	107.1	114.6	123.0	104.8	105.7	110.2	117.4	126.0	108.8	109.1	113.0	119.5	128.2
	SHC	100.0	98.4	91.3	80.7	67.9	104.8	104.1	97.3	86.4	72.1	108.7	108.4	102.6	92.0	76.1
	KW	33.50	33.80	34.60	35.70	36.90	34.20	34.40	35.10	36.10	37.30	34.90	35.00	35.60	36.40	37.60
44	TC	96.8	98.3	103.0	109.9	118.0	101.2	101.9	105.9	112.6	120.7	105.0	105.3	108.6	114.5	122.8
	SHC	96.7	95.4	88.9	78.9	66.2	101.1	100.7	94.8	84.5	70.2	105.0	104.8	99.8	90.1	74.2
	KW	35.00	35.30	36.10	37.20	38.50	35.80	35.90	36.60	37.70	38.90	36.50	36.60	37.10	38.00	39.30
48	TC	93.3	94.5	98.8	105.2	112.9	97.6	98.0	101.6	107.7	115.5	101.3	101.4	104.2	109.4	117.3
	SHC	93.2	92.3	86.5	77.2	64.4	97.6	97.3	92.1	82.6	68.4	101.3	101.1	96.9	88.1	72.4
	KW	36.50	36.80	37.50	38.80	40.10	37.40	37.50	38.10	39.20	40.60	38.10	38.10	38.70	39.50	40.90
52	TC	89.9	90.8	94.7	100.6	107.9	94.1	94.2	97.3	102.7	110.2	97.5	97.5	99.9	104.4	111.8
	SHC	89.8	89.1	84.1	75.3	62.7	94.1	94.0	89.5	80.8	66.6	97.5	97.5	94.1	86.1	70.5
	KW	38.00	38.20	39.10	40.20	41.70	39.00	39.00	39.70	40.80	42.20	39.70	39.80	40.20	41.10	42.50

LEGEND

- BF — Bypass Factor
- Edb — Entering Dry-Bulb Temperature (C)
- Ewb — Entering Wet-Bulb Temperature (C)
- kW — Compressor Input (kW)
- TC — Total Capacity (kW)
- SHC — Sensible Heat Capacity (kW)
- VAV — Variable Air Volume

NOTES:

- Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
- Direct interpolation is permissible. Do not extrapolate.
- SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

- Formulas:

$$\text{C}_{\text{db}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{Lwb}).

$$h_{\text{Lwb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

- VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY054 (175.9 kW) (50 Hz UNIT)													
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF											
		3920/0.03			4910/0.03			5900/0.03			6840/0.04		
		Evaporator Air — Ewb (C)											
		17	19	22	17	19	22	17	19	22	17	19	22
24	TC	—	—	154	—	148	162	—	154	168	254	157	171
	SHC	—	—	69	—	91	74	—	99	79	234	107	84
	kW	—	—	34.7	—	34.2	35.7	—	34.8	36.4	535.5	35.3	36.8
29	TC	—	—	148	—	142	156	—	147	161	250	151	164
	SHC	—	—	66	—	88	72	—	96	77	231	104	82
	kW	—	—	37.8	—	37.2	38.9	—	37.9	39.7	537.6	38.4	40.1
35	TC	—	—	142	—	136	149	129	141	154	133	144	157
	SHC	—	—	64	—	86	69	112	94	74	120	101	79
	kW	—	—	40.9	—	40.1	41.9	39.2	40.9	42.7	39.9	41.4	43.2
41	TC	—	—	135	—	129	142	123	134	146	127	136	149
	SHC	—	—	62	—	83	67	108	91	72	115	99	77
	kW	—	—	43.7	—	42.8	45.0	41.9	43.6	45.8	42.7	44.2	46.2
46	TC	—	117	129	—	123	134	116	126	138	121	129	141
	SHC	—	72	59	—	80	64	105	88	69	111	96	74
	kW	—	44.4	46.5	—	45.6	47.7	44.5	46.4	48.6	45.4	47.0	49.2
49	TC	—	114	125	—	119	130	113	122	134	117	125	136
	SHC	—	71	58	—	79	63	103	87	68	108	94	72
	kW	—	45.6	47.8	—	46.8	49.1	45.7	47.6	50.0	46.7	48.2	50.5

50EJ,EK,EW,EY054 (175.9 kW) (50 Hz UNIT) (cont)										
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF								
		7840/0.06			8830/0.06			9820/0.06		
		Evaporator Air — Ewb (C)								
		17	19	22	17	19	22	17	19	22
24	TC	149	161	175	153	163	177	156	164	179
	SHC	136	115	89	142	121	93	146	129	99
	kW	34.5	35.8	37.2	35.0	36.1	37.4	35.4	36.2	37.6
29	TC	143	154	168	146	156	170	150	158	171
	SHC	132	112	87	137	119	91	140	126	95
	kW	37.5	38.9	40.5	37.9	39.2	40.7	38.5	39.4	41.0
35	TC	137	147	160	141	148	161	144	150	163
	SHC	127	109	84	132	116	88	135	123	93
	kW	40.5	41.9	43.6	41.1	42.1	43.8	41.7	42.4	44.1
41	TC	131	139	152	134	140	153	138	142	154
	SHC	122	106	81	125	113	86	129	119	90
	kW	43.4	44.8	46.7	44.0	45.1	47.0	44.6	45.4	47.2
46	TC	125	131	143	128	133	144	131	134	146
	SHC	116	104	79	119	110	83	122	116	87
	kW	46.3	47.5	49.7	46.9	47.8	49.8	47.5	48.2	50.1
49	TC	122	127	139	125	129	140	128	130	141
	SHC	113	102	77	116	108	81	119	114	86
	kW	47.7	48.8	50.9	48.3	49.1	51.1	49.0	49.5	51.4

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb Temperature (C)
Ewb — Entering Wet-Bulb Temperature (C)
kW — Compressor Input (kW)
TC — Total Capacity (kW)
SHC — Sensible Heat Capacity (kW)
VAV — Variable Air Volume

NOTES:

1. Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

4. Formulas:

$$\text{C}_{\text{ldb}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{ldb}).

$$h_{\text{ldb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

5. VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY058 (193.4 kW) (50 Hz UNIT)													
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF											
		4390/0.03			5480/0.03			6560/0.03			7650.0.04		
		Evaporator Air — Ewb (C)											
		17	19	22	17	19	22	17	19	22	17	19	22
24	TC	—	—	170	—	162	179	152	168	185	156	172	189
	SHC	—	—	77	—	101	84	131	110	89	142	119	94
	KW	—	—	34.6	—	34.2	35.4	33.7	34.8	35.9	34.0	35.2	36.2
29	TC	—	—	163	—	156	172	146	161	178	150	165	181
	SHC	—	—	75	—	99	81	128	108	86	138	116	92
	KW	—	—	37.7	—	37.2	38.6	36.6	37.8	39.1	37.1	38.2	39.5
35	TC	—	142	158	—	149	165	140	154	170	144	158	174
	SHC	—	87	70	—	96	78	125	105	84	134	113	89
	KW	—	39.3	40.8	—	40.2	41.7	39.4	40.8	42.3	39.9	41.3	42.7
41	TC	—	136	151	129	143	158	133	147	163	137	150	166
	SHC	—	84	70	110	93	76	122	102	81	130	110	86
	KW	—	42.1	43.8	41.3	43.1	44.7	42.1	43.7	45.4	42.7	44.2	45.8
46	TC	—	130	144	122	136	150	127	140	155	131	142	157
	SHC	—	81	67	107	91	73	119	99	78	127	108	84
	KW	—	44.8	46.7	43.9	45.8	47.7	44.8	46.6	48.5	45.6	47.0	48.9
52	TC	—	123	136	116	128	142	120	132	146	125	134	148
	SHC	—	78	64	105	88	70	114	96	76	120	105	81
	KW	—	47.3	49.6	46.5	48.5	50.6	47.4	49.3	51.4	48.3	49.8	51.8

50EJ,EK,EW,EY058 (193.4 kW) (50 Hz UNIT) (cont)										
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF								
		8730/0.06			9820/0.06			10 900/0.06		
		Evaporator Air — Ewb (C)								
		17	19	22	17	19	22	17	19	22
24	TC SHC kW	160	175	193	164	177	195	168	179	—
		152	128	99	159	136	105	164	144	—
		34.4	35.5	36.6	34.7	35.7	36.7	35.1	35.9	—
29	TC SHC kW	154	168	185	158	170	187	163	172	—
		148	125	97	155	133	102	159	141	—
		37.5	38.5	39.9	37.8	38.8	40.1	38.2	39.1	—
35	TC SHC kW	148	161	177	153	163	179	157	164	—
		143	122	94	149	130	99	153	137	—
		40.4	41.7	43.1	41.0	41.9	43.4	41.5	42.2	—
41	TC SHC kW	142	153	169	146	154	171	150	156	—
		138	119	91	143	127	97	146	134	—
		43.4	44.7	46.3	44.0	44.9	46.6	44.5	45.2	—
46	TC SHC kW	136	145	160	140	146	161	143	147	—
		132	116	89	136	124	94	140	131	—
		46.4	47.5	49.5	46.9	47.8	49.7	47.5	48.1	—
52	TC SHC kW	129	136	151	133	138	152	136	139	—
		126	113	86	130	120	91	133	127	—
		49.3	50.2	52.3	49.9	50.6	52.6	50.6	50.9	—

LEGEND

- BF** — Bypass Factor
- Edb** — Entering Dry-Bulb Temperature (C)
- Ewb** — Entering Wet-Bulb Temperature (C)
- kW** — Compressor Input (kW)
- TC** — Total Capacity (kW)
- SHC** — Sensible Heat Capacity (kW)
- VAV** — Variable Air Volume

NOTES:

- Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
- Direct interpolation is permissible. Do not extrapolate.
- SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

4. Formulas:

$$\text{C}_{\text{ldb}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{ldb}).

$$h_{\text{ldb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

- VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY064 (211 kW) (50 Hz UNIT)													
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF											
		5050/0.03			6280/0.03			7550/0.03			8830/0.04		
		Evaporator Air — Ewb (C)											
		17	19	22	17	19	22	17	19	22	17	19	22
24	TC SHC kW	—	—	197	—	188	207	177	195	214	182	199	218
		—	—	92	—	120	99	156	131	106	169	142	113
		—	—	42.6	—	42.1	43.6	41.2	42.8	44.3	41.7	43.3	44.8
29	TC SHC kW	—	—	189	—	180	199	170	187	205	174	191	208
		—	—	89	—	117	96	153	128	103	165	138	109
		—	—	46.4	—	45.6	47.7	44.7	46.4	48.3	45.3	47.0	48.7
35	TC SHC kW	—	164	181	—	173	190	162	179	196	167	182	199
		—	103	86	—	114	93	149	125	99	160	135	105
		—	48.0	50.1	—	49.2	51.2	48.1	50.1	52.0	48.8	50.6	52.6
41	TC SHC kW	—	157	173	149	165	181	154	170	186	159	173	189
		—	100	83	131	111	90	145	121	96	155	131	102
		—	51.3	53.6	50.3	52.6	54.8	51.3	53.5	55.5	52.2	54.1	56.1
46	TC SHC kW	—	149	165	142	156	172	146	161	177	152	163	179
		—	96	80	127	107	86	141	117	92	149	127	98
		—	54.4	57.0	53.2	55.7	58.2	54.3	56.6	59.0	55.4	57.2	59.5
52	TC SHC kW	—	142	157	134	148	163	139	152	166	144	154	168
		—	93	76	124	105	83	136	114	91	143	124	96
		—	57.4	60.1	56.2	58.7	61.3	57.4	59.8	62.1	58.5	60.4	62.6

50EJ,EK,EW,EY064 (211 kW) (50 Hz UNIT) (cont)										
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF								
		10 500/0.06			11 330/0.06			12 600/0.06		
		Evaporator Air — Ewb (C)								
		17	19	22	17	19	22	17	19	22
24	TC SHC kW	186	203	222	191	—	—	196	208	—
		182	152	119	190	—	—	195	172	—
		42.3	43.7	45.2	42.8	—	—	43.4	44.3	—
29	TC SHC kW	179	194	212	184	197	—	189	199	—
		176	148	115	184	158	—	188	168	—
		45.9	47.6	49.2	46.6	47.9	—	47.1	48.3	—
35	TC SHC kW	172	185	203	177	188	—	181	189	—
		171	144	111	176	154	—	181	163	—
		49.6	51.1	53.1	50.2	51.5	—	50.9	51.9	—
41	TC SHC kW	164	176	192	169	178	—	173	180	—
		164	140	108	169	150	—	173	159	—
		53.1	54.7	56.7	53.8	55.0	—	54.5	55.3	—
46	TC SHC kW	157	166	182	161	168	—	165	170	—
		157	137	104	161	146	—	165	154	—
		56.5	57.8	60.0	57.3	58.0	—	58.0	58.7	—
52	TC SHC kW	149	157	171	153	158	—	156	160	—
		149	133	100	153	142	—	156	150	—
		59.6	61.0	63.1	60.5	61.4	—	61.3	61.7	—

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb Temperature (C)
Ewb — Entering Wet-Bulb Temperature (C)
kW — Compressor Input (kW)
TC — Total Capacity (kW)
SHC — Sensible Heat Capacity (kW)
VAV — Variable Air Volume

NOTES:

1. Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

4. Formulas:

$$\text{C}_{\text{ldb}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{ldb}).

$$h_{\text{ldb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

5. VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (SI) (cont)

50EJ,EK,EW,EY068 (228.6 kW) (50 Hz UNIT)													
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF											
		5380/0.03			6700/0.03			8070/0.03			9390/0.04		
		Evaporator Air — Ewb (C)											
		17	19	22	17	19	22	17	19	22	17	19	22
24	TC	—	—	208	—	200	217	190	207	225	195	211	228
	SHC	—	—	97	—	128	105	167	140	112	180	150	119
	kW	—	—	44.0	—	43.3	44.7	42.6	44.0	45.5	43.1	44.4	45.7
29	TC	—	—	200	—	192	209	183	199	216	188	203	219
	SHC	—	—	94	—	125	102	164	137	108	176	147	115
	kW	—	—	47.8	—	47.1	48.7	46.3	47.9	49.3	46.8	48.3	49.7
35	TC	—	—	192	—	184	201	175	190	206	180	194	210
	SHC	—	—	92	—	122	99	160	133	105	170	144	113
	kW	—	—	51.7	—	50.8	52.6	49.7	51.6	53.3	50.5	52.0	53.7
41	TC	—	168	184	—	176	191	167	181	196	172	185	199
	SHC	—	107	87	—	118	95	155	130	101	165	140	108
	kW	—	53.1	55.2	—	54.2	56.3	53.0	55.1	56.9	53.9	55.6	57.3
46	TC	—	160	175	153	167	181	158	171	185	164	174	188
	SHC	—	103	84	137	114	91	151	126	98	158	136	104
	kW	—	56.4	58.7	55.2	57.6	59.7	56.3	58.4	60.4	57.3	59.0	60.9
52	TC	—	151	165	144	157	170	150	162	175	156	164	177
	SHC	—	99	80	133	111	87	145	122	93	151	131	99
	kW	—	59.4	62.0	58.2	60.6	62.9	59.4	61.6	63.7	60.5	62.1	64.2

50EJ,EK,EW,EY064 (228.6 kW) (50 Hz UNIT) (cont)										
Temp (C) Air Entering Condenser (Edb)		Evaporator Air Quantity — L/s/BF								
		10 760/0.06			12 080/0.06			12 740/0.06		
		Evaporator Air — Ewb (C)								
		17	19	22	17	19	22	17	19	22
24	TC	200	215	232	205	218	—	208	219	—
	SHC	193	161	126	201	173	—	203	177	—
	kW	43.5	44.8	46.0	44.0	45.1	—	44.3	45.2	—
29	TC	193	207	223	198	209	—	201	210	—
	SHC	187	158	121	194	168	—	196	173	—
	kW	47.4	48.7	50.1	48.0	49.0	—	48.2	49.0	—
35	TC	185	197	213	191	200	—	193	201	—
	SHC	181	155	120	186	164	—	188	169	—
	kW	51.2	52.5	54.0	51.8	52.8	—	52.1	52.9	—
41	TC	178	188	202	183	190	—	184	191	—
	SHC	174	150	114	178	160	—	180	164	—
	kW	54.7	56.1	57.8	55.5	56.5	—	55.9	56.6	—
46	TC	170	178	190	174	180	—	176	180	—
	SHC	166	146	109	170	155	—	171	159	—
	kW	58.4	59.5	61.3	49.0	59.9	—	59.4	60.0	—
52	TC	161	167	179	165	169	—	166	169	—
	SHC	157	141	105	161	150	—	162	154	—
	kW	61.7	62.7	64.6	62.4	63.1	—	62.7	63.3	—

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb Temperature (C)
Ewb — Entering Wet-Bulb Temperature (C)
kW — Compressor Input (kW)
TC — Total Capacity (kW)
SHC — Sensible Heat Capacity (kW)
VAV — Variable Air Volume

NOTES:

1. Ratings are gross and do not account for the effects of the evaporator-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. SHC is based on 26.7 C db temperature of air entering the unit. At any other temperature, correct the SHC read from the table of cooling capacities as follows.

Corrected SHC_{kW}

$$= \text{SHC} + (1.23 \times 10^{-3} \times [1 - \text{BF}] \times [\text{C}_{\text{db}} - 26.7] \times \text{L/s})$$

Observe the rule of sign. Above 26.7 C, SHC correction will be positive; add it to SHC. Below 26.7 C, SHC correction will be negative; subtract it from SHC.

$$4. \text{ Formulas: } \text{C}_{\text{ldb}} = \text{C}_{\text{edb}} - \frac{\text{SHC}_{\text{kW}} \times 1000}{1.23 \times \text{L/s}}$$

Leaving wet bulb = wet bulb temperature corresponding to enthalpy of air leaving coil (h_{ldb}).

$$h_{\text{ldb}} = h_{\text{ewb}} - \frac{\text{TC}_{\text{kW}} \times 1000}{1.20 \times \text{L/s}}$$

Where h_{ewb} is enthalpy of air entering evaporator coil (kJ/kg).

5. VAV units will operate down to 9.39 L/s per kW. Performance at 9.39 L/s per kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (English)

50EJ,EK,EW,EY024 (20 TONS) (50 Hz UNIT)

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		5,000/0.070			6,000/0.095			7,000/0.120		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC	204.7	225.1	248.0	213.3	234.1	257.0	219.4	241.0	265.0
	SHC	171.1	145.6	119.9	187.6	158.5	128.2	202.1	170.6	135.4
	kW	11.60	12.00	12.30	11.80	12.10	12.40	11.90	12.20	12.50
85	TC	196.1	215.2	237.2	203.5	223.9	247.0	210.1	229.8	253.0
	SHC	166.4	141.4	115.8	182.3	154.2	124.0	196.0	166.1	131.3
	kW	12.90	13.30	13.70	13.00	13.50	13.90	13.20	13.60	14.00
95	TC	187.4	206.4	226.8	193.7	213.8	235.0	200.8	219.6	240.9
	SHC	162.0	137.5	111.9	177.8	150.2	119.7	189.8	162.0	127.4
	kW	14.10	14.60	15.10	14.30	14.80	15.30	14.50	15.00	15.50
105	TC	177.5	196.2	216.3	185.1	203.4	224.1	191.3	208.0	228.9
	SHC	157.3	133.1	107.7	171.3	145.6	115.5	183.2	157.8	123.1
	kW	15.20	15.80	16.40	15.50	16.10	16.70	15.70	16.20	16.80
115	TC	168.6	187.0	205.9	175.6	193.0	212.1	181.7	197.5	216.9
	SHC	152.6	129.2	103.6	165.4	141.7	111.3	176.7	153.4	119.0
	kW	16.30	17.10	17.80	16.60	17.30	18.10	16.90	17.50	18.20

50EJ,EK,EW,EY024 (20 TONS) (50 Hz UNIT) (cont)

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		8,000/0.165			9,000/0.205			10,000/0.245		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	225.4	245.9	270.0	231.5	250.0	275.0	235.6	254.0	278.0
		213.4	181.9	142.5	224.5	193.0	149.5	232.6	203.6	156.2
		11.99	12.31	12.60	12.07	12.36	12.68	12.13	12.42	12.73
85	TC SHC kW	216.2	234.4	258.0	220.9	238.5	261.0	226.0	241.8	264.0
		207.2	177.6	138.5	216.9	189.1	145.1	225.0	198.5	152.1
		13.33	13.70	14.11	13.43	13.78	14.20	13.52	13.84	14.25
95	TC SHC kW	207.0	223.9	245.3	211.3	227.0	249.0	216.4	228.7	252.0
		201.0	173.6	134.5	209.3	184.2	141.0	216.4	194.4	147.7
		14.63	15.08	15.59	14.77	15.17	15.68	14.90	15.24	15.76
105	TC SHC kW	196.2	212.2	233.2	201.5	215.2	236.2	207.5	217.0	239.0
		193.2	168.9	130.2	201.5	179.0	136.6	207.5	188.1	143.4
		15.89	16.37	16.96	16.05	16.50	17.09	16.24	16.62	17.20
115	TC SHC kW	187.4	200.5	221.2	192.8	203.4	224.1	197.5	205.3	225.7
		186.4	164.4	126.0	192.8	174.4	132.9	197.5	183.9	139.2
		17.13	17.62	18.36	17.41	17.75	18.49	17.56	17.89	18.61

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btu/h)
TC — Total Capacity (1000 Btu/h) Gross
VAV — Variable Air Volume

NOTES:

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

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

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

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

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

3. 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.

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
.05	1.04	2.07	3.11	4.14	4.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.91	
.20	.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

4. Cooling capacities are gross and do not include deduction for indoor fan motor heat.
5. VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY028 (25 TONS) (50 Hz UNIT)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		6,250/0.06			7,500/0.07			8,750/0.09		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	256.0	280.0	308.0	266.0	290.0	318.0	272.0	298.0	326.0
		214.0	182.0	149.0	236.0	198.0	158.8	256.0	214.0	168.2
		14.76	15.28	15.80	14.98	15.50	16.02	15.14	15.66	16.18
85	TC SHC kW	244.0	268.0	294.0	254.0	278.0	304.0	260.0	284.0	310.0
		208.0	176.6	144.0	230.0	192.6	154.0	248.0	208.0	162.8
		16.20	16.82	17.44	16.44	17.06	17.70	16.62	17.24	17.88
95	TC SHC kW	232.0	256.0	280.0	242.0	264.0	290.0	248.0	270.0	296.0
		204.0	171.2	139.0	224.0	187.2	149.0	242.0	202.0	157.6
		17.62	18.34	19.10	17.92	18.62	19.36	18.12	18.80	19.56
105	TC SHC kW	220.0	244.0	266.0	228.0	250.0	276.0	236.0	256.0	282.0
		197.8	166.2	133.8	218.0	181.8	143.8	234.0	197.4	152.8
		18.98	19.80	20.60	19.28	20.20	21.00	19.56	20.40	21.20
115	TC SHC kW	210.0	230.0	254.0	216.0	238.0	260.0	224.0	242.0	266.0
		192.0	161.2	128.4	212.0	176.4	138.6	224.0	192.0	147.8
		20.40	21.20	22.20	20.60	21.60	22.60	21.00	21.80	22.80

50EJ,EK,EW,EY028 (25 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		10,000/0.12			11,250/0.17			12,500/0.23		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	278.0	304.0	332.0	284.0	308.0	338.0	292.0	312.0	342.0
		274.0	228.0	177.8	284.0	242.0	186.4	292.0	256.0	194.8
		15.28	15.78	16.32	15.42	15.86	16.40	15.58	15.96	16.48
85	TC SHC kW	266.0	290.0	316.0	274.0	294.0	322.0	282.0	298.0	324.0
		264.0	222.0	172.4	274.0	236.0	181.0	282.0	250.0	189.6
		16.82	17.38	18.02	17.02	17.48	18.12	17.22	17.58	18.22
95	TC SHC kW	254.0	276.0	302.0	262.0	278.0	306.0	270.0	282.0	308.0
		254.0	218.0	166.8	262.0	230.0	175.6	270.0	244.0	184.4
		18.36	18.98	19.72	18.62	19.10	19.84	18.84	19.20	19.96
105	TC SHC kW	244.0	260.0	286.0	250.0	264.0	290.0	258.0	266.0	292.0
		244.0	212.0	161.8	250.0	226.0	170.6	258.0	238.0	179.4
		19.88	20.40	21.40	20.20	20.60	21.40	20.40	20.80	21.60
115	TC SHC kW	232.0	246.0	270.0	240.0	250.0	274.0	246.0	252.0	276.0
		232.0	206.0	156.8	240.0	220.0	165.8	246.0	232.0	174.6
		21.40	22.00	23.00	21.80	22.20	23.00	22.00	22.20	23.20

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh) Gross
VAV — Variable Air Volume

NOTES:

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

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

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

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

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

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

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

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

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
.05	1.04	2.07	3.11	4.14	4.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.91	
.20	.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.
- VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY030 (27 TONS) (50 Hz UNIT)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		6,875/0.05			8,250/0.06			9,625/0.08		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	296.0	325.0	346.0	309.0	339.0	372.0	318.0	349.0	382.0
		247.0	211.0	173.0	273.0	229.0	185.4	296.0	248.0	197.0
		19.15	20.01	20.76	19.55	20.31	21.17	19.83	20.59	21.45
85	TC SHC kW	283.0	312.0	342.0	295.0	324.0	355.0	303.0	332.0	365.0
		240.0	204.2	167.5	266.0	223.0	179.5	288.0	242.0	191.3
		20.99	21.90	22.82	21.40	22.32	23.24	21.71	22.61	23.53
95	TC SHC kW	270.0	297.0	328.0	280.0	309.0	339.0	289.0	317.0	348.0
		234.0	198.4	162.1	259.0	218.0	173.6	280.0	235.0	185.2
		22.83	23.79	24.88	23.25	24.23	25.31	23.59	24.62	25.70
105	TC SHC kW	257.0	284.0	311.0	267.0	293.0	321.0	275.0	300.0	329.0
		228.0	192.6	155.9	252.0	211.9	167.5	270.0	229.0	178.8
		24.41	25.60	26.90	24.97	26.10	27.30	25.35	26.50	27.60
115	TC SHC kW	244.0	269.0	294.0	254.0	278.0	304.0	263.0	284.0	311.0
		222.0	186.2	149.7	243.0	205.2	161.4	262.0	224.0	172.3
		26.10	27.50	28.80	26.70	27.90	29.20	27.10	28.30	29.70

50EJ,EK,EW,EY030 (27 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		11,000/0.115			12,375/0.16			13,750/0.22		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	325.0	356.0	390.0	335.0	362.0	395.0	343.0	366.0	400.0
		315.0	265.0	207.9	332.0	284.0	218.0	343.0	298.0	229.0
		20.01	20.85	21.60	20.31	20.99	21.74	20.49	21.13	21.88
85	TC SHC kW	312.0	339.0	372.0	320.0	344.0	377.0	330.0	349.0	381.0
		306.0	260.0	202.3	319.0	277.0	212.1	330.0	292.0	222.0
		21.93	22.78	23.79	22.24	23.03	23.94	22.55	23.17	24.07
95	TC SHC kW	298.0	322.0	353.0	307.0	327.0	358.0	317.0	331.0	362.0
		296.0	253.0	195.7	307.0	271.0	205.3	317.0	286.0	216.0
		23.95	24.81	25.97	24.27	25.07	26.10	24.70	25.22	26.30
105	TC SHC kW	284.0	305.0	335.0	294.0	310.0	339.0	303.0	314.0	343.0
		284.0	247.0	189.0	294.0	264.0	199.9	303.0	279.0	210.0
		25.80	26.70	27.90	26.30	26.90	28.20	26.60	27.10	28.30
115	TC SHC kW	271.0	289.0	316.0	281.0	293.0	320.0	289.0	297.0	323.0
		271.0	240.0	182.9	281.0	256.0	194.6	288.0	271.0	204.3
		27.70	28.50	29.90	28.20	28.80	30.10	28.60	29.00	30.20

