LENNOX®

ENGINEERING DATA

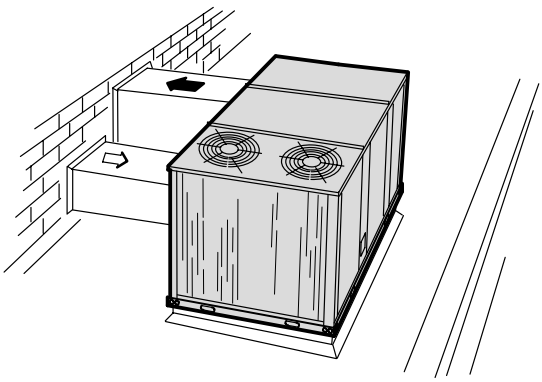
PACKAGED GAS ELECTRIC

GCS16-180-240

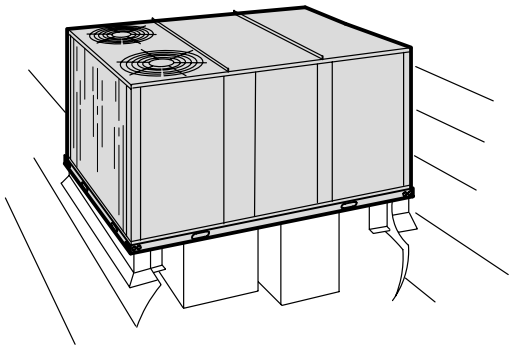
15 and 20 Ton
(52.8 and 70.3 kW)
Net Cooling Capacity - 176,000 to 216,000 Btuh (51.6 to 63.3 kW)
Input Heating Capacity - 235,000 to 375,000 Btuh (68.9 to 109.9 kW)

Bulletin #210293
August 2001
Supersedes June 2000

GCS16-240



Horizontal (Side) Supply and Return Air Installation
With RMF16 Roof Mounting Frame.



Down-Flow Supply and Return Air Installation
With RMF16 Roof Mounting Frame.

MODEL NUMBER IDENTIFICATION

GCS 16 - 180 - 235 3HP - 1 Y

Unit Type
GCS = Packaged Gas Unit

Series

Cooling Capacity Tons (kW)
180 = 15 (52.8)
240 = 20 (70.3)

Heating Capacity Btuh
235 = 235,000 Btuh (68.8 kW)
375 = 375,000 Btuh (109.8 kW)

Blower Motor Horsepower
3hp = 3 hp (2.24 kW)
5hp = 5 hp (3.73 kW)
7.5hp = 7.5 hp (5.60 kW)

Minor Revision Number

Voltage
Y = 208/230v-3 phase-60hz
G = 460v-3 phase-60hz
J = 575v-3 phase-60hz

NOTE - Due to Lennox' ongoing committment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability.
Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.
Installation and service must be performed by a qualified installer and servicing agency.

FEATURES

Air Flow Choice
- Bottom (down-flow) or horizontal (side) supply and return air.

Approvals
- Units certified by CSA International (formerly AGA/CGA) as combination heating/ cooling unit for outdoor installation, bonded for grounding to meet safety standards for servicing required by CSA International and National and Canadian Electrical Codes.
- Developed in accordance with ISO 9002 quality standards

ARI Rated and Certified
- Certified in accordance with the ULE certification program, which is based on ARI Standard 340/360-2000.

Cabinet
- Constructed of heavy gauge galvanized steel.
- Powdered enamel paint finish.
- Removable cabinet panels allow service access.
- Base section and cabinet panels exposed to conditioned air lined with thick fiberglass insulation.
- Electrical inlets (bottom power entry) provided in cabinet base and evaporator coil section cabinet panel for wiring entry.
- Control box with low voltage pigtail wiring connections and controls conveniently located for service access.
- Indoor coil condensate drain connection extends outside cabinet for ease of connection.
- Full perimeter base rails with forklift slots and holes for rigging
- Lifting brackets furnished for handling and rigging.

Coil Construction (Evaporator and Condenser)
- Extra large surface area and circuiting of coils provide maximum cooling efficiency, excellent heat transfer and low air resistance.
- Constructed of precisely spaced ripple-edged aluminum fins fitted to copper tubes.
- Fins equipped with collars that grip tubing for maximum contact area.
- Flared shoulder tubing connections and silver soldering provide tight, leakproof joints.
- Long life copper tubing is easy to field service.
- Coil is factory tested under high pressure to insure leakproof construction.

Compressors
- Reciprocating type, hermetically sealed, overload protected (-180 models).
- Copeland Scroll™ type, hermetically sealed (-240 models).

Condenser Coils
- “L” shaped formed coil construction.

Condenser Fans
- Low sound operating levels, PVC coated fan guard furnished.

Condenser Fan Motors
- Overload protected, permanently lubricated, ball bearings.

Fan and Limit Controls
- Factory installed, fan time delay (45 seconds “on” / 150 seconds “off”), dual limit controls (primary and secondary) with fixed temperature setting

Filters
- Unit is furnished with disposable 2 inch (51 mm) pleated MERV 7 rated filters (Minimum Efficiency Reporting Value based on ASHRAE 52.2).

Heat Exchanger
- Tubular construction, aluminized steel, life cycle tested.

