

CHA16

-024-030-036-048-060

2 to 5 Ton (7.0 to 17.6 kW)

SEER - up to 10.25

Net Cooling Capacity - 22,200 to 57,000 Btuh (6.5 to 16.5 kW)

Optional Electric Heat - 5 to 25 kW

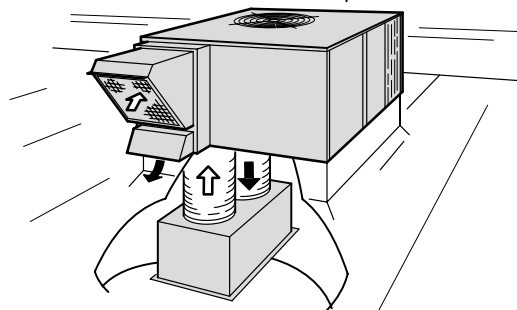
Bulletin No. 210124

September 2001

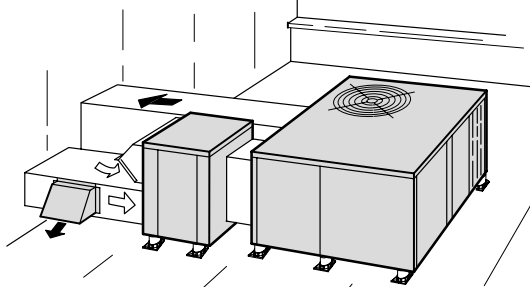
Supersedes December 2000



CHA16 Basic Unit

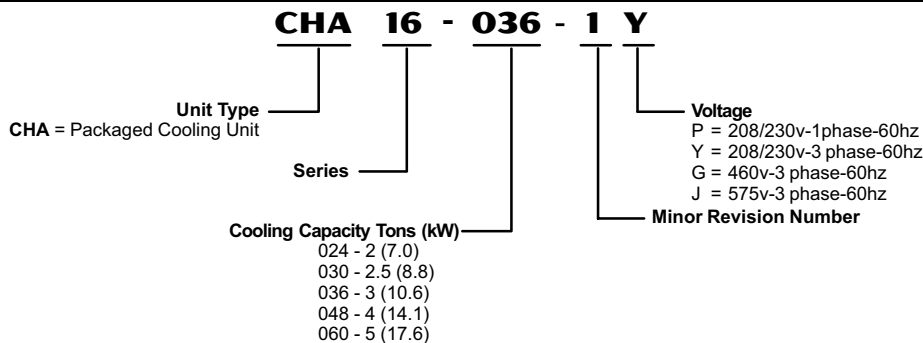


CHA16 Rooftop Installation With Combination Supply and Return Air System



CHA16 Rooftop Installation With Horizontal Economizer

MODEL NUMBER IDENTIFICATION



FEATURES

Application

- SEER up to 10.25.
- 2 through 5 ton (7.0 through 17.6 kW).
- Single and three phase power supply.
- Bottom (down-flow) or horizontal supply and return air.
- Designed for outdoor rooftop or ground level installations in residential or light commercial applications.

Approvals

- Certified in accordance with the USE certification program, which is based on ARI Standard 210/240-94.
- Sound rated in the Lennox reverberant sound test room in accordance with test conditions included in ARI Standard 270-95.
- Tested in the Lennox Research Laboratory environmental test room.
- Rated according to U.S. Department of Energy (DOE) test procedures.
- Units and components within are bonded for grounding to meet safety standards for servicing required by UL, ULC, NEC and CEC.
- Blower data is from unit tests conducted in the Lennox Laboratory air test chamber.
- Optional electric heaters are UL and ULC listed and are rated and tested according to DOE test procedures and FTC labeling regulations.
- Developed in accordance with ISO 9002 quality standards.

FEATURES - CONTINUED

Equipment Warranty

- Compressor - limited warranty for five years.
- All other covered components - one year limited warranty.
- Refer to Lennox Equipment Limited Warranty certificate for specific details.

Cabinet

- Heavy gauge, galvanized steel cabinet with five station metal wash process.
- Powder enamel paint, electrostatically bonded to the metal, provides superior rust and corrosion protection.
- Control box is conveniently located with all controls factory wired.
- Large removable panels provide service access.
- Base section and cabinet panels exposed to conditioned air are lined with thick fiberglass insulation.
- Flanged supply and return air openings.
- Electrical inlets furnished for entry into the cabinet.
- Evaporator coil drain pan constructed of painted, corrosion resistant galvanized steel with galvanized steel pipe drain outlet coupling.
- Lifting brackets factory installed.

Refrigeration System

- All models include: expansion valve, liquid line strainer, suction and liquid line service gauge ports, high pressure switch (manual reset) and full refrigerant charge.
- Freezestat prevents coil freeze-up during low ambient operation or loss of air flow.
- Low ambient operation down to 30°F (-1°C).

Compressor

- Designed for dependable efficiency with minimum operating cost.
- Suction cooled and overload protected with internal pressure relief.
- Hermetically sealed with built-in protection from excessive current and temperatures.
- Immersible self-regulating, crankcase heater assures proper compressor lubrication (024 - 030 models).
- Running gear assembly resiliently suspended internally inside case. Compressor installed in unit on resilient rubber mounts assuring low sound and vibration free operation.
- Scroll compressor on 036 - 060 models.

Condenser Fan

- Direct drive fan moves large air volumes uniformly through entire condenser coil for high refrigerant cooling capacity.
- Vertical air discharge keeps air up and away from building.
- Permanently lubricated, permanent split capacitor (PSC) motor.
- Motor totally enclosed for maximum protection from weather, dust and corrosion.
- Corrosion resistant PVC (polyvinyl chloride) coated steel wire fan guard is furnished as standard.

Copper Tube/Enhanced Fin Coil

- Lennox designed and fabricated coil.
- Ripple-edged aluminum fins.
- Long life copper tubing for ease of field servicing.
- Enhanced tubing for improved efficiency.
- Lanced fins provide maximum exposure of fin surface to air stream resulting in excellent heat transfer.
- Fin collars grip tubing for maximum contact area.
- Flared shoulder tubing connections/silver soldering construction.
- Coil is factory tested under high pressure to insure leakproof construction.

Blower

- Multi-speed direct drive blowers.
- Each blower assembly statically and dynamically balanced.
- Multiple-speed permanent split capacitor (PSC) motor resiliently mounted.
- Blower speeds are easily changed on the blower motor.
- See blower performance tables.

Air Filter

- Washable or vacuum cleanable one inch (25mm) thick polyurethane frame type air filter.
- Filter rack is furnished for field installation in down-flow applications.
- Filter rack will accept up to two inch (51mm) thick filter.
- Filters must be field installed in return air duct for horizontal applications without economizer.
- HF16 Horizontal Filter Kit available for Canada.
- See dimension drawings.

Economizer Wiring

- Furnished and factory installed.
- Economizer wiring harness with jack plug connections.
- See page 3 for economizer options.

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA						
Model No.		CHA16-024	CHA16-030	CHA16-036	CHA16-048	CHA16-060
Ceiling Diffusers - Aluminum grilles, large center grille, insulated diffuser box with flanges, hanging rings furnished, interior transition (even air flow), internally sealed (prevents recirculation), adapts to T-bar ceiling grids or plaster ceilings - Net Weight		Step-Down - double deflection louvers	RTD9-65 - 67 lbs. (30 kg)			
		Flush - fixed blade louvers	FD9-65 - 37 lbs.(17 kg)			
Ceiling Diffuser Transitions (Supply and Return) - Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for duct connection, fully insulated - Net Weight		SRT16 - 20 lbs. (9 kg)				
Coil Guards - PVC coated steel wire guards to protect outdoor coil. Not for use with Hail Guards.		LB-82199CF (47J23) 2 guards per order		LB-82199CG (47J24) 3 guards per order		
Control Systems		See pages 16-17				
Compressor Monitor (Canada Only) - Non-adjustable switch (low ambient cut-out) prevents compressor operation when outdoor temperature is below 35°F (2°C).		T6-1469 (45F08)				
Economizer with Gravity Exhaust Dampers (Down-Flow) - Installs directly in cabinet, recirculated air dampers with pressure operated gravity exhaust damper, formed, gasketed damper blades, nylon bearings, 24v damper motor has adjustable minimum position switch, electronic discharge air sensor, adjustable outdoor air enthalpy control. Utilizes filter furnished with unit, filter rack will accept up to 2 in. (51 mm) filter. Removable exhaust air hood and outdoor air intake hood with cleanable aluminum mesh filter. Choice of economizer controls. Model No. - Net Weight - No. & size of filter, in. (mm)	US Only	3 position	REMD16-41 - 48 lbs. (22 kg)	REMD16-65 - 66 lbs. (30 kg)		
		fully modulating	REMD16M-41 - 48 lbs. (22 kg)	REMD16M-65 - 66 lbs. (30 kg)		
		☐ Indoor Filter	(1) 16 x 25 x 1 (406 x 635 x 25)	(1) 20 x 25 x 1 (508 x 635 x 25)		
		Outdoor Filter	(1) 14 x 25 x 1 (356 x 635 x 25)	(1) 18 x 25 x 1 (457 x 635 x 25)		
	Canada Only	fully modulating	REMD16M-41S - 85 lbs. (39 kg)	REMD16M-65S- 105 lbs. (48 kg)		
		☐ Indoor Filter	(1) 16 x 25 x 1 (406 x 635 x 25)	(1) 20 x 25 x 1 (508 x 635 x 25)		
		Outdoor Filter	(1) 19-3/8 x 15-3/4 x 1	(1) 19-7/8 x 22-3/4 x 1 (505 x 578 x 25)		
Economizer Dampers (Horizontal) - Installs directly in cabinet, combination outdoor air and recirculated air damper, formed, gasketed damper blades, nylon bearings, 24v damper motor has adjustable minimum position switch, electronic discharge air sensor, adjustable outdoor air enthalpy control. 1 in (25 mm) fiberglass filter furnished, filter rack will accept up to 2 in. (51 mm) filter, outdoor air intake hood with aluminum mesh filter. Choice of economizer controls. Model No. - Net Weight - No. & size of filter, in. (mm)	US Only	3 position	EMDH16-41 110 lbs. (50 kg)	EMDH16-65 - 130 lbs. (59 kg)		
		fully modulating	EMDH16M-41 - 110 lbs. (50 kg)	EMDH16M-65 - 130 lbs. (59 kg)		
		Indoor Filter	(1) 20 x 24 x 1 (508 x 610 x 25)	(1) 16 x 25 x 1 (406 x 635 x 25) (1) 14 x 25 x1 (356 x 635 x 25)		
		Outdoor Filter	(1) 8 x 24 x 1 (203 x 610 x 25)	(1) 8 x 28 x 1 (203 x 711 x 25)		
	Canada Only	fully modulating	EMDH16M-41S - 70 lbs. (32 kg)	EMDH16M-65S - 86 lbs. (39 kg)		
		Indoor Filter	(1) 20 x 20 x 1 (508 x 508 x 25)	(1) 20 x 25 x 1 (508 x 635 x 25)		
		Outdoor Filter	(1) 16-1/2 x 21-3/4 x 1 (419 x 552 x 25)	(1) 22-1/2 x 25-1/4 x 1 (571 x 641 x 25)		
Economizer Gravity Exhaust Dampers - For use with EMDH16. Pressure operated assembly field installs in the return air duct adjacent to the economizer assembly. Includes bird screen. - Net Weight		GEDH16-65 - 4 lbs. (2 kg)				
Economizer Enthalpy Control, Differential - Used in conjunction with outdoor air enthalpy control. Determines and selects which air has the lowest enthalpy. Return air enthalpy sensor field installs in economizer damper section		54G44				
Electric Heat - Field installed, helix wound nichrome elements, time delay for element staging, individual element limit controls, wiring harness, may be two-stage controlled. ECH16R - Supplemental thermal cutoff safety fuses and thermal relay sequencer. ECH16 - Supplemental secondary limits, heating control relay, fuse block, thermal relay sequencer (20-25 kW 208/240v-3ph) and galvanized steel control box.		See Electric Heat Data Tables Pages 11-14				

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Model No.		CHA16-024	CHA16-030	CHA16-036	CHA16-048	CHA16-060
Electric Heat Single Point Power Source Sub-Fuse Box - Use with ECH16R electric heaters, use in conjunction with ECH16 fuse box for single point power source applications, installs internal to unit, fuses furnished, constructed of galvanized steel with prepunched mounting holes		See Electric Heat Data Tables, Pages 11-14				
Unit Single Point Power Source Sub Fuse Box - Installs internal to unit, provides sub-fusing to the unit, used in conjunction with ECH16 or ECH16R for single point power source applications, fuses furnished, constructed of galvanized steel with prepunched mounting holes and electrical inlet and outlet holes, hinged box cover		See Electric Heat Data Tables, Pages 11-14				
Hail Guards - Heavy duty field installed coil guard protects coils from damage. Not for use with Coil Guards.		90N90 2 guards per order			90N91 3 guards per order	
Horizontal Filter Kit (Canada Only) - For horizontal applications, painted steel cabinet with filter access, disposable, pleated fiber filter furnished, number and size of filter - Net Weight		HF16-46S - 18 lbs. (8 kg) (1) 20 x 20 x 2 in. (508 x 508 x 51 mm)			HF16-65S - 21 lbs. (10 kg) (1) 20 x 25 x 2 in. (508 x 635 x 51 mm)	
Low Ambient Control Kit - Units operate down to 30°F (-1°C) outdoor air temperature in cooling mode without any additional controls. A Low Ambient Kit can be field installed, enabling unit to operate properly down to 0°F (-17.7°C).		LB-57113BC (24H77)				
Outdoor Air Damper Section - For down-flow applications, damper assembly replaces blower access panel, manually adjustable, 0 to 25% (fixed) outdoor air, outdoor air hood with cleanable filter included, number and size of filter - Net Weight	US Only	OAD16-41 - 12 lbs. (5 kg) (1) 5 x 17 x 1 in. (127 x 432 x 25 mm)			OAD16-65 - 12 lbs. (5 kg) (1) 8 x 17 x 1 in. (203 x 432 x 25 mm)	
	Canada Only	OAD16-41S - 10 lbs. (5 kg) (1) 14 x 6 x 1 in. (356 x 152 x 25 mm)			OAD16-65S - 16 lbs. (7 kg) (1) 18 x 6 x 1 in. (457 x 152 x 25 mm)	
Outdoor Air Damper Section - For horizontal applications, installs in return air duct adjacent to unit, manually adjustable (fixed) outdoor air - Net Weight		OAD3-46/65 - 8 lbs. (4 kg)				
Outdoor Thermostat Kit - Used to lock out some of the electric heating elements on indoor units where two stage control is applicable. Outdoor thermostat maintains the heating load on the low power input as long as possible before allowing the full power load to come on line	Thermostat Kit	LB-29740BA (56A87)				
	Mounting Box	M-1595 (31461) / BM-10260 (33A09) Canada Only				
Roof Curb Power Entry Kit - Allows power entry through roof mounting frame, knockouts provided in roof frame, kit contains 40 in. (1016 mm) armored conduit and installation hardware, two kits are required, one for low voltage and one for high voltage. See Dimension Drawing	1/2 in. (13 mm)	18H70				
	1 in. (26 mm)	18H71				
	1-1/2 in. (39 mm)	18H72				
Roof Mounting Frame - Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down. RMF16-41 may be used on all sizes, with a slight unit overhang on CHA16-048 and CHA16-060 units - Net Weight NOTE (US Only) - Sound Reduction Plate must be ordered separately for field installation.		RMF16-41 - 75 lbs. (35 kg) Plate (ordered separately) (73H80)			RMF16-41 - 75 lbs. (35 kg) Plate (ordered separately) (73H80) RMF16-65 - 86 lbs. (39 kg) Plate (ordered separately) (73H82)	
Timed Off Control - Prevents compressor short-cycling and allows time for suction and discharge pressure to equalize, permitting the compressor to start in an unloaded condition. Automatic reset control provides a time delay between compressor shutoff and start-up.		LB-50709BK (47J27)				
Unit Stand-Off Mounting Kit - Elevates horizontal application units above mounting surface. Includes six high impact polystyrene stand-off mounts. See dimension drawings.		38H18				

☐ Indoor filter is not furnished with economizer. REMD16 utilizes existing filter furnished with CHA16 unit.