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh) Gross
VAV — Variable Air Volume

NOTES:

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

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

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

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

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

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

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
.05	1.04	2.07	3.11	4.14	4.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.91	
.20	.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

4. Cooling capacities are gross and do not include deduction for indoor fan motor heat.
5. VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY034 (30 TONS) (50 Hz UNIT)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		7,500/0.05			9,000/0.07			10,500/0.08		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	312.0	341.0	373.0	322.0	352.0	385.0	332.0	363.0	396.0
		260.0	222.0	182.0	286.0	241.0	194.0	312.0	260.0	206.0
		23.80	24.90	26.00	24.20	25.30	26.40	24.60	25.70	26.90
85	TC SHC kW	298.0	327.0	358.0	308.0	337.0	368.0	317.0	346.0	379.0
		255.0	216.0	176.0	280.0	235.0	188.0	305.0	254.0	200.0
		25.80	27.00	28.30	26.20	27.40	28.80	26.60	27.90	29.20
95	TC SHC kW	285.0	313.0	343.0	294.0	322.0	352.0	303.0	330.0	361.0
		249.0	210.0	170.0	273.0	229.0	182.0	297.0	248.0	193.0
		27.70	29.10	30.60	28.20	29.60	31.10	28.70	30.10	31.60
105	TC SHC kW	272.0	298.0	325.0	281.0	306.0	333.0	290.0	314.0	342.0
		243.0	204.0	164.0	265.0	223.0	175.0	287.0	241.0	187.0
		29.60	31.20	32.70	30.20	31.60	33.20	30.70	32.10	33.70
115	TC SHC kW	258.0	284.0	307.0	268.0	291.0	315.0	277.0	298.0	322.0
		236.0	198.0	157.0	256.0	217.0	169.0	277.0	235.0	180.0
		31.50	33.20	34.80	32.10	33.70	35.40	32.80	34.20	35.90

50EJ,EK,EW,EY034 (30 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		12,000/0.120			13,500/0.16			15,000/0.220		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	340.0	369.0	402.0	349.0	375.0	409.0	358.0	379.0	414.0
		330.0	278.0	217.0	349.0	296.0	227.0	357.0	313.0	238.0
		24.90	25.90	27.10	25.20	26.20	27.40	25.60	26.40	27.50
85	TC SHC kW	326.0	352.0	384.0	335.0	358.0	390.0	344.0	362.0	395.0
		320.0	272.0	210.0	335.0	289.0	221.0	344.0	306.0	232.0
		27.10	28.10	29.50	27.50	28.40	29.70	27.90	28.60	29.90
95	TC SHC kW	312.0	335.0	366.0	322.0	340.0	371.0	330.0	344.0	376.0
		310.0	265.0	204.0	322.0	283.0	215.0	330.0	299.0	226.0
		29.20	30.40	31.80	29.70	30.60	32.10	30.20	30.80	32.30
105	TC SHC kW	299.0	319.0	346.0	309.0	323.0	351.0	316.0	327.0	354.0
		298.0	259.0	198.0	309.0	276.0	208.0	316.0	292.0	219.0
		31.30	32.40	34.00	31.90	32.70	34.30	32.40	32.90	34.50
115	TC SHC kW	286.0	302.0	326.0	295.0	306.0	330.0	302.0	309.0	332.0
		286.0	253.0	191.0	295.0	270.0	202.0	302.0	285.0	213.0
		33.40	34.50	36.20	34.10	34.80	36.40	34.60	35.00	36.60

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh) Gross
VAV — Variable Air Volume

NOTES:

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

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

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

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

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

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

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
.05	1.04	2.07	3.11	4.14	4.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.91	
.20	.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.
- VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY038 (35 TONS) (50 Hz UNIT)

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF														
		10,500/0.155			12,250/0.17			14,000/0.19			15,750/0.20			17,500/0.21		
		Evaporator Air - Ewb (F)														
		62	67	72	62	67	72	62	67	72	62	67	72	62	67	72
75	TC	347.0	384.0	421.0	354.0	391.0	431.0	362.0	403.0	441.0	367.0	405.0	444.0	378.0	411.0	450.0
	SHC	313.0	262.0	213.0	336.0	283.0	224.0	363.0	305.0	238.0	382.0	325.0	252.0	396.0	343.0	264.0
	kW	21.20	21.80	22.40	21.30	21.90	22.70	21.50	22.20	22.90	21.60	22.20	22.90	21.80	22.30	23.00
85	TC	334.0	368.0	406.0	341.0	375.0	411.0	348.0	384.0	422.0	355.0	385.0	426.0	364.0	390.0	432.0
	SHC	305.0	257.0	207.0	328.0	275.0	219.0	354.0	297.0	230.0	368.0	312.0	242.0	378.0	331.0	254.0
	kW	23.30	24.00	24.80	23.40	24.20	24.90	23.50	24.30	25.10	23.80	24.40	25.10	23.90	24.50	25.40
95	TC	319.0	354.0	389.0	325.0	358.0	394.0	333.0	367.0	403.0	341.0	369.0	407.0	352.0	372.0	413.0
	SHC	298.0	251.0	199.0	321.0	269.0	211.0	344.0	291.0	225.0	355.0	309.0	235.0	364.0	325.0	247.0
	kW	25.30	26.20	27.10	25.30	26.30	27.30	25.70	26.60	27.50	25.90	26.60	27.60	26.30	26.80	27.70
105	TC	305.0	338.0	372.0	312.0	342.0	375.0	318.0	348.0	383.0	329.0	352.0	387.0	343.0	355.0	393.0
	SHC	291.0	244.0	194.0	312.0	264.0	206.0	333.0	284.0	219.0	340.0	301.0	229.0	348.0	317.0	240.0
	kW	27.30	28.40	29.40	27.50	28.60	29.50	27.70	28.80	29.80	28.20	29.00	29.90	28.50	29.00	30.20
115	TC	290.0	319.0	353.0	296.0	324.0	357.0	305.0	331.0	364.0	316.0	334.0	369.0	329.0	335.0	372.0
	SHC	283.0	238.0	187.0	302.0	260.0	198.0	318.0	278.0	214.0	324.0	294.0	220.0	330.0	312.0	236.0
	kW	29.20	30.50	31.70	29.40	30.70	31.80	29.80	30.90	32.00	30.40	30.90	32.20	31.00	31.00	32.40
125	TC	274.0	303.0	333.0	281.0	308.0	339.0	292.0	315.0	347.0	304.0	318.0	349.0	316.0	322.0	352.0
	SHC	275.0	231.0	179.0	292.0	251.0	193.0	306.0	271.0	204.0	309.0	287.0	217.0	316.0	304.0	228.0
	kW	31.00	32.50	33.90	31.50	32.80	34.10	32.00	33.00	34.50	32.70	33.40	34.70	33.10	33.60	34.70

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh) Gross
VAV — Variable Air Volume

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. 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.

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
.05	1.04	2.07	3.11	4.14	4.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.91	
.20	.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

4. Cooling capacities are gross and do not include deduction for indoor fan motor heat.
5. VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY044 (40 TONS) (50 Hz UNIT)													
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF											
		8,000/0.10			10,000/0.12			12,000/0.14			14,000/0.17		
		Evaporator Air — Ewb (F)											
		62	67	72	62	67	72	62	67	72	62	67	72
75	TC SHC kW	364.0	403.0	445.0	381.0	421.0	465.0	399.0	441.0	485.0	409.0	451.0	497.0
		291.0	252.0	213.0	324.0	277.0	228.0	358.0	301.0	244.0	384.0	323.0	257.0
		26.30	27.50	28.70	26.90	28.00	29.20	27.40	28.60	29.80	27.70	28.90	30.10
85	TC SHC kW	348.0	386.0	427.0	365.0	403.0	445.0	381.0	421.0	464.0	391.0	429.0	474.0
		283.0	245.0	205.0	316.0	269.0	221.0	349.0	293.0	236.0	372.0	315.0	249.0
		28.40	29.70	31.10	29.00	30.30	31.70	29.60	30.90	32.30	30.00	31.20	32.60
95	TC SHC kW	333.0	369.0	408.0	348.0	385.0	426.0	363.0	401.0	443.0	373.0	409.0	452.0
		275.0	237.0	197.5	308.0	261.0	213.0	340.0	285.0	229.0	361.0	307.0	241.0
		30.50	31.90	33.50	31.10	32.60	34.10	31.80	33.30	34.80	32.20	33.60	35.20
105	TC SHC kW	316.0	351.0	389.0	330.0	366.0	404.0	343.0	380.0	420.0	355.0	388.0	428.0
		267.0	229.0	189.8	299.0	253.0	205.0	330.0	277.0	221.0	348.0	299.0	233.0
		32.50	34.10	35.80	33.20	34.80	36.50	33.80	35.50	37.20	34.40	35.90	37.60
115	TC SHC kW	298.0	332.0	368.0	311.0	345.0	382.0	324.0	358.0	396.0	336.0	366.0	404.0
		259.0	221.0	182.0	288.0	245.0	196.9	316.0	269.0	212.0	332.0	289.0	225.0
		34.30	36.20	38.00	35.00	36.80	38.80	35.80	37.60	39.40	36.50	38.00	39.80
125	TC SHC kW	281.0	313.0	348.0	293.0	324.0	360.0	305.0	336.0	372.0	318.0	344.0	378.0
		251.0	213.0	174.0	277.0	237.0	188.7	304.0	261.0	203.0	318.0	281.0	217.0
		36.00	38.10	40.20	37.00	38.90	41.00	37.80	39.60	41.70	38.60	40.10	42.20

50EJ,EK,EW,EY044 (40 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		16,000/0.205			18,000/0.25			20,000/0.295		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC	419.0	461.0	507.0	431.0	468.0	515.0	441.0	475.0	523.0
	SHC	410.0	345.0	271.0	425.0	365.0	283.0	441.0	385.0	296.0
	kW	28.10	29.20	30.40	28.30	29.40	30.60	28.70	29.60	30.90
85	TC	401.0	439.0	485.0	413.0	446.0	491.0	423.0	453.0	498.0
	SHC	396.0	337.0	263.0	410.0	356.0	275.0	423.0	376.0	289.0
	kW	30.40	31.60	33.00	30.70	31.80	33.20	31.10	32.00	33.40
95	TC	383.0	417.0	462.0	395.0	423.0	468.0	406.0	430.0	474.0
	SHC	382.0	328.0	255.0	394.0	347.0	267.0	406.0	367.0	281.0
	kW	32.70	34.00	35.50	33.10	34.20	35.80	33.60	34.50	36.00
105	TC	366.0	396.0	438.0	378.0	401.0	443.0	388.0	407.0	448.0
	SHC	366.0	319.0	247.0	378.0	339.0	259.0	388.0	359.0	273.0
	Kw	35.00	36.30	38.00	35.50	36.60	38.20	36.00	36.80	38.50
115	TC	348.0	373.0	412.0	359.0	378.0	416.0	370.0	382.0	422.0
	SHC	348.0	311.0	239.0	359.0	329.0	251.0	370.0	349.0	263.0
	kW	37.20	38.40	40.20	37.80	38.60	40.60	38.40	39.00	40.80
125	TC	332.0	350.0	385.0	340.0	354.0	390.0	350.0	358.0	394.0
	SHC	332.0	303.0	230.0	340.0	321.0	242.0	350.0	339.0	255.0
	kW	39.40	40.60	42.60	40.00	40.80	42.80	40.60	41.10	43.00

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh) Gross
VAV — Variable Air Volume

NOTES:

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

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

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

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

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

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

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
.05	1.04	2.07	3.11	4.14	4.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.91	
.20	.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.
- VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY054 (50 TONS) (50 Hz UNIT)													
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF											
		8300/0.03			10,400/0.03			12,500/0.03			14,500/0.04		
		Evaporator Air — Ewb (F)											
		62	67	72	62	67	72	62	67	72	62	67	72
75	TC SHC kW	—	—	525	—	506	553	—	524	572	867	536	585
		—	—	235	—	309	253	—	337	271	797	365	287
		—	—	34.7	—	34.2	35.7	—	34.8	36.4	535.5	35.3	36.8
85	TC SHC kW	—	—	506	—	486	531	—	503	549	853	514	561
		—	—	226	—	301	245	—	328	263	788	355	280
		—	—	37.8	—	37.2	38.9	—	37.9	39.7	537.6	38.4	40.1
95	TC SHC kW	—	—	485	—	465	508	440	480	524	454	490	535
		—	—	218	—	292	237	382	319	253	409	346	270
		—	—	40.9	—	40.1	41.9	39.2	40.9	42.7	39.9	41.4	43.2
105	TC SHC kW	—	—	462	—	442	484	419	456	499	433	465	508
		—	—	210	—	283	227	370	311	245	394	337	262
		—	—	43.7	—	42.8	45.0	41.9	43.6	45.8	42.7	44.2	46.2
115	TC SHC kW	—	398	439	—	419	458	396	431	472	411	439	480
		—	245	202	—	273	219	359	301	236	378	327	252
		—	44.4	46.5	—	45.6	47.7	44.5	46.4	48.6	45.4	47.0	49.2
120	TC SHC kW	—	388	427	—	406	445	386	418	458	401	426	466
		—	241	197	—	270	215	352	296	231	369	322	247
		—	45.6	47.8	—	46.8	49.1	45.7	47.6	50.0	46.7	48.2	50.5

50EJ,EK,EW,EY054 (50 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		16,600/0.06			18,700/0.06			20,800/0.06		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	509	548	598	521	555	604	533	—	—
		464	392	303	484	414	319	497	—	—
		34.5	35.8	37.2	35.0	36.1	37.4	35.4	—	—
85	TC SHC kW	489	525	572	500	531	579	513	538	—
		451	382	296	457	405	309	479	428	—
		37.5	38.9	40.5	37.9	39.2	40.7	38.5	39.4	—
95	TC SHC kW	468	501	545	481	506	550	493	512	—
		435	373	288	449	395	300	460	418	—
		40.5	41.9	43.6	41.1	42.1	43.8	41.7	42.4	—
105	TC SHC kW	448	474	517	459	479	522	470	485	—
		417	363	278	427	384	292	439	407	—
		43.4	44.8	46.7	44.0	45.1	47.0	44.6	45.4	—
115	TC SHC kW	427	448	489	437	453	492	447	458	—
		397	353	269	408	374	282	417	396	—
		46.3	47.5	49.7	46.9	47.8	49.8	47.5	48.2	—
120	TC SHC kW	415	435	473	425	439	477	436	444	—
		387	348	264	397	368	277	406	389	—
		47.7	48.8	50.9	48.3	49.1	51.1	49.0	49.5	—

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btu/h) Gross
TC — Total Capacity (1000 Btu/h) Gross

NOTES:

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

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

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

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

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

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

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

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

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
0.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.
0.1	0.98	1.96	2.94	3.92	4.91	
0.2	0.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.
- VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY058 (55 TONS) (50 Hz UNIT)													
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF											
		9300/0.03			11,600/0.03			13,900/0.03			16,200/0.04		
		Evaporator Air — Ewb (F)											
		62	67	72	62	67	72	62	67	72	62	67	72
75	TC	—	—	579	—	552	610	519	573	631	533	586	644
	SHC	—	—	264	—	345	285	448	377	304	484	407	322
	kW	—	—	34.6	—	34.2	35.4	33.7	34.8	35.9	34.0	35.2	36.2
85	TC	—	—	558	—	532	587	499	550	607	513	562	619
	SHC	—	—	256	—	336	276	437	368	295	471	397	313
	kW	—	—	37.7	—	37.2	38.6	36.6	37.8	39.1	37.1	38.2	39.5
95	TC	—	485	538	—	509	563	477	527	581	491	538	593
	SHC	—	296	239	—	328	268	428	359	286	459	387	304
	kW	—	39.3	40.8	—	40.2	41.7	39.4	40.8	42.3	39.9	41.3	42.7
105	TC	—	465	514	440	487	538	455	502	555	469	512	565
	SHC	—	287	238	377	318	258	418	348	277	444	377	295
	kW	—	42.1	43.8	41.3	43.1	44.7	42.1	43.7	45.4	42.7	44.2	45.8
115	TC	—	443	490	417	464	513	432	477	528	447	486	537
	SHC	—	277	230	366	309	249	405	339	268	428	367	285
	kW	—	44.8	46.7	43.9	45.8	47.7	44.8	46.6	48.5	45.6	47.0	48.9
125	TC	—	420	466	395	438	486	410	451	498	426	458	506
	SHC	—	268	220	358	300	239	391	329	258	411	357	276
	kW	—	47.3	49.6	45.6	48.5	50.6	47.4	49.3	51.4	48.3	49.8	51.8

50EJ,EK,EW,EY058 (55 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		18,500/0.06			20,800/0.06			23,100/0.06		
		Evaporator Air — Ewb								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	546	599	657	560	606	666	575	613	—
		520	436	339	544	464	357	560	492	—
		34.4	35.5	36.6	34.7	35.7	36.7	35.1	35.9	—
85	TC SHC kW	527	574	631	540	582	639	555	587	—
		505	426	331	527	454	348	542	480	—
		37.5	38.5	39.9	37.8	38.8	40.1	38.2	39.1	—
95	TC SHC kW	505	549	605	521	555	613	534	561	—
		490	416	322	508	444	338	522	469	—
		40.4	41.7	43.1	41.0	41.9	43.4	41.5	42.2	—
105	TC SHC kW	484	522	576	499	527	583	512	532	—
		471	406	312	488	432	330	499	459	—
		43.4	44.7	46.3	44.0	44.9	46.6	44.5	45.2	—
115	TC SHC kW	463	494	546	477	499	551	489	503	—
		452	396	303	465	422	320	477	447	—
		46.4	47.5	49.4	46.9	47.8	49.7	47.5	48.1	—
125	TC SHC kW	442	466	514	455	470	519	466	474	—
		431	386	294	443	410	309	454	432	—
		49.3	50.2	52.3	49.9	50.6	52.6	50.6	50.9	—

LEGEND

BF — Bypass Factor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btu/h) Gross
TC — Total Capacity (1000 Btu/h) Gross

NOTES:

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

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

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

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

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

- 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.

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
0.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.
0.1	0.98	1.96	2.94	3.92	4.91	
0.2	0.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.
- VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY064 (60 TONS) (50 Hz UNIT)													
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF											
		10,700/0.03			13,300/0.03			16,000/0.03			18,700/0.04		
		Evaporator Air — Ewb (F)											
		62	67	72	62	67	72	62	67	72	62	67	72
75	TC	—	—	671	—	640	706	604	664	729	620	678	743
	SHC	—	—	315	—	411	338	534	448	361	577	483	384
	kW	—	—	42.6	—	42.1	43.6	41.2	42.8	44.3	41.7	43.3	44.8
85	TC	—	—	645	—	615	679	579	638	699	595	651	712
	SHC	—	—	304	—	401	328	522	438	350	562	472	371
	kW	—	—	46.4	—	45.6	47.7	44.7	46.4	48.3	45.3	47.0	48.7
95	TC	—	560	619	—	589	649	553	610	669	570	622	681
	SHC	—	351	293	—	390	317	509	427	339	546	460	360
	kW	—	48.0	50.1	—	49.2	51.2	48.1	50.1	52.0	48.8	50.6	52.6
105	TC	—	535	592	509	562	618	526	580	635	544	591	646
	SHC	—	340	282	448	379	306	496	414	327	528	447	348
	kW	—	51.3	53.6	50.3	52.6	54.8	51.3	53.5	55.5	52.2	54.1	56.1
115	TC	—	510	563	483	534	586	500	549	604	518	558	612
	SHC	—	329	272	435	366	294	481	401	315	508	435	335
	kW	—	54.4	57.0	53.2	55.7	58.2	54.3	56.6	59.0	55.4	57.2	59.5
125	TC	—	484	535	456	505	555	473	518	566	491	527	574
	SHC	—	318	260	424	356	282	465	390	312	487	422	327
	kW	—	57.4	60.1	56.2	58.7	61.3	57.4	59.8	62.1	58.5	60.4	62.6

50EJ,EK,EW,EY064 (60 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		21,300/0.06			24,000/0.06			26,700/0.06		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	62
75	TC SHC kW	635	692	756	651	—	—	668	709	—
		620	518	407	647	—	—	667	587	—
		42.3	43.7	45.2	42.8	—	—	43.4	44.3	—
85	TC SHC kW	610	663	724	627	673	—	644	679	—
		601	506	391	627	539	—	643	572	—
		45.9	47.6	49.2	46.6	47.9	—	47.1	48.3	—
95	TC SHC kW	586	633	692	603	640	—	618	646	—
		582	493	380	602	526	—	618	556	—
		49.6	51.1	53.1	50.2	51.5	—	50.9	51.9	—
105	TC SHC kW	561	601	656	578	607	—	591	613	—
		559	479	368	577	513	—	590	543	—
		53.1	54.7	56.7	53.8	55.0	—	54.5	55.3	—
115	TC SHC kW	535	567	620	551	574	—	562	579	—
		535	468	355	549	499	—	562	527	—
		56.5	57.8	60.0	57.3	58.3	—	58.0	58.7	—
125	TC SHC kW	509	536	582	522	540	—	534	546	—
		508	454	341	522	483	—	534	511	—
		59.6	51.0	63.1	60.5	61.4	—	61.3	61.7	—

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:

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

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

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

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

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

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

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

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

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
0.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.
0.1	0.98	1.96	2.94	3.92	4.91	
0.2	0.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.
- VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

COOLING CAPACITIES (50 Hz) (English) (cont)

50EJ,EK,EW,EY068 (65 TONS) (50 Hz UNIT)													
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF											
		11,400/0.03			14,200/0.03			17,100/0.03			19,900/0.04		
		Evaporator Air — Ewb (F)											
		62	67	72	62	67	72	62	67	72	62	67	72
75	TC	—	—	709	—	682	741	648	706	767	665	720	779
	SHC	—	—	332	—	438	357	570	477	382	614	514	406
	kW	—	—	44.0	—	43.3	44.7	42.6	44.0	45.5	43.1	44.4	45.7
85	TC	—	—	682	—	656	714	624	679	736	641	693	749
	SHC	—	—	322	—	427	347	559	466	370	599	503	392
	kW	—	—	47.8	—	47.1	48.7	46.3	47.9	49.3	46.8	48.3	49.7
95	TC	—	—	647	—	629	685	597	649	704	615	661	715
	SHC	—	—	312	—	415	337	545	453	358	582	491	384
	kW	—	—	51.7	—	50.8	52.6	49.7	51.6	53.3	50.5	52.0	53.7
105	TC	—	574	627	—	601	653	570	618	669	588	630	679
	SHC	—	364	299	—	403	323	531	443	346	561	478	367
	kW	—	53.1	55.2	—	54.2	56.3	53.0	55.1	56.9	53.9	55.6	57.3
115	TC	—	546	598	522	569	617	541	585	633	560	595	641
	SHC	—	351	286	467	390	311	515	429	334	540	463	353
	kW	—	56.4	58.7	55.2	57.6	59.7	56.3	58.4	60.4	57.3	59.0	60.9
125	TC	—	517	563	493	537	582	512	553	596	531	561	603
	SHC	—	339	274	452	378	299	494	415	317	515	448	338
	kW	—	59.4	62.0	58.2	60.6	62.9	59.4	61.6	63.7	60.5	62.1	64.2

50EJ,EK,EW,EY068 (65 TONS) (50 Hz UNIT) (cont)										
Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity — Cfm/BF								
		22,800/0.06			25,600/0.06			27,000/0.06		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC SHC kW	683	734	791	701	744	—	710	747	—
		659	550	430	685	590	—	694	605	—
		43.5	44.8	46.0	44.0	45.1	—	44.3	45.2	—
85	TC SHC kW	658	706	762	677	714	—	686	716	—
		639	540	414	661	574	—	670	589	—
		47.4	48.7	50.1	48.0	49.0	—	48.2	49.0	—
95	TC SHC kW	633	674	726	651	682	—	658	685	—
		618	528	410	635	561	—	642	576	—
		51.2	52.5	54.0	51.8	52.8	—	52.1	52.9	—
105	TC SHC kW	607	642	689	623	649	—	629	651	—
		592	513	389	608	545	—	615	560	—
		54.7	56.1	57.8	55.5	56.5	—	55.9	56.6	—
115	TC SHC kW	579	606	650	593	614	—	600	616	—
		565	497	373	579	530	—	584	544	—
		58.4	59.5	61.3	59.0	59.9	—	59.4	60.0	—
125	TC SHC kW	550	569	610	563	576	—	567	577	—
		536	482	359	548	511	—	553	525	—
		61.7	62.7	64.6	62.4	63.1	—	62.7	63.3	—

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:

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

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

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

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

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

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

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

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

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
0.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.
0.1	0.98	1.96	2.94	3.92	4.91	
0.2	0.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

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

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.
- VAV units will operate down to 70 cfm/ton. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.