Heating System
- Aluminized steel inshot burners, direct spark ignition, electronic flame sensor, redundant automatic dual gas valve with manual shut-off, induced draft blower, flame rollout switch, peep hole for flame viewing

Refrigeration System
- Consists of: compressors, condenser coil and direct drive fans, evaporator coil and belt drive blower, expansion valves, high capacity driers, full refrigerant charge, freezestats (prevents coil freeze-up during low ambient operation), independent refrigerant circuits (allows staging), low ambient cooling operation down to 30°F (-1°C) without additional controls.

Supply Air Blower
- Belt drive.
- Forward curved blades with double inlet.
- Statically and dynamically balanced.
- Permanently lubricated self aligning ball bearings with adjustable pulley.

Supply Air Motor
- Overload protected, equipped with ball bearings.
- Motor mounting base permits quick and simple motor changeover, belt tension adjustment or belt changing.
- Adjustable motor pulley allows for variable speed adjustments.

Warranty
- Limited ten years heat exchanger, limited five years compressors, one year all other covered components.

OPTIONAL ACCESSORIES (MUST BE ORDERED EXTRA)

Item		GCS16-180	GCS16-240
Ceiling Diffusers (Step-Down) - Aluminum grilles, double deflection louvers, 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.		RTD11-185 392 lbs. (178 kg)	RTD11-275 403 lbs. (183 kg)
Ceiling Diffusers (Flush) - Aluminum grilles, fixed blade louvers, 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.		FD11-185 289 lbs. (131 kg)	FD11-275 363 lbs. (165 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.		SRT16-18 75 lbs. (34 kg)	SRT16-24 120 lbs. (54 kg)
Coil Guards - PVC coated steel wire guards to protect outdoor coil. Not used with Hail Guards.		**78L49**	
Control Systems		See Page 11	
Economizer Dampers (Down-Flow or Horizontal) - Mechanically linked recirculated air and outdoor air dampers, plug-in connections to unit, nylon bearings, stainless steel seals (outdoor dampers), 24 volt fully modulating spring return damper motor, adjustable minimum damper position switch, mixed air sensor, solid-state adjustable outdoor air enthalpy control, 0 to 100% outdoor air adjustable, powdered enamel paint finish. NOTE - Economizer Damper Hood is required and must be ordered separately (see below). NOTE - Gravity Exhaust Dampers are required for down-flow applications and must be ordered separately (see below).	Model No. - Net Wt.	REMD16M-18/24 Dampers 95 lbs. (43 kg) (order Economizer Dampers and Damper Hood for complete assembly)	
	Net face area	5.3 sq. ft. (0.49 m^2)	
Economizer Damper Hood - Required with REMD16M economizer dampers (see above). Installs over outdoor air dampers. Includes cleanable aluminum mesh frame filters.	Model No. - Net Wt.	REMD16M-18/24 Damper Hood **81L45** 36 lbs. (16 kg)	
	No. & Size of Filters	(2) 25 x 25 x 1 in. (635 x 635 x 25 mm)	
Economizer Gravity Exhaust Dampers - Required with REMD16 economizer dampers in down-flow applications. Optional for horizontal applications. Neoprene coated fiberglass dampers. Includes rain hood. Field installs on economizer for down-flow applications. Field installs on return air duct for horizontal supply and return air applications. See dimension drawings.		GED16-18/24 23 lbs. (10 kg)	
Economizer Power Exhaust Fans - For use with REMD16M economizer dampers and GED16 Gravity Exhaust Dampers (see above). Provides pressure relief. Installs between economizer and gravity exhaust dampers (required). Interlocked to run when return air dampers are closed and supply air blowers are operating. Overload protected.	Model No. - Net Wt.	PED16-18/24 80 lbs. (36 kg)	
	Dia. - in. (mm) No. blades	20 (508) - 5	
	Total air volume - cfm (L/s)	6000 (2830)	
	Motor horsepower (W)	(2) - 1/3 (250)	
	Total Watts input	850	
Economizer Differential Enthalpy Control - For use with economizer dampers, solid-state return air sensor allows selection between outdoor air and return air (whichever has lowest enthalpy).		**54G44**	
Hail Guards - Heavy duty field installed coil guard protects coils from damage. Not used with Coil Guards.		**78L48**	
Horizontal Supply and Return Air Kit - Provides duct connection to unit, flanges furnished, hardware furnished, two filler panels furnished for unused air openings in unit base.		HDK16-18/24 55 lbs. (25 kg)	
Low Ambient Controls - Allows unit operation down to 0°F (-17.7°C).		LB-57113BY **(85L42)**	
LPG/Propane Kits		**81L86**	
Outdoor Air Damper/Hood Section - Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, cleanable aluminum mesh frame type filter furnished in hood, section installs on unit for down-flow applications with Outdoor Air Damper Panel Kit (required, must be ordered separately - see below). Damper/Hood section field installs in return air duct for horizontal supply and return air applications, panel kit not required for horizontal applications. Minimum mixed air temperature: Heat mode (aluminized heat exchanger) - 45°F (7°C) Maximum mixed air temperature: Cool mode - 90°F (32°C).	Model No.	OAD16-18/24 Damper/Hood **81L38** 52 lbs. (24 kg) (Order Air Damper/Hood and Damper Panel Kit for complete assembly for down-flow applications)	
	No. & Size of Filters	(1) 26 x 28 x 1 in. (660 x 711 x 25 mm)	
Outdoor Air Damper Panel Kit (Down-Flow Applications) - Required with OAD16 Damper/Hood. Interchangeable unit panel.		OAD16-18/24 Panel Kit **81L39** 20 lbs. (9 kg)	
Outdoor Air Damper Motorized Damper Kit - 3 position damper actuator, plug-in connection.		**35G21 -** 7 lbs. (3 kg)	
Roof Mounting Frame - Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down.		RMF16-18/24 154 lbs. (70 kg)	