SPECIFICATIONS

Cooling Performance		Model No.	CHA16-024	CHA16-030	CHA16-036	CHA16-048	CHA16-060
	Nominal Tonnage (kW)		2 (7.0)	2.5 (8.8)	3 (10.5)	4 (14.0)	5 (17.5)
	★Cooling capacity - Btuh (kW)		22,200 (6.5)	27,600 (8.1)	35,200 (10.3)	45,000 (13.2)	57,000 (16.5)
	Total unit watts		2550	3210	4045	4890	6065
	★SEER (Btuh/Watts)		10.0	10.0	10.0	10.0	10.25
	EER (Btuh/Watts)		8.7	8.6	8.7	9.2	9.4
	*Sound Rating Number (db)		80	80	80	82	82
	Refrigerant Charge (HCFC-22)		3 lbs. 3 oz. (1.45 kg)	4 lbs. 6 oz. (1.98 kg)	4 lbs. 13 oz. (2.18 kg)	5 lbs. 8 oz. (2.49 kg)	7 lbs. 7 oz. (3.37 kg)
Condenser Coil	Net face area - ft. ² (m ²) Outer coil		8.6 (0.80)	8.6 (0.80)	8.6 (0.80)	14.3 (1.33)	14.3 (1.33)
	Inner coil		- - -	8.4 (0.78)	8.4 (0.78)	5.9 (0.55)	13.8 (1.28)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	No. of rows		1	2	2	1.4	2
	Fins per inch (m)		20 (787)	20 (787)	20 (787)	20 (787)	20 (787)
Condenser Fan	Motor horsepower (W)		1/6 (124)	1/6 (124)	1/6 (124)	1/4 (187)	1/4 (187)
	Motor watts		230	220	220	340	330
	Diameter - in. (mm) & No. of blades		20 (508) - 4	20 (508) - 4	20 (508) - 4	24 (610) - 4	24 (610) - 4
	Air volume - cfm (L/s)		2400 (1135)	2200 (1040)	2200 (1040)	4000 (1890)	3600 (1700)
Evaporator Coil	Net face area - ft. ² (m ²)		3.2 (0.30)	3.2 (0.30)	4.1 (0.38)	5.8 (0.54)	5.8 (0.54)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	No. of rows		2	2	2	2	2
	Fins per inch (m)		15 (591)	17 (669)	17 (669)	15 (591)	15 (591)
	Condensate drain coupling size npt - in.		3/4	3/4	3/4	3/4	3/4
Evaporator Blower	Motor horsepower (W)		1/3 (249)	1/3 (249)	1/3 (249)	1/2 (373)	3/4 (560)
	Blower wheel nominal diameter x width in. (mm)		9 x 8 (229 x 203)	10 x 7 (254 x 178)	10 x 7 (254 x 178)	10 x 8 (254 x 203)	11-1/2 x 9 (292 x 229)
No. & size of cleanable polyurethane filters - in. (mm)			(1) 16 x 25 x 1 (406 x 635 x 25)			(1) 20 x 25 x 1 (508 x 635 x 25)	
Shipping Data	Net weight basic unit - lbs. (kg)		300 (136)	331 (150)	320 (145)	438 (199)	473 (215)
	Shipping weight basic unit - lbs. (kg) 1 pkg.		385 (175)	413 (187)	407 (185)	547 (248)	582 (264)
Electrical characteristics (60hz)			208/230v - 1 phase		208/230v - 1 ph, 208/230v, 460v or 575v - 3 ph		

*Sound Rating Number in accordance with test conditions included in ARI Standard 270.

★Certified in accordance with USE certification program, which is based on ARI Standard 210/240 and DOE 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator coil air.

COOLING RATINGS

NOTE - For Temperatures and Capacities not shown in tables, see bulletin — Cooling Unit Rating Table Correction Factor Data in Miscellaneous Engineering Data section.

CHA16-024 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	640	300	22.2	6.5	1.81	.71	.84	.96	21.0	6.2	1.95	.73	.87	.98	19.8	5.8	2.10	.75	.89	1.00	18.7	5.5	2.22	.77	.91	1.00
	800	380	23.1	6.8	1.84	.76	.90	1.00	21.9	6.4	1.99	.78	.93	1.00	20.7	6.1	2.13	.80	.95	1.00	19.5	5.7	2.27	.83	.97	1.00
	960	455	23.8	7.0	1.86	.80	.96	1.00	22.6	6.6	2.02	.83	.98	1.00	21.4	6.3	2.17	.85	1.00	1.00	20.3	5.9	2.31	.88	1.00	1.00
67°F (19°C)	640	300	23.7	6.9	1.86	.56	.69	.81	22.5	6.6	2.01	.57	.70	.83	21.2	6.2	2.16	.58	.72	.85	19.9	5.8	2.29	.59	.74	.88
	800	380	24.5	7.2	1.88	.59	.73	.87	23.2	6.8	2.04	.60	.75	.90	21.9	6.4	2.19	.61	.78	.92	20.6	6.0	2.33	.63	.80	.95
	960	455	25.1	7.4	1.90	.61	.78	.93	23.8	7.0	2.06	.63	.80	.95	22.4	6.6	2.21	.64	.83	.98	21.1	6.2	2.35	.66	.85	.99
71°F (22°C)	640	300	25.4	7.4	1.91	.43	.54	.66	24.1	7.1	2.07	.43	.55	.67	22.8	6.7	2.23	.43	.56	.69	21.5	6.3	2.37	.43	.57	.71
	800	380	26.2	7.7	1.93	.43	.57	.71	24.9	7.3	2.10	.43	.58	.73	23.5	6.9	2.26	.44	.60	.75	22.1	6.5	2.40	.45	.61	.77
	960	455	26.8	7.9	1.95	.44	.60	.76	25.4	7.4	2.12	.45	.61	.78	24.0	7.0	2.28	.45	.63	.80	22.5	6.6	2.42	.46	.65	.83

CHA16-030 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	800	380	27.9	8.2	2.23	.73	.86	.97	26.6	7.8	2.41	.74	.88	.99	25.1	7.4	2.59	.76	.90	1.00	23.7	6.9	2.77	.78	.93	1.00
	1000	470	29.0	8.5	2.26	.77	.92	1.00	27.7	8.1	2.44	.79	.94	1.00	26.2	7.7	2.62	.81	.96	1.00	24.7	7.2	2.82	.83	.99	1.00
	1200	565	29.9	8.8	2.28	.82	.97	1.00	28.5	8.4	2.47	.84	.99	1.00	27.1	7.9	2.66	.86	1.00	1.00	25.7	7.5	2.86	.89	1.00	1.00
67°F (19°C)	800	380	29.8	8.7	2.28	.57	.70	.82	28.4	8.3	2.46	.58	.71	.84	27.0	7.9	2.65	.59	.73	.86	25.4	7.4	2.84	.60	.75	.89
	1000	470	30.8	9.0	2.31	.60	.75	.89	29.3	8.6	2.49	.61	.76	.91	27.8	8.1	2.68	.62	.78	.93	26.2	7.7	2.87	.63	.81	.96
	1200	565	31.5	9.2	2.32	.62	.79	.94	29.9	8.8	2.52	.64	.82	.96	28.4	8.3	2.71	.65	.84	.98	26.8	7.9	2.90	.67	.86	1.00
71°F (22°C)	800	380	31.9	9.3	2.33	.43	.55	.67	30.4	8.9	2.53	.43	.56	.69	28.9	8.5	2.73	.43	.57	.70	27.3	8.0	2.93	.44	.58	.72
	1000	470	32.9	9.6	2.36	.44	.58	.72	31.3	9.2	2.56	.44	.59	.74	29.7	8.7	2.76	.45	.60	.76	28.0	8.2	2.97	.45	.62	.79
	1200	565	33.5	9.8	2.38	.45	.61	.77	31.9	9.3	2.58	.45	.63	.79	30.3	8.9	2.79	.46	.64	.82	28.5	8.4	3.00	.47	.66	.84

CHA16-036 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	960	455	34.9	10.2	2.87	.70	.84	.96	33.8	9.9	3.20	.71	.85	.97	32.6	9.6	3.59	.72	.87	.98	31.3	9.2	4.02	.73	.88	1.00
	1200	565	36.3	10.6	2.87	.75	.90	1.00	35.1	10.3	3.20	.76	.92	1.00	33.9	9.9	3.59	.78	.94	1.00	32.6	9.6	4.02	.79	.95	1.00
	1440	680	37.5	11.0	2.87	.80	.96	1.00	36.3	10.6	3.21	.82	.97	1.00	35.0	10.3	3.59	.83	.99	1.00	33.8	9.9	4.02	.85	1.00	1.00
67°F (19°C)	960	455	37.2	10.9	2.87	.55	.67	.80	35.9	10.5	3.20	.55	.68	.81	34.7	10.2	3.59	.56	.69	.83	33.3	9.8	4.03	.57	.70	.84
	1200	565	38.3	11.2	2.89	.58	.72	.87	37.1	10.9	3.22	.58	.74	.89	35.7	10.5	3.60	.59	.75	.91	34.4	10.1	4.03	.60	.76	.92
	1440	680	39.2	11.5	2.90	.61	.78	.93	37.9	11.1	3.24	.61	.79	.95	36.5	10.7	3.62	.62	.81	.96	35.1	10.3	4.05	.63	.83	.98
71°F (22°C)	960	455	39.6	11.6	2.91	.41	.53	.65	38.3	11.2	3.25	.41	.54	.66	37.0	10.8	3.63	.42	.54	.67	35.6	10.4	4.07	.42	.55	.68
	1200	565	40.7	11.9	2.93	.42	.56	.70	39.4	11.5	3.27	.43	.57	.71	38.0	11.1	3.65	.43	.58	.73	36.6	10.7	4.09	.43	.59	.74
	1440	680	41.5	12.2	2.95	.43	.59	.75	40.1	11.8	3.29	.44	.60	.77	38.7	11.3	3.67	.44	.61	.78	37.2	10.9	4.11	.45	.63	.80

CHA16-048 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	1280	605	45.0	13.2	3.40	.71	.84	.96	43.6	12.8	3.79	.71	.85	.97	42.0	12.3	4.23	.73	.87	.98	40.3	11.8	4.75	.74	.89	.99
	1600	755	46.7	13.7	3.43	.76	.91	1.00	45.1	13.2	3.82	.77	.92	1.00	43.5	12.7	4.27	.78	.94	1.00	41.8	12.3	4.79	.80	.95	1.00
	1920	905	48.0	14.1	3.46	.80	.96	1.00	46.5	13.6	3.84	.82	.97	1.00	44.8	13.1	4.29	.83	.99	1.00	43.1	12.6	4.82	.85	1.00	1.00
67°F (19°C)	1280	605	47.8	14.0	3.45	.56	.68	.81	46.2	13.5	3.83	.56	.69	.82	44.5	13.0	4.28	.57	.70	.84	42.7	12.5	4.80	.57	.71	.85
	1600	755	49.2	14.4	3.47	.58	.73	.88	47.6	14.0	3.86	.59	.74	.89	45.8	13.4	4.31	.60	.76	.91	43.9	12.9	4.84	.61	.78	.93
	1920	905	50.3	14.7	3.49	.61	.78	.93	48.6	14.2	3.88	.62	.80	.95	46.7	13.7	4.34	.63	.82	.97	44.8	13.1	4.86	.64	.83	.98
71°F (22°C)	1280	605	50.9	14.9	3.50	.42	.54	.66	49.2	14.4	3.89	.42	.54	.67	47.4	13.9	4.35	.42	.55	.68	45.5	13.3	4.87	.43	.56	.69
	1600	755	52.3	15.3	3.53	.43	.57	.71	50.5	14.8	3.92	.43	.58	.72	48.7	14.3	4.37	.43	.58	.74	46.6	13.7	4.90	.44	.60	.75
	1920	905	53.3	15.6	3.55	.44	.60	.76	51.5	15.1	3.94	.44	.61	.78	49.5	14.5	4.39	.45	.62	.79	47.4	13.9	4.93	.45	.63	.81

COOLING RATINGS

NOTE - For Temperatures and Capacities not shown in tables, see bulletin — Cooling Unit Rating Table Correction Factor Data in Miscellaneous Engineering Data section.

CHA16-060 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																													
			95°F (35°C)						105°F (41°C)						115°F (46°C)																	
	Total Cooling Capacity		85°F (29°C) Compressor Motor Watts Input			Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		95°F (35°C) Compressor Motor Watts Input			Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		105°F (41°C) Compressor Motor Watts Input			Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		115°F (46°C) Compressor Motor Watts Input			Sensible To Total Ratio (S/T) Dry Bulb		
			75°F 24°C	80°F 27°C	85°F 29°C	75°F 24°C	80°F 27°C	85°F 29°C			75°F 24°C	80°F 27°C	85°F 29°C	75°F 24°C	80°F 27°C	85°F 29°C			75°F 24°C	80°F 27°C	85°F 29°C	75°F 24°C	80°F 27°C	85°F 29°C								
63°F (17.2°C)	825	1750	17.2	58,800	4330	.72	.88	.99	16.5	56,300	4660	.74	.89	1.00	15.7	53,700	4970	.75	.91	1.00	14.8	50,500	5270	.77	.94	1.00						
	945	2000	17.7	60,500	4380	.75	.91	1.00	16.8	57,200	4700	.77	.94	1.00	16.1	54,900	5020	.78	.95	1.00	15.3	52,300	5340	.80	.97	1.00						
	1060	2250	18.0	61,500	4410	.78	.94	1.00	17.3	59,000	4750	.80	.96	1.00	16.4	55,900	5060	1.00	1.00	1.00	15.5	53,000	5370	.84	1.00	1.00						
67°F (19.4°C)	825	1750	18.0	61,400	4410	.57	.72	.85	17.3	58,900	4740	.58	.73	.86	16.5	56,300	5080	.59	.74	.88	15.7	53,600	5400	.59	.76	.90						
	945	2000	18.5	63,200	4460	.59	.74	.89	17.8	60,600	4800	.62	.76	.90	16.9	57,800	5140	.61	.77	.92	16.1	55,000	5470	.62	.79	.94						
	1060	2250	19.0	64,700	4490	.61	.77	.93	18.1	61,900	4840	.62	.78	.94	17.3	59,100	5190	.63	.80	.97	16.5	56,200	5520	.64	.82	.99						
71°F (21.7°C)	825	1750	18.7	63,900	4480	.43	.57	.71	18.0	61,400	4820	.43	.57	.73	17.2	58,700	5170	.43	.59	.74	16.4	56,000	5510	.44	.60	.75						
	945	2000	19.3	65,700	4530	.43	.58	.74	18.5	63,000	4880	.44	.59	.75	17.7	60,300	5230	.44	.61	.77	16.8	57,400	5580	.45	.62	.78						
	1060	2250	19.7	67,200	4560	.44	.60	.77	18.9	64,400	4920	.45	.61	.78	18.0	61,600	5280	.45	.63	.80	17.2	58,600	5630	.45	.64	.82						

NOTE — All values are gross capacities and do not include indoor coil blower motor heat deduction.

BLOWER DATA

CHA16-024 BLOWER PERFORMANCE @ 230 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1370	645	950	450	875	415	660	310
.05	12	1365	645	955	450	880	415	670	315
.10	25	1350	635	960	455	885	420	675	320
.15	37	1340	630	960	455	885	420	680	320
.20	50	1320	625	955	450	880	415	680	320
.25	62	1300	615	950	450	875	415	680	320
.30	75	1280	605	940	445	870	410	675	320
.40	100	1220	575	920	435	850	400	660	310
.50	125	1150	545	880	415	820	385	630	295
.60	150	1070	505	835	395	775	365	585	275
.70	175	975	460	780	370	725	340	535	250
.75	185	925	435	745	350	700	330	500	235

NOTE — For 208v unit operation, derate air volume by 7%. All air data is measured external to the unit with dry coil and without air filter.

CHA16-024 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1405	665	905	425	820	385	620	295
.05	12	1400	660	935	440	845	400	640	300
.10	25	1385	655	955	450	865	410	655	310
.15	37	1370	645	975	460	880	415	665	315
.20	50	1355	640	985	465	890	420	670	315
.25	62	1335	630	990	465	895	420	670	315
.30	75	1310	620	985	465	890	420	670	315
.40	100	1260	595	965	455	870	410	650	305
.50	125	1195	565	915	430	830	390	615	290
.60	150	1120	530	840	395	865	410	560	265
.70	175	1035	490	740	350	675	320	490	230
.75	185	990	465	685	325	620	295	445	210

NOTE — For 208v unit operation, derate air volume by 7%. All air data is measured external to the unit with dry coil and without air filter.