Performance data (cont)



FAN PERFORMANCE, 50EJ,EK024-034 — VERTICAL DISCHARGE UNITS (SI) FOR 50EW,EY UNITS, REDUCE NET AVAILABLE EXTERNAL STATIC PRESSURE BY 75 PA

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)															
	50		100		150		200		250		300		350		400	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
1900	5.4	0.60	6.7	0.80	7.8	1.10	8.7	1.30	9.6	1.60	10.4	1.90	11.1	2.10	11.8	2.40
2400	6.0	0.80	7.2	1.10	8.2	1.40	9.1	1.70	10.0	2.00	10.7	2.20	11.4	2.50	12.1	2.80
2800	6.7	1.20	7.8	1.50	8.8	1.80	9.6	2.10	10.4	2.40	11.1	2.70	11.8	3.00	12.5	3.30
3300	7.5	1.70	8.5	2.00	9.3	2.30	10.2	2.60	10.9	2.90	11.6	3.30	12.3	3.60	12.9	3.90
3800	8.2	2.20	9.2	2.60	10.0	2.90	10.7	3.20	11.5	3.60	12.1	3.90	12.8	4.30	13.4	4.60
3900	8.4	2.40	9.3	2.70	10.1	3.10	10.9	3.40	11.6	3.70	12.3	4.10	12.9	4.40	13.5	4.80
4200	9.1	2.90	9.9	3.20	10.7	3.60	11.4	4.00	12.0	4.30	12.7	4.70	13.3	5.00	13.9	5.40
4700	9.9	3.70	10.6	4.00	11.4	4.40	12.0	4.80	12.7	5.20	13.3	5.50	13.9	5.90	14.4	6.30
5200	10.7	4.60	11.4	5.00	12.1	5.30	12.7	5.70	13.3	6.10	13.9	6.50	14.5	6.90	15.0	7.30
5700	11.5	5.60	12.2	6.00	12.8	6.40	13.4	6.80	14.0	7.20	14.6	7.70	15.1	8.10	15.6	8.50
5900	12.0	6.10	12.6	6.60	13.2	7.00	13.8	7.40	14.4	7.80	14.9	8.30	15.4	8.70	15.9	9.10
6100	12.4	6.70	13.0	7.20	13.6	7.60	14.2	8.00	14.7	8.50	15.3	8.90	15.8	9.30	16.3	9.80
6500	13.0	7.70	13.6	8.10	14.2	8.60	14.7	9.00	15.3	9.50	15.8	9.90	16.3	10.40	16.8	10.80
6600	13.3	8.00	13.8	8.50	14.4	8.90	14.9	9.40	15.5	9.80	16.0	10.30	16.4	10.70	16.9	11.20
7100	14.1	9.50	14.7	9.90	15.2	10.40	15.7	10.90	16.2	11.30	16.7	11.80	17.2	12.30	17.6	12.70

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)															
	450		500		550		600		650		700		750		800	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
1900	12.4	2.70	13.0	3.00	13.6	3.30	14.2	3.60	14.7	3.90	15.3	4.20	15.8	4.60	16.3	4.90
2400	12.7	3.10	13.3	3.40	13.9	3.80	14.5	4.10	15.0	4.40	15.5	4.70	16.0	5.10	16.5	5.40
2800	13.1	3.60	13.7	4.00	14.2	4.30	14.8	4.60	15.3	5.00	15.8	5.30	16.3	5.60	16.8	6.00
3300	13.5	4.30	14.1	4.60	14.6	4.90	15.1	5.30	15.6	5.60	16.1	6.00	16.6	6.30	17.1	6.70
3800	13.9	5.00	14.5	5.30	15.0	5.70	15.5	6.00	16.0	6.40	16.5	6.80	17.0	7.10	17.4	7.50
3900	14.1	5.20	14.6	5.50	15.1	5.90	15.6	6.20	16.1	6.60	16.6	7.00	17.1	7.30	17.5	7.70
4200	14.4	5.80	15.0	6.10	15.5	6.50	16.0	6.90	16.5	7.30	16.9	7.60	17.4	8.00	17.8	8.40
4700	15.0	6.70	15.5	7.10	16.0	7.50	16.5	7.90	16.9	8.20	17.4	8.60	17.8	9.00	18.3	9.40
5200	15.5	7.70	16.0	8.10	16.5	8.50	17.0	8.90	17.4	9.40	17.9	9.80	18.3	10.20	18.7	10.60
5700	16.1	8.90	16.6	9.30	17.1	9.70	17.5	10.20	18.0	10.60	18.4	11.00	18.8	11.40	19.2	11.80
5900	16.4	9.50	16.9	10.00	17.4	10.40	17.8	10.80	18.2	11.20	18.7	11.70	19.1	12.10	19.5	12.50
6100	16.7	10.20	17.2	10.60	17.7	11.10	18.1	11.50	18.5	11.90	18.9	12.40	19.4	12.80	19.8	13.20
6500	17.2	11.30	17.7	11.70	18.1	12.10	18.5	12.60	19.0	13.00	19.4	13.50	19.8	13.90	—	—
6600	17.4	11.60	17.8	12.10	18.3	12.50	18.7	13.00	19.1	13.40	19.5	13.90	19.9	14.30	—	—
7100	18.1	13.20	18.5	13.70	18.9	14.10	19.3	14.60	19.7	15.10	—	—	—	—	—	—

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)					
	850		900		950	
	r/s	BkW	r/s	BkW	r/s	BkW
1900	16.7	5.20	17.2	5.50	17.6	5.90
2400	17.0	5.70	17.4	6.10	17.9	6.40
2800	17.2	6.30	17.7	6.70	18.1	7.00
3300	17.5	7.00	18.0	7.40	18.4	7.80
3800	17.9	7.90	18.3	8.20	18.7	8.60
3900	18.0	8.10	18.4	8.50	18.8	8.80
4200	18.3	8.80	18.7	9.20	19.1	9.60
4700	18.7	9.80	19.1	10.20	19.5	10.60
5200	19.2	11.00	19.6	11.40	20.0	11.80
5700	19.6	12.30	20.0	12.70	—	—
5900	19.9	13.00	—	—	—	—
6100	—	—	—	—	—	—
6500	—	—	—	—	—	—
6600	—	—	—	—	—	—
7100	—	—	—	—	—	—

LEGEND

BkW — Motor Brake (Output) Power (kW)
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
r/s — Fan Wheel Speed, Revolutions per Second

NOTES:

- Fan performance is based on wet coils, economizer, roof curb, cabinet losses, and clean 51 mm filters.
- Variable air volume (VAV) units will operate down to 9.39 l/s per kW in the cooling mode. Performance at 9.39 L/s kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
- Maximum fan speed is 20 r/s.



FAN PERFORMANCE, 50EJ,EK038 AND 50EJ,EK044 — VERTICAL DISCHARGE UNITS (SI)
FOR 50EW,EY UNITS, REDUCE NET AVAILABLE EXTERNAL STATIC PRESSURE BY 125 PA

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)															
	50		100		150		200		250		300		350		400	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
3800	7.5	1.60	8.3	2.10	9.1	2.40	9.8	2.70	10.5	3.00	11.2	3.30	11.8	3.60	12.5	3.90
4200	8.2	2.10	8.9	2.70	9.7	3.00	10.3	3.40	11.0	3.70	11.6	4.00	12.2	4.30	12.8	4.60
4700	8.9	2.80	9.6	3.50	10.3	3.80	10.9	4.10	11.5	4.40	12.1	4.80	12.7	5.10	13.2	5.40
5200	9.7	3.50	10.3	4.30	10.9	4.60	11.5	5.00	12.1	5.30	12.7	5.70	13.2	6.00	13.7	6.40
5600	10.5	4.30	11.1	5.20	11.6	5.60	12.2	6.00	12.7	6.30	13.2	6.70	13.7	7.10	14.2	7.40
6100	11.3	5.20	11.8	6.30	12.3	6.70	12.8	7.10	13.3	7.50	13.8	7.80	14.3	8.20	14.8	8.60
6600	12.0	6.30	12.5	7.50	13.0	7.90	13.5	8.30	14.0	8.70	14.5	9.10	14.9	9.50	15.4	9.90
7100	12.8	7.50	13.3	8.90	13.8	9.30	14.2	9.70	14.7	10.10	15.1	10.50	15.5	11.00	16.0	11.40
7600	13.6	8.80	14.1	10.40	14.5	10.80	14.9	11.30	15.4	11.70	15.8	12.10	16.2	12.50	16.6	13.00
8000	14.4	10.20	14.8	12.10	15.3	12.50	15.7	13.00	16.1	13.40	16.5	13.80	16.9	14.30	17.2	14.70
8500	15.2	11.80	15.6	13.90	16.0	14.40	16.4	14.80	16.8	15.30	17.2	15.70	17.5	16.20	17.9	16.60
9000	16.0	13.50	16.4	15.90	16.8	16.40	17.1	16.80	17.5	17.30	17.9	17.80	18.2	18.20	18.6	18.70
9400	16.8	15.40	17.2	18.10	17.5	18.50	17.9	19.00	18.2	19.50	18.6	20.00	18.9	20.50	19.3	21.00

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)															
	450		500		550		600		650		700		750		800	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
3800	13.0	4.20	13.6	4.60	14.2	4.90	14.7	5.20	15.3	5.60	15.8	5.90	16.3	6.20	16.8	6.60
4200	13.4	5.00	13.9	5.30	14.5	5.60	15.0	6.00	15.5	6.30	16.0	6.70	16.5	7.00	17.0	7.40
4700	13.8	5.80	14.3	6.10	14.8	6.50	15.3	6.80	15.8	7.20	16.3	7.60	16.8	7.90	17.2	8.30
5200	14.2	6.70	14.7	7.10	15.2	7.50	15.7	7.80	16.2	8.20	16.6	8.60	17.1	9.00	17.5	9.30
5600	14.7	7.80	15.2	8.20	15.7	8.60	16.1	8.90	16.6	9.30	17.0	9.70	17.4	10.10	17.8	10.50
6100	15.2	9.00	15.7	9.40	16.1	9.80	16.6	10.20	17.0	10.60	17.4	11.00	17.8	11.40	18.2	11.80
6600	15.8	10.30	16.2	10.70	16.7	11.10	17.1	11.50	17.5	12.00	17.9	12.40	18.3	12.80	18.7	13.20
7100	16.4	11.80	16.8	12.20	17.2	12.60	17.6	13.00	18.0	13.50	18.4	13.90	18.8	14.30	19.1	14.80
7600	17.0	13.40	17.4	13.80	17.8	14.30	18.1	14.70	18.5	15.10	18.9	15.60	19.3	16.00	19.6	16.50
8000	17.6	15.20	18.0	15.60	18.4	16.10	18.7	16.50	19.1	17.00	19.4	17.40	19.8	17.90	—	—
8500	18.3	17.10	18.6	17.60	19.0	18.00	19.3	18.50	19.7	18.90	—	—	—	—	—	—
9000	18.9	19.20	19.3	19.70	19.6	20.10	19.9	20.60	—	—	—	—	—	—	—	—
9400	19.6	21.40	19.9	21.90	—	—	—	—	—	—	—	—	—	—	—	—

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)					
	850		900		950	
	r/s	BkW	r/s	BkW	r/s	BkW
3800	17.3	6.90	17.7	7.30	18.2	7.60
4200	17.4	7.70	17.9	8.10	18.3	8.50
4700	17.7	8.70	18.1	9.00	18.5	9.40
5200	17.9	9.70	18.4	10.10	18.8	10.50
5600	18.3	10.90	18.7	11.30	19.1	11.70
6100	18.6	12.20	19.0	12.60	19.4	13.00
6600	19.1	13.60	19.4	14.00	19.8	14.50
7100	19.5	15.20	19.9	15.60	—	—
7600	20.0	16.90	—	—	—	—
8000	—	—	—	—	—	—
8500	—	—	—	—	—	—
9000	—	—	—	—	—	—
9400	—	—	—	—	—	—

LEGEND

BkW — Motor Brake (Output) Power (kW)
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
r/s — Fan Wheel Speed, Revolutions per Second

NOTES:

- Fan performance is based on wet coils, economizer, roof curb, cabinet losses, and clean 51 mm filters.
- Variable air volume (VAV) units will operate down to 9.39 l/s per kW in the cooling mode. Performance at 9.39 L/s kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
- Maximum fan speed is 20 r/s.

Performance data (cont)



FAN PERFORMANCE, 50EJ,EK054-068 — VERTICAL DISCHARGE UNITS (SI)

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)															
	50		100		149		199		249		299		349		399	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
4,721	6.6	2.00	7.7	2.49	8.6	2.96	9.3	3.41	10.0	3.87	10.6	4.32	11.1	4.78	11.7	5.24
5,665	7.4	2.95	8.5	3.53	9.4	4.07	10.1	4.59	10.7	5.10	11.3	5.61	11.9	6.11	12.4	6.62
7,082	8.7	4.86	9.7	5.58	10.5	6.23	11.3	6.85	11.9	7.46	12.5	8.05	13.0	8.64	13.5	9.22
7,554	9.1	5.63	10.1	6.40	10.9	7.09	11.6	7.75	12.3	8.39	12.9	9.01	13.4	9.63	13.9	10.24
8,026	9.5	6.48	10.5	7.30	11.3	8.03	12.0	8.73	12.7	9.40	13.3	10.05	13.8	10.70	14.3	11.33
8,498	9.9	7.41	10.9	8.27	11.7	9.05	12.4	9.78	13.1	10.49	13.6	11.17	14.2	11.85	14.7	12.51
8,970	10.4	8.42	11.3	9.33	12.1	10.15	12.8	10.92	13.5	11.66	14.0	12.37	14.6	13.08	15.1	13.77
9,442	10.8	9.51	11.7	10.47	12.5	11.33	13.2	12.14	13.9	12.91	14.4	13.66	15.0	14.40	15.4	15.12
9,914	11.2	10.99	12.2	11.69	12.9	12.59	13.6	13.44	14.3	14.25	14.8	15.04	15.3	15.80	15.8	16.56
10,386	11.7	11.96	12.6	13.00	13.4	13.95	14.0	14.83	14.7	15.68	15.2	16.50	15.7	17.30	16.2	18.08
10,858	12.1	13.32	13.0	14.41	13.8	15.39	14.4	16.32	15.1	17.20	15.6	18.06	16.1	18.89	16.6	19.70
11,330	12.5	14.77	13.4	15.90	14.2	16.93	14.9	17.90	15.5	18.82	16.0	19.71	16.5	20.57	17.0	21.41
11,803	13.0	16.31	13.9	17.50	14.6	18.57	15.3	19.57	15.9	20.53	16.4	21.45	16.9	22.35	17.4	23.22
12,275	13.4	17.96	14.3	19.19	15.0	20.30	15.7	21.34	16.3	22.34	16.8	23.30	17.3	24.23	17.8	25.13
12,747	13.9	19.70	14.7	20.98	15.4	22.13	16.1	23.22	16.7	24.25	17.2	25.24	17.7	26.20	18.2	27.15

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)															
	448		498		548		598		648		697		747		797	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
4,721	12.1	5.70	12.6	6.16	13.0	6.63	13.4	7.11	13.8	7.59	14.2	8.07	14.6	8.56	15.0	9.05
5,665	12.9	7.12	13.3	7.63	13.8	8.14	14.2	8.66	14.6	9.17	15.0	9.69	15.3	10.22	15.7	10.74
7,082	14.0	9.80	14.5	10.38	14.9	10.96	15.3	11.53	15.7	12.11	16.1	12.69	16.4	13.27	16.8	13.86
7,554	14.4	10.84	14.8	11.44	15.3	12.05	15.7	12.65	16.1	13.25	16.4	13.85	16.8	14.45	17.2	15.05
8,026	14.8	11.97	15.2	12.59	15.6	13.22	16.0	13.84	16.4	14.47	16.8	15.09	17.2	15.71	17.5	16.33
8,498	15.1	13.17	15.6	13.82	16.0	14.47	16.4	15.12	16.8	15.77	17.2	16.41	17.6	17.06	17.9	17.70
8,970	15.5	14.46	16.0	15.14	16.4	15.81	16.8	16.49	17.2	17.16	17.6	17.82	17.9	18.49	18.3	19.16
9,442	15.9	15.83	16.4	16.54	16.8	17.24	17.2	17.94	17.6	18.63	18.0	19.32	18.3	20.01	18.7	20.70
9,914	16.3	17.30	16.7	18.03	17.2	18.76	17.6	19.48	18.0	20.20	18.3	20.92	18.7	21.63	19.1	22.34
10,386	16.7	18.85	17.1	19.62	17.6	20.37	18.0	21.12	18.3	21.86	18.7	22.60	19.1	23.34	19.4	24.07
10,858	17.1	20.50	17.5	21.29	17.9	22.07	18.3	22.65	18.7	23.62	19.1	24.38	19.5	25.14	19.8	25.90
11,330	17.5	22.25	17.9	23.06	18.3	23.87	18.7	24.67	19.1	25.47	19.5	26.26	19.8	27.04	—	—
11,803	17.9	24.09	18.3	24.93	18.7	25.77	19.1	26.60	19.5	27.42	19.9	28.24	—	—	—	—
12,275	18.3	26.03	18.7	26.90	19.1	27.77	19.5	28.62	19.9	29.47	—	—	—	—	—	—
12,747	18.7	28.07	19.1	28.97	19.5	29.87	19.9	30.75	—	—	—	—	—	—	—	—

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)					
	847		897		947	
	r/s	BkW	r/s	BkW	r/s	BkW
4,721	15.3	9.54	15.6	10.04	16.0	10.54
5,665	16.0	11.27	16.4	11.80	16.7	12.34
7,082	17.1	14.44	17.5	15.03	17.8	15.61
7,554	17.5	15.66	17.8	16.26	18.2	16.87
8,026	17.9	16.96	18.2	17.58	18.5	18.21
8,498	18.3	18.35	18.6	18.99	18.9	19.64
8,970	18.6	19.82	19.0	20.49	19.3	21.16
9,442	19.0	21.39	19.3	22.08	19.7	22.76
9,914	19.4	23.05	19.7	23.76	—	—
10,386	—	—	—	—	—	—
10,858	—	—	—	—	—	—
11,330	—	—	—	—	—	—
11,803	—	—	—	—	—	—
12,275	—	—	—	—	—	—
12,747	—	—	—	—	—	—

LEGEND

- BkW** — Brake Kilowatts
- Edb** — Entering Dry Bulb
- Ewb** — Entering Wet Bulb
- r/s** — Fan Wheel Speed, Revolutions per Second
- VAV** — Variable Air Volume

NOTES:

1. Fan performance is based on dry coils, economizer, roof curb, cabinet losses, and clean 51 mm filters.
2. Conversion — BkW to input watts:
Watts = BkW/Motor Efficiency
3. Variable air volume (VAV) units will operate down to 1.02 L/s/1000 per kW in the cooling mode. Performance at 1.02 L/s/1000 kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
3. Maximum fan speed is 20 r/s.



FAN PERFORMANCE, 50EW,EY054-068 — HORIZONTAL DISCHARGE UNITS (SI)

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)													
	50		100		149		199		249		299		349	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
4,721	7.1	2.02	8.1	2.48	8.9	2.91	9.6	3.33	10.3	3.75	10.8	4.17	11.4	4.59
5,665	8.0	3.01	9.0	3.54	9.8	4.04	10.5	4.52	11.1	4.99	11.7	5.46	12.2	5.93
7,082	9.5	5.02	10.4	5.65	11.2	6.25	11.8	6.82	12.4	7.38	13.0	7.93	13.5	8.48
7,554	10.0	5.84	10.9	6.51	11.6	7.14	12.3	7.74	12.9	8.33	13.4	8.91	13.9	9.48
8,026	10.5	6.74	11.4	7.45	12.1	8.11	12.7	8.75	13.3	9.36	13.9	9.97	14.4	10.56
8,498	11.0	7.72	11.8	8.47	12.6	9.16	13.2	9.83	13.8	10.48	14.3	11.11	14.8	11.73
8,970	11.5	8.80	12.3	9.58	13.0	10.31	13.7	11.00	14.2	11.68	14.8	12.34	15.3	12.99
9,442	12.0	9.96	12.8	10.78	13.5	11.54	14.1	12.27	14.7	12.97	15.2	13.66	15.7	14.34
9,914	12.6	11.22	13.3	12.07	14.0	12.86	14.6	13.62	15.2	14.36	15.7	15.08	16.2	15.78
10,386	13.1	12.57	13.8	13.45	14.5	14.28	15.1	15.07	15.6	15.84	16.1	16.58	16.6	17.32
10,858	13.6	14.03	14.3	14.94	15.0	15.80	15.6	16.62	16.1	17.41	16.6	18.19	17.1	18.95
11,330	14.1	15.58	14.8	16.52	15.5	17.41	16.0	18.27	16.6	19.09	17.1	19.90	17.5	20.68
11,803	14.7	17.24	15.4	18.22	16.0	19.14	16.5	20.02	17.1	20.87	17.6	21.71	18.0	22.52
12,275	15.2	19.01	15.9	20.01	16.5	20.96	17.0	21.88	17.5	22.76	18.0	23.62	18.5	24.47
12,747	15.7	20.88	16.4	21.92	17.0	22.90	17.5	23.84	18.0	24.76	18.5	25.65	19.0	26.52

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)													
	399		448		498		548		598		648		697	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
4,721	11.9	5.02	12.3	5.44	12.8	5.88	13.2	6.31	13.6	6.75	14.0	7.19	14.4	7.63
5,665	12.7	6.40	13.2	6.87	13.6	7.34	14.0	7.81	14.4	8.29	14.8	8.77	15.2	9.25
7,082	14.0	9.02	14.4	9.56	14.9	10.09	15.3	10.63	15.7	11.16	16.1	11.70	16.4	12.24
7,554	14.4	10.04	14.9	10.61	15.3	11.17	15.7	11.72	16.1	12.28	16.5	12.84	16.8	13.40
8,026	14.8	11.16	15.3	11.74	15.7	12.32	16.1	12.91	16.5	13.48	16.9	14.06	17.3	14.64
8,498	15.3	12.35	15.7	12.96	16.2	13.57	16.6	14.17	17.0	14.77	17.3	15.37	17.7	15.97
8,970	15.7	13.63	16.2	14.27	16.6	14.90	17.0	15.53	17.4	16.15	17.8	16.77	18.1	17.39
9,442	16.2	15.01	16.6	15.67	17.0	16.32	17.4	16.97	17.8	17.62	18.2	18.27	18.6	18.91
9,914	16.6	16.47	17.1	17.16	17.5	17.84	17.9	18.51	18.3	19.19	18.6	19.85	19.0	20.52
10,386	17.1	18.04	17.5	18.75	17.9	19.45	18.3	20.15	18.7	20.85	19.1	21.53	—	—
10,858	17.5	19.70	18.0	20.44	18.4	21.16	18.8	21.89	—	—	—	—	—	—
11,330	18.0	21.46	18.4	22.22	18.8	22.98	—	—	—	—	—	—	—	—
11,803	18.5	23.32	18.9	24.11	—	—	—	—	—	—	—	—	—	—
12,275	18.9	25.29	—	—	—	—	—	—	—	—	—	—	—	—
12,747	—	—	—	—	—	—	—	—	—	—	—	—	—	—

AIRFLOW (L/s)	AVAILABLE EXTERNAL STATIC PRESSURE (Pa)									
	747		797		847		897		947	
	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW	r/s	BkW
4,721	14.7	8.08	15.1	8.53	15.4	8.98	15.8	9.44	16.1	9.90
5,665	15.5	9.73	15.9	10.21	16.2	10.70	16.6	11.19	16.9	11.68
7,082	16.8	12.78	17.1	13.32	17.5	13.86	17.8	14.40	18.1	14.94
7,554	17.2	13.96	17.5	14.51	17.9	15.07	18.2	15.63	18.5	16.20
8,026	17.6	15.22	18.0	15.80	18.3	16.38	18.6	16.96	18.9	17.54
8,498	18.0	16.57	18.4	17.17	18.7	17.77	19.0	18.37	19.4	18.96
8,970	18.5	18.01	18.8	18.63	19.1	19.25	19.5	19.87	19.8	20.49
9,442	18.9	19.55	—	—	19.6	20.83	19.9	21.46	—	—
9,914	—	—	—	—	20.0	22.50	—	—	—	—
10,386	—	—	—	—	—	—	—	—	—	—
10,858	—	—	—	—	—	—	—	—	—	—
11,330	—	—	—	—	—	—	—	—	—	—
11,803	—	—	—	—	—	—	—	—	—	—
12,275	—	—	—	—	—	—	—	—	—	—
12,747	—	—	—	—	—	—	—	—	—	—

LEGEND

BkW — Brake Kilowatts
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
r/s — Fan Wheel Speed, Revolutions per Second
VAV — Variable Air Volume

NOTES:

- Fan performance is based on dry coils, economizer, roof curb, cabinet losses, and clean 51 mm filters.
- Conversion — BkW to input watts:
Watts = BkW/Motor Efficiency
- Variable air volume (VAV) units will operate down to 1.02 L/s/1000 per kW in the cooling mode. Performance at 1.02 L/s/1000 kW is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
- Maximum fan speed is 20 r/s.

Performance data (cont)



FAN PERFORMANCE, 50EJ,EK024-034 — VERTICAL DISCHARGE UNITS (ENGLISH) FOR 50EW,EY UNITS, REDUCE NET AVAILABLE EXTERNAL STATIC PRESSURE BY 0.3 IN. WG

AIRFLOW (Cfm)	AVAILABLE 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
4,000	322	0.77	401	1.09	466	1.43	523	1.78	575	2.13	622	2.50	666	2.87	707	3.25
5,000	361	1.14	433	1.50	494	1.86	548	2.23	598	2.62	643	3.00	686	3.40	726	3.80
6,000	403	1.62	468	2.01	526	2.41	577	2.81	624	3.21	668	3.62	709	4.04	748	4.46
7,000	448	2.22	508	2.65	561	3.08	609	3.50	654	3.93	696	4.37	736	4.81	773	5.25
8,000	495	2.97	549	3.42	599	3.88	645	4.33	687	4.79	727	5.25	765	5.71	801	6.18
8,250	507	3.18	560	3.64	609	4.10	654	4.56	696	5.02	735	5.49	773	5.96	809	6.43
9,000	543	3.85	593	4.34	639	4.82	682	5.30	723	5.78	761	6.27	797	6.76	832	7.24
10,000	592	4.90	638	5.41	682	5.91	722	6.42	760	6.93	797	7.44	832	7.95	865	8.46
11,000	642	6.10	685	6.64	725	7.17	764	7.70	800	8.24	835	8.77	868	9.30	900	9.84
12,000	693	7.48	733	8.04	771	8.60	807	9.15	841	9.71	874	10.26	906	10.82	937	11.38
12,500	718	8.23	757	8.80	794	9.37	829	9.94	862	10.51	895	11.08	926	11.64	956	12.21
13,000	744	9.03	781	9.62	817	10.20	851	10.78	884	11.36	915	11.93	946	12.51	975	13.09
13,750	783	10.32	818	10.92	852	11.52	885	12.12	917	12.71	947	13.31	977	13.90	1005	14.50
14,000	795	10.77	831	11.38	864	11.98	896	12.59	928	13.19	958	13.79	987	14.39	1015	14.99
15,000	847	12.71	880	13.34	912	13.96	943	14.59	972	15.21	1001	15.83	1029	16.45	1056	17.08

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)															
	1.8		2.0		2.2		2.4		2.6		2.8		3.0		3.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
4,000	746	3.64	783	4.03	818	4.44	852	4.85	884	5.26	916	5.68	946	6.11	975	6.54
5,000	764	4.21	800	4.62	834	5.04	868	5.46	900	5.89	930	6.33	960	6.77	989	7.22
6,000	785	4.89	820	5.32	854	5.76	886	6.21	918	6.65	948	7.11	977	7.56	1006	8.02
7,000	809	5.70	843	6.16	876	6.61	908	7.08	939	7.54	968	8.01	997	8.49	1025	8.96
8,000	836	6.65	869	7.12	901	7.60	932	8.08	962	8.57	991	9.05	1019	9.55	1046	10.04
8,250	843	6.91	876	7.39	908	7.87	938	8.36	968	8.84	997	9.34	1025	9.83	1052	10.33
9,000	865	7.74	898	8.23	929	8.73	959	9.23	988	9.74	1016	10.24	1043	10.75	1070	11.27
10,000	897	8.98	928	9.49	958	10.01	987	10.53	1016	11.06	1043	11.58	1070	12.11	1096	12.64
11,000	931	10.37	961	10.91	990	11.45	1018	11.99	1046	12.54	1073	13.08	1099	13.63	1124	14.18
12,000	967	11.94	996	12.49	1024	13.06	1051	13.62	1078	14.18	1104	14.75	1129	15.31	1154	15.88
12,500	985	12.78	1014	13.35	1041	13.92	1068	14.49	1094	15.07	1120	15.64	1145	16.22	1169	16.80
13,000	1004	13.67	1032	14.25	1059	14.83	1086	15.42	1111	16.00	1137	16.59	1161	17.17	1185	17.76
13,750	1033	15.09	1060	15.69	1087	16.29	1112	16.88	1138	17.48	1162	18.08	1186	18.68	—	—
14,000	1043	15.59	1070	16.19	1096	16.79	1122	17.40	1147	18.00	1171	18.60	1195	19.21	—	—
15,000	1083	17.70	1109	18.32	1134	18.94	1159	19.56	1183	20.19	—	—	—	—	—	—

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)					
	3.4		3.6		3.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
4,000	1004	6.97	1032	7.41	1059	7.86
5,000	1017	7.67	1045	8.12	1072	8.58
6,000	1034	8.49	1061	8.96	1087	9.43
7,000	1052	9.44	1079	9.93	1105	10.42
8,000	1073	10.54	1099	11.04	1125	11.55
8,250	1079	10.84	1105	11.34	1130	11.85
9,000	1096	11.78	1122	12.30	1147	12.82
10,000	1122	13.18	1147	13.71	1171	14.25
11,000	1149	14.73	1173	15.29	1197	15.84
12,000	1178	16.45	1202	17.03	—	—
12,500	1193	17.38	—	—	—	—
13,000	—	—	—	—	—	—
13,750	—	—	—	—	—	—
14,000	—	—	—	—	—	—
15,000	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb

NOTES:

- Fan performance is based on wet coils, economizer, roof curb, cabinet losses, and clean 2-in. filters.
- Conversion — Bhp to watts:

$$\text{Watts} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$
- Variable air volume (VAV) units will operate down to 70 cfm/ton in the cooling mode. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
- Maximum fan speed is 1200 rpm.