SPECIFICATIONS

		Model No.	GCS16-180	GCS16-240
Heating Performance	-235 Heat Models	Low fire input - Btuh (kW)	154,000 (45.1) Nat. Gas 170,000 (49.8) LPG/Propane	154,000 (45.1) Nat. Gas 170,000 (49.8) LPG/Propane
		Input - Btuh (kW)	235,000 (68.9)	235,000 (68.9)
		Output - Btuh (kW)	188,000 (55.1) Nat. Gas 191,000 (56.0) LPG/Propane	188,000 (55.1) Nat. Gas 191,000 (56.0) LPG/Propane
		CSA Thermal Efficiency	80.0% Nat. / 81.3% LPG/Propane	80.0% Nat. / 81.3% LPG/Propane
	-375 Heat Models	Low fire input - Btuh (kW)	246,000 (72.1) Nat. Gas 271,000 (79.4) LPG/Propane	246,000 (72.1) Nat. Gas 271,000 (79.4) LPG/Propane
		Input - Btuh (kW)	375,000 (109.9)	375,000 (109.9)
		Output - Btuh (kW)	300,000 (87.9) Nat. Gas 305,000 (89.4) LPG/Propane	300,000 (87.9) Nat. Gas 305,000 (89.4) LPG/Propane
		CSA Thermal Efficiency	80.0% Nat. / 81.3% LPG/Propane	80.0% Nat. / 81.3% LPG/Propane
		Gas Supply Connections fpt - in. (mm)	3/4	3/4
		Rec. Gas Supply Pressure - wc. in. (kPa) - Natural	7 (1.7)	7 (1.7)
		LPG/Propane	11 (2.7)	11 (2.7)
Cooling Performance		Nominal Tonnage	15	20
		Gross cooling capacity - Btuh (kW)	183,200 (53.7)	226,600 (66.4)
		★Total cooling capacity - Btuh (kW)	176,000 (51.6)	216,000 (63.3)
		★Total unit kW	19.5	24.0
		★EER (Btuh/Watts)	9.0	9.0
		★Integrated Part Load Value	9.2	9.2
		Refrigerant Charge Furnished (HCFC-22) Circuit 1	7 lbs. 8 oz. (3.40 kg)	8 lbs. 8 oz. (3.86 kg)
		Circuit 2	7 lbs. 8 oz. (3.40 kg)	8 lbs. 8 oz. (3.86 kg)
		Circuit 3	7 lbs. 8 oz. (3.40 kg)	8 lbs. 8 oz. (3.86 kg)
Condenser Coil		Net face area - sq. ft. (m^2)	29.5 (2.74)	29.5 (2.74)
		Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)
		No. of rows	2	2
		Fins per inch (m)	20 (787)	20 (787)
Condenser Fans		Motor horsepower (W)	3/4 (560)	1 (746)
		Motor rpm	1075	1140
		Motor watts	1200	2050
		Diameter - in. (mm) & No. of blades	(2) 24 (610) - 4	(2) 26 (660) - 4
		Air volume - cfm (L/s)	10,000 (4720)	13,500 (6370)
Evaporator Coil		Net face area - sq. ft. (m^2)	17.9 (1.66)	17.9 (1.66)
		Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)
		No. of rows	3	4
		Fins per inch (m)	14 (551)	14 (551)
		Expansion device type	Thermostatic Expansion Valve	Thermostatic Expansion Valve
		Drain connection size mpt - in. (mm)	1 (25.4)	1 (25.4)
Evaporator Blower Motor Selection		Nominal motor output - hp (kW)	3 (2.24) 5 (3.73)	5 (3.73) 7.5 (5.60)
		Max. usable motor output - hp (kW)	3.45 (2.57) 5.75 (4.29)	5.75 (4.29) 8.6 (6.42)
		Motor - RPM range	3 hp 645-845 5 hp 765-965	5 hp 765-965 7.5 hp 895-1120
		Blower wheel nominal diameter x width - in. (mm)	18 x 18 (457 x 457)	18 x 18 (457 x 457)
Filters (furnished)		Type of filter	Disposable, MERV 7 rated, commercial grade, pleated	
		No. & size - in. (mm)	(6) 18 x 24 x 2 (457 x 610 x 51)	(6) 18 x 24 x 2 (457 x 610 x 51)
Shipping Data		Net weight of basic unit - lbs. (kg)	1700 (771)	1825 (828)
		Shipping weight of basic unit - lbs. (kg) 1 Pkg.	1870 (848)	1990 (903)
Electrical characteristics			208/230v, 460v or 575v - 60 hertz - 3 phase	

★Certified in accordance with the ULE certification program, which is based on ARI Standard 340/360-93; 95°F (35°F) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air. NOTE - Integrated Part Load Value rated at 80°F (27°C) outdoor air temperature.
NOTE - ARI capacity is net and includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.
[1]Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished by Lennox are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

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.