CHA16-030 BLOWER PERFORMANCE @ 230 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1355	640	1255	590	1105	520	900	425
.05	12	1345	635	1250	590	1100	520	910	430
.10	25	1330	630	1245	590	1090	515	915	430
.15	37	1310	620	1235	585	1080	510	915	430
.20	50	1290	610	1220	575	1070	505	910	430
.25	62	1270	600	1205	570	1055	500	900	425
.30	75	1245	590	1180	555	1035	490	890	420
.40	100	1190	560	1130	535	990	465	855	405
.50	125	1125	530	1060	500	935	440	805	380
.60	150	1050	495	980	460	870	410	735	345
.70	175	960	455	885	420	790	375	655	310
.75	185	915	430	835	395	745	350	605	285

NOTE — For 208v unit operation, derate air volume by 7%. All air data is measured external to the unit with dry coil and without air filter.

CHA16-030 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1445	680	1330	630	1105	520	900	425
.05	12	1435	680	1295	610	1105	520	910	430
.10	25	1420	670	1285	605	1105	520	915	430
.15	37	1400	660	1275	600	1100	520	920	435
.20	50	1380	650	1265	595	1095	515	920	435
.25	62	1360	640	1250	590	1085	510	915	430
.30	75	1335	630	1230	580	1070	505	905	425
.40	100	1280	605	1185	560	1035	490	880	415
.50	125	1220	575	1135	535	995	470	840	395
.60	150	1150	545	1070	505	935	440	790	375
.70	175	1070	505	995	470	870	410	720	340
.75	185	1025	485	955	450	830	390	680	320

NOTE — For 208v unit operation, derate air volume by 7%. All air data is measured external to the unit with dry coil and without air filter.

BLOWER DATA

CHA16-036 BLOWER PERFORMANCE @ 230 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1415	670	1350	635	1135	530	915	430
.05	12	1395	660	1335	630	1125	530	905	425
.10	25	1375	650	1315	620	1115	525	895	420
.15	37	1360	640	1290	610	1110	525	890	420
.20	50	1355	640	1275	600	1105	520	885	420
.25	62	1325	625	1255	590	1095	515	875	415
.30	75	1310	620	1235	585	1085	510	865	410
.40	100	1265	595	1195	565	1060	500	845	400
.50	125	1220	575	1155	545	1020	480	825	390
.60	150	1170	550	1105	520	975	460	785	370
.70	175	1115	525	1045	495	925	435	725	340
.75	185	1085	510	1010	475	895	420	685	325

NOTE — For 208v unit operation, derate air volume by 7%.
All air data is measured external to the unit with dry coil and without air filter.

CHA16-036 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1490	705	1460	690	1145	540	920	435
.05	12	1470	695	1440	680	1135	535	910	430
.10	25	1450	685	1420	670	1125	530	900	425
.15	37	1435	675	1395	660	1120	530	895	420
.20	50	1430	675	1375	650	1115	525	890	420
.25	62	1400	660	1355	640	1105	520	880	415
.30	75	1380	650	1335	630	1095	515	870	410
.40	100	1335	630	1285	605	1070	505	850	400
.50	125	1285	605	1235	585	1030	485	830	390
.60	150	1235	585	1195	565	985	465	790	375
.70	175	1185	560	1140	540	935	440	730	345
.75	185	1160	545	1110	525	905	425	690	325

NOTE — All air data is measured external to the unit with dry coil and without air filter.

CHA16-036 BLOWER PERFORMANCE @ 460/575 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s
0	0	1625	765	1465	690	1100	520
.05	12	1600	755	1445	680	1100	520
.10	25	1570	740	1420	670	1100	520
.15	37	1555	735	1395	660	1095	515
.20	50	1525	720	1385	655	1090	515
.25	62	1485	700	1365	645	1075	505
.30	75	1465	690	1340	630	1070	505
.40	100	1400	660	1285	605	1035	490
.50	125	1335	630	1235	585	1005	475
.60	150	1260	595	1165	550	955	450
.70	175	1170	550	1085	510	875	415
.75	185	1100	520	1045	495	815	385

NOTE — All air data is measured external to the unit with dry coil and without air filter.

CHA16-036 BLOWER PERFORMANCE @ 460/575 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s
0	0	1710	805	1590	750	1105	520
.05	12	1685	795	1565	740	1105	520
.10	25	1655	780	1535	725	1105	520
.15	37	1630	770	1510	715	1100	520
.20	50	1610	760	1490	705	1095	515
.25	62	1570	740	1470	695	1085	510
.30	75	1540	725	1445	680	1075	505
.40	100	1475	695	1385	655	1040	490
.50	125	1405	665	1330	630	1010	475
.60	150	1335	630	1260	595	960	455
.70	175	1240	585	1185	560	885	420
.75	185	1180	555	1150	545	825	390

NOTE — All air data is measured external to the unit with dry coil and without air filter.

CHA16-048 BLOWER PERFORMANCE @ 230 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2065	975	1715	810	1515	715	1305	615
.05	12	2055	970	1705	805	1505	710	1300	615
.10	25	2040	965	1690	800	1495	705	1300	615
.15	37	2020	955	1680	795	1485	700	1295	610
.20	50	2000	945	1665	785	1475	695	1290	610
.25	62	1975	930	1650	780	1470	695	1285	605
.30	75	1950	920	1635	770	1450	685	1280	605
.40	100	1885	890	1600	755	1425	670	1260	595
.50	125	1810	855	1565	740	1395	660	1225	580
.60	150	1730	815	1525	720	1360	640	1175	555
.70	175	1645	775	1600	755	1320	625	1110	525
.75	185	1600	755	1455	685	1295	610	1070	505

NOTE — For 208v unit operation, derate air volume by 7%.
All air data is measured external to the unit with dry coil and without air filter.

CHA16-048 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
		in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2140	1010	1785	840	1535	725	1305	615
.05	12	2115	1000	1770	835	1530	720	1300	615
.10	25	2090	985	1755	830	1520	715	1295	610
.15	37	2070	975	1745	825	1510	715	1290	610
.20	50	2045	965	1730	815	1500	710	1285	605
.25	62	2020	955	1715	810	1490	705	1280	605
.30	75	1995	940	1700	800	1480	700	1275	600
.40	100	1935	915	1665	785	1460	690	1260	595
.50	125	1875	885	1630	770	1430	675	1235	585
.60	150	1800	850	1585	750	1400	660	1205	570
.70	175	1710	805	1530	720	1370	645	1170	550
.75	185	1655	780	1495	705	1355	640	1150	545

NOTE — For 208v unit operation, derate air volume by 7%.
All air data is measured external to the unit with dry coil and without air filter.

BLOWER DATA

CHA16-048 BLOWER PERFORMANCE @ 460/575 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2140	1010	1745	825	1175	555
.05	12	2120	1000	1730	815	1175	555
.10	25	2080	980	1720	810	1170	550
.15	37	2045	965	1710	805	1170	550
.20	50	2005	945	1695	800	1165	550
.25	62	1975	930	1680	795	1160	545
.30	75	1940	915	1665	785	1150	545
.40	100	1870	885	1625	765	1135	535
.50	125	1790	845	1580	745	1110	525
.60	150	1705	805	1515	715	1075	505
.70	175	1605	760	1430	675	1030	485
.75	185	1555	740	1375	650	1000	470

NOTE — All air data is measured external to the unit with dry coil and without air filter.

CHA16-048 BLOWER PERFORMANCE @ 460/575 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2160	1020	1815	855	1210	570
.05	12	2125	1005	1800	850	1210	570
.10	25	2095	990	1790	845	1200	565
.15	37	2060	970	1780	840	1200	565
.20	50	2025	955	1760	830	1195	565
.25	62	1990	940	1745	825	1190	560
.30	75	1955	925	1730	815	1185	560
.40	100	1885	890	1690	800	1170	550
.50	125	1805	850	1640	775	1140	540
.60	150	1715	810	1575	745	1105	520
.70	175	1615	760	1495	705	1065	505
.75	185	1560	735	1445	680	1040	490

NOTE — All air data is measured external to the unit with dry coil and without air filter.

CHA16-060 BLOWER PERFORMANCE @ 230 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2725	1285	2490	1175	2235	1055	1940	915	1620	765
.05	12	2695	1270	2435	1150	2210	1045	1930	910	1625	765
.10	25	2665	1260	2430	1145	2185	1030	1925	910	1625	765
.15	37	2635	1245	2415	1140	2160	1020	1910	900	1610	760
.20	50	2600	1225	2395	1130	2140	1010	1895	895	1590	750
.25	62	2555	1205	2365	1115	2130	1005	1880	885	1580	745
.30	75	2510	1185	2335	1100	2115	1000	1865	880	1565	740
.40	100	2445	1155	2275	1075	2060	970	1830	865	1540	725
.50	125	2385	1125	2230	1050	2005	945	1765	835	1505	710
.60	150	2285	1080	2140	1010	1940	915	1725	815	1455	685
.70	175	2210	1045	2075	980	1880	885	1660	785	1405	665
.75	185	2175	1025	2030	960	1845	870	1615	760	1370	645

NOTE — For 208v unit operation, derate air volume by 7%.
All air data is measured external to the unit with dry coil and without air filter.

CHA16-060 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2850	1345	2530	1195	2255	1065	1970	930	1640	775
.05	12	2820	1330	2475	1170	2230	1050	1965	925	1645	775
.10	25	2790	1315	2475	1170	2205	1040	1955	925	1645	775
.15	37	2760	1300	2455	1160	2180	1030	1940	915	1630	770
.20	50	2725	1285	2435	1150	2160	1020	1925	910	1610	760
.25	62	2680	1265	2405	1135	2150	1015	1910	900	1600	755
.30	75	2630	1240	2375	1120	2135	1010	1895	895	1585	750
.40	100	2570	1215	2315	1090	2080	980	1860	880	1560	735
.50	125	2510	1185	2270	1070	2025	955	1795	845	1525	720
.60	150	2410	1135	2180	1030	1960	925	1755	830	1475	695
.70	175	2335	1100	2115	1000	1900	895	1690	800	1425	670
.75	185	2300	1085	2070	975	1865	880	1650	780	1390	655

NOTE — For 208v unit operation, derate air volume by 7%.
All air data is measured external to the unit with dry coil and without air filter.

CHA16-060 BLOWER PERFORMANCE @ 460/575 VOLTS (With Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2725	1285	2405	1135	1905	900
.05	12	2680	1265	2365	1115	1890	890
.10	25	2635	1245	2325	1095	1870	880
.15	37	2590	1220	2290	1080	1855	875
.20	50	2550	1205	2255	1065	1840	870
.25	62	2515	1185	2220	1050	1820	860
.30	75	2485	1175	2190	1035	1795	845
.40	100	2395	1130	2120	1000	1745	825
.50	125	2325	1095	2050	965	1680	795
.60	150	2235	1055	1970	930	1570	740
.70	175	2150	1015	1900	895	1560	735
.75	185	2100	990	1860	880	1515	715

NOTE — All air data is measured external to the unit with dry coil and without air filter.

CHA16-060 BLOWER PERFORMANCE @ 460/575 VOLTS (With Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2850	1345	2430	1145	1940	915
.05	12	2805	1325	2385	1125	1920	905
.10	25	2760	1300	2345	1105	1905	900
.15	37	2715	1280	2310	1090	1885	890
.20	50	2670	1260	2275	1075	1870	880
.25	62	2640	1245	2240	1055	1850	875
.30	75	2605	1230	2210	1045	1825	860
.40	100	2515	1185	2140	1010	1775	840
.50	125	2445	1155	2120	1000	1710	805
.60	150	2355	1110	1990	940	1600	755
.70	175	2270	1070	1920	905	1590	750
.75	185	2225	1050	1880	885	1545	730

NOTE - All air data is measured external to the unit with dry coil and without air filter.

BLOWER DATA

FILTER AND ACCESSORY AIR RESISTANCE

Unit Model No.	Air Volume		Total Air Resistance											
			1 in. (25mm) Filter Furnished		REMD16 Down-Flow Economizer						EMDH16 Horizontal Economizer			
					Less Filter		With Optional Pleated Polyester 2 in. (51mm) Filter		With Optional Fiberglass 2 in. (51mm) Filter		With Furnished 1 in. (25mm) Filter		Less Filter	
cfm	L/s	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	
CHA16-024 CHA16-030 CHA16-036	800	380	.15	37	.05	12	.27	67	.13	32	.18	45	.10	25
	1000	470	.18	45	.06	15	.34	85	.18	45	.26	65	.15	37
	1200	565	.21	52	.09	22	.42	104	.24	60	.35	87	.21	52
	1400	660	.25	62	.15	37	.51	127	.31	77	.46	114	.29	72
CHA16-048 CHA16-060	1600	755	.15	37	.05	12	.40	99	.27	67	.30	75	.17	42
	1800	850	.17	42	.06	15	.48	119	.33	82	.35	87	.19	47
	2000	945	.20	50	.08	20	.56	139	.39	97	.40	99	.22	55
	2200	1040	.23	57	.13	32	.66	164	.46	114	.47	117	.26	85

DIFFUSER AIR RESISTANCE

Unit Model No.	Air Volume		Total Air Resistance							
			RTD9-65 Diffuser				FD9-65 Diffuser			
			2 Ends Open		1 Side 2 Ends Open		All Ends & Sides Open		FD9-65 Diffuser	
cfm	L/s	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	
CHA16-024 CHA16-030 CHA16-036	800	380	.15	37	.13	32	.11	27	.11	27
	1000	470	.19	47	.16	40	.14	35	.14	35
	1200	565	.25	62	.20	50	.17	42	.17	42
	1400	660	.33	82	.26	65	.20	50	.20	50
CHA16-048 CHA16-060	1600	755	.43	107	.32	80	.20	50	.24	60
	1800	850	.56	139	.40	90	.30	75	.30	75
	2000	945	.73	182	.50	124	.36	90	.36	90
	2200	1040	.95	236	.63	157	.44	109	.44	109

NOTE - Electric heaters have no appreciable air resistance.

CEILING DIFFUSER AIR THROW DATA

Model No.		RTD9-65		FD9-65	
Air Volume		Effective Throw		Effective Throw	
cfm	L/s	ft.	m	ft. — ft.	(m) _m
1000	470	10-17	3-5	15-20	5-6
1200	565	11-18	3-5	16-22	5-7
1400	660	12-19	4-6	17-24	5-7
1600	755	12-20	4-6	18-25	5-8
1800	850	13-21	4-6	20-28	6-9
2000	945	14-23	4-7	21-29	6-9
2200	1040	16-25	5-8	22-30	7-9

Effective throw based on terminal velocities of 75 ft. (22.9 m) per minute.

WET INDOOR COIL AIR RESISTANCE

Model Number	Air Volume		Air Resistance	
	cfm	L/s	in. w.g.	Pa
CHA16-024	800	380	0.06	15
	1000	470	0.07	17
	1200	565	0.08	20
CHA16-030	800	380	0.09	22
	1000	470	0.10	25
	1200	565	0.11	27
CHA16-036	800	380	0.09	22
	1000	470	0.10	25
	1200	565	0.11	27
CHA16-048	1400	660	0.12	30
	1600	755	0.11	27
	1800	850	0.12	30
	2000	945	0.13	32
CHA16-060	2200	1040	0.14	35
	1600	755	0.08	20
	1800	850	0.09	22
	2000	945	0.10	25
	2200	1040	0.11	27

ELECTRICAL DATA - SINGLE PHASE MODELS

General Data	Model No.	CHA16-024	CHA16-030	CHA16-036	CHA16-048	CHA16-060
Line voltage data - 60 hz - 1 phase		208/230v	208/230v	208/230v	208/230v	208/230v
Rec. maximum fuse size (amps)		25	30	40	50	60
†Minimum Circuit Ampacity		16	21	27	34	41
Compressor	Rated load amps	10.1	13.0	17.7	21.8	26.1
	Locked rotor amps	60	69.4	100	131	170
Condenser Coil Fan Motor	Full load amps	1.1	1.1	1.1	2.3	2.3
	Locked rotor amps	2.2	2.2	2.2	4.4	4.4
Evaporator Blower Motor	Motor output - hp (W)	1/3 (249)	1/3 (249)	1/3 (249)	1/2 (373)	3/4 (560)
	Full load amps	2.2	3	3	3.9	5.2
	Locked rotor amps	4.2	6.2	6.2	8.3	10

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.
NOTE - Extremes of operating range are plus and minus 10% of line voltage.