FAN PERFORMANCE, 50EJ,EK038 AND 50EJ,EK044 — VERTICAL DISCHARGE UNITS (ENGLISH)

FOR 50EW,EY UNITS, REDUCE NET AVAILABLE EXTERNAL STATIC PRESSURE BY 0.5 IN. WG

AIRFLOW (Cfm)	AVAILABLE 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
8,000	448	2.18	498	2.87	544	3.25	589	3.64	631	4.04	671	4.44	710	4.86	747	5.27
9,000	492	2.87	537	3.68	580	4.09	621	4.50	660	4.92	698	5.35	734	5.78	769	6.22
10,000	537	3.69	578	4.63	617	5.07	655	5.50	692	5.95	727	6.39	761	6.85	795	7.30
11,000	582	4.65	620	5.75	657	6.20	692	6.66	726	7.13	759	7.60	792	8.07	823	8.55
12,000	629	5.75	664	7.02	698	7.50	730	7.98	763	8.47	794	8.96	824	9.45	854	9.95
13,000	675	7.00	708	8.48	739	8.98	770	9.48	800	9.99	830	10.50	859	11.01	887	11.53
14,000	722	8.42	753	10.11	782	10.63	811	11.16	840	11.69	868	12.22	895	12.75	922	13.29
15,000	770	10.00	798	11.94	826	12.48	853	13.03	880	13.57	907	14.13	932	14.68	958	15.24
16,000	817	11.76	844	13.96	870	14.53	896	15.09	922	15.66	947	16.23	971	16.81	995	17.38
17,000	865	13.70	890	16.19	915	16.78	940	17.37	964	17.95	988	18.54	1011	19.14	1034	19.73
18,000	913	15.83	937	18.64	961	19.25	984	19.85	1007	20.46	1030	21.07	1052	21.68	1074	22.30
19,000	961	18.16	984	21.32	1006	21.94	1029	22.56	1050	23.19	1072	23.82	1093	24.45	1115	25.08
20,000	1009	20.69	1031	24.22	1052	24.86	1074	25.50	1095	26.15	1115	26.80	1136	27.45	1156	28.10

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)															
	1.8		2.0		2.2		2.4		2.6		2.8		3.0		3.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
8,000	783	5.70	818	6.13	852	6.56	884	7.00	916	7.45	947	7.90	978	8.36	1007	8.82
9,000	803	6.66	836	7.11	869	7.56	900	8.02	930	8.48	960	8.95	989	9.42	1018	9.90
10,000	827	7.77	858	8.23	889	8.70	919	9.18	948	9.66	977	10.15	1005	10.64	1032	11.13
11,000	854	9.03	884	9.51	913	10.00	941	10.50	969	11.00	997	11.50	1024	12.01	1050	12.52
12,000	883	10.45	911	10.96	939	11.47	967	11.98	993	12.50	1020	13.02	1046	13.54	1071	14.07
13,000	914	12.05	942	12.57	968	13.10	994	13.63	1020	14.17	1045	14.71	1070	15.25	1094	15.79
14,000	948	13.83	974	14.37	999	14.92	1024	15.47	1049	16.02	1073	16.58	1096	17.14	1120	17.70
15,000	983	15.80	1007	16.36	1032	16.92	1056	17.49	1079	18.06	1102	18.64	1125	19.21	1148	19.79
16,000	1019	17.96	1043	18.54	1066	19.13	1089	19.71	1111	20.30	1134	20.89	1156	21.49	1177	22.08
17,000	1057	20.33	1079	20.93	1102	21.53	1124	22.14	1145	22.75	1167	23.35	1188	23.97	—	—
18,000	1096	22.91	1117	23.53	1138	24.15	1160	24.78	1180	25.40	—	—	—	—	—	—
19,000	1135	25.72	1156	26.36	1176	26.99	1197	27.63	—	—	—	—	—	—	—	—
20,000	1176	28.75	1196	29.41	—	—	—	—	—	—	—	—	—	—	—	—

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)					
	3.4		3.6		3.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
8,000	1036	9.29	1065	9.76	1092	10.24
9,000	1046	10.38	1073	10.87	1100	11.36
10,000	1059	11.63	1086	12.13	1112	12.64
11,000	1076	13.03	1102	13.55	1127	14.07
12,000	1096	14.60	1121	15.13	1145	15.67
13,000	1118	16.34	1142	16.89	1165	17.45
14,000	1143	18.26	1166	18.83	1188	19.40
15,000	1170	20.37	1192	20.96	—	—
16,000	1199	22.68	—	—	—	—
17,000	—	—	—	—	—	—
18,000	—	—	—	—	—	—
19,000	—	—	—	—	—	—
20,000	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb

NOTES:

- Fan performance is based on wet coils, economizer, roof curb, cabinet losses, and clean 2-in. filters.
- Conversion — Bhp to watts:

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

- Variable air volume (VAV) units will operate down to 70 cfm/ton in the cooling mode. Performance at 70 cf/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
- Maximum fan speed is 1200 rpm.

Performance data (cont)



FAN PERFORMANCE 50EJ,EK054-068 — VERTICAL DISCHARGE UNITS (ENGLISH)

AIRFLOW (Cfm)	AVAILABLE 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
10,000	397	2.68	463	3.34	516	3.97	560	4.58	600	5.18	635	5.79	668	6.40	699	7.02
12,000	446	3.96	510	4.73	562	5.46	606	6.15	645	6.84	680	7.52	713	8.19	744	8.87
15,000	520	6.51	582	7.47	632	8.35	675	9.19	714	10.00	749	10.79	781	11.58	812	12.36
16,000	545	7.55	606	8.58	656	9.51	699	10.39	737	11.25	772	12.08	804	12.91	834	13.72
17,000	571	8.69	631	9.78	680	10.77	722	11.70	760	12.60	795	13.48	827	14.34	857	15.19
18,000	596	9.94	655	11.09	704	12.13	746	13.11	784	14.06	818	14.98	850	15.88	880	16.77
19,000	622	11.29	680	12.50	728	13.60	770	14.63	808	15.62	842	15.69	874	17.53	904	18.46
20,000	648	12.75	705	14.03	752	15.18	794	16.27	831	17.31	865	18.31	897	19.30	927	20.27
21,000	674	14.33	730	15.67	777	16.88	818	18.02	855	19.10	889	20.16	921	21.18	950	22.19
22,000	700	16.03	755	17.43	802	18.70	842	19.89	879	21.02	913	22.12	944	23.19	974	24.24
23,000	726	17.85	780	19.31	826	20.64	867	21.88	903	23.06	937	24.20	968	25.32	997	26.41
24,000	752	19.79	806	21.32	851	22.70	891	23.99	927	25.22	961	26.41	992	27.57	1021	28.71
25,000	779	21.87	831	23.45	876	24.89	916	26.24	952	27.52	985	28.75	1015	29.96	1044	31.13
26,000	805	24.07	857	25.72	901	27.21	940	28.61	976	29.94	1009	31.23	1039	32.47	1068	33.69
27,000	832	26.41	883	28.12	926	29.67	965	31.12	1000	32.50	1033	33.83	1063	35.13	1092	36.39

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)															
	1.8		2.0		2.2		2.4		2.6		2.8		3.0		3.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
10,000	728	7.64	755	8.26	781	8.89	806	9.53	830	10.17	853	10.82	876	11.47	897	12.13
12,000	773	9.55	800	10.23	826	10.92	851	11.61	875	12.30	898	12.99	920	13.70	941	14.40
15,000	840	13.14	867	13.91	893	14.69	918	15.46	941	16.24	964	17.01	986	17.79	1008	18.57
16,000	863	14.53	890	15.34	916	16.15	940	16.95	964	17.76	987	18.56	1009	19.37	1030	20.18
17,000	886	16.04	913	16.88	938	17.72	963	18.56	987	19.39	1009	20.23	1031	21.06	1053	21.90
18,000	909	17.65	936	18.53	961	19.40	986	20.27	1009	21.14	1032	22.00	1054	22.87	1075	23.73
19,000	932	19.38	958	20.29	984	21.20	1008	22.10	1032	23.00	1055	23.89	1076	24.79	1098	25.68
20,000	955	21.23	982	22.17	1007	23.11	1031	24.05	1055	24.98	1077	25.90	1099	26.83	1120	27.75
21,000	978	23.19	1005	24.17	1030	25.15	1054	26.12	1078	27.08	1100	28.04	1122	28.99	1143	29.95
22,000	1001	25.27	1028	26.29	1053	27.31	1077	28.31	1101	29.31	1123	30.30	1145	31.28	1166	32.27
23,000	1025	27.48	1051	28.54	1076	29.59	1100	30.63	1124	31.66	1146	32.68	1168	33.70	1189	34.72
24,000	1048	29.82	1074	30.92	1100	32.00	1124	33.08	1147	34.14	1169	35.20	1191	36.25	—	—
25,000	1072	32.29	1098	33.42	1123	34.55	1147	35.66	1170	36.76	1192	37.85	—	—	—	—
26,000	1095	34.89	1121	36.08	1146	37.22	1170	38.37	1193	39.51	—	—	—	—	—	—
27,000	1119	37.62	1145	38.84	1170	40.04	1194	41.22	—	—	—	—	—	—	—	—

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)					
	3.4		3.6		3.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
10,000	918	12.79	938	13.46	958	14.13
12,000	962	15.11	982	15.82	1002	16.54
15,000	1028	19.36	1049	20.14	1068	20.93
16,000	1051	20.99	1071	21.80	1090	22.61
17,000	1073	22.73	1093	23.57	1113	24.41
18,000	1096	24.59	1116	25.46	1135	26.32
19,000	1118	26.57	1138	27.47	1158	28.36
20,000	1141	28.67	1161	29.59	1180	30.51
21,000	1163	30.90	1183	31.85	—	—
22,000	—	—	—	—	—	—
23,000	—	—	—	—	—	—
24,000	—	—	—	—	—	—
25,000	—	—	—	—	—	—
26,000	—	—	—	—	—	—
27,000	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb

NOTES:

- Fan performance is based on dry coils, economizer, roof curb, cabinet losses, and clean 2-in. filters.
- Conversion — Bhp to watts:

$$\text{Watts} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$
- Variable air volume (VAV) units will operate down to 70 cfm/ton in the cooling mode. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
- Maximum fan speed is 1200 rpm.



FAN PERFORMANCE, 50EW,EY054-068 — HORIZONTAL DISCHARGE UNITS (ENGLISH)

AIRFLOW (cfm)	AVAILABLE 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
10,000	424	2.7	485	3.3	535	3.9	577	4.5	615	5.0	650	5.6	682	6.2	712	6.7
12,000	481	4.0	540	4.7	588	5.4	629	6.1	666	6.7	700	7.3	732	8.0	762	8.6
15,000	570	6.7	624	7.6	669	8.4	709	9.1	745	9.9	779	10.6	809	11.4	838	12.1
16,000	600	7.8	653	8.7	697	9.6	737	10.4	772	11.2	805	11.9	836	12.7	864	13.5
17,000	631	9.0	682	10.0	725	10.9	764	11.7	799	12.6	832	13.4	862	14.2	891	15.0
18,000	661	10.4	711	11.4	754	12.3	792	13.2	827	14.0	859	14.9	889	15.7	917	16.6
19,000	692	11.8	740	12.8	782	13.8	820	14.8	854	15.7	886	16.5	916	17.4	944	18.3
20,000	723	13.4	770	14.4	811	15.5	848	16.4	882	17.4	913	18.3	943	19.2	970	20.1
21,000	754	15.0	800	16.2	840	17.2	877	18.3	910	19.2	941	20.2	970	21.2	997	22.1
22,000	785	16.9	830	18.0	869	19.1	905	20.2	938	21.2	969	22.2	997	23.2	1025	24.2
23,000	817	18.8	860	20.0	899	21.2	934	22.3	966	23.3	997	24.4	1025	25.4	1052	26.4
24,000	848	20.9	891	22.2	928	23.3	963	24.5	995	25.6	1025	26.7	1053	27.7	1080	28.8
25,000	880	23.1	921	24.4	958	25.7	992	26.8	1024	28.0	1053	29.1	1081	30.2	1107	31.3
26,000	912	25.5	952	26.8	988	28.1	1021	29.3	1052	30.5	1082	31.7	1109	32.8	1135	33.9
27,000	943	28.0	983	29.4	1018	30.7	1051	32.0	1082	33.2	1110	34.4	1137	35.5	1163	36.7

AIRFLOW (cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)															
	1.8		2.0		2.2		2.4		2.6		2.8		3.0		3.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
10,000	740	7.3	766	7.88	792	8.46	816	9.04	840	9.63	862	10.23	884	10.83	905	11.43
12,000	789	9.2	816	9.84	841	10.47	865	11.11	889	11.75	911	12.39	933	13.04	953	13.69
15,000	866	12.8	892	13.53	917	14.25	940	14.97	963	15.68	985	16.41	1007	17.13	1028	17.85
16,000	891	14.2	917	14.97	942	15.72	966	16.46	989	17.21	1011	17.96	1032	18.71	1053	19.46
17,000	918	15.7	943	16.52	968	17.30	991	18.08	1014	18.85	1036	19.63	1057	20.40	1078	21.18
18,000	944	17.4	969	18.19	994	19.00	1017	19.80	1040	20.61	1061	21.41	1083	22.21	1103	23.02
19,000	970	19.1	995	19.97	1020	20.81	1043	21.65	1065	22.48	1087	23.32	1108	24.15	1129	24.98
20,000	997	21.0	1022	21.88	1046	22.75	1069	23.62	1091	24.48	1113	25.35	1134	26.20	1154	27.06
21,000	1024	23.0	1049	23.91	1072	24.82	1095	25.72	1118	26.61	1139	27.50	1160	28.39	1180	29.27
22,000	1051	25.1	1075	26.08	1099	27.01	1122	27.94	1144	28.87	1165	29.79	1186	30.70	—	—
23,000	1078	27.4	1102	28.37	1126	29.34	1148	30.30	1170	31.26	1192	32.21	—	—	—	—
24,000	1105	29.8	1129	30.80	1153	31.80	1175	32.79	1197	33.78	—	—	—	—	—	—
25,000	1132	32.3	1157	33.37	1180	34.40	—	—	—	—	—	—	—	—	—	—
26,000	1160	35.0	1184	36.08	—	—	—	—	—	—	—	—	—	—	—	—
27,000	1188	37.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—

AIRFLOW (cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)					
	3.4		3.6		3.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
10,000	925	12.04	945	12.65	965	13.27
12,000	974	14.34	994	15.00	1013	15.66
15,000	1048	18.57	1067	19.30	1086	20.03
16,000	1073	20.21	1092	20.96	1111	21.71
17,000	1098	21.95	1117	22.73	1136	23.51
18,000	1123	23.82	1142	24.62	1161	25.42
19,000	1148	25.80	1168	26.63	1186	27.46
20,000	1174	27.92	1193	28.77	—	—
21,000	1200	30.16	—	—	—	—
22,000	—	—	—	—	—	—
23,000	—	—	—	—	—	—
24,000	—	—	—	—	—	—
25,000	—	—	—	—	—	—
26,000	—	—	—	—	—	—
27,000	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb

NOTES:

- Fan performance is based on dry coils, economizer, roof curb, cabinet losses, and clean 2-in. filters.
- Conversion — Bhp to watts:

$$\text{Watts} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$
- Variable air volume (VAV) units will operate down to 70 cfm/ton in the cooling mode. Performance at 70 cfm/ton is limited to unloaded operation and may be additionally limited by edb and ewb conditions.
- Maximum fan speed is 1200 rpm.

Performance data (cont)



MOTOR LIMITATIONS

STANDARD EFFICIENCY MOTORS						
Nominal		Maximum		Maximum Amps	Maximum Watts	Maximum Efficiency
Bhp	BkW	Bhp	BkW	400 V		
5	3.73	5.9	4.40	7.9	5,030	87.5
7.5	5.60	9.5	7.09	12.0	8,008	88.5
10	7.46	11.8	8.80	14.6	9,836	89.5
15	11.19	18.0	13.43	21.9	14,756	91.0
20	14.92	23.4	17.46	28.7	19,183	91.0
25	18.65	29.4	21.93	37.4	23,918	91.7
30	22.38	34.7	25.89	48.0	28,015	92.4
40	29.84	42.0	31.33	55.0	33,690	93.0

LEGEND

Bhp — Brake Horsepower

NOTE: Extensive motor and electrical testing on the Carrier units has ensured that the full kW and horsepower range of the motor can be utilized with confidence. Using your fan motors up to the kW and horsepower ratings shown on the Motor Limitations table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

FAN PERFORMANCE — POWER EXHAUST (50 Hz) (SI)

50EJ,EK,EW,EY024-044 (70.3 THRU 140.7 kW)									
Airflow (L/s)	Low Speed			Medium Speed			High Speed		
	400 v			400 v			400 v		
	ESP	BkW	kW	ESP	BkW	kW	ESP	BkW	kW
2556	120	1.29	1.93	—	—	—	—	—	—
2635	110	1.31	1.97	140	1.39	2.09	—	—	—
2713	100	1.33	2.00	130	1.42	2.13	—	—	—
2792	100	1.34	2.02	130	1.44	2.16	—	—	—
2871	90	1.36	2.04	120	1.46	2.20	—	—	—
2949	90	1.38	2.07	110	1.49	2.23	—	—	—
3028	80	1.39	2.09	110	1.50	2.26	130	1.72	2.58
3107	80	1.41	2.12	90	1.52	2.29	120	1.74	2.61
3185	70	1.44	2.16	80	1.54	2.31	110	1.76	2.64
3343	—	—	—	70	1.59	2.38	100	1.78	2.67
3500	—	—	—	50	1.63	2.45	80	1.82	2.74
3657	—	—	—	40	1.67	2.51	60	1.89	2.84
3815	—	—	—	30	1.71	2.56	50	1.93	2.90
3972	—	—	—	20	1.74	2.62	40	1.97	2.96
4129	—	—	—	—	—	—	30	2.01	3.02
4286	—	—	—	—	—	—	20	2.05	3.08
4444	—	—	—	—	—	—	10	2.07	3.11
4601	—	—	—	—	—	—	10	2.09	3.14

LEGEND

BkW — Brake Kilowatts
ESP — External Static Pressure (Pa)
kW — Input Kilowatts to Motor

50EJ,EK,EW,EY054-068 (175.9 THRU 228.6 kW)									
Airflow (L/s)	Low Speed			Medium Speed			High Speed		
	400 v			400 v			400 v		
	ESP	BkW	kW	ESP	BkW	kW	ESP	BkW	kW
3777	130	1.43	2.880	—	—	—	—	—	—
4013	105	1.48	2.980	—	—	—	—	—	—
4249	95	1.51	3.040	122	1.63	3.280	—	—	—
4485	85	1.55	3.115	105	1.67	3.360	142	1.92	3.860
4721	75	1.59	3.205	90	1.71	3.450	117	1.96	3.940
4957	35	1.67	3.360	75	1.76	3.550	105	2.00	4.020
5193	—	—	—	57	1.81	3.640	85	2.03	4.080
5429	—	—	—	42	1.86	3.740	70	2.09	4.220
5665	—	—	—	30	1.90	3.830	55	2.14	4.320
5901	—	—	—	22	1.94	3.900	42	2.19	4.420
6137	—	—	—	15	1.97	3.970	32	2.23	4.500
6373	—	—	—	—	—	—	15	2.28	4.600
6609	—	—	—	—	—	—	15	2.31	4.660
6845	—	—	—	—	—	—	7	2.33	4.690
7082	—	—	—	—	—	—	—	—	—

LEGEND

BkW — Brake Kilowatts
ESP — External Static Pressure (Pa)
kW — Input Kilowatts to Motor

FAN PERFORMANCE — POWER EXHAUST (50 Hz) (English)

50EJ,EK,EW,EYJ024-044 (20 THRU 40 TONS)									
Airflow (Cfm)	Low Speed			Medium Speed			High Speed		
	400 v			400 v			400 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
5417	0.49	1.72	1933	—	—	—	—	—	—
5583	0.44	1.75	1968	0.57	1.87	2095	—	—	—
5750	0.41	1.79	2002	0.54	1.90	2130	—	—	—
5917	0.39	1.80	2020	0.51	1.93	2164	—	—	—
6083	0.37	1.82	2043	0.47	1.96	2199	—	—	—
6250	0.35	1.85	2072	0.44	1.99	2234	—	—	—
6417	0.33	1.87	2095	0.41	2.01	2257	0.51	2.30	2581
6583	0.31	1.89	2124	0.38	2.04	2286	0.48	2.33	2610
6750	0.28	1.93	2159	0.34	2.06	2315	0.45	2.35	2639
7083	—	—	—	0.28	2.13	2384	0.39	2.38	2674
7417	—	—	—	0.21	2.18	2448	0.33	2.45	2743
7750	—	—	—	0.15	2.24	2512	0.26	2.53	2836
8083	—	—	—	0.11	2.29	2564	0.21	2.59	2899
8417	—	—	—	0.08	2.33	2616	0.16	2.64	2957
8750	—	—	—	—	—	—	0.12	2.69	3021
9083	—	—	—	—	—	—	0.08	2.75	3084
9417	—	—	—	—	—	—	0.05	2.78	3113
9750	—	—	—	—	—	—	0.03	2.80	3137

LEGEND

Bhp — Brake Horsepower
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

50EJ,EK,EW,EY054-068 (50 THRU 65 TONS)									
Airflow (Cfm)	Low Speed			Medium Speed			High Speed		
	400 v			400 v			400 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
8,000	0.52	2.57	2880	—	—	—	—	—	—
8,500	0.42	2.66	2980	—	—	—	—	—	—
9,000	0.38	2.71	3040	0.49	2.93	3280	—	—	—
9,500	0.34	2.78	3115	0.42	3.00	3360	0.57	3.44	3860
10,000	0.30	2.86	3205	0.36	3.08	3450	0.47	3.51	3940
10,500	0.14	3.00	3360	0.30	3.17	3550	0.42	3.59	4020
11,000	—	—	—	0.23	3.25	3640	0.34	3.64	4080
11,500	—	—	—	0.17	3.34	3740	0.28	3.76	4220
12,000	—	—	—	0.12	3.42	3830	0.22	3.85	4320
12,500	—	—	—	0.09	3.48	3900	0.17	3.94	4420
13,000	—	—	—	0.06	3.54	3970	0.13	4.01	4500
13,500	—	—	—	—	—	—	0.06	4.10	4600
14,000	—	—	—	—	—	—	0.05	4.16	4660
14,500	—	—	—	—	—	—	0.03	4.18	4690
15,000	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

Electrical data



UNIT 50EJ,EK, EW,EY	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR				OFM			IFM		POWER EXHAUST		ELECTRIC HEAT*		POWER SUPPLY			
				No. 1		No. 2														
		Min	Max	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	Hp	FLA	FLA	LRA	kW	FLA	MCA	MOCP†		
024	400-3-50	342	440	19.9	114	11.5	80	2	1	2.8	5	7.9	— 26.0	— 45.8	— 25	— 36.1	49.9 75.8	60 90		
													— 26.0	— 45.8	25 25	36.1 36.1	55.0 87.4	60 90		
													— 26.0	— 45.8	50 50	72.2 72.2	100.1 132.5	110 150		
													— 26.0	— 45.8	— —	— —	56.6 82.5	70 100		
													— 26.0	— 45.8	25 25	36.1 36.1	63.4 95.8	70 100		
													— 26.0	— 45.8	50 50	72.2 72.2	108.5 140.9	110 150		
											10	14.6	— 26.0	— 45.8	— —	— —	63.9 89.8	80 100		
													— 26.0	— 45.8	25 25	36.1 36.1	72.5 104.9	80 110		
													— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175		
													15	21.9	— 26.0	— 45.8	— —	— —	63.3 89.3	80 100
															— 26.0	— 45.8	25 25	36.1 36.1	63.3 93.8	80 100
															— 26.0	— 45.8	50 50	72.2 72.2	106.5 138.9	110 150
10	14.6	— 26.0	— 45.8	— —	— —	64.9 90.9	80 110													
		— 26.0	— 45.8	25 25	36.1 36.1	64.9 95.8	80 110													
		— 26.0	— 45.8	50 50	72.2 72.2	108.5 140.9	110 150													
		15	21.9	— 26.0	— 45.8	— —	— —	72.2 98.2	90 110											
				— 26.0	— 45.8	25 25	36.1 36.1	72.5 104.9	90 110											
				— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175											
028	400-3-50	342	440	19.9	114	19.9	114	2	1	2.8	7.5	13	— 26.0	— 45.8	— 25	— 36.1	63.3 89.3	80 100		
													— 26.0	— 45.8	25 25	36.1 36.1	63.3 93.8	80 100		
													— 26.0	— 45.8	50 50	72.2 72.2	106.5 138.9	110 150		
													— 26.0	— 45.8	— —	— —	64.9 90.9	80 110		
													— 26.0	— 45.8	25 25	36.1 36.1	64.9 95.8	80 110		
													— 26.0	— 45.8	50 50	72.2 72.2	108.5 140.9	110 150		
											10	14.6	— 26.0	— 45.8	— —	— —	72.2 98.2	90 110		
													— 26.0	— 45.8	25 25	36.1 36.1	72.5 104.9	90 110		
													— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175		
													15	21.9	— 26.0	— 45.8	— —	— —	79.4 105.4	100 125
															— 26.0	— 45.8	25 25	36.1 36.1	79.4 105.4	100 125
															— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175
15	21.9	— 26.0	— 45.8	— —	— —	86.2 112.2	110 125													
		— 26.0	— 45.8	25 25	36.1 36.1	86.2 113.4	110 125													
		— 26.0	— 45.8	50 50	72.2 72.2	126.1 158.5	150 175													
		20	28.7	— 26.0	— 45.8	— —	— —	77.9 103.9	100 125											
				— 26.0	— 45.8	25 25	36.1 36.1	77.9 103.9	100 125											
				— 26.0	— 45.8	50 50	72.2 72.2	108.5 140.9	110 150											
030	400-3-50	342	440	25.6	120	19.9	114	2	1	2.8	10	14.6	— 26.0	— 45.8	— 25	— 36.1	72.1 98.1	90 110		
													— 26.0	— 45.8	25 25	36.1 36.1	72.1 98.1	90 110		
													— 26.0	— 45.8	50 50	72.2 72.2	108.5 140.9	110 150		
													— 26.0	— 45.8	— —	— —	79.4 105.4	100 125		
													— 26.0	— 45.8	25 25	36.1 36.1	79.4 105.4	100 125		
													— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175		
											15	21.9	— 26.0	— 45.8	— —	— —	86.2 112.2	110 125		
													— 26.0	— 45.8	25 25	36.1 36.1	86.2 113.4	110 125		
													— 26.0	— 45.8	50 50	72.2 72.2	126.1 158.5	150 175		
													20	28.7	— 26.0	— 45.8	— —	— —	77.9 103.9	100 125
															— 26.0	— 45.8	25 25	36.1 36.1	77.9 103.9	100 125
															— 26.0	— 45.8	50 50	72.2 72.2	108.5 140.9	110 150
034	400-3-50	342	440	25.6	120	25.6	120	2	1	2.8	10	14.6	— 26.0	— 45.8	— 25	— 36.1	77.9 103.9	100 125		
													— 26.0	— 45.8	25 25	36.1 36.1	77.9 103.9	100 125		
													— 26.0	— 45.8	50 50	72.2 72.2	108.5 140.9	110 150		
													— 26.0	— 45.8	— —	— —	85.2 111.2	110 125		
													— 26.0	— 45.8	25 25	36.1 36.1	85.2 111.2	110 125		
													— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175		
											15	21.9	— 26.0	— 45.8	— —	— —	92.0 118.0	110 125		
													— 26.0	— 45.8	25 25	36.1 36.1	92.0 118.0	110 125		
													— 26.0	— 45.8	50 50	72.2 72.2	126.1 158.5	150 175		
													20	28.7	— 26.0	— 45.6	— —	— —	92.0 118.0	110 125
															— 26.0	— 45.8	25 25	36.1 36.1	92.0 118.0	110 125
															— 26.0	— 45.8	50 50	72.2 72.2	126.1 158.5	150 175

NOTE: See legend and notes on page 68.