GCS16-180 — TWO COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																					
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°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		
	cfm	L/s	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)	4800	2265	127.8	37.5	8.42	.68	.81	.93	122.8	36.0	9.00	.69	.82	.94	117.4	34.4	9.70	.70	.84	.96	111.4	32.6	10.46	.72	.86	.98
	6000	2830	132.8	38.9	8.54	.72	.87	.99	127.6	37.4	9.16	.74	.89	1.00	121.8	35.7	9.88	.75	.91	1.00	115.6	33.9	10.66	.77	.93	1.00
	7200	3400	136.8	40.1	8.62	.77	.93	1.00	131.2	38.5	9.26	.78	.95	1.00	125.4	36.8	10.00	.80	.97	1.00	119.2	34.9	10.82	.83	.99	1.00
67°F (19°C)	4800	2265	136.2	39.9	8.60	.54	.65	.77	130.8	38.3	9.24	.54	.66	.79	124.8	36.6	9.98	.55	.68	.81	118.4	34.7	10.80	.56	.69	.83
	6000	2830	140.6	41.2	8.70	.56	.70	.84	134.8	39.5	9.38	.57	.71	.86	128.6	37.7	10.14	.58	.73	.88	121.8	35.7	10.96	.59	.75	.90
	7200	3400	143.8	42.1	8.76	.59	.75	.90	137.8	40.4	9.46	.60	.76	.92	131.4	38.5	10.24	.61	.78	.94	124.4	36.5	11.08	.62	.81	.96
71°F (22°C)	4800	2265	145.0	42.5	8.78	.41	.52	.63	139.2	40.8	9.50	.41	.53	.64	132.8	38.9	10.30	.41	.53	.65	126.0	36.9	11.16	.42	.54	.67
	6000	2830	149.4	43.8	8.88	.42	.55	.67	143.2	42.0	9.62	.42	.56	.69	136.6	40.0	10.46	.42	.56	.71	129.4	37.9	11.34	.43	.58	.72
	7200	3400	152.6	44.7	8.96	.43	.58	.72	146.0	42.8	9.72	.43	.59	.74	139.0	40.7	10.56	.44	.60	.76	131.8	38.6	11.46	.44	.61	.78

GCS16-180 — ALL COMPRESSORS OPERATING

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		
	cfm	L/s	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)	4800	2265	176.5	51.7	14.54	.70	.84	.97	167.6	49.1	15.68	.72	.86	.98	158.5	46.5	16.88	.73	.89	1.00	149.5	43.8	18.06	.75	.91	1.00
	6000	2830	183.2	53.7	14.81	.75	.91	1.00	173.9	51.0	15.98	.77	.94	1.00	164.5	48.2	17.22	.80	.96	1.00	155.3	45.5	18.48	.82	.99	1.00
	7200	3400	188.6	55.3	14.99	.80	.97	1.00	179.3	52.5	16.23	.83	.99	1.00	170.3	49.9	17.55	.85	1.00	1.00	161.3	47.3	18.89	.88	1.00	1.00
67°F (19°C)	4800	2265	187.6	55.0	14.96	.55	.68	.81	178.1	52.2	16.18	.56	.69	.83	168.1	49.3	17.43	.57	.71	.85	158.5	46.5	18.68	.58	.73	.88
	6000	2830	193.3	56.7	15.19	.58	.73	.88	183.2	53.7	16.43	.59	.75	.90	172.9	50.7	17.72	.60	.77	.93	162.7	47.7	18.98	.62	.80	.96
	7200	3400	197.5	57.9	15.35	.61	.78	.94	187.0	54.8	16.61	.62	.81	.97	176.5	51.7	17.93	.64	.83	.99	166.0	48.6	19.22	.66	.86	1.00
71°F (22°C)	4800	2265	199.7	58.5	15.44	.41	.53	.65	189.5	55.5	16.73	.42	.54	.67	179.2	52.5	18.08	.42	.55	.69	169.0	49.5	19.40	.42	.57	.71
	6000	2830	205.3	60.2	15.67	.42	.57	.71	194.5	57.0	16.99	.43	.58	.73	183.7	53.8	18.35	.43	.59	.75	172.9	50.7	19.70	.44	.61	.77
	7200	3400	209.0	61.3	15.82	.44	.60	.76	198.1	58.1	17.17	.44	.61	.78	186.9	54.8	18.55	.45	.63	.81	175.8	51.5	19.90	.46	.65	.84