ELECTRICAL DATA - THREE PHASE MODELS

General Data	Model No.	CHA16-036			CHA16-048			CHA16-060		
		208/230v	460v	575v	208/230v	460v	575v	208/230v	460v	575v
Line voltage data - 60 hz - 3 phase		208/230v	460v	575v	208/230v	460v	575v	208/230v	460v	575v
Rec. maximum fuse size (amps)		30	15	15	35	15	15	40	20	15
†Minimum Circuit Ampacity		20	11	9	23	11	10	28	14	12
Compressor	Rated load amps	12.2	6.2	4.6	12.8	6.4	5.1	16.2	8.0	6.5
	Locked rotor amps	77	39	31	91	46	37	124	60	47.7
Condenser Coil Fan Motor	Full load amps	1.1	.73	1.73	2.3	1.1	1.1	2.3	1.1	1.1
	Locked rotor amps	2.2	1.3	1.3	4.4	2	2	4.4	2	2
Evaporator Blower Motor	Motor output - hp (W)	1/3 (249)	1/3 (249)	1/3 (249)	1/2 (373)	1/2 (373)	1/2 (373)	3/4 (560)	3/4 (560)	3/4 (560)
	Full load amps	3.0	1.8	1.8	3.9	1.8	1.8	5.2	2.7	2.7
	Locked rotor amps	6.2	4.4	4.4	8.3	4.4	4.4	10	3.8	3.8

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.
1 Motors are rated at 460 volts. Full load amps shown are for step-down transformer output.
NOTE - Extremes of operating range are plus and minus 10% of line voltage.

ELECTRIC HEAT DATA - CHA16-024-030

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat kW Input	Electric Heat Btuh Input	Heater Only †Minimum Circuit Ampacity	Total Unit + Electric Heat		Optional Single Point Power Source Boxes	
							†Minimum Circuit Ampacity	Maximum Fuse Size	Heater Sub-Fuse Box	Unit Sub-Fuse Box
CHA16-024 1 phase	5 kW ECH16R-5 (31H46) 4 lbs. (2 kg)	1	208	3.8	12,800	23	26	30	ECH16R-26/41-5 (31H26)	ECH16-261 (31H10)
		1	220	4.2	14,300	26	29	30		
		1	230	4.6	15,700	26	29	30		
		1	240	5.0	17,100	26	29	30		
	7 kW ECH16R-7 (31H47) 5 lbs. (2 kg)	1	208	5.3	17,900	32	35	35	ECH16R-26/65-7 (31H25)	ECH16-261 (31H10)
		1	220	5.9	20,100	37	40	40		
		1	230	6.4	21,900	37	40	40		
	10 kW ECH16R-10 (31H48) 5 lbs. (2 kg)	1	208	7.5	25,600	46	48	50	ECH16R-26/65-10 (31H24)	ECH16-261 (31H10)
		1	220	8.4	28,700	53	55	60		
		1	230	9.2	31,300	53	55	60		
	15 kW ECH16R-15 (31H27) 18 lbs. (8 kg)	1	208	11.3	38,400	68	71	80	Not required	ECH16-261 (31H10)
		1	220	12.6	43,000	79	81	90		
1		230	13.8	47,100	79	81	90			
CHA16-030 1 phase	5 kW ECH16R-5 (31H46) 4 lbs. (2 kg)	1	208	3.7	12,800	23	27	30	ECH16R-26/41-5 (31H26)	ECH16-311 (31H11)
		1	220	4.2	14,300	26	30	30		
		1	230	4.6	15,700	26	30	30		
		1	240	5.0	17,100	26	30	30		
	7 kW ECH16R-7 (31H47) 5 lbs. (2 kg)	1	208	5.3	17,900	32	36	40	ECH16R-26/65-7 (31H25)	ECH16-311 (31H11)
		1	220	5.9	20,100	37	41	45		
		1	230	6.4	21,800	37	41	45		
	10 kW ECH16R-10 (31H48) 5 lbs. (2 kg)	1	208	7.5	25,600	46	49	50	ECH16R-26/65-10 (31H24)	ECH16-311 (31H11)
		1	220	8.4	28,700	53	56	60		
		1	230	9.2	31,300	53	56	60		
	15 kW ECH16R-15 (31H27) 18 lbs. (8 kg)	1	208	11.3	38,400	68	72	80	Not required	ECH16-311 (31H11)
		1	220	12.6	43,000	79	82	90		
1		230	13.8	47,100	79	82	90			
1	240	15.0	51,200	79	82	90				

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

ELECTRIC HEAT DATA - CHA16-036

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps & Phase	Volts Input	Electric Heat kW Input	Electric Heat Btuh Input	Heater Only †Minimum Circuit Ampacity	Total Unit + Electric Heat		Optional Single Point Power Source Boxes	
							†Minimum Circuit Ampacity	Maximum Fuse Size	Heater Sub-Fuse Box	Unit Sub-Fuse Box
CHA16-036 1 phase	5 kW ECH16R-5 (31H46) 4 lbs. (2 kg)	1	208	3.7	12,600	23	27	40	ECH16R-26/41-5 (31H26)	ECH16-411 (31H12)
		1	220	4.2	14,300	26	30	40		
		1	230	4.6	15,700	26	30	40		
		1	240	5.0	17,100	26	30	40		
	7 kW ECH16R-7 (31H47) 5 lbs. (2 kg)	1	208	5.3	18,100	32	36	40	ECH16R-26/65-7 (31H25)	ECH16-411 (31H12)
		1	220	5.9	20,100	37	41	45		
		1	230	6.4	21,800	37	41	45		
	10 kW ECH16R-10 (31H48) 5 lbs. (2 kg)	1	208	7.5	25,600	46	49	50	ECH16R-26/65-10 (31H24)	ECH16-411 (31H12)
		1	220	8.4	28,700	53	56	60		
		1	230	9.2	31,400	53	56	60		
	15 kW ECH16-15 (31H27) 18 lbs. (8 kg)	1	208	11.3	38,600	68	72	80	Not required	ECH16-411 (31H12)
		1	220	12.6	43,000	79	82	90		
1		230	13.8	47,100	79	82	90			
20 kW ECH16-20 (31H28) 19 lbs. (9 kg)	1	208	15.0	51,200	91	95	100	Not required	ECH16-411 (31H12)	
	1	220	16.8	57,300	105	108	110			
	1	230	18.4	62,800	105	108	110			
20 kW ECH16-20 (31H28) 19 lbs. (9 kg)	1	240	20.0	68,300	105	108	110	Not required	ECH16-411 (31H12)	
	1	220	16.8	57,300	105	108	110			
	1	230	18.4	62,800	105	108	110			
CHA16-036 3 phase	5 kW ECH16-5 208/230v (31H30) 17 lbs. (9 kg)	1	208	3.8	12,800	13	20	30	Not required	ECH16-413 208/230v (31H15)
		1	220	4.2	14,300	15	20	30		
		1	230	4.6	15,700	15	20	30		
		1	240	5.0	17,100	15	20	30		
	7 kW ECH16-7 208/230v (31H31) 460v (31H36) 575v (31H41) 17 lbs. (8 kg)	1	208	5.3	18,000	18	22	30	Not required	ECH16-413 208/230v (31H15) 460v (31H18) ECH16-413/513 575v (31H21)
		1	220	5.9	20,000	21	25	30		
		1	230	6.4	22,000	21	25	30		
		1	240	7.0	23,900	21	25	30		
		1	440	5.8	19,800	11	13	15		
		1	460	6.5	22,200	11	13	15		
		1	480	7.0	23,900	11	13	15		
		1	550	5.8	19,800	8	11	15		
	10 kW ECH16-10 208/230v (31H32) 460v (31H37) 575v (31H42) 17 lbs. (8 kg)	1	208	7.5	25,600	26	30	30	Not required	ECH16-413 208/230v (31H15) 460v (31H18) ECH16-413/513 575v (31H21)
		1	220	8.4	28,700	30	34	35		
		1	230	9.2	31,400	30	34	35		
		1	240	10.0	34,100	30	34	35		
		1	440	8.4	28,700	15	18	20		
		1	460	9.2	31,400	15	18	20		
		1	480	10.0	34,100	15	18	20		
		1	550	8.4	28,700	12	15	15		
	15 kW ECH16-15 208/230v (31H33) 460v (31H38) 575v (31H43) 17 lbs. (8 kg)	1	208	11.3	38,500	39	43	45	Not required	ECH16-413 208/230v (31H15) 460v (31H18) ECH16-413/513 575v (31H21)
		1	220	12.6	43,000	45	49	50		
		1	230	13.8	47,100	45	49	50		
		1	240	15.0	51,200	45	49	50		
		1	440	12.6	43,000	23	25	25		
		1	460	13.8	47,100	23	25	25		
		1	480	15.0	51,200	23	25	25		
		1	550	12.6	43,000	18	21	25		
	20 kW ECH16-20 208/230v (31H34) 460v (31H39) 575v (31H44) 20 lbs. (9 kg)	2	208	15.0	51,300	52	56	60	Not required	ECH16-413 208/230v (31H15) 460v (31H18) ECH16-413/513 575v (31H21)
		2	220	16.8	57,300	60	64	70		
		2	230	18.4	62,800	60	64	70		
		2	240	20.0	68,300	60	64	70		
		1	440	16.8	57,300	30	33	35		
		1	460	18.4	62,700	30	33	35		
		1	480	20.0	68,300	30	33	35		
		1	550	16.8	57,300	24	27	30		
		1	575	18.4	62,700	24	27	30		
		1	600	20.0	68,300	24	27	30		

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

ELECTRIC HEAT DATA - CHA16-048

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat kW Input	Electric Heat Btu/h Input	Heater Only † Minimum Circuit Ampacity	† Total Unit + Electric Heat		Optional Single Point Power Source Boxes	
							† Minimum Circuit Ampacity	Maximum Fuse Size	Heater Sub-Fuse Box	Unit Sub-Fuse Box
CHA16-048 1 phase	7 kW ECH16R-7 (31H47) 5 lbs. (2 kg)	1	208	5.3	18,000	32	37	50	ECH16R-26/65-7 (31H25)	ECH16-511 (31H13)
		1	220	5.9	20,000	37	42	50		
		1	230	6.4	22,000	37	42	50		
		1	240	7.0	23,900	37	42	50		
	10 kW ECH16R-10 (31H48) 5 lbs. (2 kg)	1	208	7.5	25,600	46	50	50	ECH16R-26/65-10 (31H24)	ECH16-511 (31H13)
		1	220	8.4	28,700	53	57	60		
		1	230	9.2	31,300	53	57	60		
		1	240	10.0	34,100	53	57	60		
	15 kW ECH16-15 (31H27) 18 lbs. (8 kg)	1	208	11.3	38,500	68	73	80	Not required	ECH16-511 (31H13)
		1	220	12.6	43,000	79	83	90		
		1	230	13.8	47,000	79	83	90		
	20 kW ECH16-20 (31H28) 19 lbs. (9 kg)	1	208	15.0	51,200	91	96	100	Not required	ECH16-511 (31H13)
		1	220	16.8	57,300	105	109	110		
		1	230	18.4	62,700	105	109	110		
	25 kW ECH16-25 (31H29) 19 lbs. (9 kg)	1	208	18.8	64,200	113	118	125	Not required	ECH16-511 (31H13)
		1	220	21.0	71,700	131	136	150		
		1	230	23.0	78,500	131	136	150		
	CHA16-048 3 phase	7 kW ECH16-7 208/230v (31H31) 460v (31H36) 575v (31H41) 17 lbs. (8 kg)	1	208	5.3	18,000	19	24	35	Not required
1			220	5.9	20,000	21	26	35		
1			230	6.4	22,000	21	26	35		
1			240	7.0	23,900	21	26	35		
1			440	5.8	19,800	11	13	15		
1			460	6.5	22,200	11	13	15		
1			480	7.0	23,900	11	13	15		
1			550	5.8	19,800	9	11	15		
10 kW ECH16-10 208/230v (31H32) 460v (31H37) 575v (31H42) 17 lbs. (8 kg)		1	208	7.5	25,600	27	31	35	Not required	ECH16-513 208/230v (31H16) ECH16-413/513 460/575v (31H21)
		1	220	8.4	28,700	31	35	35		
		1	230	9.2	31,300	31	35	35		
		1	240	10.0	34,100	31	35	35		
		1	440	8.4	28,700	15	18	15		
		1	460	9.2	31,400	15	18	15		
		1	480	10.0	34,100	15	18	15		
		1	550	8.4	28,700	12	15	15		
15 kW ECH16-15 208/230v (31H33) 460v (31H38) 575v (31H43) 17 lbs. (8 kg)		1	208	11.3	38,500	40	44	45	Not required	ECH16-513 208/230v (31H16) ECH16-413/513 460/575v (31H21)
		1	220	12.6	43,000	46	50	50		
	1	230	13.8	47,100	46	50	50			
	1	240	15.0	51,200	46	50	50			
	1	440	12.6	43,000	23	25	25			
	1	460	13.8	47,100	23	25	25			
	1	480	15.0	51,200	23	25	25			
	1	550	12.6	43,000	18	21	25			
20 kW ECH16-20 208/230v (31H34) 460v (31H39) 575v (31H44) 20 lbs. (9 kg)	2	208	15.0	51,200	53	57	60	Not required	ECH16-513 208/230v (31H16) ECH16-413/513 460/575v (31H21)	
	2	220	16.8	57,300	61	65	70			
	2	230	18.4	62,700	61	65	70			
	2	240	20.0	68,200	61	65	70			
	1	440	16.8	57,300	31	33	35			
	1	460	18.4	62,700	31	33	35			
	1	480	20.0	68,200	31	33	35			
	1	550	16.8	57,300	24	27	30			
25 kW ECH16-25 208/230v (31H35) 460v (31H40) 575v (31H45) 20 lbs. (9 kg)	2	208	18.8	64,000	66	70	70	Not required	ECH16-513 208/230v (31H16) ECH16-413/513 460/575v (31H21)	
	2	220	21.0	71,600	76	80	80			
	2	230	22.9	78,300	76	80	80			
	2	240	25.0	85,300	76	80	80			
	1	440	21.0	71,800	40	40	40			
	1	460	22.9	78,300	40	40	40			
	1	480	25.0	85,300	40	40	40			
	1	550	21.1	71,800	31	33	35			
1	575	23.0	78,300	31	33	35				
1	600	25.0	85,300	31	33	35				