UNIT 50EJ,EW	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR				OFM			IFM		POWER EXHAUST		ELECTRIC HEAT*		POWER SUPPLY	
				No. 1		No. 2												
		Min	Max	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	Hp	FLA	FLA	LRA	kW	FLA	MCA	MOCP†
038	400-3-50	342	440	25.6	120	25.6	120	2	1	2.8	10	14.6	— 26.0	— 45.8	— —	— —	83.5 109.5	100 125
													— 26.0	— 45.8	25 25	36.1 36.1	83.5 109.5	100 125
													— 26.0	— 45.8	50 50	68.4 68.4	111.3 140.8	125 150
													— 26.0	— 45.8	— —	— —	90.8 116.8	110 125
													— 26.0	— 45.8	25 25	36.1 36.1	90.8 116.8	110 125
													— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175
											15	21.9	— 26.0	— 45.8	— —	— —	97.6 123.6	110 150
													— 26.0	— 45.8	25 25	36.1 36.1	97.6 123.6	110 150
													— 26.0	— 45.8	50 50	72.2 72.2	126.1 158.5	150 175
													— 26.0	— 45.8	— —	— —	104.8 130.8	125 150
													— 26.0	— 45.8	25 25	36.1 36.1	104.8 130.8	125 150
													— 26.0	— 45.8	50 50	72.2 72.2	126.1 158.5	150 175
20	28.7	— 26.0	— 45.8	— —	— —	113.5 139.5	125 150											
		— 26.0	— 45.8	25 25	36.1 36.1	113.5 139.5	125 150											
		— 26.0	— 45.8	50 50	72.2 72.2	137.0 169.4	150 175											
		— 26.0	— 45.8	— —	— —	118.4 157.2	150 200											
		— 38.94	— 68.64	37.5 37.5	54.1 54.1	118.4 157.3	150 200											
		— 38.94	— 68.64	75 75	108.3 108.3	135.6 184.3	150 200											
044	400-3-50	342	440	28.8	173	28.8	173	4	1	2.8	15	21.9	— 26.0	— 45.8	— —	— —	98.0 124.0	125 150
													— 26.0	— 45.8	25 25	36.1 36.1	98.0 124.0	125 150
													— 26.0	— 45.8	50 50	72.2 72.2	117.6 150.0	125 175
													— 26.0	— 45.8	— —	— —	104.8 130.8	125 150
													— 26.0	— 45.8	25 25	36.1 36.1	104.8 130.8	125 150
													— 26.0	— 45.8	50 50	72.2 72.2	126.1 158.5	150 175
											20	28.7	— 26.0	— 45.8	— —	— —	113.5 139.5	125 150
													— 26.0	— 45.8	25 25	36.1 36.1	113.5 139.5	125 150
													— 26.0	— 45.8	50 50	72.2 72.2	137.0 169.4	150 175
													— 38.94	— 68.64	— —	— —	133.9 172.8	175 200
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	133.9 172.8	175 200
													— 38.94	— 68.64	75 75	108.3 108.3	155.0 200	175
054	400-3-50	342	440	43.6	223	30.8	173	4	1	2.8	15	21.9	— 38.94	— 66.64	— —	— —	118.4 157.2	150 200
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	118.4 157.3	150 200
													— 38.94	— 68.64	75 75	108.3 108.3	135.6 184.3	150 200
													— 38.94	— 68.64	— —	— —	125.2 164.1	150 200
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	125.2 164.1	150 200
													— 38.94	— 68.64	75 75	108.3 108.3	144.1 192.8	150 200
											20	28.7	— 38.94	— 68.64	— —	— —	133.9 172.8	175 200
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	133.9 172.8	175 200
													— 38.94	— 68.64	75 75	108.3 108.3	155.0 200	175
													— 38.94	— 68.64	— —	— —	142.0 163.0	175 200
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	142.0 180.9	175 225
													— 38.94	— 68.64	75 75	108.3 108.3	144.1 192.8	175 225
058	400-3-50	342	440	52.6	253	30.8	173	6	1	2.8	20	28.7	— 38.94	— 68.64	— —	— —	142.0 163.0	175 200
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	142.0 180.9	175 225
													— 38.94	— 68.64	75 75	108.3 108.3	144.1 192.8	175 225
													— 38.94	— 68.64	— —	— —	150.7 189.6	200 225
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	150.7 189.6	200 225
													— 38.94	— 68.64	75 75	108.3 108.3	155.0 203.7	200 225
											25	37.4	— 38.94	— 68.64	— —	— —	157.1 196.0	200 225
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	157.1 196.0	200 225
													— 38.94	— 68.64	75 75	108.3 108.3	163.0 211.7	200 225
													— 38.94	— 68.64	— —	— —	157.1 196.0	200 225
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	157.1 196.0	200 225
													— 38.94	— 68.64	75 75	108.3 108.3	163.0 211.7	200 225

NOTE: See legend and notes on page 68.

Electrical data (cont)



UNIT 50EJ,EK,EW,EY	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR				OFM			IFM		POWER EXHAUST		ELECTRIC HEAT*		POWER SUPPLY			
				No. 1		No. 2														
		Min	Max	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	Hp	FLA	FLA	LRA	kW	FLA	MCA	MOCP†		
064	400-3-50	342	440	52.6	253	43.6	223	6	1	2.8	25	37.4	— 38.94	— 68.64	— —	— —	163.5 202.4	200 225		
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	163.5 202.4	200 300		
													— 38.94	— 68.64	75 75	108.3 108.3	163.5 203.7	200 300		
													— 38.94	— 68.64	— —	— —	169.9 208.8	200 225		
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	169.9 208.8	200 300		
													— 38.94	— 68.64	75 75	108.3 108.3	169.9 211.7	200 300		
											30	43.8	— 38.94	— 68.64	— —	— —	189.1 228.0	225 250		
													— 38.94	— 68.64	37.5 37.5	54.1 54.1	189.1 228.0	225 300		
													— 38.94	— 68.64	75 75	108.3 108.3	189.1 235.7	300 300		
													40	63.0	— 38.94	— 68.64	— —	— —	172.5 211.4	225 225
															— 38.94	— 68.64	37.5 37.5	54.1 54.1	172.5 211.4	225 300
															— 38.94	— 68.64	75 75	108.3 108.3	172.5 211.4	225 300
											25	43.8			— 38.94	— 68.64	— —	— —	178.9 217.8	225 225
															— 38.94	— 68.64	37.5 37.5	54.1 54.1	178.9 217.8	225 300
															— 38.94	— 68.64	75 75	108.3 108.3	178.9 217.8	225 300
													40	63.0	— 38.94	— 68.64	— —	— —	198.1 237.0	200 250
															— 38.94	— 68.64	37.5 37.5	54.1 54.1	198.1 237.0	300 300
															— 38.94	— 66.64	75 75	108.3 108.3	198.1 237.0	300 300

LEGEND

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

*Heater capacity (kW) is based on heater voltage of 380 and 400 v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly.

†Fuse or HACR circuit breaker.

NOTES:

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

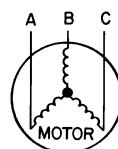
2. Unbalanced 3-Phase Supply Voltage

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

% Voltage Imbalance

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

EXAMPLE: Supply voltage is 400-3-50.



$$\begin{aligned} AB &= 393 \text{ v} \\ BC &= 403 \text{ v} \\ AC &= 396 \text{ v} \\ \text{Average Voltage} &= \frac{393 + 403 + 396}{3} \\ &= \frac{1192}{3} \\ &= 397 \end{aligned}$$

Determine maximum deviation from average voltage.

$$(AB) 397 - 393 = 4 \text{ v}$$

$$(BC) 403 - 397 = 6 \text{ v}$$

$$(AC) 397 - 396 = 1 \text{ v}$$

Maximum deviation is 6 v.

Determine percent of voltage imbalance.

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{6}{397} \\ &= 1.5\% \end{aligned}$$

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

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

- MCA calculation for units with electric heaters over 50 kW = (1.25 x IFM amp) + (1.00 x heater FLA).
- 75 kW heaters are for constant volume applications only.

Controls options

The control options that the units can provide are based on the following parameters: CV (constant volume) or VAV (variable air volume) operation; stand-alone unit with field-supplied sensors installed (CV or VAV); as a system via the Carrier Comfort System (TEMP or VVT® [Variable Volume and Temperature]); optional electronic expansion board installed (CV or VAV); linked to the Carrier Comfort Network; and availability of a computer and software (Comfort Works™, Building Supervisor, and Service Tool software, or accessory LID-2B) to access the base control board.

NOTE: Access to the base control board allows unit occupancy schedules, unit timeclock, and various set points to be changed from their factory-defined default settings. The supply fan's speed is controlled by the variable frequency drive (VFD). The VFD operates independently of the unit's microprocessor and is controlled by supply duct pressure via a unit mounted 4 to 20 mA output transducer.

Every unit is equipped with a supply-air thermistor (SAT) located in the supply fan discharge and an outdoor-air thermistor (OAT) located in the outdoor air hood. Variable air volume units are supplied with a return-air thermistor (RAT) located in the return air damper for heat control.

Constant volume applications — The units, as shipped, are operable as stand-alone units, using either a standard (mechanical or electronic) 2-stage heat, 2-stage cool thermostat, or with an electronic room sensor and a timeclock to establish unit start and stop times.

With a standard thermostat (programmable is optional), heating and cooling operation is set by space temperature.

With a space sensor and field-supplied timeclock, the machine will operate at default values unless they are changed using appropriate input devices. The space sensor senses space temperature and may be equipped with a timed override feature, which allows unit operation during unoccupied periods.

The space sensors may be used in multiples of 4 or 9 to achieve space temperature averaging. The use of a space sensor also allows the unit to be turned on and off from a remote signal.

Features with Thermostat Control of Unit

- two-stage heating (if installed)
- two-stage cooling
- control of unit using Y1, Y2, W1, W2, and G thermostat inputs
- control of the indoor fan
- outdoor air temperature/supply air temperature monitoring
- control of an outdoor air condenser fan based on outdoor air temperature
- control of modulating economizer damper to provide free cooling when outdoor conditions are suitable, using supply-air temperature as a control point
- control of the economizer damper and indoor fan to obtain unoccupied free cooling
- provide power exhaust output to an external power exhaust controller
- support a field test for field checkout
- control of 2 stages of CV power exhaust

- compressor Time Guard® override (power up and minimum off and on times)
- compressor lockout during low supply air temperature

Additional features are provided by accessing the standard unit control board via software with a computer. These features are:

- electronic expansion board features (if installed)
- control board diagnostics
- ability to change supply air set point (economizer control)
- ability to change high outdoor air temperature lockout set point (economizer control)
- ability to change power exhaust set points

NOTE: A CV unit without a thermostat requires a field-supplied sensor for operation.

Features with Sensor Control of Unit (Stand-Alone Applications) — Unit control is limited to CV unoccupied default set points, 32 C (90 F) for cooling, 13 C (55 F) for heating. There are 2 sensor options available:

- T-55 sensor will monitor room temperature and provide unoccupied override capability (1 hour)
- T-56 sensor will monitor room temperature, provide unoccupied override capability (1 hour), and provide a temperature offset of 3° C (5° F) maximum.

Standard features are:

- support of remote occupied/unoccupied input to start and stop the unit
- cooling capacity control of 3 stages using economizer and 2 compressors to maintain space temperature to an occupied or unoccupied set point
- enable heating (if installed) or cooling during unoccupied periods as required to maintain space temperature within the unoccupied set points
- adjustment of space temperature set points of $\pm 3^{\circ}\text{C}$ (5° F) when using a T-56 sensor

Features with sensor control of unit (with computer access or LID-2B accessory) are:

- 365-day timeclock with backup (supports minute, hour, day of week, date, month, and year)
- daylight savings time function
- occupancy control with 8 periods for unit operation
- holiday table containing up to 18 holiday schedules
- ability to initiate timed override from T-55 or T-56 sensors (for a timed period of 1 to 4 hours)
- ability to use multiple space temperature sensors to average the space temperature
- supply air temperature reset for the supply air temperature set point
- temperature compensated start to calculate early start times before occupancy
- access to the Display, Maintenance, Configuration, Service, and Set Point data table through Carrier Comfort Network software

When the unit is equipped with a field-supplied space temperature sensor and a remote contact closure (remote start/stop) on the base control board, the occupied default set points will monitor unit operation. The occupied default set points are 26 C (78 F) cooling and 20 C (68 F) heating (if electric heat is installed).

NOTE: For units (with a field-supplied space temperature sensor) which have not had the base unit control board accessed via software to set an occupancy schedule, the remote start/stop closure will allow the unit to operate in the pre-configured occupied default set points (based on space temperature) of 26 C (78 F) cooling and 20 C (68 F) heating. Without this feature, the unit will control to the unoccupied default set points of 32 C (90 F) cooling and 13 C (55 F) heating (if electric heat is installed).

An electronic expansion board may be field-installed to provide the following features:

- control of modulating economizer damper to maintain indoor air quality (IAQ) when outdoor conditions are suitable

NOTE: The IAQ sensor must be set for current output (4 to 20 mA). This requires removing the sensor cover and moving a jumper on the sensor.

- provide discrete inputs for fan status, filter status, field-applied status, and demand limit
- provide an output for the external alarm light indicator
- perform demand limit functions based on a field-supplied discrete input
- provide power exhaust fire outputs for direct control of modulated power exhaust stages during fire or smoke modes
- smoke control modes including evacuation, smoke purge, pressurization, and fire shutdown (modulating power exhaust required)

When the unit is connected to the CCN (Carrier Comfort Network), the following expansion board features can be utilized.

- perform Demand Limit functions based on CCN loadshed commands or the state of the discrete input
- alarm monitoring of all key parameters
- CCN protocol
- provides CCN IAQ participation

See Carrier TEMP or VVT® literature for complete TEMP (single zone) or VVT (multi-zone) application information.

Features with Sensor Control of Unit (Network Applications) —

The base control board provides, as standard, a connection for use with a Carrier VVT system and can also be integrated into a Carrier Comfort Network.

When the unit is accessed via a PC equipped with ComfortWorks™, Building Supervisor, or Service Tool software or accessory LID-2B, the following features can be accessed:

- on-board timeclock can be programmed
- occupancy schedules can be programmed
- unit set points can be changed
- alarms can be monitored

This access is available on the base control board via a RJ-11 phone jack or a 3-wire connection to the communication bus. The timeclock has a 10-hour minimum backuptime to provide for unit power off for servicing unit or during unexpected power outages. For complete Carrier Comfort System (CCS) and Carrier Comfort Network (CCN) features and benefits, refer to the product literature.

Variable air volume (VAV) applications

Features with Stand-Alone Applications — The units, as shipped, are operable as stand-alone units with the addition of a field-supplied timeclock to establish unit start and stop times.

Heating (if equipped with electric heat) and cooling in both on and off modes are controlled to default values by the base unit control. Set points may be changed with appropriate input devices.

The control has an on-board occupancy schedule which can be set using an input device and eliminates the need for an external timeclock.

During both the on and off periods, cooling operation is controlled to the supply air setting and heating is controlled to the return air setting (or to the optional space temperature sensor). During the on period, the supply fan runs continuously. During the off period, the supply fan will be activated if the return air sensor is outside of the set points and will run long enough to accurately sample the space temperature. The supply fan will then continue to run until any heating or cooling load is satisfied, at which point it will turn off. The supply fan speed is controlled by the Variable Frequency Drive (VFD). The VFD operates independently of the unit's microprocessor and is controlled by supply duct pressure via a unit-mounted 4 to 20 mA output transducer.

The use of a space sensor will allow for supply air reset to conserve energy and maintain comfort. Supply-air reset is also attained by a 4 to 20 mA input to the microprocessor, providing 0° to 11.2° C (0° to 20° F) reset. If equipped with an override feature, the sensor will allow operation during the off period for a fixed length of time.

Base unit control supports a Heat Interlock Relay (field supplied) to fully open the VAV terminal devices during heating operation.

Standard features of a VAV unit with a remote start/stop switch are:

- control board diagnostics
- control of an outdoor condenser fan based upon outdoor-air temperature
- control of modulating economizer to provide free cooling when outdoor conditions are suitable, using supply-air temperature as a set point
- support of remote occupied/unoccupied input to start or stop the unit
- provide power exhaust output to an external power exhaust controller
- support supply air temperature reset to offset supply air set point
- support a field test for field check out
- support linkage to DAV (digital air volume) systems
- cooling capacity control of up to 6 stages plus economizer with compressors and unloaders to maintain supply-air temperature set point during occupied periods
- control of one stage of heat to maintain air temperature
- control of heat interlock relay
- compressor Time Guard® override (power up, minimum off and on times)

With the addition of a remote start/stop switch, heating or cooling is enabled during unoccupied periods as required to maintain space temperature to within unoccupied set points.

Occupied heating is enabled or disabled by the position of DIP (dual in-line package) switch no. 5.

Additional features may be provided with electronic access to unit control board. These features are:

- additional control board diagnostics
- electronic expansion board features (if installed)
- control of the economizer damper and indoor fan to option unoccupied free cooling
- 365-day timeclock with backup (supports minute, hour, day, month, and year)
- holiday table containing up to 18 holiday schedules
- occupancy control with 8 periods for unit operation
- support a set of display, maintenance, configuration, service, and set point data tables for interface with Building Supervisor, ComfortWorks™, or Service Tool software or LID-2B accessory

When a VAV unit with a space temperature sensor is accessed via a computer, the following additional features are available:

- ability to initiate timed override from T-55 sensors
- temperature compensated start to calculate early start time before occupancy
- provide space temperature reset to reset the supply air set point upward when the temperature falls below the occupied cooling set point (sensor operation only)

An electronic expansion board may be field-installed to provide the following features:

- fan status
- filter status
- field-applied status
- demand limiting
- IAQ (indoor air quality) sensor
- OAQ (outdoor air quality) sensor
- fire unit shutdown
- fire pressurization
- fire evacuation
- fire smoke purge
- alarm light

When the unit is connected to the CCN (Carrier Comfort Network), the following expansion board features can be utilized:

- CCN IAQ participation
- CCN OAQ participation
- CCN demand limit participation
- ability to use multiple space temperature sensors (multiples of 4 or 9 only) to average space temperature (DAV only)

A field-supplied space temperature sensor can be added to allow an accessory T-55 sensor to monitor room temperature and provide unoccupied override capability (1 hour)

When the unit is equipped with a field-supplied space temperature sensor and a remote contact closure (remote start/stop), the occupied default set points will monitor unit operation. The occupied default set points are 13 C (55 F) (supply air) cooling and 20 C (68 F) (return air temperature) heating (if electric heat is installed).

NOTE: For units without a space temperature sensor and which have not had the base unit control board accessed via software to set an occupancy schedule, the remote start/stop closure will allow the unit to operate in the pre-configured occupied default set points of 13 C (55 F) (supply-air temperature) cooling and 20 C (68 F) (return-air temperature) heating. Without an occupancy schedule, the unit will control to the unoccupied default set points of 32 C (90 F) (return air) cooling and 13 C (55 F) (return air) heating (if electric heat is installed).

Features with Network Applications — The base control board provides, as standard, a connection for use with a Carrier Comfort System and can also be integrated into a Carrier Comfort Network. When the unit is accessed via a PC equipped with ComfortWorks, Building Supervisor, or Service Tool software or LID-2B accessory, the following features can be accessed:

- on-board timeclock can be programmed
- occupancy schedules can be programmed
- unit set points can be changed
- alarms can be monitored

This access is available on the base control board via a RJ-11 phone jack or a 3-wire connection to the communication bus. The timeclock has a 10-hour minimum back-up time to provide for unit power off for servicing unit or during unexpected power outages. For complete Carrier Comfort System (CCS) or Carrier Comfort Network (CCN) features and benefits, refer to the product literature.

Sequence of operation

NOTE: Unit is shipped with default values that can be changed through Service Tool or CCN software, or with an LID-2B accessory.

Cooling, constant volume (CV) units — On power up, the control module will activate the initialization software. The initialization software reads each DIP switch to determine the unit configuration. The initialization sequence: clears all alarms and alerts; re-maps the input/output database for CV operation; sets maximum heat stages to 2; and sets maximum cool stages to 3. The control module reads DIP switch no. 3 and determines if the unit will use expansion mode operation.

The TSTAT function performs a thermostat based control by monitoring Y1, Y2, W1, W2, and G inputs. These functions control stages: cool1, cool2, heat1, heat2, and the indoor fan, respectively. If the TSTAT function is not selected, the control module determines the occupancy state based on the system time schedules with a field-supplied sensor installed, or with remote occupied/unoccupied input. If Temperature Compensated Start is active, the unit will be controlled as in the Occupied mode. User defined set points are shown on page 76.

Occupied or unoccupied comfort set points must be selected, and the space temperature offset input will be used if present. The control module will set appropriate operating mode and fan control. The control module will turn on indoor fan if in Occupied mode or if the unit is in Unoccupied mode and the space temperature is outside of the unoccupied comfort set points (Unoccupied Heat or

Unoccupied Cool). The control module will then monitor space temperature against comfort set points and control heating or cooling stages as required. If the system is in the Occupied mode, the economizer will operate as required. If the system is in Unoccupied mode, the system will perform nighttime free cool and IAQ (indoor air quality) pre-occupancy purge as required (when functions are enabled via software). Whenever the DX (direct expansion) cooling is requested, the outdoor fan will operate.

The control module will operate economizer, run diagnostics to monitor alarms/alerts at all times, and respond to CCN communications to perform any configured network POC (product outboard control) functions such as time/outdoor-air temperature broadcast and global occupancy broadcast. When the optional expansion I/O board is employed, it will: perform a periodic scan and maintain a database of expanded I/O points; perform Fire/Smoke control (power exhaust required); if in Occupied mode, perform IAQ control and monitor the fan, filter, demand limit, and field-applied status (with accessories).

If thermostats are used to energize the G input, the control module will turn on the indoor fan without delay and open the economizer dampers to minimum position. If thermostats are used to deenergize the G input, the control module will turn off the indoor fan without delay and close the economizer dampers.

When cooling, G must be energized before cooling can operate. The control module determines if outdoor conditions are suitable for economizer cooling using the standard outdoor air thermistor. For the economizer to function for outside air cooling: the enthalpy must be below the enthalpy set point; the outdoor-air temperature must be equal to or less than the High Outdoor Air Temperature Lock-out (default is 18 C [65 F]); the SAT (supply-air temperature) thermistor must not be in alarm; and the outdoor air reading is available. When these conditions are satisfied, the control module will use economizer as the first stage of cooling.

When Y1 input is energized, the economizer will be modulated to maintain SAT at the defined set point. (The default is 13 C [55 F].) When SAT is above the set point, the economizer will be 100% open. When SAT is below the set point, the economizer will modulate between minimum and 100% open position. When Y2 is energized, the control module will turn on compressor no. 1 and continue to modulate the economizer as described above. If the Y2 remains energized and the SAT reading remains above the set point for 15 minutes, compressor no. 2 will turn on. If Y2 is deenergized at any time, only the last stage of compression that was energized will be turned off. If outdoor conditions are not suitable for economizer cooling, the economizer will go to minimum position and cycle compressors no. 1 and 2 based on demand from Y1 and Y2 respectively. The compressors will be locked out when the SAT temperature is too low (less than 4 C [40 F] for compressor no. 1 and less than 7 C [45 F] for compressor no. 2). After a compressor is locked out, it can restart after normal time-guard period.

The Time Guard® function maintains a minimum off time of 5 minutes, a minimum on time of 10 seconds, and a minimum delay before starting the second compressor of 10 seconds.

When heating, the heat stages respond to the demand from W1 and W2 of the thermostat input. Heating and cooling will be mutually locked out on demand on a first call basis. The heating and the cooling functions cannot operate simultaneously.

Cooling, variable air volume units — On power up, the control module will activate the initialization software. The initialization software reads each DIP switch to determine the unit configuration. The initialization sequence: clears all alarms and alerts; re-maps the input/output database for VAV operation; sets maximum heat stages to 1; and sets maximum cool stages to 6. The control module reads DIP switch no. 3 and determines if the unit will use expansion mode operation. Power up takes a random time of 1 to 63 seconds plus 5 minutes the first time power is sent to the control board after a power outage.

The control module will determine if an interface (linkage) is active and if the unit will operate in a Digital Air Volume (DAV) mode. In a DAV system, the room terminals are equipped with microprocessor controls that give commands to the base unit module. If a linkage is active, the control module will replace local comfort set points, space and return air temperatures, and occupancy status with the linkage data supplied.

The control module will determine occupancy status from Time Schedules (if programmed), Remote Occupied/Unoccupied input, global occupancy schedules, or DAV. If temperature compensated start is active, the unit will be controlled as in the Occupied mode.

Temperature compensated start is a period of time calculated to bring the unit on while in Unoccupied mode to reach the occupied set point when occupancy occurs.

The control module will set the appropriate operating mode and fan control. The control module will turn on the VFD if Occupied mode is evident. If in Unoccupied mode and a valid return-air temperature reading is available (either from a sensor or DAV), the control module will monitor return-air temperature against unoccupied heat and cool set points. The control module will start the VFD whenever return-air temperature is outside of the set points (Unoccupied Heat or Unoccupied Cool). The VFD may also be started by nighttime thermostat via remote Occupied/Unoccupied input or by a temperature compensated start algorithm. When the VFD is running in a normal mode, the control module will start heating or cooling as required to maintain supply-air temperature at the supply air set point plus the reset (when enabled). The reset value is determined by SAT (supply-air temperature) reset and/or space temperature reset algorithms. The space temperature reset, requiring an accessory space temperature sensor, is only available when enabled through software.

When cooling, the control module will energize the power exhaust enable output to the external power exhaust controller (when power exhaust is used).

The control module will run continuous diagnostics for alarms/alerts; respond to CCN (Carrier Comfort Network) communications; perform any configured network POC (Product Outboard Control) functions such as time/outdoor air temperature broadcast and global broadcast; and perform Fire/Smoke control.

Heating, constant volume (CV) units — The control module is powered by 24 vac. If the unit is controlled with a room sensor, the fan will run continuously in the Occupied mode, with the outside-air damper in the minimum position. If the unit is controlled through a room thermostat (with FAN set to AUTO), upon a call for heat the first stage of heat is energized, the indoor-fan motor will turn on, and the outdoor-air damper will move to the minimum position. Upon a call for additional heat (if the unit is equipped with a two-stage heater), the second stage of heat is energized. When the call for heat is satisfied, the heaters will deenergize. The indoor-fan motor will also deenergize (unless controlled by a room sensor) and the outdoor-air damper will move to the closed position.

If the unit is controlled with a room sensor the fan will not run in the Unoccupied mode. Upon a call for heat, the first stage of heat is energized, the indoor-fan motor will turn on, and the outdoor air damper will move to the Unoccupied IAQ position (generally set to zero in the Unoccupied mode). The IAQ feature is enabled through system software. Upon a call for additional heat (if the unit is equipped with a two-stage heater), the second stage of heat is energized. When the call for heat is satisfied, the heaters and indoor-fan motor will deenergize and the outdoor-air damper will move to the closed position (if open).

Heating, variable air volume (VAV) units — The control board is powered by 24 vac. When there is a call for heating (from Morning Warm-Up, Unoccupied, or Occupied modes), power is sent from the control module to energize the first stage of electric heat. A field-supplied heat interlock relay signals for the air terminals to fully open. In the Occupied mode, the indoor-fan motor will operate continuously and the outdoor-air dampers will be in the minimum position. In the Unoccupied mode, the indoor-fan motor will be off, but will energize upon the call for heat. The outdoor-air dampers will move to the IAQ unoccupied position (generally set to zero in the Unoccupied mode). The IAQ feature is enabled through system software. The duct pressure sensor will signal to the variable frequency drive to operate at full speed. When the call for heat is satisfied, the heaters will deenergize.

NOTE: The HIR is not needed in a DAV system.

If the unit is in the Unoccupied mode, the indoor-fan motor will deenergize and the outdoor-air damper will move to the closed position (if open).

Variable Air Volume (VAV) occupied heat is controlled by return air temperature (RAT) using a 5k thermistor located just below the outdoor air dampers. A VAV unit without a space temperature sensor is also controlled by RAT. A VAV unit with a space temperature has unoccupied heat controlled by space temperature (SPT).