GCS16-240 — TWO COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																					
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°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		
	cfm	L/s	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)	5760	2720	153.0	44.8	8.64	.69	.82	.94	148.6	43.6	9.64	.69	.83	.95	143.8	42.1	10.76	.70	.84	.97	138.6	40.6	12.04	.71	.85	.98
	7200	3400	158.8	46.5	8.82	.73	.89	1.00	154.0	45.1	9.80	.74	.90	1.00	149.0	43.7	10.92	.76	.92	1.00	143.8	42.1	12.22	.77	.93	1.00
	8640	4080	163.4	47.9	8.96	.78	.95	1.00	158.6	46.5	9.96	.80	.96	1.00	153.6	45.0	11.10	.81	.98	1.00	148.2	43.4	12.40	.83	.99	1.00
67°F (19°C)	5760	2720	162.0	47.5	8.92	.54	.66	.78	157.2	46.1	9.90	.55	.67	.79	152.0	44.5	11.04	.55	.68	.81	146.4	42.9	12.34	.56	.69	.82
	7200	3400	167.0	48.9	9.08	.57	.71	.85	161.8	47.4	10.08	.57	.72	.87	156.6	45.9	11.22	.58	.73	.88	150.8	44.2	12.50	.59	.75	.90
	8640	4080	170.6	50.0	9.22	.60	.76	.92	165.4	48.5	10.20	.61	.78	.94	159.8	46.8	11.36	.62	.79	.95	153.8	45.1	12.66	.62	.81	.97
71°F (22°C)	5760	2720	171.6	50.3	9.26	.41	.53	.64	166.6	48.8	10.26	.41	.53	.64	161.0	47.2	11.40	.42	.54	.65	155.2	45.5	12.70	.42	.54	.67
	7200	3400	176.4	51.7	9.44	.42	.56	.69	171.0	50.1	10.44	.42	.56	.70	165.4	48.5	11.58	.43	.57	.71	159.4	46.7	12.88	.43	.58	.73
	8640	4080	179.6	52.6	9.58	.43	.59	.74	174.0	51.0	10.58	.44	.60	.76	168.2	49.3	11.72	.44	.61	.77	162.0	47.5	13.02	.44	.62	.79

GCS16-240 — ALL COMPRESSORS OPERATING

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		
	cfm	L/s	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)	5760	2720	216.1	63.3	16.13	.70	.84	.97	208.4	61.1	18.04	.71	.86	.98	200.3	58.7	20.20	.72	.87	1.00	191.3	56.1	22.68	.74	.90	1.00
	7200	3400	224.0	65.6	16.37	.76	.92	1.00	216.2	63.4	18.31	.77	.93	1.00	207.5	60.8	20.49	.79	.95	1.00	198.8	58.3	22.98	.81	.97	1.00
	8640	4080	230.9	67.7	16.63	.81	.98	1.00	222.8	65.3	18.58	.83	.99	1.00	214.5	62.9	20.77	.85	1.00	1.00	205.8	60.3	23.29	.87	1.00	1.00
67°F (19°C)	5760	2720	228.5	67.0	16.54	.55	.68	.81	220.1	64.5	18.49	.56	.69	.82	211.3	61.9	20.66	.56	.70	.84	202.0	59.2	23.13	.57	.72	.86
	7200	3400	235.3	69.0	16.81	.58	.73	.89	226.6	66.4	18.72	.59	.75	.91	217.3	63.7	20.94	.60	.77	.93	207.5	60.8	23.42	.61	.78	.95
	8640	4080	240.1	70.4	17.01	.62	.79	.96	231.1	67.7	18.96	.63	.81	.97	221.8	65.0	21.12	.64	.83	.99	211.6	62.0	23.63	.65	.85	1.00
71°F (22°C)	5760	2720	242.0	70.9	17.08	.42	.54	.66	233.3	68.4	19.03	.42	.54	.67	224.2	65.7	21.25	.42	.55	.68	214.3	62.8	23.73	.42	.56	.69
	7200	3400	248.5	72.8	17.35	.43	.57	.71	239.5	70.2	19.30	.43	.58	.73	229.6	67.3	21.54	.43	.59	.74	219.4	64.3	24.02	.44	.60	.76
	8640	4080	252.7	74.1	17.56	.44	.61	.77	243.3	71.3	19.50	.44	.62	.79	233.2	68.3	21.72	.45	.63	.81	222.7	65.3	24.23	.45	.65	.83

BLOWER DATA - GCS16-180

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL & AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Wet indoor coil air resistance of selected unit.

2 - Any field installed accessories air resistance (economizer, duct resistance, diffuser, etc.)

Then determine from blower table blower motor output.

NOTE - In Canada, nominal motor output is also maximum usable motor output - 3 hp (2.24 kW) and 5 hp (3.73 kW).

See Page 8 for wet coil and optional accessory air resistance data.