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

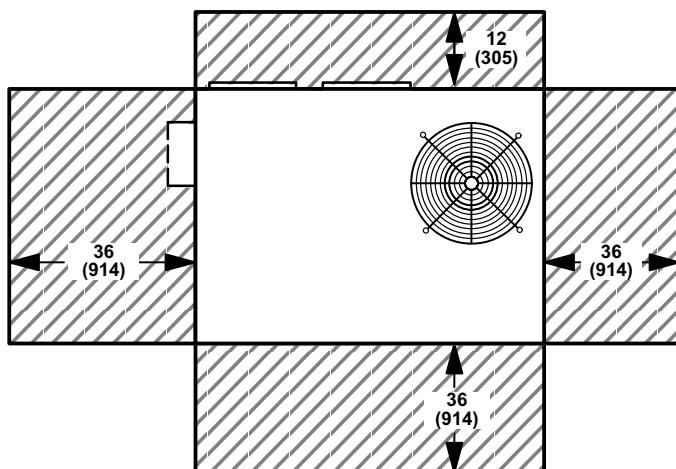
ELECTRIC HEAT DATA - CHA16-060

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat kW Input	Electric Heat Btuh Input	Heater Only †Minimum Circuit Ampacity	†Total Unit + Electric Heat		Optional Single Point Power Source Boxes		
							†Minimum Circuit Ampacity	Maximum Fuse Size	Heater Sub-Fuse Box	Unit Sub-Fuse Box	
CHA16-060 1 phase	7 kW ECH16R-7 (31H47) 5 lbs. (2 kg)	1	208	5.3	18,000	32	41	60	ECH16R-26/65-7 (31H25)	ECH16-651 (31H14)	
		1	220	5.9	20,000	37	43	60			
		1	230	6.4	22,000	37	43	60			
		1	240	7.0	23,900	37	43	60			
	10 kW ECH16R-10 (31H48) 5 lbs. (2 kg)	1	208	7.5	25,600	46	52	60	ECH16R-26/65-10 (31H24)	ECH16-651 (31H14)	
		1	220	8.4	28,700	53	59	60			
		1	230	9.2	31,300	53	59	60			
		1	240	10.0	34,100	53	59	60			
	15 kW ECH16-15 (31H27) 18 lbs. (8 kg)	1	208	11.3	38,500	68	75	80	Not required	ECH16-651 (31H14)	
		1	220	12.6	43,000	79	85	90			
		1	230	13.8	47,000	79	85	90			
		1	240	15.0	51,200	79	85	90			
	20 kW ECH16-20 (31H28) 19 lbs. (9 kg)	1	208	15.0	51,200	91	97	100	Not required	ECH16-651 (31H14)	
		1	220	16.8	57,300	105	111	125			
		1	230	18.4	62,700	105	111	125			
		1	240	20.0	68,200	105	111	125			
	25 kW ECH16-25 (31H29) 19 lbs. (9 kg)	1	208	18.8	64,200	113	120	125	Not required	ECH16-651 (31H14)	
		1	220	21.0	71,700	131	137	150			
		1	230	23.0	78,500	131	137	150			
		1	240	25.0	85,300	131	137	150			
	CHA16-060 3 phase	7 kW ECH16-7 208/230v (31H31) 460v (31H36) 575v (31H41) 17 lbs. (8 kg)	1	208	5.3	18,000	19	28	40	Not required	ECH16-653 208/230v (58L07) ECH16-513/653 460v (31H19) ECH16-653 575v (31H23)
			1	220	5.9	20,000	21	28	40		
			1	230	6.4	22,000	21	28	40		
			1	240	7.0	23,900	21	28	40		
1			440	5.9	20,000	11	14	20			
1			460	6.5	22,000	11	14	20			
1			480	7.0	23,900	11	14	20			
1			550	5.9	20,000	9	12	15			
10 kW ECH16-10 208/230v (31H32) 460v (31H37) 575v (31H42) 17 lbs. (8 kg)		1	208	7.5	25,600	27	33	40	Not required	ECH16-653 208/230v (58L07) ECH16-513/653 460v (31H19) ECH16-653 575v (31H23)	
		1	220	8.4	28,700	31	37	40			
		1	230	9.2	31,300	31	37	40			
		1	240	10.0	34,100	31	37	40			
		1	440	8.4	28,600	15	19	20			
		1	460	9.2	31,300	15	19	20			
		1	480	10.0	34,100	15	19	20			
		1	550	8.4	28,600	12	16	15			
15 kW ECH16-15 208/230v (31H33) 460v (31H38) 575v (31H43) 17 lbs. (8 kg)		1	208	11.3	38,500	40	46	50	Not required	ECH16-653 208/230v (58L07) ECH16-513/653 460v (31H19) ECH16-653 575v (31H23)	
		1	220	12.6	43,000	46	52	60			
		1	230	13.8	47,100	46	52	60			
		1	240	15.0	51,200	46	52	60			
		1	440	12.6	43,000	23	26	30			
		1	460	13.8	47,100	23	26	30			
		1	480	15.0	51,200	23	26	30			
		1	550	12.6	43,000	18	22	25			
20 kW ECH16-20 208/230v (31H34) 460v (31H39) 575v (31H44) 20 lbs. (9 kg)		2	208	15.0	51,200	53	59	60	Not required	ECH16-653 208/230v (58L07) ECH16-513/653 460v (31H19) ECH16-653 575v (31H23)	
		2	220	16.8	57,300	61	67	70			
		2	230	18.4	62,700	61	67	70			
		2	240	20.0	68,200	61	67	70			
		1	440	16.8	57,500	31	34	35			
		1	460	18.4	62,800	31	34	35			
		1	480	20.0	68,200	31	34	35			
		1	550	16.8	57,500	24	28	30			
25 kW ECH16-25 208/230v (31H35) 460v (31H40) 575v (31H45) 20 lbs. (9 kg)		2	208	18.8	64,000	66	72	80	Not required	ECH16-653 208/230v (58L07) ECH16-513/653 460v (31H19) ECH16-653 575v (31H23)	
		2	220	21.0	71,600	76	82	90			
		2	230	22.9	78,100	76	82	90			
		2	240	25.0	85,300	76	82	90			
		1	440	21.0	71,800	38	41	45			
		1	460	22.9	78,300	38	41	45			
		1	480	25.0	85,300	38	41	45			
		1	550	21.0	71,800	31	34	35			
1		575	22.9	78,300	31	34	35				
1		600	25.0	85,300	31	34	35				

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

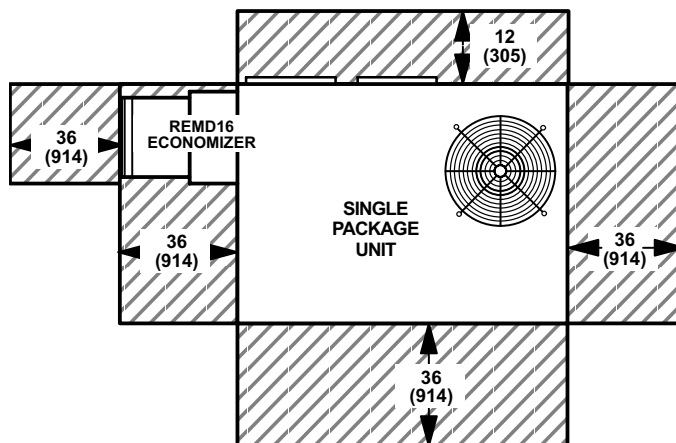
INSTALLATION CLEARANCES - INCHES (MM)

CHA16 BASIC UNIT



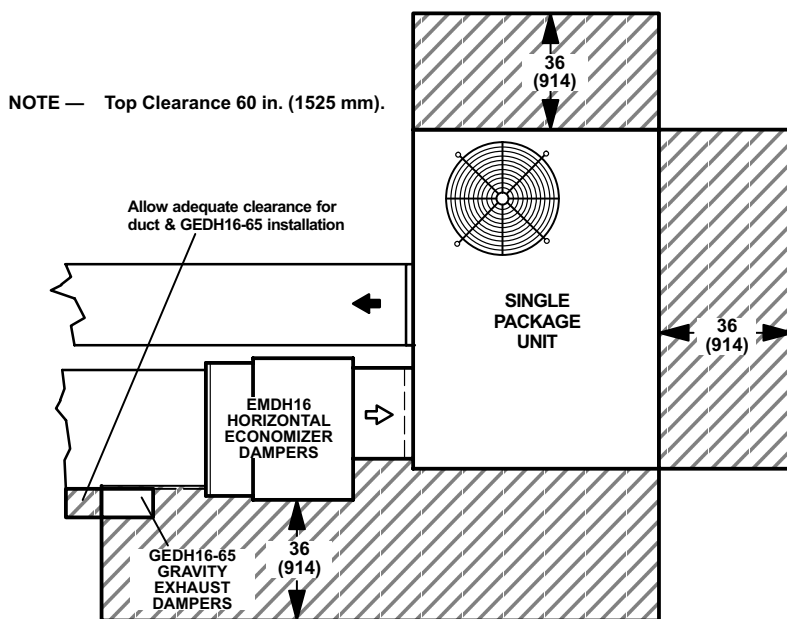
NOTE — Top Clearance 60 in. (1525 mm).
 NOTE — Entire perimeter of unit requires support when elevated above mounting surface.

CHA16 UNIT WITH REMD16 ECONOMIZER



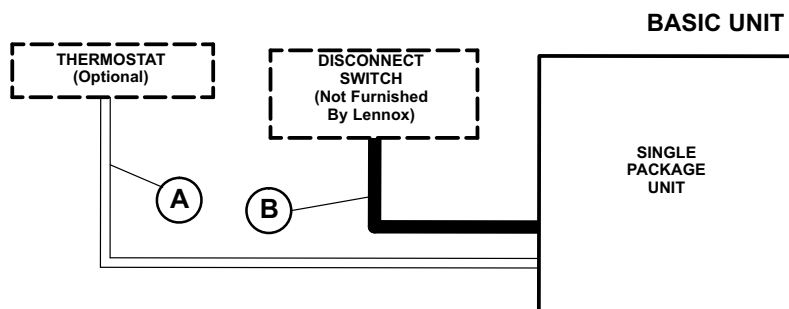
NOTE — Top Clearance 60 in. (1525 mm).

CHA16 UNIT WITH EMD16H ECONOMIZER AND GEDH16-65 GRAVITY EXHAUST DAMPER



NOTE — Top Clearance 60 in. (1525 mm).

FIELD WIRING



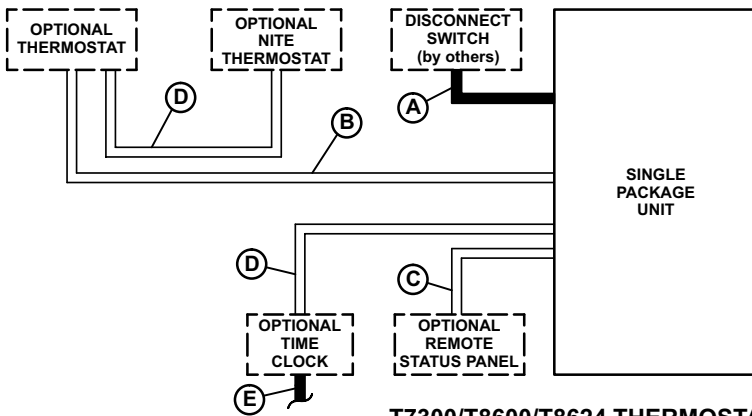
A — *Four Wire Low Voltage (Electro-mechanical)
 — *Five Wire Low Voltage (Electronic)
 B — Two or Three Wire Power (See Electrical Data Table)
 — Field Wiring Not Furnished —

*When economizer with two stage thermostat is used, one additional wire is required

NOTE - All wiring must conform to NEC or CEC and local electrical codes.

FIELD WIRING

ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM

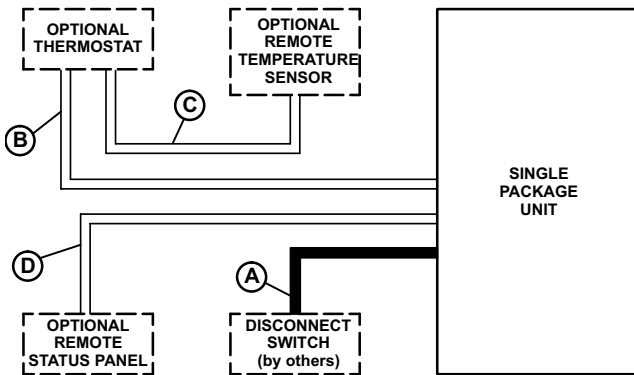


- A - Two or Three wire power (See Electrical Data Table)
- B - Six wire low voltage
- C - Nine wire low voltage
- D - Two wire low voltage
- E - Two wire low voltage

- Field wiring not furnished -

NOTE - All wiring must conform to NEC or CEC and local electrical codes.

T7300/T8600/T8624 THERMOSTAT CONTROL SYSTEM



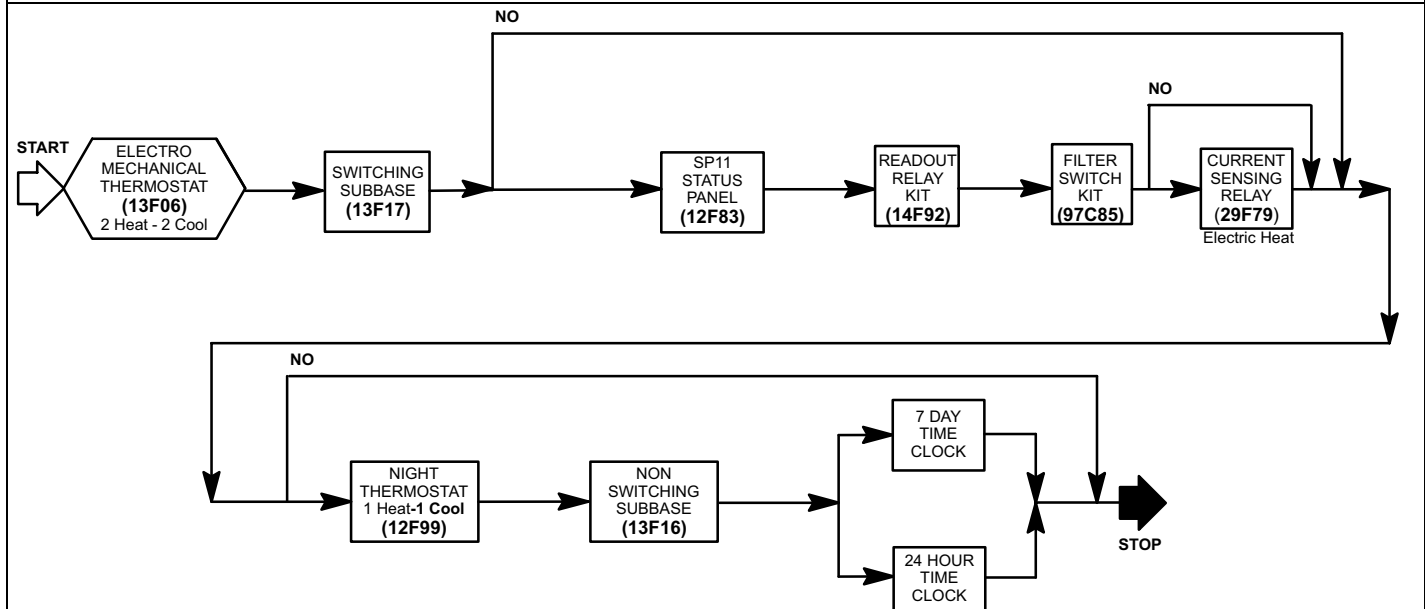
- A - Two or Three wire power (See Electrical Data Table)
- B - Nine wire low voltage
- C - Two wire low voltage
- Seven wire low voltage (T7300 Room Sensor with override)
- D - Nine wire low voltage (T7300 with optional override sensor)
- Seven wire low voltage (T8624)
- Four wire low voltage (T8600)

- Field wiring not furnished -

NOTE - All wiring must conform to NEC or CEC and local electrical codes.