Morning warm-up (VAV only with PC accessed/CCN operation) — Morning warm-up occurs when the control module has been programmed to turn on heat, prior to the Occupied mode, to be ready for the occupancy. Morning warm-up is a condition in VAV systems that occurs when the Temperature Compensated Start algorithm calculates a biased occupied start time and the unit has a

demand for heating. The warm-up will continue into the occupied period as long as there is a need for heat. During warm-up, the unit can continue heating into the occupied period, even if occupied heating is disabled. When the heating demand is satisfied, the warm-up condition will terminate. To increase or decrease the heating demand, use the network access software to change the occupied heating set point.

NOTE: To utilize morning warm-up mode, the unit occupancy schedule must be accessed via Service Tool, ComfortWorks™, or Building Supervisor software, or an accessory LID-2B.

For current software (version 3.0 or later), the Low Temperature Minimum Damper Position Override (LOWMDP) has a 0 to 100% limit, with a default of 100%. Think of the LOWMDP as a second minimum damper position. This LOWMDP limit change requires access to the unit software with a computer equipped with Building Supervisor, Service Tool, or ComfortWorks software, or an accessory LID-2B.

When the LOWMDP is in effect the outdoor dampers will remain at the LOWMDP position (typically set to “0%” closed) during heating, even in the occupied period. For the LOWMDP to be in effect the LOWMDP must be less than the minimum damper position (MDP). For VAV applications the RAT (return-air temperature) must be less than the OHSP minus 1.12° C (2° F). The following table summarizes the operational requirements and controlling factors for occupied heat and morning warm-up.

**OCCUPIED HEAT AND MORNING WARM-UP
OPERATION REQUIREMENTS AND
CONTROLLING FACTORS**

SOFTWARE VERSION	OCCUPIED HEAT ENABLED VIA	MORNING WARM-UP MAY START DURING	TEMPERATURE CONDITION FOR HEAT TO START
3.0 and 3.1	DIP Switch No. 5	Smart start or within 10 minutes	RAT < OHSP

LEGEND

OHSP — Occupied Heat Set Point
RAT — Return-Air Temperature

Morning warm-up (VAV only with stand-alone operation) — When a unit operates in stand-alone mode, morning warm-up occurs when the unit is energized in Occupied mode and return-air temperature (RAT) is below 20 C (68 F). Warm-up will not terminate until the RAT reaches 20 C (68 F). The heat interlock relay output is energized during morning warm-up. (A field-installed 24-vac heat interlock relay is required.) The output will be energized until the morning warm-up cycle is complete.

Controls (cont)



Space temperature reset (VAV only) — An accessory space temperature sensor (T-55 or T-56 without offset) is required. Space temperature reset is used to reset the supply-air temperature set point of a VAV system higher, as the space temperature falls below the Occupied Cool set point. As the space temperature falls below the cool set point, the supply-air temperature will be reset upward as a function of the reset ratio. Reset ratio is expressed in degrees change in supply-air temperature per degree of space temperature change. A reset limit will exist which will limit the maximum number of degrees the supply-air temperature may be raised. Both the reset ratio and the reset limit are user definable. The sequence of operation is as follows:

1. The on/off status of the unit supply fan is determined.
2. If the fan is on, the sequence will check if the system is in Occupied mode.
3. If the system is in Occupied mode, the sequence will determine if the reset option is enabled.
4. If the reset option is enabled, the sequence will read the space temperature and compare it to the Occupied Cool set point. If the temperature is below the Occupied Cool set point, the algorithm will compute the reset value and compare this value against the reset limit. If it is greater than the reset limit, the sequence will use the reset limit as the reset value.

NOTE: A computer equipped with Carrier network access software (ComfortWorks™, Building Supervisor, or Service Tool) or an accessory LID-2B is required to enable this function.

Supply air temperature reset (VAV only) — A field-supplied 4 to 20 mA input signal enables the supply air temperature to be reset 0° to 11.1° C (0° to 20° F). The supply air temperature reset option does not need to be enabled.

Power exhaust operation — Power exhaust has two options (Constant Volume and Modulating) that have the following sequence of operation:

The first stage of constant volume (CV) power exhaust is enabled when the indoor fan has been energized and the desired damper position for the economizer increases above the CV power exhaust set point (PES1). The default for

PES1 is set at 25%. The second stage of power exhaust is enabled when the desired damper position for the economizer increases above the second CV power exhaust set point (PES2). The default for PES2 is set at 75%. Each stage is disabled when the desired damper position decreases below the respective set points.

The modulating power exhaust is enabled when the indoor fan is energized and the building pressure has exceeded the individual stage sequencer set points. Modulating power exhaust is disabled as the building pressure drops below the disable set point. Both the enable and disable set points are changed at the specific controlling sequencer. See the table below for the default enable and disable values.

MODULATING POWER EXHAUST DEFAULT SET POINTS

STAGE	ENABLE SET POINTS			DISABLE SET POINTS		
	Pressure		VDC	Pressure		VDC
	Pa	in. wg.		Pa	in. wg.	
1	9.9	0.04	6.3	0.0	0.00	6.0
2	24.9	0.10	6.8	14.9	0.06	6.5
3	39.8	0.16	7.3	32.3	0.13	7.0
4	57.2	0.23	7.8	47.2	0.19	7.5
5	72.0	0.29	8.3	62.1	0.25	8.0
6	86.9	0.35	8.8	77.1	0.31	8.5

Smoke control modes — The 50E units with an optional expansion board perform fire and smoke control modes. The expansion board provides 4 modes which can be used to control smoke within the conditioned area. The modes of operation are fire shutdown, pressurization, evacuation, and smoke purge.

Smoke detector — A smoke detector can be used to initiate fire shutdown. This can be accomplished by a set of normally closed pilot relay contacts which will interrupt power from the 24-v transformer, secondary “B” terminal to the control circuit breaker (CB4). The wire that connects these two points is white and labeled “W78.”

The smoke detector may be mounted in the return-air duct or the supply duct. Carrier does not make recommendations as to specific smoke detector location due to liability considerations.

SMOKE CONTROL MODES

DEVICE	PRESSURIZATION	SMOKE PURGE	EVACUATION	FIRE SHUTDOWN
Economizer	100%	100%	100%	0%
Indoor Fan/VFD	ON	ON	OFF	OFF
Power Exhaust (all outputs)	OFF	ON	ON	OFF
Heat Stages	OFF	OFF	OFF	OFF
HIR	ON	ON	OFF	OFF

LEGEND

HIR — Heat Interlock Relay
VFD — Variable Frequency Drive

IAQ control — The accessory expansion board and accessory IAQ sensor are required for IAQ control. The Carrier sensors operate with a 4 to 20 mA signal. The 4 to 20 mA signal is connected to T11 (+) and T12 (–) for the IAQ sensor, and T13 (+) and T14 (–) for the OAQ sensor. The sensor is field-mounted and wired to the expansion board installed in the unit main control box. The IAQ sensor must be powered by a field-supplied 24-v power supply (ungrounded). Do not use the unit 24-v power supply to power the sensor.

Once installed, the sensor must be enabled via unit software access. The sensor is configured with default values which may be changed through network access software. To work properly, the IAQ sensor high and low reference points for the sensor that is used must match the configured values. The expansion board reacts to a 4 to 20 mA signal from the IAQ sensor. The low reference (4 mA output) must be configured to the minimum IAQ sensor reading. The high reference (20 mA output) must be configured to the maximum IAQ sensor reading.

The IAQ sensor can be configured to either low or high priority. The priority value can be changed by the user. The default is low.

Low priority — When the priority is set to low, the initial control is to the IAQ set point, but the outside air damper position will change to its minimum position when the following conditions occur:

- CV units with sensor — when the space temperature is greater than the occupied cooling set point plus 1° C (2° F) or when the space temperature is less than the occupied heating set point minus 1° C (2° F).
- VAV units and CV units with thermostat — when the supply-air temperature is less than the supply-air temperature set point minus 4° C (8° F) or when the supply-air temperature is greater than the supply air temperature set point plus 3° C (5° F) for 4 minutes.
- When the outdoor air quality is greater than the outdoor air quality set point (ppm)

High priority — When the priority is set to high, the IAQ set point controls the outside air damper exclusively, with no regard to comfort conditioning.

Non-Carrier control interface options

The following sections provide information for units that will be accessed or controlled by non-Carrier Energy Management System controls (that is, a control system other than the Carrier Comfort Network [CCN]).

Software access — A computer equipped with Carrier proprietary software (such as Service Tool or Building Supervisor) or with an accessory LID-2B (part no. 30HX900007) will allow data to be read or changed. Dataport (read only) or Datalink (read and write to configurable points) are devices available to communicate with non-Carrier systems. Either means allows the user to change factory default configurations and set points. The rooftop unit does not have an LCD display; there is no method to access these screens using the rooftop unit alone.

Sensors — All units have a supply-air temperature (SAT) sensor located on the fan housing. The SAT sensor is used for economizer control (for CV units with a thermostat and VAV units' supply air set point). An outdoor-air temperature (OAT) sensor is the standard economizer control. The OAT sensor as shipped from the factory is located on the outside edge of the economizer damper at the filter access end of the unit. Variable air volume (VAV) units use a return-air temperature (RAT) sensor for heating control (morning warm-up and occupied heat). The RAT sensor is located in the return air area between the unit bottom and the return air damper. The OAT, SAT, and RAT sensors are all 5K ohm thermistors (Part No. HH79NZ020). See the Control Wiring section, page 79, for sensor wiring.

Start/Stop (On/Off) — Start/Stop is accomplished with a contact closure between terminals R and W1 (software versions 2.0 through current). See the Control Wiring section on page 81 for the Field Control Remote Start/Stop Wiring diagram.

Space temperature offset (CV) — The space temperature offset (STO) offsets a space temperature set point by using a T-56 space sensor (part no. CECCO121503-01). The space temperature offset on terminal T10 provides an analog output that is linearized by the software into the range and is used as an STO bias to offset a set point.

CONTROLS OPTIONS AND CONFIGURATIONS (NON-THERMOSTAT APPLICATIONS)

UNIT CONFIGURATION	DEFAULT COOLING	DEFAULT HEATING
CV or VAV Unit with SPT Sensor	Unoccupied Cooling — 32 C (90 F) (SPT) Occupied Cooling — NA	Unoccupied Heating — 13 C (55 F) (SPT) Occupied Heating — NA
CV Unit with SPT Sensor and Remote Start/Stop Switch	Unoccupied Cooling — 32 C (90 F) (SPT) Occupied Cooling — 26 C (78 F) (SPT)	Unoccupied Heating — 13 C (55 F) (SPT) Occupied Heating — 20 C (68 F) (SPT)
VAV Unit Remote Start/Stop Switch Only	Unoccupied Cooling — 32 C (90 F) (RAT) Occupied Cooling — 13 C (55 F) (SAT)	Unoccupied Heating — 13 C (55 F) (RAT) Occupied Heating — 20 C (68 F) (RAT)*
VAV Unit with SPT Sensor and Remote Start/Stop Switch	Unoccupied Cooling — 32 C (90 F) (SPT) Occupied Cooling — 13 C (55 F) (SAT)	Unoccupied Heating — 13 C (55 F) (SPT) Occupied Heating — 20 C (68 F) (RAT)*

LEGEND

CV — Constant Volume
NA — Not Available
RAT — Return-Air Temperature
SAT — Supply-Air Temperature
SPT — Space Temperature
VAV — Variable Air Volume

*With DIP (dual in-line package) switch no. 5 configured to OPEN (occupied heat enabled).

NOTE: Space temperature sensor and remote start/stop switch are field supplied.

Controls (cont)



Supply air temperature reset (VAV) — The supply air temperature reset uses a 4 to 20 mA input into the control module at terminals T11 (+) and T12 (-). This 4 to 20 mA input will reset the **cooling** supply air set point upward by 0° to 11.2° C (0° to 20° F), proportional to the 4 to 20 mA signal received. For example, a 12 mA signal will produce a 5.6° C (10° F) reset. The unit will cool until the cooling demand has been satisfied. Heat will start (heat interlock relay [HIR] is available even if the unit is not equipped with heat) when the return-air temperature (RAT) is 20 C (68 F) or below and no cooling demand exists. The unit software does not need to be enabled for this function. The VAV temperature reset using a space sensor does require software enabling. See the Control Wiring section on page 80 for the Supply Temperature Reset Wiring diagram.

Economizer — The Johnson Controls economizer damper motor is controlled by a 4 to 20 mA input. Motor control is based on outdoor-air temperature (OAT) or accessory enthalpy sensors. If outdoor-air temperature is suitable for free cooling (when no IAQ or OAQ demand is in effect), the unit will try to control a 13 C (55 F) supply-air temperature (CV

with thermostat or VAV units). The CV units with sensors control to the mid-point of the OCSP (occupied cooling set point) and OHSP (occupied heat set point); that is,

$$20 + \frac{22.2 - 20}{2} = 21.1 \text{ C,}$$

or

$$68 + \frac{72 - 68}{2} = 70 \text{ F.}$$

Read/write interoperability — The following devices allow access to unit control, and require field programming:

- Dataport (software read only, provides ACSII stream output)
- Datalink (software read/write, provides ASCII stream input and output)
- Bac Link (read/write)

Contact Carrier Controls Marketing for pricing and availability information regarding these devices. See page 77 for a list of Dataport/Datalink control points.

USER DEFINED SET POINTS

SET POINT	FORMAT	DESCRIPTION	LIMITS	DEFAULT	
OHSP	xx.xF	Occupied Heat Set Point	13 to 27 C (55 to 80 F)	20 C	68 F
OCSP	xx.xF	Occupied Cool Set Point	13 to 27 C (55 to 80 F)	26 C	78 F
UHSP	xx.xF	Unoccupied Heat Set Point	4 to 27 C (40 to 80 F)	13 C	55 F
UCSP	xx.xF	Unoccupied Cool Set Point	24 to 35 C (75 to 95 F)	32 C	90 F
SASP	xx.xF	Supply Air Set Point	7 to 21 C (45 to 70 F)	13 C	55 F
OATL	xx.xF	Hi OAT Lockout Temperature	13 to 35 C (55 to 75 F)	18 C	65 F
NTLO	xx.xF	Unoccupied OAT Lockout Temperature	4 to 21 C (40 to 70 F)	10 C	50 F
RTIO	xx.x	Reset Ratio	0 to 10	3	3
LIMIT	xx.x°F	Reset Limit	0 to 11° C (0 to 20 F)	5.6° C	10° F
MDP	xxx%	Minimum Damper Position	0 to 100%	20%	20%
LOW MDP	xxx%	Low Temperature Minimum Damper Position Override	0 to 100%	100%	100%
IAQS	xxxx	IAQ Set Point	1 to 5000 PPM	650 PPM	650 PPM
UHDB	xx.x°F	Unoccupied Heating Deadband	0 to 6° C (0 to 10 F)	-.56° C	1° F
UCDB	xx.x°F	Unoccupied Cooling Deadband	0 to 6° C (0 to 10 F)	-.56° C	1° F
LTMP	xx.xF	Low Temp. Min. Position	-18 to 38 C (0 to 100 F)	-12 C	10 F
HTMP	xx.xF	High Temp. Min. Position	-18 to 38 C (0 to 100 F)	2 C	35 F
PES1	xxx%	CV Power Exhaust Stage 1 Point	0 to 100%	25%	25%
PES2	xxx%	CV Power Exhaust Stage 2 Point	0 to 100%	75%	75%

LEGEND

CV — Constant Volume
 IAQ — Indoor Air Quality
 OAT — Outdoor Air Temperature

NOTE: Computer access may be required to reconfigure set points.

50E DATAPORT/DATALINK CONTROL POINTS

SET POINT	DESCRIPTION	SET POINT	DESCRIPTION
SPT	Space Temperature	CV Data	
SAT	Supply-Air Temperature	HS2	Heat Stage 2
RAT	Return-Air Temperature	STO	Space Temp Offset
OAT	Outside-Air Temperature	CVPE1	CV Power Exhaust Stg 1
CLSP	Control Set Point	CVPE2	CV Power Exhaust Stg 2
CCAP	Cooling % Total Capacity	VAV Data	
HCAP	Heating % Total Capacity	HIR	Heat Interlock Relay
ECOS	Economizer Active	SPTRESET	Space Temp Reset
SFSTAT	Supply Fan Status	CMP1	Compressor 1
SF	Fan Relay	CMP1SAFE	Compressor 1 Safety
ECONPOS	Economizer Position	CMP2	Compressor 2
IQMP	Min. Damper Position	CMP2SAFE	Compressor 2 Safety
PEXE	Pwr Exhaust Enable	ULD1	Unloader 1
FLTS	Filter Status	ULD2	Unloader 2
FAS	Field Applied Status	OFC1	Outdoor Fan 1
RMT OCC	Remote Occupied Mode	OFC2	Outdoor Fan 2
General Data		Y1	Y1 — Call for Cool 1
HS1	Heat Stage 1	Y2	Y2 — Call for Cool 2
ENTH	Enthalpy	W1	W1 — Call for Heat 1
IAQI	Indoor Air Quality	W2	W2 — Call for Heat 2
IAQO	Outdoor Air Quality	G	G — Call for Fan
SATRES	SAT Reset	CDEVCODE	CONQUEST DEVICE CODE
ALMLIGHT	Alarm Warning Light	CDEVURST	CONQUEST UNIT RESET
DL	Demand Limit Switch	CDEVBCAK	CONQUEST BROADCAST ACK
EVAC	Evacuation	PE1	Mod Power Exhaust Stg 1
PRES	Pressurization	PE2	Mod Power Exhaust Stg 2
PURG	Smoke Purge	PE3	Mod Power Exhaust Stg 3
FSD	Fire Shutdown	PE4	Mod Power Exhaust Stg 4
		PE5	Mod Power Exhaust Stg 5
		PE6	Mod Power Exhaust Stg 6

I/O CHANNEL DESIGNATIONS BASE MODULE — CV

TERMINAL NO.	ASSIGNMENT	TERMINAL NO.	ASSIGNMENT
T1-2	SPT (CCN) — 10K Ω Thermistor	T23-25	Compressor 2 Safety — DI (24 vac)
T3-4	STO (CCN) — 10K Ω Thermistor	T24-25	Outside Air Enthalpy — DI (24 vac)
T5-6	OAT — 5K Ω Thermistor	T26-27	Economizer Pos. — AO (4-20 mA)
T7-8	SAT — 5K Ω Thermistor	T28-29	Heat 1 Relay — DO (24 vac)
T9-10	—	T30-29	Heat 2 Relay — DO (24 vac)
T11-12	SAT Reset — AI (4 to 20 mA)	T31-32	CV Power Exhaust 1/Modulating Power Exhaust — DO (115 vac)
T13-14	—	T33-32	CV Power Exhaust 2 — DO (115 vac)
T15-16	—	T34-35	Condenser Fan — DO (115 vac)
T17-25	Y1 or Remote Start/Stop — DI (24 vac)	T36-35	OFC2 — DO (115 vac)
T18-25	Y2 — DI (24 vac)	T37-38	—
T19-25	W1 — DI (24 vac)	T39-38	—
T20-25	W2 — DI (24 vac)	K1	Indoor Fan Relay — DO (LV)
T21-25	G — DI (24 vac)	K2	Compr. 1 — DO (HV)
T22-25	Compressor 1 Safety — DI (24 vac)	K3	Compr. 2 — DO (HV)

I/O CHANNEL DESIGNATIONS BASE MODULE — VAV

TERMINAL NO.	ASSIGNMENT	TERMINAL NO.	ASSIGNMENT
T1-2	SPT (CCN) — 10K Ω Thermistor	T23-25	Compressor 2 Safety — DI (24 vac)
T3-4	RAT — 5K Ω Thermistor	T24-25	Outside Air Enthalpy — DI (24 vac)
T5-6	OAT — 5K Ω Thermistor	T26-27	Economizer Pos. — AO (4-20 mA)
T7-8	SAT — 5K Ω Thermistor	T28-29	Heat 1 Relay — DO (24 v)
T9-10	—	T30-29	Heat Interlock Relay — DO (24 v)
T11-12	SAT Reset — AI (4 to 20 mA)	T31-32	Modulated Power Exhaust — DO (24 vac)
T13-14	—	T33-32	—
T15-16	—	T34-35	Condenser Fan — DO (115 vac)
T17-25	Remote Start/Stop — DI (24 vac)	T36-35	OFC2 — DO (115 vac)
T18-25	—	T37-38	Unloader 1 — DO (115 vac)
T19-25	—	T39-38	Unloader 2 — DO (115 vac)
T20-25	—	K1	Indoor Fan Relay — DO (LV)
T21-25	—	K2	Compr. 1 — DO (HV)
T22-25	Compressor 1 Safety — DI (24 vac)	K3	Compr. 2 — DO (HV)

I/O CHANNEL DESIGNATIONS EXPANSION MODULE (Field-Installed) — CV AND VAV

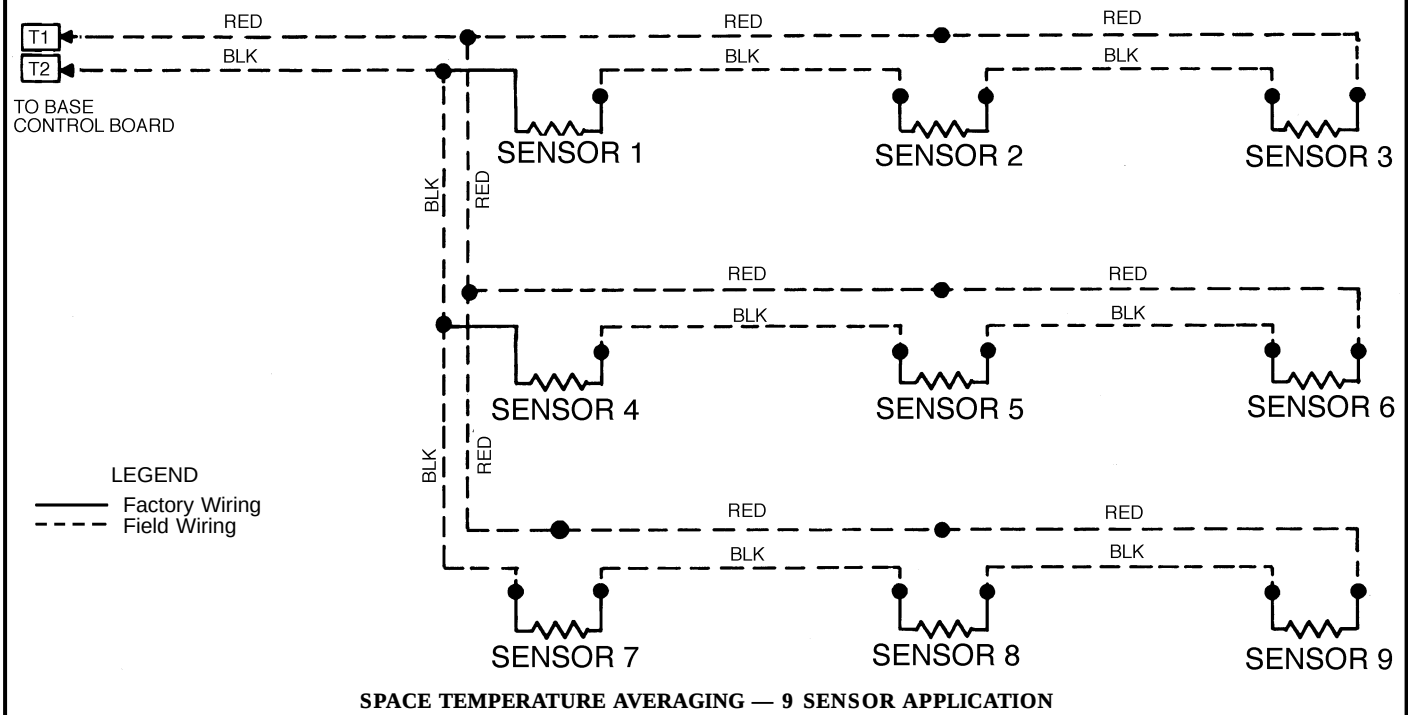
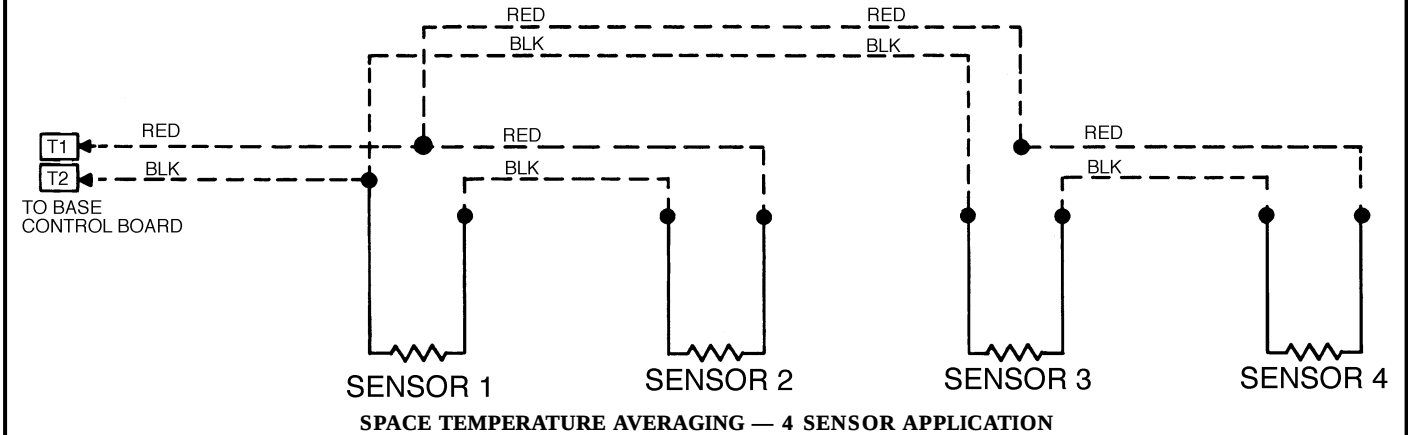
TERMINAL NO.	ASSIGNMENT	TERMINAL NO.	ASSIGNMENT
T1-2	—	T23 and TB2-1	Fire — Evacuation — DI (24 vac)
T3-4	—	T24 and TB2-1	Fire — Smoke Purge — DI (24 vac)
T5-6	—	T26-27	—
T7-8	—	T28-29	—
T9-10	—	T30 and TB2-2	Alarm Light Indicator — DO (24 vac)
T11-12	IAQ Indoor — AI (4 to 20 mA)	T31	Power Exhaust Fire No. 1 — DO (115 vac)
T13-14	IAQ Outdoor — AI (4 to 20 mA)	T33	Power Exhaust Fire No. 2 — DO (115 vac)
T15-16	—	T34	Power Exhaust Fire No. 3 — DO (115 vac)
T17 and TB2-1	Fan Status — DI (24 vac)	T36	Power Exhaust Fire No. 4 — DO (115 vac)
T18 and TB2-1	Filter Status — DI (24 vac)	T37	Modulating Power Exhaust No. 5
T19 and TB2-1	Field Applied Status — DI (24 vac)	T39	Modulating Power Exhaust No. 6
T20 and TB2-1	Demand Limit — DI (24 vac)	K1	—
T21 and TB2-1	Fire — Unit Shutdown — DI (24 vac)	K2	—
T22 and TB2-1	Fire — Pressurization — DI (24 vac)	K3	—

LEGEND

AI	— Analog Input	OAT	— Outdoor-Air Temperature
AO	— Analog Output	OFC	— Outdoor Fan Contactor
CCN	— Carrier Comfort Network	RAT	— Return-Air Temperature
CV	— Constant Volume	SAT	— Supply-Air Temperature
DI	— Direct Input	SPT	— Space Temperature
DO	— Direct Output	STO	— Space Temperature Offset
HV	— High Voltage	T	— Terminal
IAQ	— Indoor Air Quality	TB	— Terminal Block
K Ω	— Kilo-Ohms	VAV	— Variable Air Volume
LV	— Low Voltage		

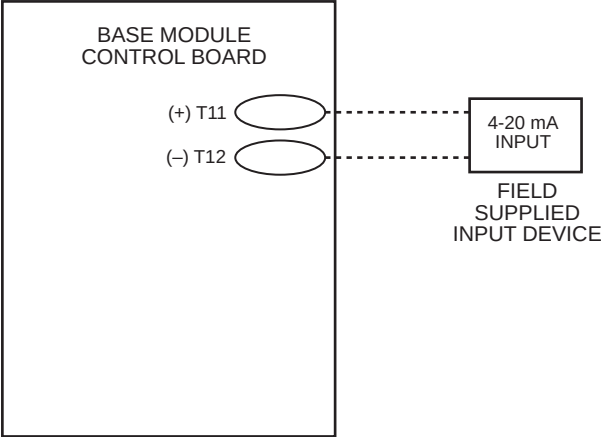
NOTE: All even numbered terminals are negative (–) polarity and all odd numbered terminals are positive (+) polarity.