BOLD ITALIC INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT — Inches Water Gauge (Pa)																			
	.20 (50)		.40 (100)		.60 (150)		.80 (200)		1.00 (250)		1.20 (300)		1.40 (350)		1.60 (400)		1.80 (450)		2.00 (495)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
4800 (2265)	***450***	***0.90 (0.67)***	***510***	***1.10 (0.82)***	***575***	***1.35 (1.01)***	***630***	***1.55 (1.16)***	680	1.75 (1.31)	730	2.00 (1.49)	775	2.25 (1.68)	820	2.50 (1.87)	860	2.75 (2.05)	900	3.05 (2.28)
4900 (2310)	***455***	***0.95 (0.71)***	***515***	***1.15 (0.86)***	***580***	***1.40 (1.04)***	***635***	***1.60 (1.19)***	685	1.85 (1.38)	735	2.10 (1.57)	780	2.35 (1.75)	820	2.55 (1.90)	865	2.85 (2.13)	900	3.10 (2.31)
5000 (2360)	***460***	***1.00 (0.75)***	***520***	***1.20 (0.90)***	***585***	***1.45 (1.08)***	***640***	***1.70 (1.27)***	690	1.90 (1.42)	735	2.15 (1.60)	780	2.40 (1.79)	825	2.65 (1.98)	865	2.90 (2.16)	905	3.20 (2.39)
5100 (2405)	***465***	***1.05 (0.78)***	***530***	***1.30 (0.97)***	***590***	***1.50 (1.12)***	645	1.75 (1.31)	695	2.00 (1.49)	740	2.20 (1.64)	785	2.45 (1.83)	830	2.75 (2.05)	870	3.00 (2.24)	910	3.30 (2.46)
5200 (2455)	***470***	***1.10 (0.82)***	***535***	***1.35 (1.01)***	***595***	***1.55 (1.16)***	645	1.80 (1.34)	700	2.05 (1.53)	745	2.30 (1.72)	790	2.55 (1.90)	830	2.80 (2.09)	870	3.05 (2.28)	910	3.35 (2.50)
5300 (2500)	***475***	***1.15 (0.86)***	***540***	***1.40 (1.04)***	***600***	***1.65 (1.23)***	650	1.85 (1.38)	700	2.10 (1.57)	750	2.40 (1.79)	795	2.65 (1.98)	835	2.90 (2.16)	875	3.15 (2.35)	915	3.45 (2.57)
5400 (2550)	***480***	***1.20 (0.90)***	***545***	***1.45 (1.08)***	***605***	***1.70 (1.27)***	655	1.95 (1.45)	705	2.20 (1.64)	755	2.45 (1.83)	795	2.70 (2.01)	840	3.00 (2.24)	880	3.25 (2.42)	915	3.55 (2.65)
5500 (2595)	***490***	***1.30 (0.97)***	***550***	***1.50 (1.12)***	***610***	***1.75 (1.31)***	660	2.00 (1.49)	710	2.25 (1.68)	755	2.50 (1.87)	800	2.80 (2.09)	840	3.05 (2.28)	880	3.35 (2.50)	920	3.65 (2.72)
5600 (2645)	***495***	***1.35 (1.01)***	***555***	***1.60 (1.19)***	***615***	***1.85 (1.38)***	665	2.10 (1.57)	715	2.35 (1.75)	760	2.60 (1.94)	805	2.90 (2.16)	845	3.15 (2.35)	885	3.45 (2.57)	925	3.75 (2.80)
5700 (2690)	***500***	***1.40 (1.04)***	***560***	***1.65 (1.23)***	***620***	***1.90 (1.42)***	670	2.15 (1.60)	720	2.45 (1.83)	765	2.70 (2.01)	810	3.00 (2.24)	850	3.25 (2.42)	890	3.55 (2.65)	925	3.80 (2.83)
5800 (2735)	***505***	***1.45 (1.08)***	***570***	***1.75 (1.31)***	***625***	***2.00 (1.49)***	675	2.25 (1.68)	725	2.50 (1.87)	770	2.80 (2.09)	810	3.05 (2.28)	850	3.30 (2.46)	890	3.60 (2.69)	930	3.90 (2.91)