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FIELD INSTALLED)

System and Component Description	Catalog No.
ELECTRO-MECHANICAL THERMOSTAT	
Thermostat - Two stage heat & two stage cool with dual temperature levers, subbase choice	13F06
Subbase - Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)	13F17
Emergency Heat Subbase and Relay Kit	49G09
Status Panel - May be ordered extra	12F83
Night Setback Operation - Order components below	—
Thermostat - One stage heat & one stage cool	12F99
Subbase - Non-switching	13F16
Time Clock - 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book for Selection
Time Clock - 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book for Selection



OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FIELD INSTALLED)

System and Component Description	Catalog No.																																
HONEYWELL T7300 THERMOSTAT																																	
Thermostat - Programmable, internal or optional remote temperature sensing (sensor required), touch sensitive keyboard, automatic switching, °F or °C readout, no anticipator, droop/no droop selection, indicator LED's, hour/day programming, override capabilities, time and operational mode readout, stage status indicators, battery back-up, subbase choice, manual system switch (Heat-Off-Auto-Cool), fan switch (Auto-On)	37L54																																
Subbase - Selectable staging, indicator LED's, auxiliary relay output for economizer operation	Up to two stage heat & two stage cool 37L55																																
	Up to three stage heat & three stage cool 37L53																																
Sensor - Room temperature	58C92																																
Sensor - Room temperature with 3 hour override and setpoint adjustment	86G67																																
Sensor - Return air temperature	27C40																																
Status Panel - May be ordered extra	12F83																																
HONEYWELL T8600D/T8624D THERMOSTAT																																	
Thermostat - Programmable, touch sensitive keypad, automatic heat/cool switching, °F or °C readout, indicator LED's, four temperature settings per daily schedule, override capabilities, time and operational mode readout, battery back-up (batteries included)	—																																
T8600D Thermostat - 1 heat/1 cool, 7 day programming, wiring wall plate included	37L59																																
T8624D Thermostat - 2 heat/2 cool, 7 day programming, switching subbase included	37L61																																
Status Panel - May be ordered extra	12F83																																
STATUS PANEL																																	
SP11 Status Panel — Allows remote monitoring of unit through status lights, requires Status Panel Readout Kit																																	
	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Cool Mode</th> <th style="text-align: left;">Status Light</th> <th style="text-align: left;">Definition</th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td>Heat Mode</td> <td>Green</td> <td>Cooling operation</td> <td></td> </tr> <tr> <td>Compressor 1</td> <td>Green</td> <td>Heating operation</td> <td></td> </tr> <tr> <td></td> <td>Green</td> <td>Compressor operation</td> <td></td> </tr> <tr> <td></td> <td>Red</td> <td>Compressor malfunction</td> <td style="text-align: right;">12F83</td> </tr> <tr> <td>Compressor 2</td> <td></td> <td>Not used</td> <td></td> </tr> <tr> <td>No Heat</td> <td>Red</td> <td>Requires service</td> <td></td> </tr> <tr> <td>Filter</td> <td>Red</td> <td>Requires service</td> <td></td> </tr> </tbody> </table>	Cool Mode	Status Light	Definition		Heat Mode	Green	Cooling operation		Compressor 1	Green	Heating operation			Green	Compressor operation			Red	Compressor malfunction	12F83	Compressor 2		Not used		No Heat	Red	Requires service		Filter	Red	Requires service	
Cool Mode	Status Light	Definition																															
Heat Mode	Green	Cooling operation																															
Compressor 1	Green	Heating operation																															
	Green	Compressor operation																															
	Red	Compressor malfunction	12F83																														
Compressor 2		Not used																															
No Heat	Red	Requires service																															
Filter	Red	Requires service																															
Status Panel Readout Kit — Required to interface SP11 to unit operation																																	
Filter Switch Kit — Required with Filter light option on SP11																																	
Current Sensing Relay — For operation of No Heat light with electric heat on SP11																																	

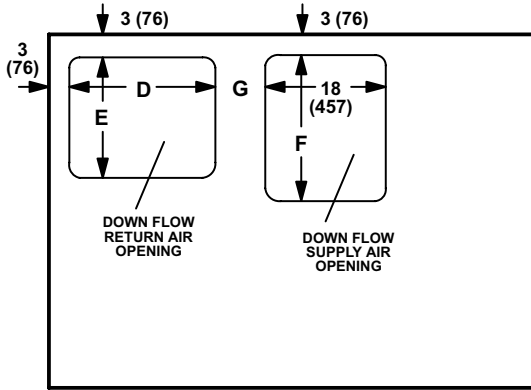
DIMENSIONS - INCHES (MM) BASIC UNIT

CORNER WEIGHTS

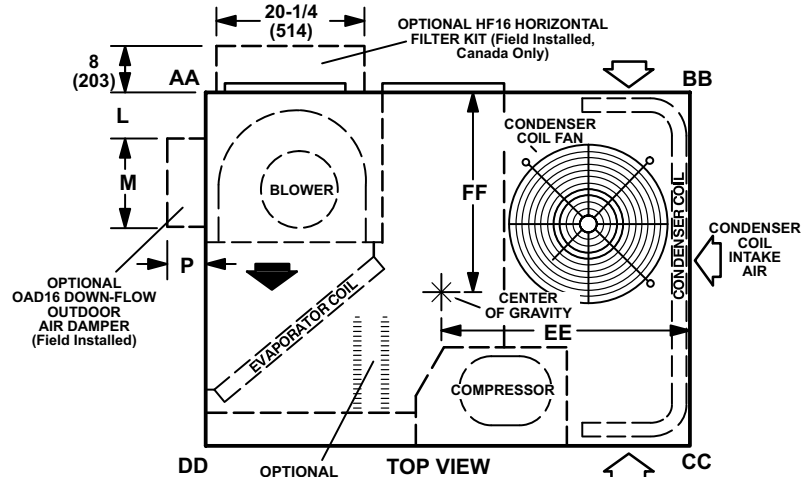
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHA16-024	60	27	64	29	91	41	85	39
CHA16-030	66	30	71	32	100	46	94	43
CHA16-036	64	29	68	31	97	44	91	41
CHA16-048	85	39	91	42	135	61	126	57
CHA16-060	92	42	99	45	146	66	136	62

CENTER OF GRAVITY

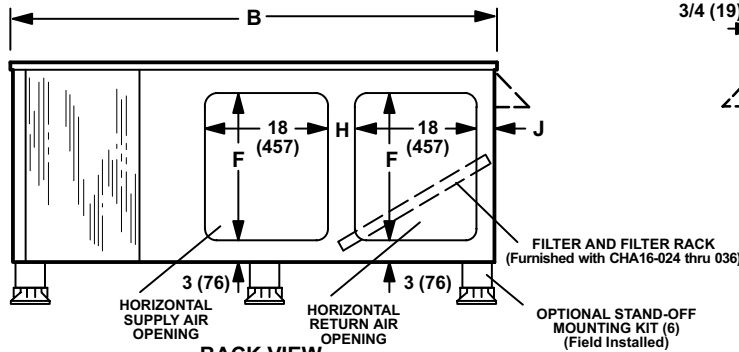
Model Number	EE		FF	
	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	29	737	27	686
CHA16-048 CHA16-060	35	889	31	787



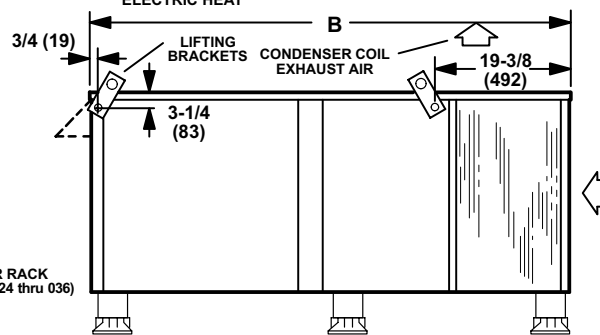
TOP VIEW BASE SECTION



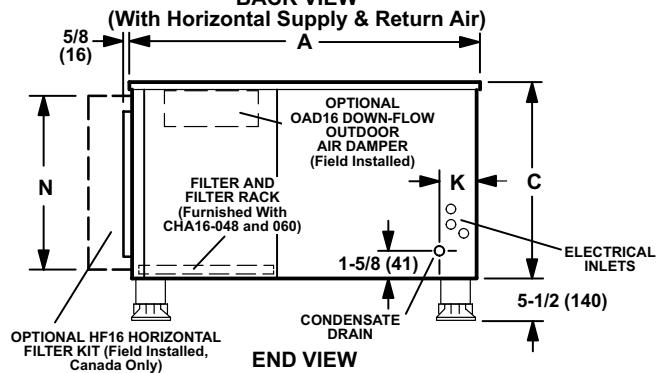
TOP VIEW



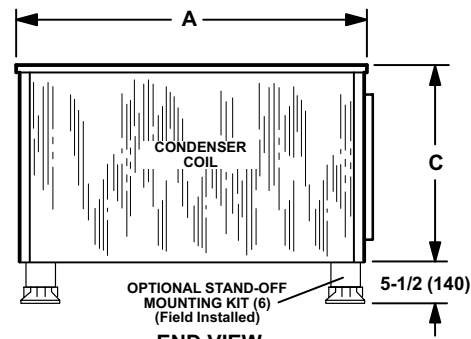
BACK VIEW



FRONT VIEW



END VIEW



END VIEW

Model Number	A		B		C		D		E		F		G	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	46	1168	60	1524	23	584	18	457	13	330	13	330	10	254
CHA16-048 CHA16-060	52	1321	72-1/2	1842	29	737	22	559	18	457	22	559	7-1/2	191

Model Number	H		J		K		L		M		N		P		P			
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		
CHA16-024 CHA16-030 CHA16-036	3	76	4	102	6-1/2	165	2	51	13-3/4	349	14-1/2	368	22	559	5	127	6	152
CHA16-048 CHA16-060	5	127	3	76	6-1/8	156	5	127	13-3/4	349	18-5/8	473	22	559	8	203	6	152
												27	686					

Canada Only

ACCESSORY DIMENSIONS - INCHES (MM)

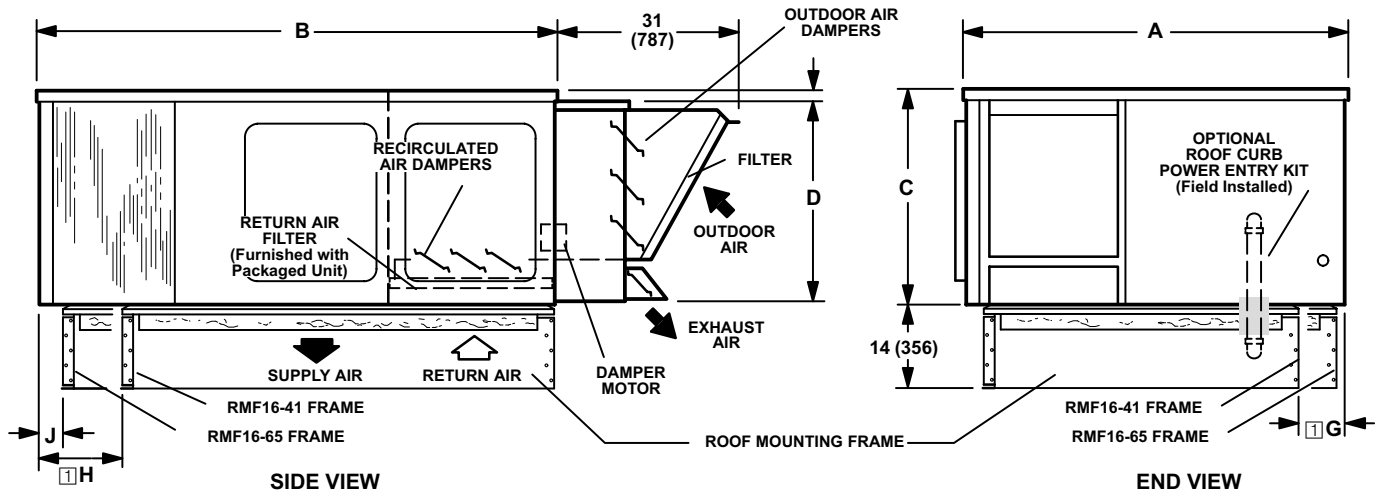
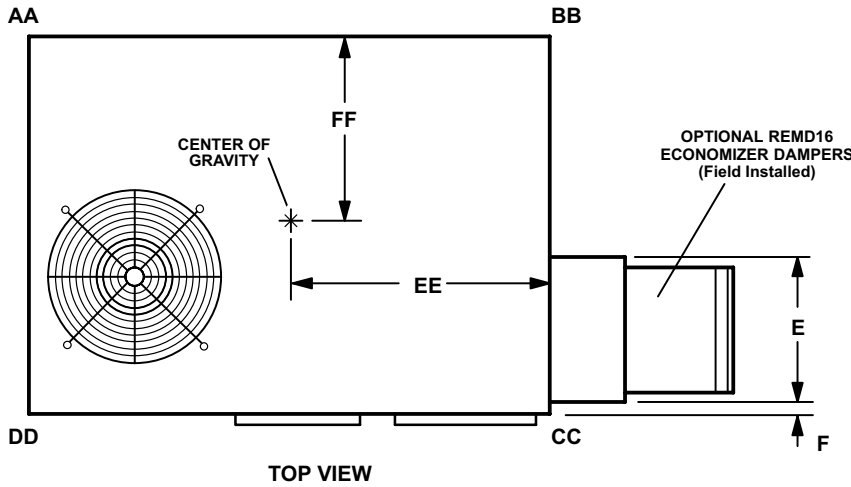
CHA16 UNIT WITH REMD16 ECONOMIZER DAMPER SECTION AND RMF16 ROOF MOUNTING FRAME

CORNER WEIGHTS

Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHA16-024	102	46	121	55	108	49	92	42
CHA16-030	110	50	130	59	116	53	98	45
CHA16-036	107	49	126	57	113	52	96	44
CHA16-048	145	66	171	78	148	67	126	57
CHA16-060	154	70	181	82	157	71	133	60

CENTER OF GRAVITY

Model Number	EE		FF	
	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	27-1/2	699	21-3/4	552
CHA16-048 CHA16-060	33-1/4	845	24-1/8	613

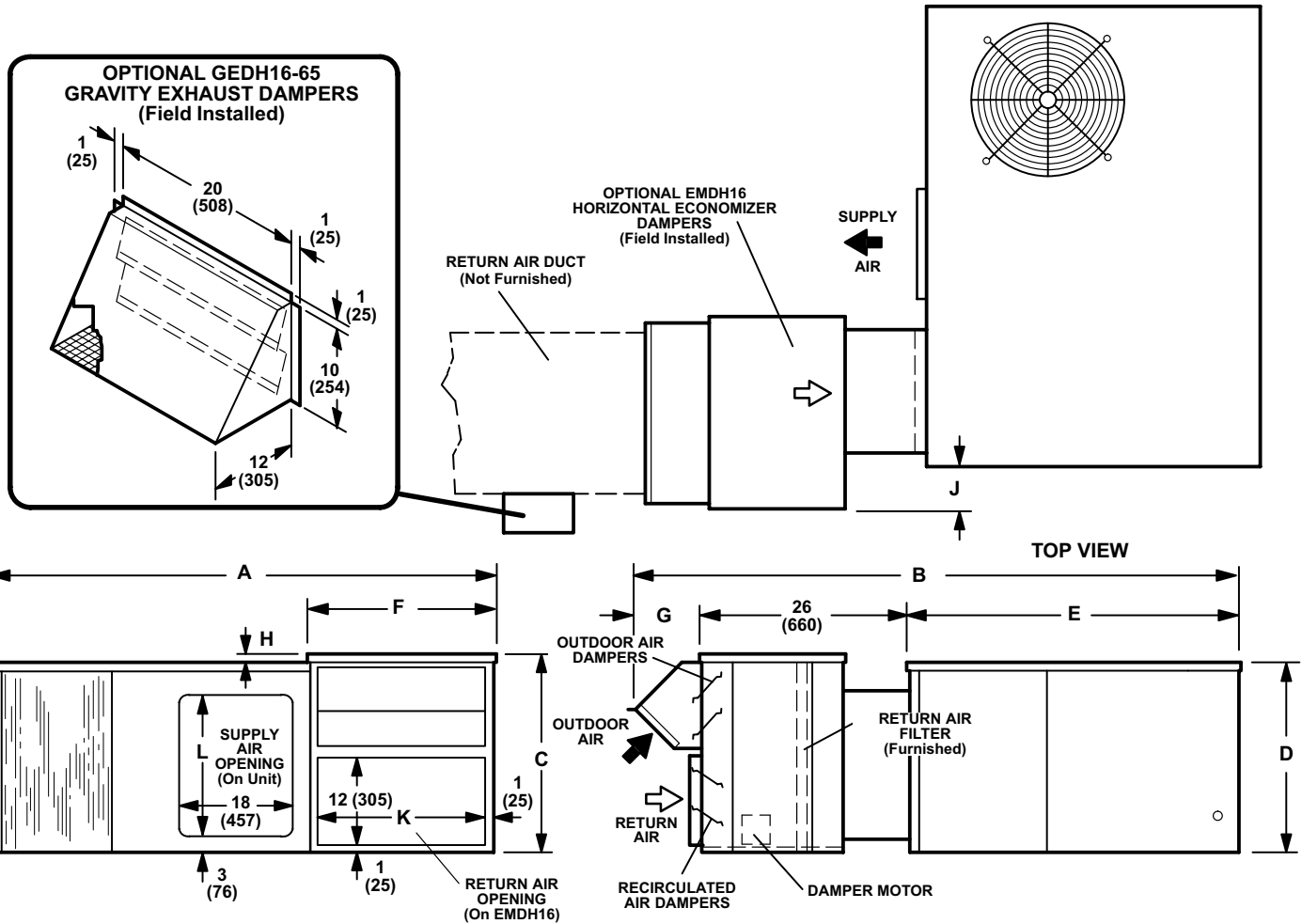


Model Number	A		B		C		D		E		F		G		H		J	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	46	1168	60	1524	23	584	21-3/4	552	16-1/4	413	3/4	19	---	---	---	---	---	---
CHA16-048 CHA16-060	52	1321	72-1/2	1842	29	737	27-3/4	705	20-7/16	519	1-1/2	38	7	178	16	406	3-1/2	89

① Dimensions reflect usage with RMF16-41 mounting frame.