SPACE TEMPERATURE AVERAGING WIRING





SUPPLY TEMPERATURE RESET WIRING

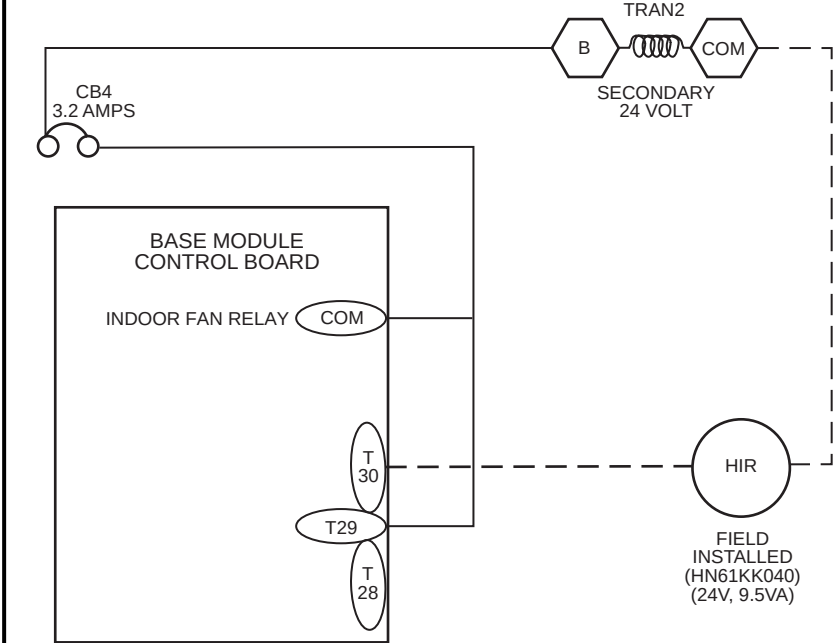


mA INPUT	DEG. C RESET	DEG. F RESET
4	0.00	0.00
5	0.70	1.25
6	1.40	2.50
7	2.10	3.75
8	2.80	5.00
9	3.50	6.25
10	4.20	7.50
11	4.90	8.75
12	5.60	10.00
13	6.30	11.25
14	7.00	12.50
15	7.70	13.75
16	8.40	15.00
17	9.10	16.25
18	9.80	17.50
19	10.50	18.75
20	11.20	20.00

LEGEND
T — Terminal

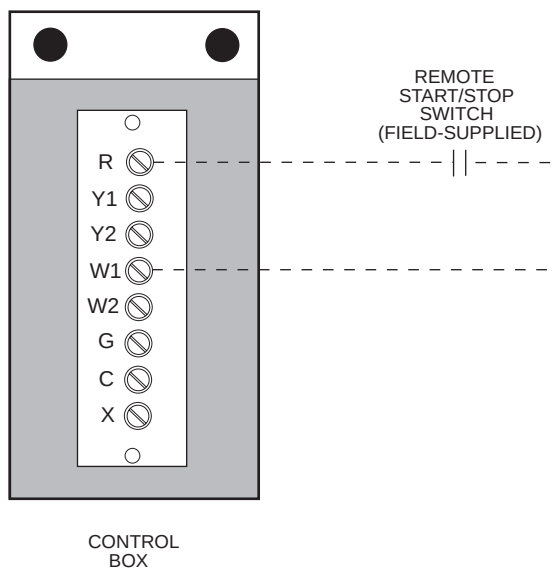
NOTE: The 4 to 20 mA input is a field-supplied non-Carrier EMS (Energy Management System) device.

HEAT INTERLOCK RELAY WIRING

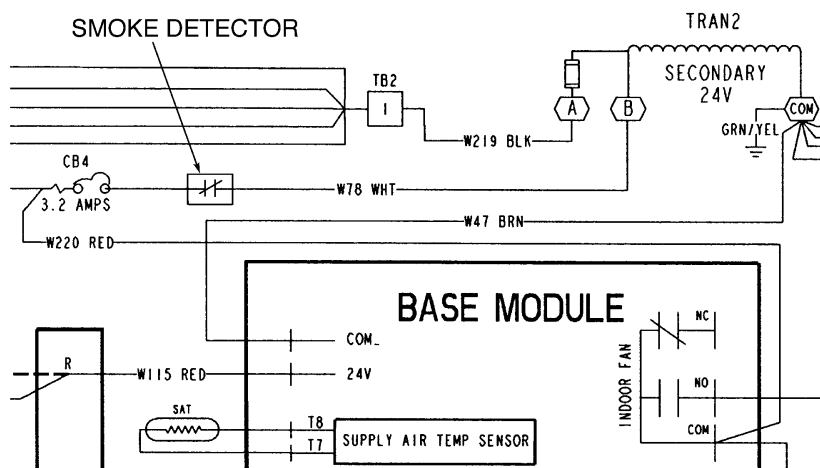


LEGEND
CB — Circuit Breaker
COM — Common
HIR — Heat Interlock Relay
T — Terminal
TRAN — Transformer

FIELD CONTROL REMOTE START/STOP WIRING

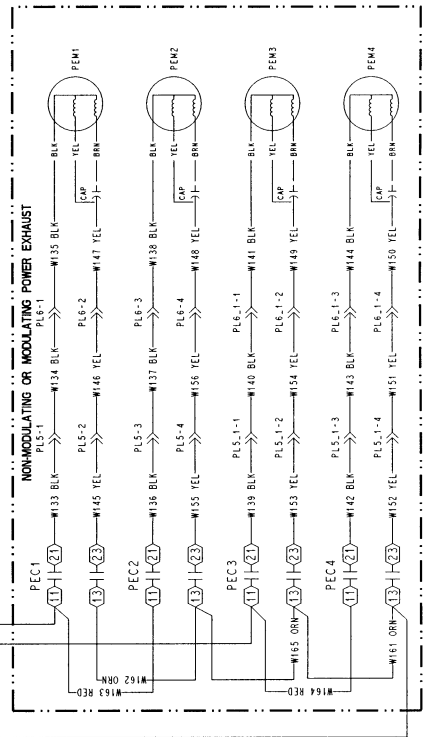
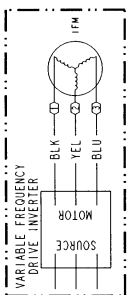
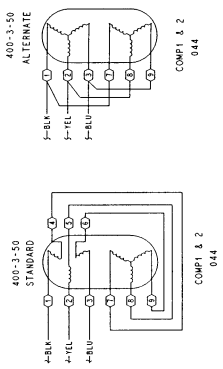
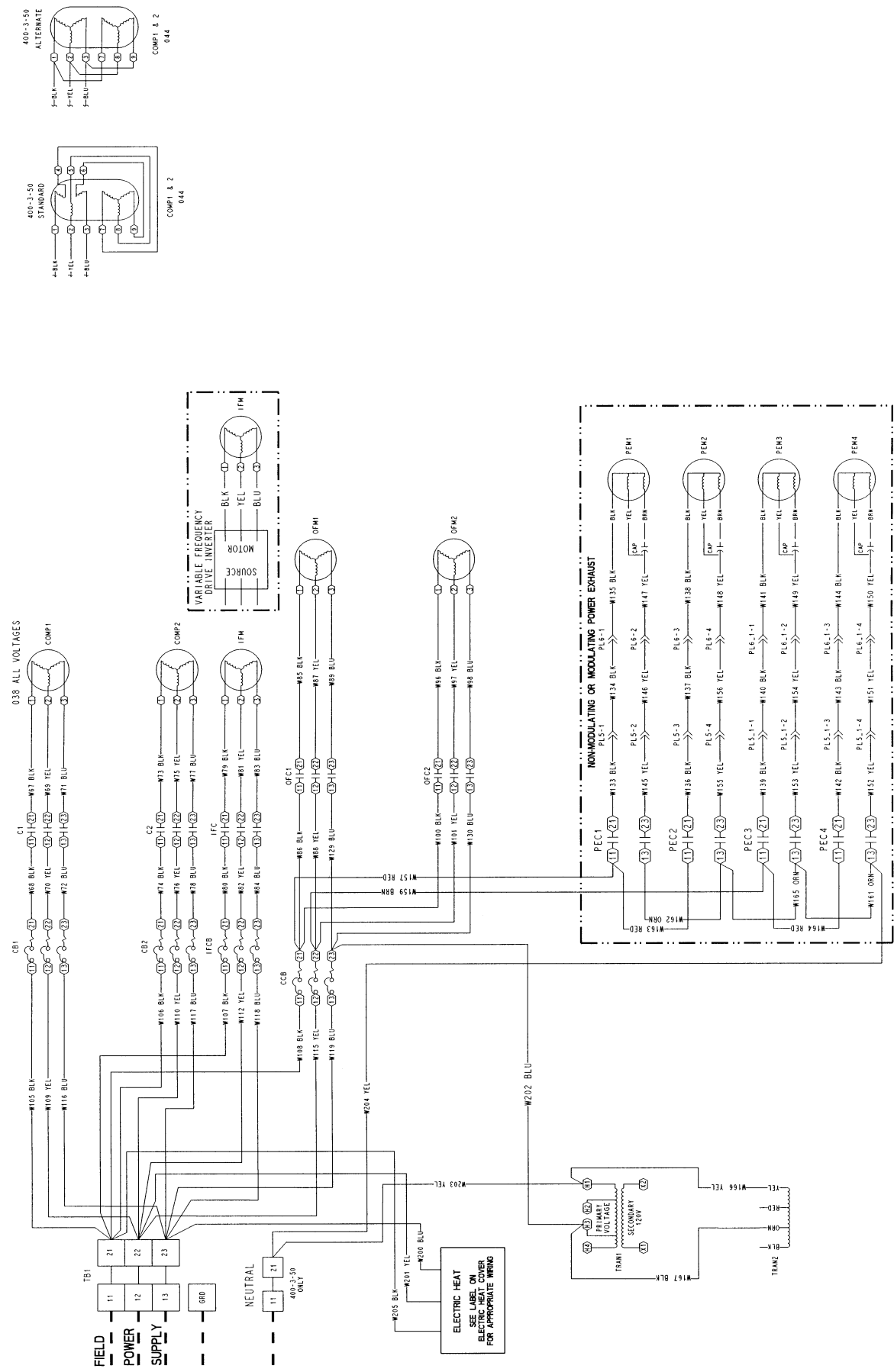


SMOKE DETECTOR WIRING



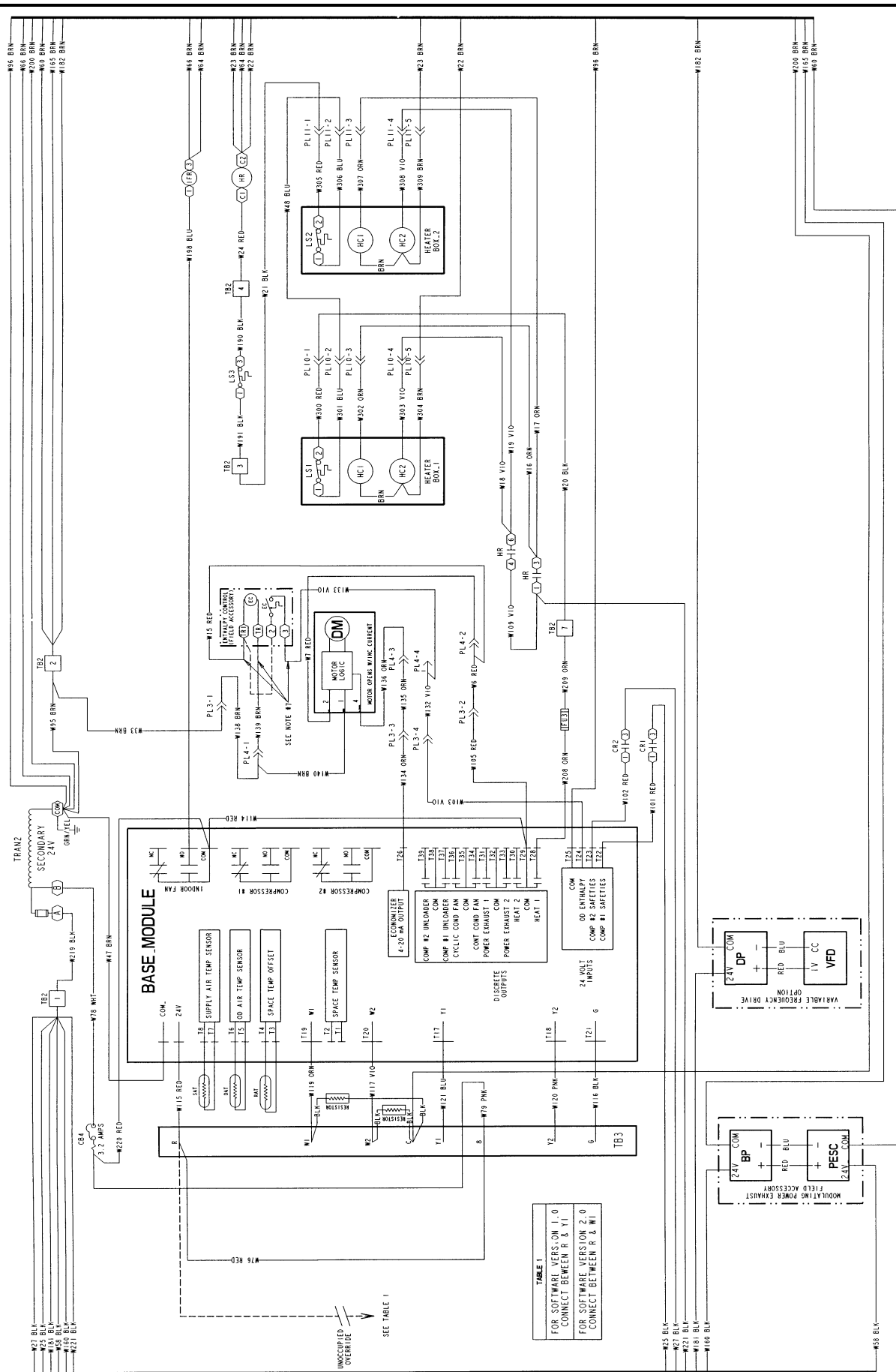


TYPICAL POWER WIRING SCHEMATIC





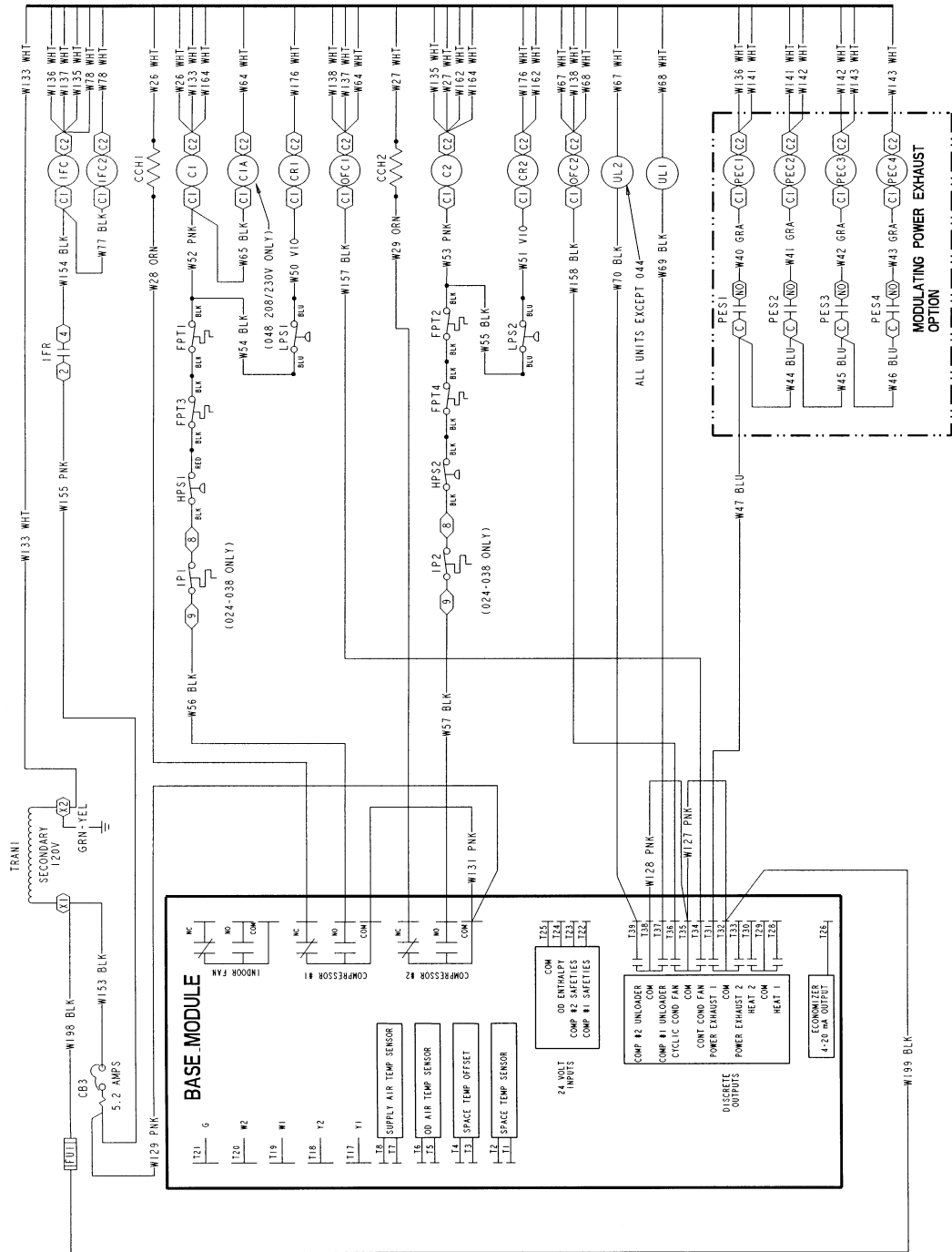
TYPICAL 24-V CONTROL SCHEMATIC (Variable Air Volume Units)







TYPICAL 120-V CONTROL SCHEMATIC (Variable Air Volume Units)



LEGEND AND NOTES FOR TYPICAL WIRING SCHEMATIC

LEGEND

AHA — Adjustable Heat Anticipator	IFCB — Indoor Fan Circuit Breaker	TC — Thermostat Cooling
BP — Building Pressure	IFM — Indoor-Fan Motor	TH — Thermostat Heating
C — Contactor, Compressor	IFR — Indoor-Fan Relay	TRAN — Transformer
CB — Circuit Breaker	IP — Internal Protector	VFD — Variable Frequency Drive
CC — Cooling Compensator	LPS — Low-Pressure Switch	 Terminal (Marked)
CCH — Crankcase Heater	LS — Limit Switch	 Terminal (Unmarked)
COM — Communication	NC — Normally Closed	 Terminal Block
COMP — Compressor Motor	NO — Normally Open	 Splice
CR — Control Relay	OAT — Outdoor-Air Thermistor	 Factory Wiring
DM — Damper Motor	OFC — Outdoor-Fan Contactor	 Field Wiring
DP — Duct Pressure	PEC — Power Exhaust Contactor	 To Indicate Common Potential Only.
EC — Enthalpy Control	PEM — Power Exhaust Motor	 Not to Represent Wiring
FPT — Freeze Protection Thermostat	PESC — Power Exhaust Sequencer Controller	
FU — Fuse	PL — Plug Assembly	
HC — Heater Contactor	RAT — Return-Air Thermistor	
HPS — High-Pressure Switch	SAT — Supply-Air Thermistor	
HR — Heater Relay	TB — Terminal Block	

NOTES:

1. Connect to H3 for 400 v units.
2. Connect TRAN2 to orange lead for 400 v units.
3. Circuit breaker Must Trip Amps are equal to or less than 156% FLA for CB1 and CB2. All others are 140%.
4. If any of the original wire furnished must be replaced, it must be replaced with Type 90 C wire or its equivalent.
5. Compressor and/or fan motors are thermally protected.
6. Three phase motors are protected against primary single phasing conditions.
7. Red wire and violet wire are spliced together at the factory. The brown wire has a wire nut added at the factory.

Ductwork — Secure vertical discharge ductwork to roof curb. Interior installation may proceed before unit is set in place on roof. 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. Units equipped with electric heat require a 90-degree elbow below the unit supply duct connection.

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

Thermostat (CV only) — Use of a thermistor type room sensor is recommended on all CCN installations. A thermistor type room sensor or a 2-stage heating/cooling thermostat may be used for all other units.

Heating-to-cooling changeover — All units are automatic changeover from heating to cooling when automatic changeover thermostat and subbase or a thermistor type room sensor are used.

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

Maximum airflow — To minimize the possibility of condensate blow-off from evaporator, airflow through units should not exceed values shown in cooling operating range table on page 17 and cooling capacities tables on pages 36-55.

Minimum airflow — The minimum airflow for cooling is 40.3 L/s kW (300 cfm/ton) for constant volume units and 9.4 L/s kW (70 cfm/ton) for VAV (variable air volume) units. Performance at 9.4 L/s kW (70 cfm/ton) is limited to **unloaded** operation and may be additionally limited by entering-air temperatures.

Minimum ambient cooling operation temperature — All units are equipped with factory economizers to allow free cooling at any outdoor ambient. If mechanical cooling is required, the units are designed to operate at outdoor temperatures down to 2 C (35 F). With accessory Motormaster® III control, units can operate at outdoor temperatures down to -29 C (-20 F). Outdoor-fan motor no. 1 changeout is required for Motormaster III applications.

Maximum operating outdoor-air temperature — The maximum operating outdoor-air temperature is 46 C (115 F). Some models will operate up to 52 C (125 F) depending on model and operating conditions.

Minimum temperature — Minimum allowable temperature of mixed air entering the heat exchanger during half-rate (first stage) operation is 10 C (50 F). There is no minimum mixture temperature during full-rate operation. Comfort conditioning may be compromised at temperatures below 10 C (50 F). Below 10 C (50 F), both stages of heat are engaged.

Internal unit design — Due to Carrier's internal unit design (draw-thru over the motor), air path, and specially designed motors, the full kilowatts (horsepower) listed in the Physical Data table and motor limitations table can be utilized with extreme confidence.

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

Electric heat — A field-supplied 90-degree elbow must be installed in the supply ductwork below the unit discharge connection.

Existing roof curbs (50DD,DF,DL024-054 units) — The 50E units will install on existing 50DD,DF,DL vertical supply and return roof curb applications. Using the existing curb minimizes installation expense. No additional roof penetrations or transition curbs are required.

The existing building ductwork on 50DD,DF,DL units is **connected to the unit** (not the roof curb). The ductwork must be disconnected from the existing unit prior to its removal. The ductwork must then be cut back below the roof curb to allow for installation of field-supplied ductwork. The field-supplied ductwork will transition from the existing building ductwork to the newly installed accessory roof curb adapter package. The accessory roof curb adapter package provides sheet metal duct connections to be installed in the existing roof curb. No connections exist in the original roof curb since the ductwork is connected to the unit, not the curb.

50EJ,EK054-068 models will fit on existing 50DL054 and 064 applications without any ductwork transitions. See unit Price Pages for accessory retrofit kit for existing roof curb.

NOTE: Each installation should be evaluated to determine if the application will accommodate the accessory roof curb adapter package. Call Carrier Application Engineering for more information concerning individual applications.

Guide specifications — 50EJ,EW constant volume units



Packaged Rooftop Cooling Unit Constant Volume Application

HVAC Guide Specifications — Section 50EJ,EW

Size Range: **70.3 to 228.6 kW, Nominal**
20 to 65 Tons, Nominal

Carrier Model Number: **50EJ, 50EW**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor roof curb or slab mounted, electronically controlled heating and cooling unit utilizing semi-hermetic reciprocating type compressors for cooling duty and optional electric heat for heating duty. Units 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 Standard 360 and designed in accordance with UL Standard 1995 (U.S.A. Standards).
- B. Unit shall be designed to conform to ANSI/ASHRAE 15 and 62 (latest edition) and NEC (U.S.A. Standards).
- C. Roof curb shall be NRCA approved (U.S.A. Standard).
- D. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation (U.S.A. Standard).
- E. Unit shall be manufactured in a facility registered to the ISO 9002 manufacturing quality standard.

1.03 DELIVERY, STORAGE AND HANDLING

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

Part 2 — Products

2.01 EQUIPMENT

- A. Factory-assembled, single-piece heating and cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, refrigerant charge (R-22), operating oil charge, dual refrigerant circuits, microprocessor based control system and associated hardware, and all special features required prior to field start-up.
- B. Unit Cabinet:
 1. Constructed of galvanized steel, bonderized and precoated with a baked enamel finish.
 - a. Top cover shall be 18-gage sheet metal with 19.05 mm (0.75-in.) thick, 1.5-lb density, fiberglass insulation blanket coated with an acrylic coating impregnated with an antimicrobial agent (cleanable).
 - b. Access panels and doors shall be 20-gage sheet metal with 12.70 mm (0.5-in. thick, 1.5-lb density, fiberglass insulation blanket coated with an acrylic coating impregnated with an antimicrobial agent (cleanable).
 - c. Corner and center posts shall be 16-gage galvanized steel.

- d. Basepans in the heating and return air sections shall be 16-gage galvanized steel.
 - e. Basepans in the condenser section shall be 14-gage galvanized steel.
 - f. Compressor rail shall be 12-gage galvanized steel.
 - g. Condensate pan shall be 16-gage aluminized steel.
 - h. Air baffles shall be 18-gage galvanized steel with 12.70 mm (0.5-in.) thick, 1.5-lb density, fiberglass insulation blanket coated with an acrylic coating impregnated with an antimicrobial agent (cleanable).
 - i. Base rail shall be 14-gage galvanized steel.
 - j. Fan deck (indoor and outdoor section) shall be 16-gage galvanized steel.
2. Unit casing shall be capable of withstanding test method ASTM Standard B-117 500-hour salt spray test (U.S.A. Standard) (scribed specimen).
 3. Sides shall have person-sized insulated hinged access doors for easy access to the control box and other areas requiring servicing. Each door shall seal against a rubber gasket to prevent air and water leakage and be equipped to permit ease and safety during servicing.
 4. Interior cabinet surfaces shall be sheet metal lined or insulated with minimum 1/2-in. thick, flexible, cleanable, fire-retardant material, coated on the air side and containing an EPA-registered immobilized antimicrobial agent to effectively resist the growth of bacteria and fungi as proven by tests in accordance with ASTM standards G21 and 22 (U.S.A. Standards).
 5. Unit shall have a factory-installed condensate drain connection and an aluminized steel, sloped condensate drain pan to prevent standing water from accumulating.
 6. Equipped with lifting lugs to facilitate overhead rigging.
 7. Filters shall be accessible through a hinged access panel without requiring any special tools.
- C. Fans:
1. Indoor Evaporator Fans:
 - a. Double-width/double-inlet, centrifugal, belt driven, forward-curved type with single outlet discharge.
 - b. Fan shaft bearings shall be of the pillow-block type with positive locking collar and lubrication provisions.
 - c. Statically and dynamically balanced.
 - d. Evaporator fan shaft bearings shall have a life of 200,000 hours at design operating conditions in accordance with ANSI B3.15 (U.S.A. Standard).
 - e. Solid fan shaft construction (024-044); two-piece solid fan shaft construction (054-068).