5900 (2785)	***515***	***1.55 (1.16)***	***575***	***1.80 (1.34)***	***630***	***2.05 (1.53)***	680	2.30 (1.72)	725	2.60 (1.94)	775	2.90 (2.16)	815	3.15 (2.35)	855	3.40 (2.54)	895	3.70 (2.76)	935	4.05 (3.02)
6000 (2830)	***520***	***1.60 (1.19)***	***580***	***1.85 (1.38)***	***635***	***2.15 (1.60)***	685	2.40 (1.79)	730	2.65 (1.98)	775	2.95 (2.20)	820	3.25 (2.42)	860	3.55 (2.65)	900	3.85 (2.87)	935	4.10 (3.06)
6100 (2880)	***525***	***1.65 (1.23)***	***585***	***1.95 (1.45)***	***640***	***2.20 (1.64)***	690	2.50 (1.87)	735	2.75 (2.05)	780	3.05 (2.28)	825	3.35 (2.50)	865	3.65 (2.72)	900	3.90 (2.91)	940	4.25 (3.17)
6200 (2925)	***530***	***1.75 (1.31)***	***590***	***2.00 (1.49)***	645	2.30 (1.72)	695	2.60 (1.94)	740	2.85 (2.13)	785	3.15 (2.35)	830	3.45 (2.57)	870	3.75 (2.80)	905	4.00 (2.98)	945	4.35 (3.25)
6300 (2975)	***540***	***1.85 (1.38)***	***595***	***2.10 (1.57)***	650	2.40 (1.79)	700	2.65 (1.98)	745	2.95 (2.20)	790	3.25 (2.42)	830	3.50 (2.61)	870	3.80 (2.83)	910	4.15 (3.10)	945	4.45 (3.32)
6400 (3020)	***545***	***1.90 (1.42)***	***605***	***2.20 (1.64)***	655	2.45 (1.83)	705	2.75 (2.05)	750	3.05 (2.28)	795	3.35 (2.50)	835	3.65 (2.72)	875	3.95 (2.95)	915	4.25 (3.17)	950	4.55 (3.39)
6500 (3065)	***550***	***2.00 (1.49)***	***610***	***2.30 (1.72)***	660	2.55 (1.90)	710	2.85 (2.13)	755	3.15 (2.35)	800	3.45 (2.57)	840	3.75 (2.80)	880	4.05 (3.02)	915	4.35 (3.25)	955	4.70 (3.51)
6600 (3115)	***560***	***2.10 (1.57)***	***615***	***2.35 (1.75)***	665	2.65 (1.98)	715	2.95 (2.20)	760	3.25 (2.42)	805	3.55 (2.65)	845	3.85 (2.87)	885	4.20 (3.13)	920	4.45 (3.32)	960	4.80 (3.58)
6700 (3160)	***565***	***2.15 (1.60)***	***620***	***2.45 (1.83)***	670	2.75 (2.05)	720	3.05 (2.28)	765	3.35 (2.50)	810	3.65 (2.72)	850	4.00 (2.98)	890	4.30 (3.21)	925	4.60 (3.43)	960	4.90 (3.66)
6800 (3210)	***575***	***2.25 (1.68)***	***625***	***2.55 (1.90)***	680	2.85 (2.13)	725	3.15 (2.35)	770	3.45 (2.57)	815	3.80 (2.83)	855	4.10 (3.06)	890	4.40 (3.28)	930	4.75 (3.54)	965	5.05 (3.77)
6900 (3255)	***580***	***2.35 (1.75)***	***635***	***2.65 (1.98)***	685	2.95 (2.20)	730	3.25 (2.42)	775	3.55 (2.65)	815	3.85 (2.87)	855	4.20 (3.13)	895	4.50 (3.36)	935	4.85 (3.62)	***970***	***5.20 (3.88)***
7000 (3305)	***585***	***2.45 (1.83)***	***640***	***2.75 (2.05)***	690	3.05 (2.28)	735	3.35 (2.50)	780	3.70 (2.76)	820	4.00 (2.98)	860	4.30 (3.21)	900	4.65 (3.47)	935	4.95 (3.69)	***975***	***5.35 (3.99)***
7100 (3350)	***590***	***2.50 (1.87)***	645	2.85 (2.13)	695	3.15 (2.35)	740	3.45 (2.57)	785	3.80 (2.83)	825	4.10 (3.06)	865	4.45 (3.32)	905	4.75 (3.54)	940	5.10 (3.80)	***975***	***5.40 (4.03)***
7200 (3400)	***600***	***2.65 (1.98)***	650	2.95 (2.20)	700	3.25 (2.42)	745	3.60 (2.69)	790	3.90 (2.91)	830	4.20 (3.13)	870	4.55 (3.39)	910	4.90 (3.66)	945	5.25 (3.92)	***980***	***5.55 (4.14)***