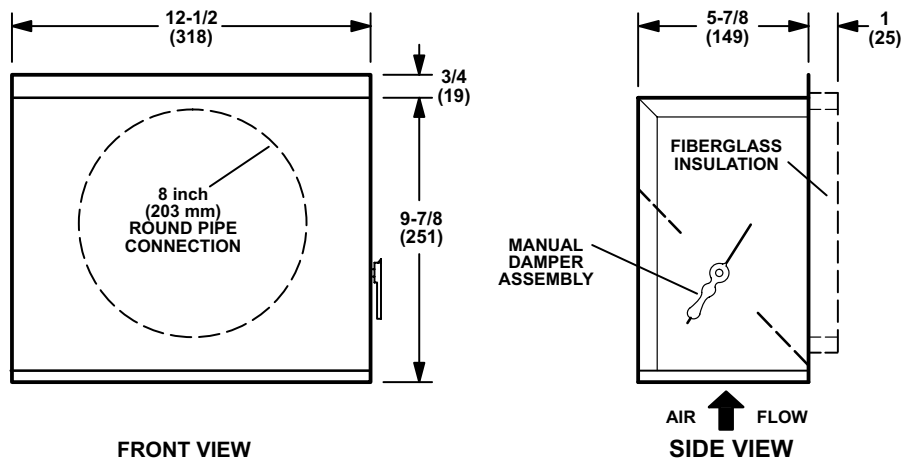
ACCESSORY DIMENSIONS - INCHES (MM)

CHA16 UNIT WITH EMDH16 HORIZONTAL ECONOMIZER DAMPER SECTION AND GEDH16-65 GRAVITY EXHAUST DAMPERS



Model Number	A		B		C		D		E		F		G		H		J		K		L	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	63	1600	81-1/2	2070	26	660	23	584	46	1168	26	660	9-1/2	241	3	76	3	76	24	610	13	330
CHA16-048 CHA16-060	79-1/2	2019	90	8100	30-3/8	772	29	737	52	1321	30-1/2	775	12	305	1-1/2	38	7	178	28-7/8	733	22	559

OAD3-46/65 MANUAL MINIMUM OUTDOOR AIR DAMPER



ACCESSORY DIMENSIONS - INCHES (MM) - CANADA ONLY

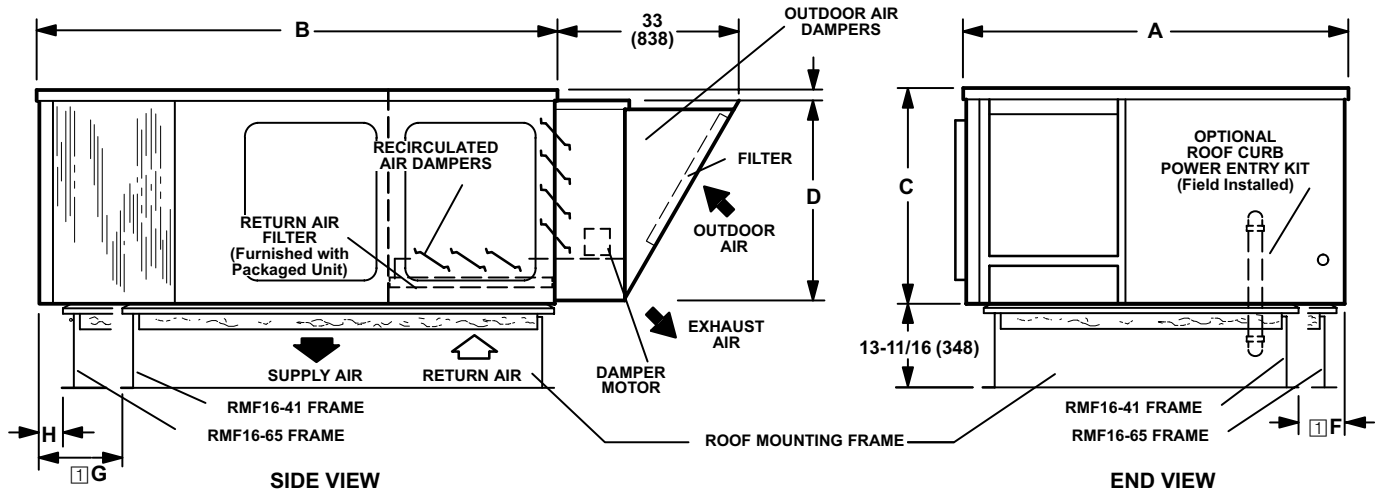
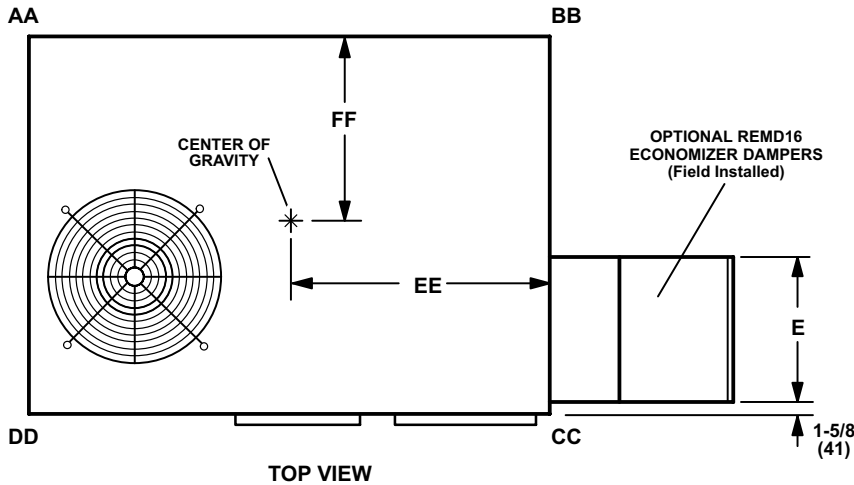
CHA16 UNIT WITH REMD16 ECONOMIZER DAMPER SECTION AND RMF16 ROOF MOUNTING FRAME

CORNER WEIGHTS

Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHA16-024	97	44	133	61	133	61	97	44
CHA16-030	103	47	142	65	142	65	103	47
CHA16-036	101	46	139	63	139	63	101	46
CHA16-048	139	63	184	84	174	79	132	60
CHA16-060	147	67	194	88	183	83	139	63

CENTER OF GRAVITY

Model Number	EE		FF	
	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	25-1/4	641	23	584
CHA16-048 CHA16-060	31-1/4	794	25-1/4	641

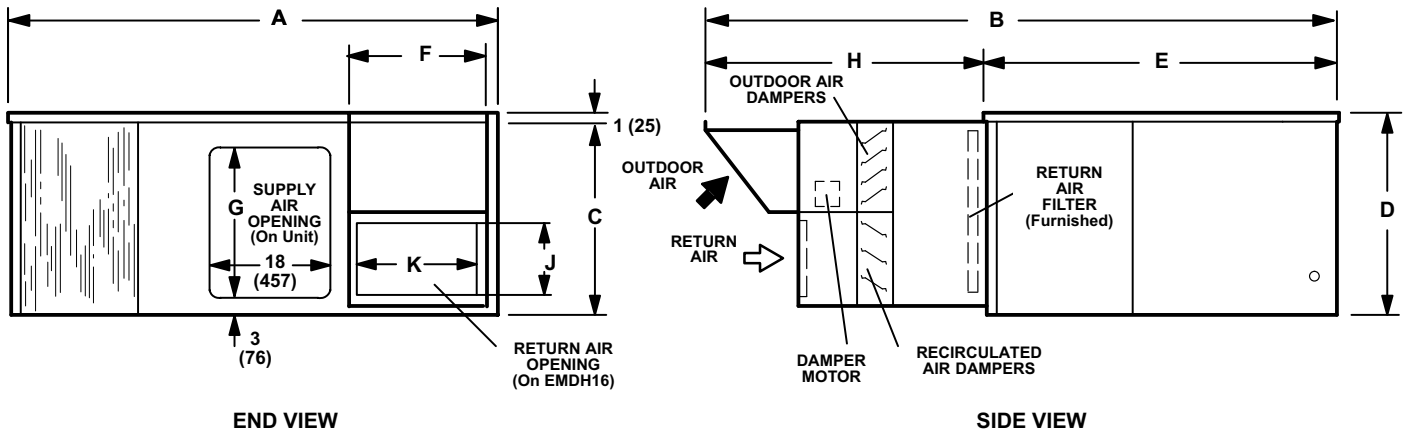
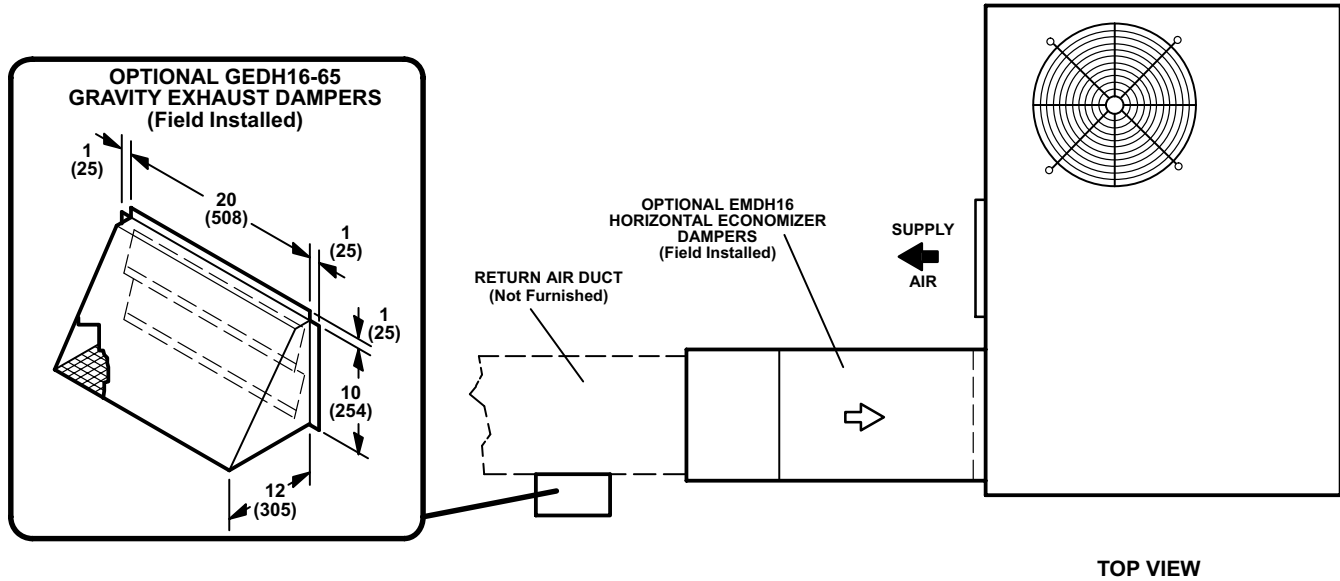


Model Number	A		B		C		D		E		F		G		H	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	46	1168	60	1524	23	584	21-3/4	552	16	406	---	---	---	---	---	---
CHA16-048 CHA16-060	52	1321	72-1/2	1842	29	737	27-3/4	705	20-1/4	514	7	178	16	406	3-1/2	89

Dimensions reflect usage with RMF16-41 mounting frame.

ACCESSORY DIMENSIONS - INCHES (MM) - CANADA ONLY

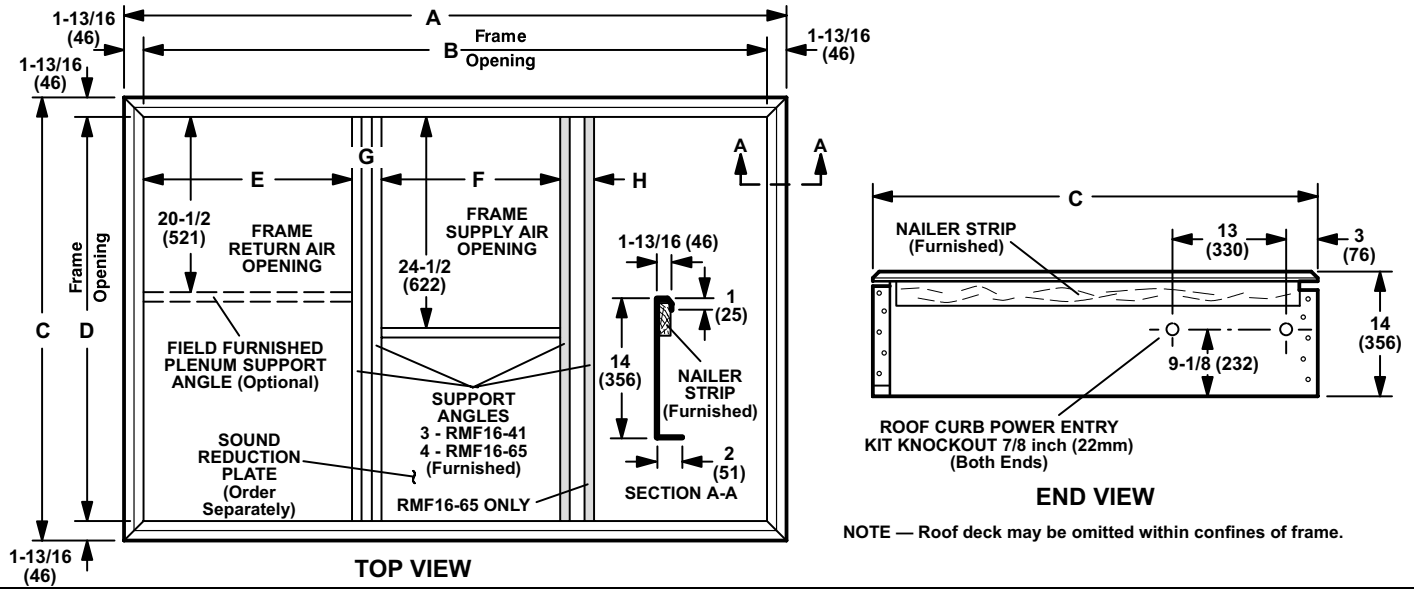
CHA16 UNIT WITH EMDH16M HORIZONTAL ECONOMIZER DAMPER SECTION AND GEDH16-65 GRAVITY EXHAUST DAMPERS



Model Number	A		B		C		D		E		F		G		H		J		K	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHA16-024 CHA16-030 CHA16-036	60	1524	84-1/2	2146	22	559	23	584	46	1168	22	559	13	330	38-1/2	979	9	229	20	508
CHA16-048 CHA16-060	72-1/2	1842	97-7/8	2486	27	686	29	737	52	1321	23-5/8	600	22	559	45-7/8	1165	12	305	21-3/4	552

ACCESSORY DIMENSIONS - INCHES (MM)

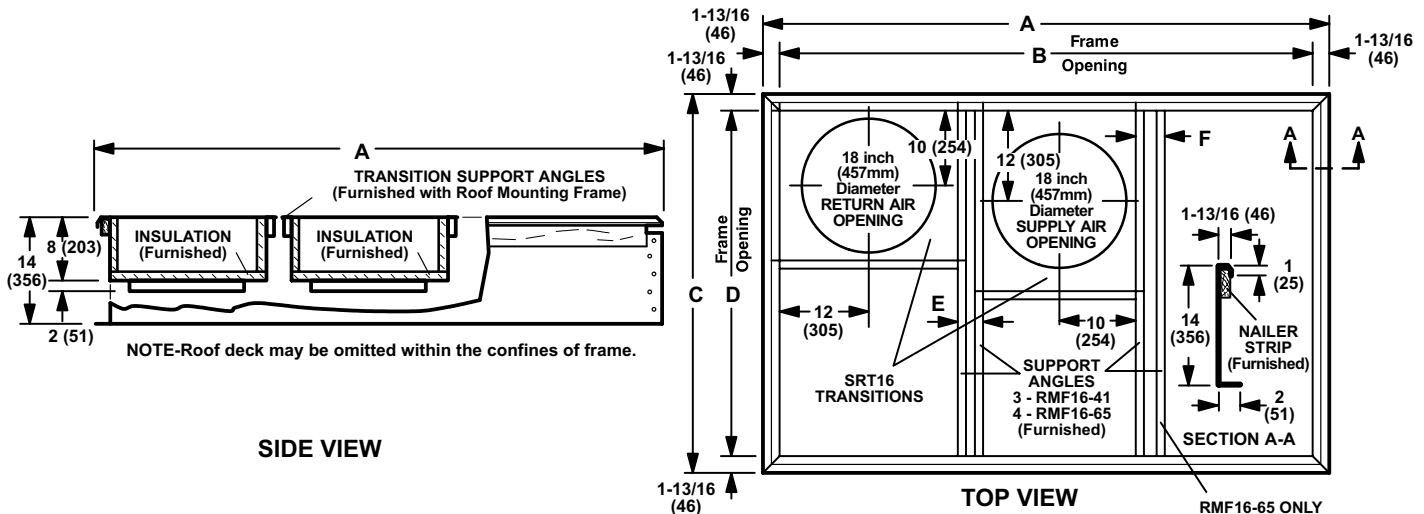
RMF16-41 & RMF16-65 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING FOR CHA16 UNITS



Model Number	A		B		C		D		E		F		G		H	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
RMF16-41	56-3/8	1432	52-3/4	1340	44-1/8	1121	40-1/2	1029	24-3/8	619	20-9/16	522	4	102	---	---
RMF16-65	69	1753	65-3/8	1661	50-1/2	1283	46-7/8	1191	24-1/4	616	20-1/2	521	4	102	4	102

3-1/4 inches (83 mm) for CHA16-024-030-036.