Guide specifications — 50EJ,EW constant volume units (cont)



2. Condenser Fans:

- a. Direct-driven propeller type only, with corrosion-resistant blades riveted to corrosion-resistant steel supports.
- b. Discharge air vertically upward and protected by PVC coated steel wire safety guards.
- c. Statically and dynamically balanced.

D. Compressors:

1. Reciprocating, semi-hermetic type only capable of unloading and located for easy servicing.
2. Mounted on spring vibration isolators with an isolation efficiency of no less than 95%.
3. Each equipped with an automatically reversible oil pump, operating oil charge, insert-type crankcase heater to prevent refrigerant migration to the compressor, and suction and discharge service valves.
4. Maximum operating speed of 1800 rpm (30 rps).
5. Each on independent refrigerant and electrical circuits.

E. Coils:

1. Evaporator Coil:

- a. Intertwined circuited, constructed of lanced aluminum fins mechanically bonded to seamless internally enhanced copper tubes.
- b. Full face active type during full load and part load conditions.
- c. Coils shall be leak tested at 1034 kPa (150 psig) and pressure tested at 3103 kPa (450 psig).

2. Condenser Coil:

- a. Constructed of aluminum fins mechanically bonded to seamless internally grooved copper tubes.
- b. Air-cooled condenser coils shall be leak tested at 1034 kPa (150 psig) and pressure tested at 3103 kPa (450 psig).

3. All coils shall be same manufacturer as unit.

F. Heating Section:

Electric resistance heaters shall be factory-installed, open wire, nichrome element type, insulated with ceramic bushings, and include operating and safety controls.

G. Refrigerant Components:

Unit shall be equipped with dual refrigerant circuits each containing:

1. Liquid line service valve.
2. Solid core filter drier.
3. Thermostatic expansion valve.
4. Fusible plug.

H. Filter Section:

Filter section shall consist of 51 mm (2-in.) thick, disposable fiberglass filters of commercially available sizes.

I. Controls and Safeties:

1. Controls:

- a. Unit shall be complete with self-contained, demand-oriented microprocessor based, solid-state control system.
- b. Unit shall be compatible with either a remote start/stop switch and a room sensor, a room thermostat, or on a TEMP system or CCN (Carrier Comfort Network) with no accessory interface required.
- c. Unit staging shall be minimum 2-cool, 2-heat.
- d. Unit shall perform in response to a variable space temperature signal. Control system shall determine control sequences through monitoring the following operational variables:
 - 1) Evaporator leaving-air (supply-air) temperature (SAT).
 - 2) Economizer position.
 - 3) Minimum economizer set point.
 - 4) Morning warm-up set point.
 - 5) Outdoor-air temperature (OAT).
- e. In the event of a power failure, unit control system shall sequence the unit to re-start beginning with the first stage of cooling or heating.
- f. Thermostats shall be of the dual set point type for heating and cooling.
- g. Set points must have adjustable deadband between heat and cool.
- h. Unit shall be capable of performing night-time free cooling.
- i. Control boards shall be equipped with flashing LED(s) for diagnostics.
- j. Minimum heat on-time of 1 minute.

2. Safeties:

Unit components shall be equipped with the following protections:

- a. Compressors:
 - 1) Overtemperature (shuts down individual compressor) (sizes 024-034 only).
 - 2) Overcurrent (shuts down individual compressor).
 - 3) Crankcase heaters.
 - 4) High-pressure switch (shuts down individual compressor, automatic reset type).
 - 5) Loss-of-charge switch (shuts down individual compressor, automatic reset type).
 - 6) Compressor shall be prevented from re-starting for a minimum of 5 minutes after shutdown. Compressor shall run a minimum of 10 seconds after starting.
 - 7) Freeze protection thermostat (FPT) shall shut down unit operation based on coil temperature.

c. Heating Section:

- 1) Automatic reset high-temperature limit switches.
- 2) Heat limiters (fusible links).
- 3) Overcurrent protection short-circuit fuses.
- 4) Branch circuit protection.

J. Operating Characteristics:

1. Unit shall be capable of starting and minimum running at 46 C (115 F) ambient outdoor temperature per maximum load criteria of ARI Standard 360 (U.S.A. Standard).
2. Unit shall be capable of mechanical cooling operation down to 2 C (35 F) ambient outdoor temperature.
3. Provides multi-stage mechanical cooling capability.
4. Unit provided with fan time delay to prevent cold starts.

K. Motors:

1. Compressor motors shall be cooled by suction gas passing over motor windings and shall have line break thermal and current overload protection.
2. Condenser-fan motors shall be totally enclosed, 3-phase type with permanently lubricated ball bearings and internal, automatic-reset thermal overload protection.
3. Indoor blower motor shall be of the 3-phase ball bearing type.
4. Complies with Energy Policy Act (EPACT) minimum efficiency requirements effective October 24, 1997 (U.S.A. standard).

L. Electrical Requirements:

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

M. Integrated Economizer:

Consists of gear driven dampers, direct-drive motor in conjunction with microprocessor control system to provide primary cooling using outdoor air, temperature permitting, supplemented with mechanical cooling when necessary.

1. Dampers shall be low leakage type, not to exceed 101.59 L/s m² (20 cfm per sq ft) leakage at 249 Pa (1 in. wg) pressure differential when fully closed.
2. Motor shall have a spring return feature which shuts dampers upon a power interruption or unit shutdown.
3. Equipped with solid-state control that sets the economizer cut-in point at an economical level.
4. Capable of introducing up to 100% outdoor air.
5. Motor shall be controlled by 4 to 20 mA input.
6. Minimum position set point shall be adjustable by the control module DIP (dual in-line package) switches in 10% increments.

N. Space Temperature Control:

1. Two-Stage Thermostat with Integral Sensor:

- a. Thermostat shall be capable of automatic heating and cooling changeover without system switches.
- b. Each thermostat or transmitter shall provide the following features:
 - 1) Separate locking heating and cooling set point adjustments concealed under a locking cover.
 - 2) An adjustable 2 to 17° C (3 to 30° F) dead-band between heating and cooling set points.
 - 3) Two LEDs concealed under locking cover to provide remote checkout of control system.
 - 4) Load reactive time delays to ensure stable system performance.

2. Thermistor Type Room Sensor with Remote Start/Stop Switch (stand alone applications)

- a. Sensor shall be capable of setback override.
- b. Set point adjustment may be made at sensor.
- c. Allows access to CCN (Carrier Comfort Network) (computer access required).

O. Special Features:

Certain standard features are not applicable when the features designated * are specified. For assistance in amending the specifications, your local Carrier Sales Office should be contacted.

* 1. Optional Condenser Coil Materials:

- a. Unit shall be factory equipped with a condenser coil made from copper tubes and copper fins.
- b. Unit shall be factory equipped with a condenser coil made from corrosion resistant pre-coated aluminum fins.

* 2. Roof Curb:

Formed 14-gage galvanized steel with wood nailer strip. Supports full perimeter of unit.

* 3. Constant Volume Power Exhaust:

Package shall include 4 (sizes 024-044) or 6 (sizes 054-068) double-width double inlet direct drives, forward-curved power exhaust fans with non-modulating dampers at the discharge. Motors shall be 1 hp, 3-speed, single-phase design.

- a. Fans shall be statically and dynamically balanced.
- b. Exhaust hood and eliminators shall prevent objects from entering unit through the relief dampers.

Guide specifications — 50EJ,EW constant volume units (cont)



- * 4. Non-Modulating to Modulating Power Exhaust Conversion Package:
Package shall include modulating devices to maintain a field adjustable interior space pressure set point.
- 5. Barometric Relief Damper Package:
 - a. Package shall relieve excess internal pressure and consist of damper assembly, hoods, damper screen, seal strip, and required hardware.
 - b. Damper assembly shall close due to gravity upon unit shutoff.
 - c. Unit mounted on vertical supply/return units only; can be duct mounted on horizontal applications.
 - d. Each damper (4 for sizes 024-044, 6 for sizes 054-068) shall consist of six 26-gage aluminum blades with a total area of 0.101 m² (1.085 ft²) each and a maximum velocity of 13.2 m/s (2600 ft/m).
- 6. Modulating Head Pressure Control:
Package shall consist of an accessory outdoor-air package and a solid-state control with condenser coil temperature sensor capable of modulating outdoor-fan motor no. 1 speed to maintain condensing temperature between 32 C and 38 C (90 F and 100 F) at outdoor ambient temperature down to -29 C (-20 F).
- 7. Condenser Coil Hail Guard:
Hood with welded wire grille complete with support retainers and fasteners shall be provided for protection of condensing coil(s).
- 8. Electric Heat Package:
Shall be fully assembled for installation. The 400-v units are designed in accordance with UL standards (U.S.A. Standard) and all units feature a single point connection.
- * 9. Space Temperature Sensor (T-55):
This space temperature sensor shall monitor the actual temperature in the conditioned space. Sensor shall be equipped with an override button to provide unoccupied 1-hour override.
- * 10. Space Temperature Sensor with Offset (T-56):
This space temperature sensor shall monitor the actual temperature in the conditioned space, provide a 1-hour unoccupied override and provide a space temperature offset of 3° C (5° F).
- * 11. Enthalpy Control:
Shall provide efficient economizer control based on outdoor air enthalpy. Shall include logic and one sensor to calculate both dry and wet bulb of the outdoor air.
- * 12. Enthalpy Sensor:
 - a. For use with economizer only and with enthalpy control. Provides differential enthalpy.
 - b. Capable of measuring temperature of return air to provide economizer control with a comparison of outdoor temperature and humidity and return air temperature and humidity.
- * 13. Thermostat and Subbase Assembly:
To provide staged heating and cooling in addition to automatic (or manual) changeover and fan control.
- 14. Indoor Air Quality (IAQ) CO₂ Sensor (Electronic Expansion Board Required):
 - a. Shall have the ability to provide demand ventilation IAQ control through the economizer with an indoor air quality sensor.
 - b. The IAQ sensor shall be available in duct mount, wall mount, and wall mount with LED display of CO₂ in parts per million. The set point shall have adjustment capability.
 - c. The IAQ sensor must be powered by a separate field-supplied 24-v transformer.
- 15. Electronic Expansion Board:
Shall provide the following:
 - a. Control of modulating economizer damper to maintain indoor air quality when outdoor conditions are suitable.
 - b. Discrete inputs for fan status, filter status, field-applied status, and demand limit.
 - c. Shall perform demand limit functions based on the state of the discrete input.
 - d. An output for the external alarm light indicator.
 - e. Smoke control modes including evacuation, smoke purge, pressurization, and shutdown. (Power exhaust required.)
 - f. Pre-occupancy purge shall be available.
 - g. Power to expansion board shall be provided by a separate 24-v power source.
 - h. All even numbered terminals shall have negative (-) potential. All odd numbered terminals shall have positive (+) potential.
- 16. Pressure Operated Unloader:
Additional steps for unloading can be obtained by the addition of accessory pressure-actuated suction cutoff unloaders to the lead compressor.
- 17. Roof Curb Adapter Package:
Shall provide duct support hardware to retrofit unit to an existing 50DD,DF,DL roof curb.
NOTE: Duct transition from new unit duct configuration to existing ductwork design will be required below the existing roof curb.

18. Roof Curb Retrofit Kit:

Shall provide duct support hardware and panels to retrofit 50EJ,EK054-068 models only on an existing 50DD,DF054-064 roof curb.

19. Roof Curb Retrofit Kit:

Shall provide duct support hardware and panels to retrofit 50EJ,EK054-068 models only on an existing 50DL054 and 064 application.

20. Field-Installed Interface Device (LID-2B accessory):

Shall be field-mounted to provide a remote 40-character per line, 16-line display panel. Device is not qualified for outdoor installation. The interface device is for use with temporary installation during service of unit. Requires a separate 24 v power supply.

21. Electronic Programmable Thermostat:

Capable of using deluxe full-featured electronic thermostat. Shall use built-in compressor cycle delay control for both heating and cooling duty. Compatible with Carrier direct-digital controls.

Guide specifications — 50EK,EY variable air volume units



Packaged Rooftop Cooling Unit Variable Air Volume Application

HVAC Guide Specifications — Section 50EK,EY

Size Range: **70.3 to 228.6 kW Nominal**
20 to 65 Tons, Nominal

Carrier Model Number: **50EK, 50EY**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor roof curb or slab mounted, electronically controlled heating and cooling unit utilizing semi-hermetic reciprocating type compressors for cooling duty and optional electric heaters for heating duty. Units shall discharge supply air horizontally or vertically as shown on contract drawings.

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standard 360 and designed in accordance with UL Standard 1995 (U.S.A. Standard).
- B. Unit shall be designed to conform to ANSI/ASHRAE 15 and 62 (latest edition) and NEC (U.S.A. Standard).
- C. Roof curb shall be NRCA approved (U.S.A. Standard).
- D. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation. Insulation shall contain an EPA-registered immobilized antimicrobial agent to effectively resist the growth of bacteria and fungi as proven by tests in accordance with ASTM standards G21 and 22 (U.S.A. Standard).
- E. Unit shall be manufactured in a facility registered to the ISO 9002 manufacturing quality standard.

1.03 DELIVERY, STORAGE AND HANDLING

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

Part 2 — Products

2.01 EQUIPMENT

- A. Factory-assembled, single-piece heating and cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, refrigerant charge (R-22), operating oil charge, dual refrigerant circuits, microprocessor based control system and associated hardware, and all special features required prior to field start-up.
- B. Unit Cabinet:
 1. Constructed of galvanized steel, bonderized and precoated with a baked enamel finish.
 - a. Top cover shall be 18-gage sheet metal with 19.05 mm (0.75-in.) thick, 1.5-lb density, fiberglass insulation blanket coated with an acrylic coating impregnated with an antimicrobial agent (cleanable).
 - b. Access panels and doors shall be 20-gage sheet metal with 12.70 mm (0.5-in. thick,

1.5-lb density, fiberglass insulation blanket coated with an acrylic coating impregnated with an antimicrobial agent (cleanable).

- c. Corner and center posts shall be 16-gage galvanized steel.
 - d. Basepans in the heating and return air sections shall be 16-gage galvanized steel.
 - e. Basepans in the condenser section shall be 14-gage galvanized steel.
 - f. Compressor rail shall be 12-gage galvanized steel.
 - g. Condensate pan shall be 16-gage aluminized steel.
 - h. Air baffles shall be 18-gage galvanized steel with 12.70 mm (0.5-in.) thick, 1.5-lb density, fiberglass insulation blanket coated with an acrylic coating impregnated with an antimicrobial agent (cleanable).
 - i. Base rail shall be 14-gage galvanized steel.
 - j. Fan deck (indoor and outdoor section) shall be 16-gage galvanized steel.
2. Unit casing shall be capable of withstanding test method ASTM Standard B-117 (U.S.A. Standard) 500-hour salt spray test.
 3. Sides shall have person-sized insulated hinged access doors for easy access to the control box and other areas requiring servicing. Each door shall seal against a rubber gasket to prevent air and water leakage.
 4. Interior cabinet surfaces shall be sheet metal lined or insulated with minimum ½-in. thick, flexible, cleanable, fire-retardant material, coated on the air side and containing an EPA-registered immobilized antimicrobial agent to effectively resist the growth of bacteria and fungi as proven by tests in accordance with ASTM standards G21 and 22 (U.S.A. Standard).
 5. Unit shall have a factory-installed condensate drain connection and an aluminized steel, sloped condensate drain pan to prevent standing water from accumulating.
 6. Equipped with lifting lugs to facilitate overhead rigging.
 7. Filters shall be accessible through a hinged access panel without requiring any special tools.
- C. Fans:
1. Indoor Evaporator Fans:
 - a. Double-width/double-inlet, centrifugal, belt driven, forward-curved type with single outlet discharge.
 - b. Fan shaft bearings shall be of the pillow-block type with positive locking collar and lubrication provisions.
 - c. Statically and dynamically balanced.

- d. Evaporator fan shaft bearings shall have a life of 200,000 hours at design operating conditions in accordance with ANSI B3.15 (U.S.A. Standard).
- e. Solid fan shaft construction (024-044); two-piece solid fan shaft construction (054-068).

2. Condenser Fans:

- a. Direct-driven propeller type only, with corrosion-resistant blades riveted to corrosion-resistant steel supports.
- b. Discharge air vertically upward and protected by PVC coated steel wire safety guards.
- c. Statically and dynamically balanced.

3. Supply Fan Drive:

Unit shall be equipped with Variable Frequency Drive (VFD, inverter). The VFD shall be provided with a metal enclosure and shall be factory-mounted, -wired and -tested. The VFD shall control motor speed to maintain set point static pressure at the sensor tube location of the supply duct pressure transducer (transducer is factory-provided and -installed; sensor tube must be field-routed). The VFD may be field-adjusted to maintain supply duct static pressure set points from 0 kPa to 1.24 kPa (0-in. wg to 5.0-in. wg).

The variable speed drive shall include the following features:

- a. Full digital control.
- b. Insulated Gate Bi-Polar Transistors (IGBT) used to produce the output pulse width modulated (PWM) waveform, allowing for quiet motor operation.
- c. Inverters capable of operation at a frequency of 8 kHz, so no acoustic noise shall be produced by the motor.
- d. NEMA 1 (U.S.A. standard) metal enclosure for reduction of RFI (radio frequency interference).
- e. Self diagnostics.
- f. Personal lockout code for additional security.
- g. Critical frequency avoidance.
- h. PID (Proportional Integral Derivative logic) set point control.
- i. RS232C/RS485 capability.
- j. Electronic thermal overload protection.
- k. DC link feature for harmonic reduction and improved power factor (20 Hp and larger only).

D. Compressors:

- 1. Reciprocating, semi-hermetic type only capable of unloading and shall be located for easy servicing.
- 2. Equipped with suction-cutoff type unloader(s).
- 3. Mounted on spring vibration isolators with an isolation efficiency of no less than 95%.
- 4. Each equipped with an automatically reversible oil pump, operating oil charge, insert-type crankcase heater to prevent refrigerant migration to the compressor, and suction and discharge service valves.
- 5. Maximum operating speed of 1800 rpm (30 rps).
- 6. Each on independent refrigerant and electrical circuits.

E. Coils:

1. Evaporator Coil:

- a. Intertwined circuited, constructed of lanced aluminum fins mechanically bonded to seamless internally enhanced copper tubes.
- b. Full-face active type during full load and part load conditions.
- c. Coils shall be leak tested at 1034 kPa (150 psig) and pressure tested at 3103 kPa (450 psig).

2. Condenser Coil:

- a. Constructed of aluminum fins mechanically bonded to seamless internally grooved copper tubes.
- b. Air-cooled condenser coils shall be leak tested at 1034 kPa (150 psig) and pressure tested at 3103 (450 psig).

- 3. All coils shall be same manufacturer as unit.

F. Heating Section:

Electric resistance heaters shall be factory-installed, open wire, nichrome element type, insulated with ceramic bushings, and include operating and safety controls.

G. Refrigerant Components:

Unit shall be equipped with dual refrigerant circuits each containing:

- 1. Liquid line service valve.
- 2. Solid core filter drier.
- 3. Thermostatic expansion valve.
- 4. Fusible plug.

H. Filter Section:

Filter section shall consist of 51 mm (2-in.) thick, disposable fiberglass filters of commercially available sizes.

Guide specifications — 50EK,EY variable air volume units (cont)



I. Controls, Safeties and Diagnostics:

1. Controls:

- a. Control shall be accomplished through the use of a factory-installed, microprocessor based control system and associated electronic and electrical hardware. Control system shall determine control sequences through monitoring the following operational variables:

- 1) Evaporator leaving-air (supply-air) temperature (SAT).
- 2) Evaporator entering-air temperature.
- 3) Economizer position.
- 4) Minimum economizer set point.
- 5) Morning warm-up set point.
- 6) Outdoor-air temperature (OAT).

NOTE: A field-supplied remote start/stop contact closure is required for stand-alone applications to run unit during occupied time periods.

- b. Controls shall be capable of performing the following functions:

- 1) Capacity control based on discharge air temperature and compensated by rate of change of return-air temperature. Capacity control shall be accomplished through the use of an unloading device and compressor staging.
- 2) Perform a quick test to check the status of all input and output signals to the control system.
- 3) Control of integrated economizer operation.
- 4) Capable of single-step demand limit control.
- 5) Condenser fan cycling to maintain correct head pressure.
- 6) Morning warm-up.
- 7) Remote monitoring and set point adjustments.
- 8) In the event of a power failure, unit control system shall sequence the unit to restart beginning with the first stage of cooling or heating.
- 9) Nighttime free cooling.
- 10) Control boards shall be equipped with flashing LED(s) for diagnostics.
- 11) Minimum heat on-time of 1 minute.

2. Safeties:

Unit components shall be equipped with the following protections:

- a. Compressors:
 - 1) Overtemperature (shuts down individual compressor) (sizes 024-034 only).
 - 2) Overcurrent (shuts down individual compressor).
 - 3) Crankcase heaters.
 - 4) High-pressure switch (shuts down individual compressor, automatic reset type).
 - 5) Loss-of-charge switch (shuts down individual compressor, automatic reset type).

- 6) Compressor shall be prevented from re-starting for a minimum of 5 minutes after shut down. Compressor must run for at least 10 seconds after start-up.

- 7) Freeze protection thermostat (FPT) shall shut down unit operation based on coil temperature.

b. Heating Section:

- 1) Automatic reset high-temperature limit switches.
- 2) Overcurrent protection short-circuit fuses.
- 3) Branch circuit protection.

3. Diagnostics:

- a. Diagnostic display via the Carrier Comfort Network (CCN) or an accessory LID-2B shall be capable of indicating a safety lockout condition.
- b. Diagnostics must also be capable of displaying outputs of microprocessor controlled run test to verify operation of every thermistor, potentiometer, fan and compressor before unit is started.

J. Operating Characteristics:

1. Unit shall be capable of starting and minimum running at 46 C (115 F) ambient outdoor temperature per maximum load criteria of ARI Standard 360 (U.S.A. Standard).
2. Unit shall be capable of mechanical cooling operation down to 2 C (35 F) ambient outdoor temperature.
3. Provides multi-stage mechanical cooling capability and single-stage morning warm-up heating.
4. Unit provided with fan time delay to prevent cold starts.

K. Motors:

1. Compressor motors shall be cooled by suction gas passing over motor windings and shall have line break thermal and current overload protection.
2. Condenser-fan motors shall be totally enclosed, 3-phase type with permanently lubricated ball bearings and internal, automatic-reset thermal overload protection.
3. Indoor blower motor shall be of the 3-phase ball bearing type. Induced-draft motor shall be of the permanently lubricated sealed bearing type with inherent automatic reset thermal overload protection.

L. Electrical Requirements:

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

M. Integrated Economizer:

Consists of gear driven dampers, direct-drive motor in conjunction with microprocessor control system to provide primary cooling using outdoor air, temperature permitting, supplemented with mechanical cooling when necessary.

1. Dampers shall be low leakage type, not to exceed 101.59 L/s m² (20 cfm per sq ft) leakage at 249 Pa (1 in. wg) pressure differential when fully closed.
2. Motor shall have a spring return feature which shuts dampers upon a power interruption or unit shutdown.
3. Equipped with solid-state control that sets the economizer cut-in point at an economical level.
4. Capable of introducing up to 100% outdoor air.
5. Motor shall be controlled by 4 to 20 mA input.
6. Minimum position set point shall be adjustable by the control module DIP (dual in-line package) switches in 10% increments.

N. Special Features:

Certain standard features are not applicable when the features designated * are specified. For assistance in amending the specifications, your local Carrier Sales Office should be contacted.

- * 1. Optional Condenser Coil Materials:
 - a. Unit shall be factory equipped with a condenser coil made from copper tubes and copper fins.
 - b. Unit shall be factory equipped with a condenser coil made from corrosion resistant pre-coated aluminum fins.
- * 2. Roof Curb:

Formed 14-gage galvanized steel with wood nailer strip. Supports full perimeter of unit.
- * 3. 100% Modulating Power Exhaust:

Package shall include 4 (sizes 024-044) or 6 (sizes 054-068) double-width, double inlet direct drives, forward-curved power exhaust fans staged independently to maintain a field adjustable interior space pressure set point.

 - a. Fans shall be statically and dynamically balanced.
 - b. Exhaust hood and eliminators shall prevent objects from entering unit through the relief dampers.
- 4. Barometric Relief Damper Package:
 - a. Package shall relieve excess internal pressure and consist of damper assembly, hoods, damper screen, seal strip, and required hardware.
 - b. Damper assembly shall close due to gravity upon unit shutoff.
 - c. Unit mounted on vertical supply/return units only; can be duct mounted on horizontal applications. Each damper (4 for sizes 024-044, 6 for sizes 054-068) shall consist of six 26-gage aluminum blades with a total area of 0.101 m² (1.085 ft²) each and a maximum velocity of 13.2 m/s (2600 ft/m).

5. Modulating Head Pressure Control:

Package shall consist of an accessory outdoor-air package and a solid-state control with condenser coil temperature sensor capable of modulating outdoor-fan motor speed to maintain condensing temperature between 32 C and 38 C (90 F and 100 F) at outdoor ambient temperature down to -29 C (-20 F).

6. Condenser Coil Hail Guard:

Hood with welded wire grille complete with support retainers and fasteners shall be provided for protection of condensing coil.

7. Electric Heat Package:

Shall be fully-assembled for installation. The 400-v units are designed in accordance with UL standards (U.S.A. Standard) and all units feature a single point connection.

* 8. Space Temperature Sensor (T-55):

This space temperature sensor shall monitor the actual temperature in the conditioned space. Sensor shall be equipped with an override button to provide unoccupied 1-hour override.

* 9. Enthalpy Control:

Shall provide efficient economizer control based on outdoor air enthalpy. Shall include logic and one sensor to calculate both dry and wet bulb of the outdoor air.

* 10. Enthalpy Sensor:

- a. For use with economizer only and with enthalpy control. Provides differential enthalpy.
- b. Capable of measuring temperature of outdoor air and controlling economizer cut-in point at a more economical level.

11. Indoor Air Quality (IAQ) CO₂ Sensor (Electronic Expansion Board Required):

- a. Shall have the ability to provide demand ventilation IAQ control through the economizer with an indoor air quality sensor.
- b. The IAQ sensor shall be available in duct mount, wall mount, and wall mount with LED display of CO₂ in parts per million. The set point shall have adjustment capability.

12. Electronic Expansion Board:

Shall provide the following:

- a. Control of modulating economizer damper to maintain indoor air quality when outdoor conditions are suitable.
- b. Discrete inputs for fan status, filter status, field-applied status, and demand limit.
- c. Shall perform demand limit functions based on the state of the discrete input.
- d. An output for the external alarm light indicator.

Guide specifications — 50EK,EY variable air volume units (cont)



- e. Smoke control modes including evacuation, smoke purge, pressurization, and shutdown. (Power exhaust required.)
 - f. Pre-occupancy purge shall be available.
13. Roof Curb Adapter Package:
Shall provide duct support hardware to retrofit unit to an existing 50DD,DF,DL roof curb.
NOTE: Duct transition from new unit duct configuration to existing ductwork design will be required below the existing roof curb.
14. Roof Curb Retrofit Kit:
Shall provide duct support hardware and panels to retrofit 50EJ,EK054-068 models only on an existing 50DD,DF054-064 roof curb.
15. Roof Curb Retrofit Kit:
Shall provide duct support hardware and panels to retrofit 50EJ,EK054-068 models only on an existing 50DL054 and 064 application.
16. Field-Installed Interface Device (LID-2B):
Shall be field-mounted to provide a remote 40-character per line, 16-line display panel. Device is not qualified for outdoor installation. The interface device is for use with temporary installation during service of unit. Requires a separate 24-v power supply.