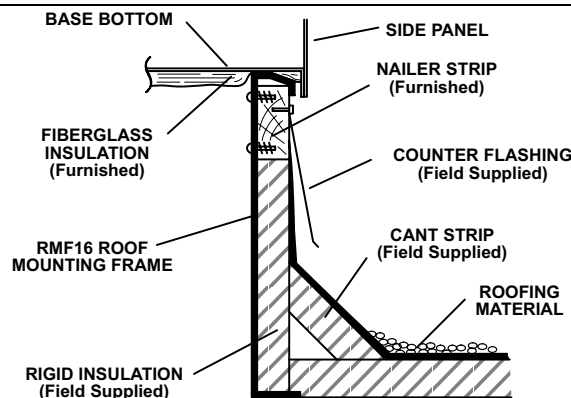
RMF16-41 & RMF16-65 ROOF MOUNTING FRAMES WITH SRT16-65 SUPPLY AND RETURN AIR TRANSITIONS FOR FD9-65 & RTD9-65 CEILING DIFFUSERS



Model Number	A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
RMF16-41 With SRT16-65	56-3/8	1432	52-3/4	1340	44-1/8	1121	40-1/2	1029	4	102	---	---
RMF16-65 With SRT16-65	69	1753	65-3/8	1661	50-1/2	1283	46-7/8	1191	4	102	4	102

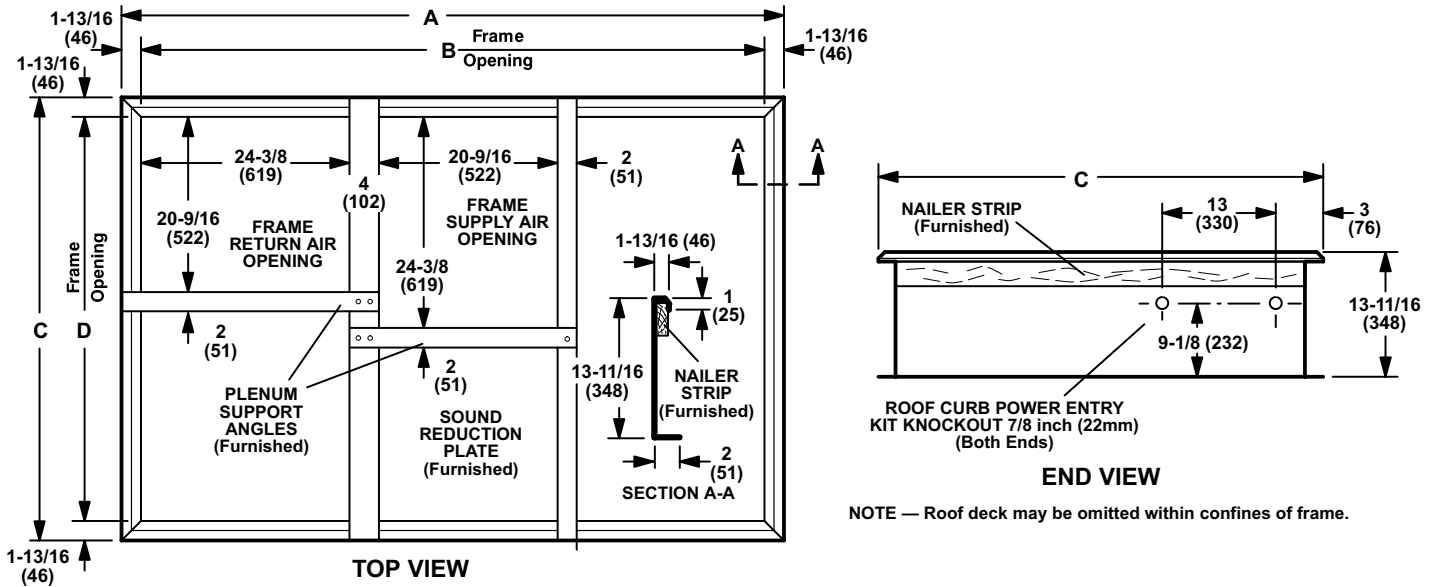
3-1/4 inches (83 mm) for CHA16-024-030-036.

TYPICAL FLASHING DETAIL FOR RMF16 ROOF MOUNTING FRAME



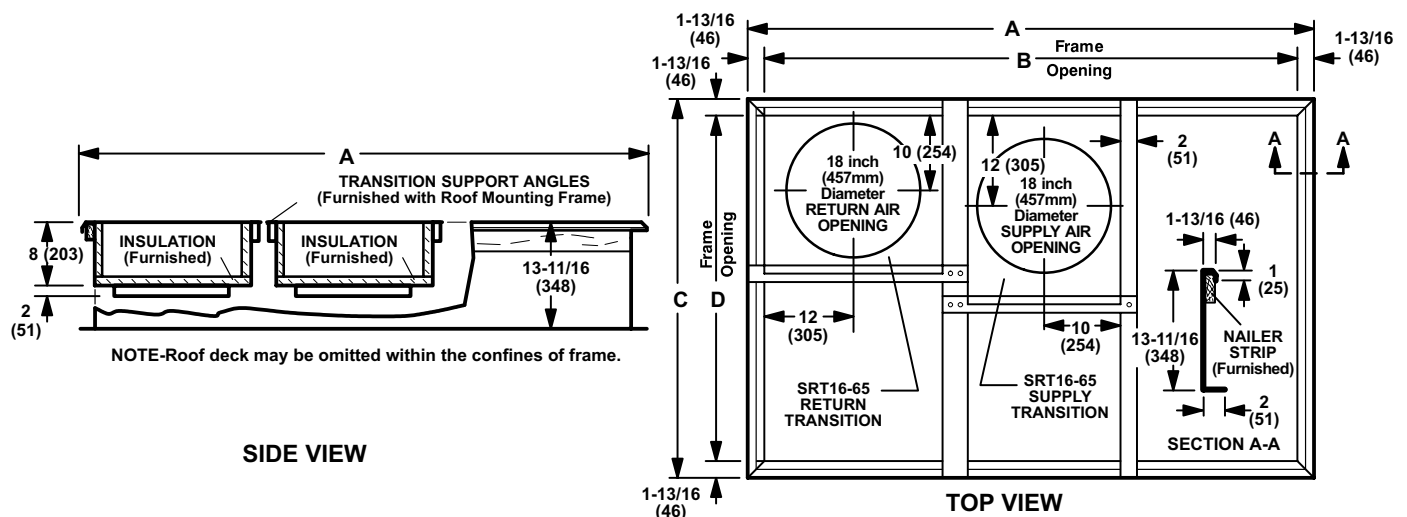
ACCESSORY DIMENSIONS - INCHES (MM) - CANADA ONLY

RMF16-41 & 65 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING FOR CHA16 UNITS



Model Number	A		B		C		D	
	inch	mm	inch	mm	inch	mm	inch	mm
RMF16-41	56-3/8	1432	52-3/4	1340	44-1/8	1121	40-1/2	1029
RMF16-65	69	1753	65-3/8	1661	50-1/2	1283	46-7/8	1191

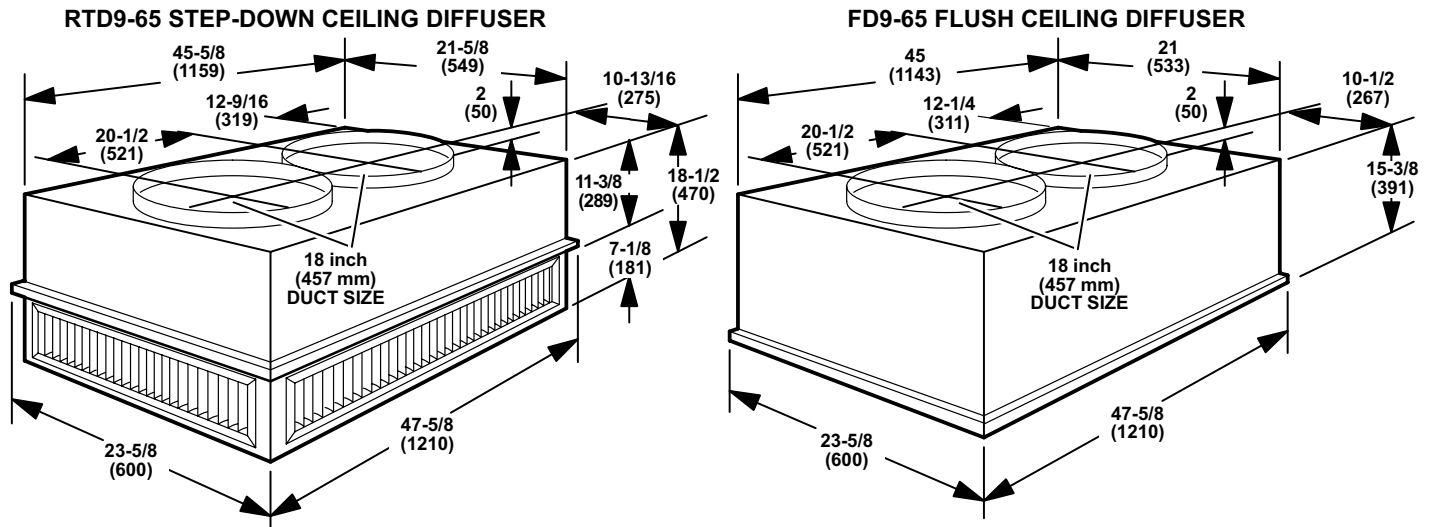
RMF16-41 & RMF16-65 ROOF MOUNTING FRAMES WITH SRT16-65 SUPPLY AND RETURN AIR TRANSITIONS FOR FD9-65 & RTD9-65 CEILING DIFFUSERS



Model Number	A		B		C		D	
	inch	mm	inch	mm	inch	mm	inch	mm
RMF16-41 With SRT16-65	56-3/8	1432	52-3/4	1340	44-1/8	1121	40-1/2	1029
RMF16-65 With SRT16-65	69	1753	65-3/8	1661	50-1/2	1283	46-7/8	1191

ACCESSORY DIMENSIONS - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS



GUIDE SPECIFICATIONS

General

- Furnish and install a single package air to air DX mechanical cooling system, complete with automatic controls.
- The single package unit shall be a standard product of a firm regularly engaged in the manufacture of heating-cooling equipment.
- The manufacturer shall have parts and service available throughout the U.S. and Canada.
- The equipment shall be shipped completely factory assembled, precharged, piped and wired internally ready for field connections.
- The manufacturer shall test operate system at the factory before shipment.

Air Distribution

- Equipment shall be capable of bottom (down-flow) or side (horizontal) handling of conditioned air.

Approvals

- All electrical components shall have UL and ULC Listing. All wiring shall be in compliance with NEC and CEC.
- Shall be rated and certified in accordance with the USE certification program, which is based on ARI Standard 210/240-94.

Equipment Warranty

- Compressors have a limited warranty for a full five years.
- All other covered components have a limited warranty for one year.
- Refer to the Lennox Equipment Limited Warranty certificate for details.

Refrigeration System

- The coils shall be non-ferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested.
- Outdoor coil shall be formed coil construction. Optional coil guards shall be available.
- Compressors shall be resiliently mounted and have overload protection. 024 and 030 models shall have compressor crankcase heaters. 036, 048 and 060 models shall have scroll compressors. The refrigeration system shall have discharge, suction and liquid line service gauge ports, frezestat, high pressure switch, liquid line strainer, expansion valve and full refrigerant charge.
- Control options available shall consist of low ambient controls, timed-off control and thermostat.

Cabinet

- Shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal.
- Cabinet panels where conditioned air is handled shall be fully insulated to prevent sweating and minimize sound. Openings shall be provided for power connection entry.
- Supply and return air openings shall be flanged.
- Indoor coil condensate drain shall be provided.
- Lifting brackets shall be factory installed.

Economizer Wiring

- Economizer wiring harness shall be furnished and factory installed.

Service Access

- All components, wiring and inspection areas shall be completely accessible through removable panels.

Supply Air Blowers

- Centrifugal supply air blower shall be direct driven by a multi-speed motor.
- Blower shall be statically and dynamically balanced.

Outdoor Coil Fans

- Direct drive propeller type condenser fans shall discharge vertically.
- Fan motor shall be permanently lubricated and inherently protected.
- Fans shall have a safety guard.

Air Filters

- Cleanable 1 inch (25 mm) thick filters shall be furnished.

OPTIONAL ACCESSORIES

Ceiling Diffusers

- Furnish and install a (flush or stepdown) optional combination ceiling supply and return air diffuser.

Ceiling Diffuser Supply and Return Air Transitions

- Supply and return transitions shall be available, for field installation in the roof mounting frame, to facilitate duct connection to the diffuser.

Coil Guards

- PVC (polyvinyl chloride) coated steel wire coil guards shall be available for field installation to protect outdoor coils from damage.

Control Systems

- Shall provide a selection of thermostats and related controls to automatically operate the mechanical equipment through the heating or cooling and ventilating cycles as required.

Economizer Dampers

- Furnish and install, complete with controls, an air mixing damper assembly including outdoor air and recirculated air dampers.
- The assembly shall provide for the introduction of outside air for minimum ventilation and free cooling.
- Damper motor shall be 24 volt fully modulating or three position spring return.
- Down-flow models shall include Gravity Exhaust Dampers.
- Horizontal models shall require optional Gravity Exhaust Dampers.
- Controls shall include electronic discharge air sensor, minimum position switch, and solid-state adjustable enthalpy control.
- Control option available shall consist of differential enthalpy control (return air sensor).

Electric Heaters

- Shall be available for field installation.
- Heating elements shall be nichrome bare wire exposed directly to the air stream.
- ECH16R safety devices shall consist of limit controls and thermal cutoff safety fuses. ECH16 safety devices shall consist of limit controls and fuse block.
- ECH16-20 and 25kW (208/240v-3ph) heaters shall have thermal time delay relay to bring elements on and off in sequence with at time delay between each element.
- Heaters shall be UL and ULC listed.
- Optional heater sub-fuse box shall be available for ECH16R electric heaters for single point power supply applications.

Hail Guards

- Hail guards shall be available for field installation to protect outdoor coils from damage.

Horizontal Gravity Exhaust Dampers

- Pressure operated dampers shall install in return air duct for horizontal applications with EMDH16 horizontal economizer dampers.
- Damper blades shall ride in nylon bearings and be gasketed for tight seal and quiet operation.

Outdoor Air Damper Section

- Optional manual outdoor dampers shall be available to provide outdoor air requirements of up to 25%.
- Damper section field installs external to the unit.
- Shall be equipped with outdoor air hood filter for extra air filtering and bird screen protection.

Remote Status Panel

- Shall be available for installation within the conditioned area to observe equipment operation.
- The panel shall include signal lights for Cool Mode, Heat Mode, Compressor 1, Compressor 2, No Heat and Filter.

Roof Curb Power Entry Kit

- Optional kit shall provide power entry to the unit through the roof mounting frame.

Roof Mounting Frame

- Mechanical contractor shall install a steel roof mounting frame for bottom discharge and return air duct connection.
- It shall mate to the bottom perimeter of the equipment.
- When flashed into the roof it shall make a unit mounting curb and provide weatherproof duct connection and entry into the conditioned area.
- Flashing shall be the responsibility of a roofing contractor.
- Frame shall be approved by US National Roofing Contractors Association.

Single Point Power Source Unit Sub-Fuse Box

- Optional box shall field install internal to the unit and provide single point power source connection and sub-fusing for unit.
- Shall be of galvanized steel with mounting holes, electrical inlets and hinged cover.

Stand-Off Mounting Kit

- Optional kit shall be available to elevate unit above mounting surface in horizontal applications.