BLOWER DATA - GCS16-240

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL & AIR FILTERS IN PLACE.
FOR ALL UNITS ADD:

1 - Wet indoor coil air resistance of selected unit.
2 - Any field installed accessories air resistance (economizer, duct resistance, diffuser, etc.)

Then determine from blower table blower motor output.
NOTE - In Canada, nominal motor output is also maximum usable motor output - 5 hp (3.73 kW) and 7.5 hp (5.60 kW).
See Page 8 for wet coil and optional accessory air resistance data.

BOLD ITALIC INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT — Inches Water Gauge (Pa)																					
	.20 (50)		.40 (100)		.60 (150)		.80 (200)		1.00 (250)		1.20 (300)		1.40 (350)		1.60 (400)		1.80 (450)		2.00 (495)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
6000 (2830)	***565***	***1.65 (1.23)***	***620***	***1.95 (1.45)***	***670***	***2.20 (1.64)***	***720***	***2.50 (1.87)***	765	2.75 (2.05)	810	3.05 (2.28)	850	3.35 (2.50)	890	3.65 (2.72)	930	3.95 (2.95)	965	4.25 (3.17)
6100 (2880)	***575***	***1.75 (1.31)***	***625***	***2.00 (1.49)***	***675***	***2.25 (1.68)***	***725***	***2.55 (1.90)***	770	2.85 (2.13)	815	3.15 (2.35)	855	3.45 (2.57)	895	3.75 (2.80)	930	4.05 (3.02)	970	4.40 (3.28)
6200 (2925)	***580***	***1.80 (1.34)***	***635***	***2.10 (1.57)***	***685***	***2.40 (1.79)***	***730***	***2.65 (1.98)***	775	2.95 (2.20)	820	3.25 (2.42)	860	3.55 (2.65)	900	3.85 (2.87)	935	4.15 (3.10)	975	4.50 (3.36)
6300 (2975)	***590***	***1.90 (1.42)***	***640***	***2.20 (1.64)***	***690***	***2.45 (1.83)***	***735***	***2.75 (2.05)***	780	3.05 (2.28)	825	3.35 (2.50)	865	3.65 (2.72)	900	3.95 (2.95)	940	4.25 (3.17)	975	4.60 (3.43)
6400 (3020)	***595***	***2.00 (1.49)***	***650***	***2.30 (1.72)***	***695***	***2.55 (1.90)***	***740***	***2.85 (2.13)***	785	3.15 (2.35)	830	3.45 (2.57)	870	3.75 (2.80)	905	4.05 (3.02)	945	4.40 (3.28)	980	4.70 (3.51)
6500 (3065)	***605***	***2.10 (1.57)***	***655***	***2.35 (1.75)***	***700***	***2.65 (1.98)***	***750***	***2.95 (2.20)***	790	3.25 (2.42)	835	3.55 (2.65)	875	3.85 (2.87)	910	4.15 (3.10)	950	4.50 (3.36)	985	4.85 (3.62)
6600 (3115)	***610***	***2.15 (1.60)***	***660***	***2.45 (1.83)***	***710***	***2.75 (2.05)***	***755***	***3.05 (2.28)***	795	3.35 (2.50)	840	3.65 (2.72)	880	4.00 (2.98)	915	4.30 (3.21)	955	4.65 (3.47)	990	4.95 (3.69)
6700 (3160)	***620***	***2.25 (1.68)***	***670***	***2.55 (1.90)***	***715***	***2.85 (2.13)***	***760***	***3.15 (2.35)***	805	3.45 (2.57)	845	3.75 (2.80)	885	4.10 (3.06)	920	4.40 (3.28)	960	4.75 (3.54)	995	5.10 (3.80)
6800 (3210)	***630***	***2.35 (1.75)***	***675***	***2.65 (1.98)***	***720***	***2.95 (2.20)***	765	3.25 (2.42)	810	3.55 (2.65)	850	3.90 (2.91)	890	4.20 (3.13)	925	4.50 (3.36)	965	4.90 (3.66)	1000	5.25 (3.92)
6900 (3255)	***635***	***2.45 (1.83)***	***685***	***2.75 (2.05)***	***730***	***3.05 (2.28)***	770	3.35 (2.50)	815	3.70 (2.76)	855	4.00 (2.98)	895	4.35 (3.25)	930	4.65 (3.47)	965	4.95 (3.69)	1005	5.35 (3.99)
7000 (3305)	***645***	***2.55 (1.90)***	***690***	***2.85 (2.13)***	***735***	***3.15 (2.35)***	780	3.50 (2.61)	820	3.80 (2.83)	860	4.10 (3.06)	900	4.45 (3.32)	935	4.75 (3.54)	970	5.10 (3.80)	1005	5.45 (4.07)
7100 (3350)	***650***	***2.65 (1.98)***	***700***	***2.95 (2.20)***	***740***	***3.25 (2.42)***	785	3.60 (2.69)	825	3.90 (2.91)	865	4.25 (3.17)	905	4.60 (3.43)	940	4.90 (3.66)	975	5.25 (3.92)	1010	5.60 (4.18)
7200 (3400)	***660***	***2.75 (2.05)***	***705***	***3.05 (2.28)***	***750***	***3.40 (2.54)***	790	3.70 (2.76)	830	4.00 (2.98)	870	4.35 (3.25)	910	4.70 (3.51)	945	5.05 (3.77)	980	5.35 (3.99)	1015	5.75 (4.29)
7300 (3445)	***665***	***2.85 (2.13)***	***710***	***3.15 (2.35)***	***755***	***3.50 (2.61)***	800	3.85 (2.87)	840	4.15 (3.10)	875	4.45 (3.32)	915	4.85 (3.62)	950	5.15 (3.84)	985	5.50 (4.10)	1020	5.90 (4.40)
7400 (3490)	***675***	***3.00 (2.24)***	***720***	***3.30 (2.46)***	765	3.65 (2.72)	805	3.95 (2.95)	845	4.30 (3.21)	885	4.65 (3.47)	920	4.95 (3.69)	955	5.30 (3.95)	990	5.65 (4.21)	1025	6.00 (4.48)
7500 (3540)	***680***	***3.05 (2.28)***	***725***	***3.40 (2.54)***	770	3.75 (2.80)	810	4.05 (3.02)	850	4.40 (3.28)	890	4.75 (3.54)	925	5.10 (3.80)	960	5.45 (4.07)	995	5.80 (4.33)	1030	6.15 (4.59)
7600 (3585)	***690***	***3.20 (2.39)***	***735***	***3.55 (2.65)***	775	3.85 (2.87)	820	4.20 (3.13)	855	4.50 (3.36)	895	4.90 (3.66)	930	5.20 (3.88)	965	5.55 (4.14)	1000	5.95 (4.44)	1035	6.35 (4.74)
7700 (3635)	***700***	***3.35 (2.50)***	***740***	***3.65 (2.72)***	785	4.00 (2.98)	825	4.35 (3.25)	865	4.70 (3.51)	900	5.00 (3.73)	935	5.35 (3.99)	970	5.70 (4.25)	1005	6.10 (4.55)	1040	6.50 (4.85)
7800 (3680)	***705***	***3.45 (2.57)***	***750***	***3.80 (2.83)***	790	4.10 (3.06)	830	4.45 (3.32)	870	4.80 (3.58)	905	5.15 (3.84)	945	5.55 (4.14)	980	5.90 (4.40)	1010	6.25 (4.66)	1045	6.65 (4.96)
7900 (3730)	***715***	***3.60 (2.69)***	***755***	***3.90 (2.91)***	800	4.25 (3.17)	835	4.60 (3.43)	875	4.95 (3.69)	910	5.30 (3.95)	950	5.70 (4.25)	985	6.05 (4.51)	1015	6.40 (4.77)	1050	6.80 (5.07)
8000 (3775)	***720***	***3.70 (2.76)***	765	4.05 (3.02)	805	4.40 (3.28)	845	4.75 (3.54)	880	5.10 (3.80)	920	5.45 (4.07)	955	5.85 (4.36)	990	6.20 (4.63)	1020	6.55 (4.89)	1055	6.95 (5.18)
8100 (3820)	***730***	***3.85 (2.87)***	770	4.15 (3.10)	810	4.50 (3.36)	850	4.90 (3.66)	890	5.25 (3.92)	925	5.60 (4.18)	960	6.00 (4.48)	995	6.35 (4.74)	1030	6.75 (5.04)	1060	7.10 (5.30)
8200 (3870)	***740***	***4.00 (2.98)***	780	4.30 (3.21)	820	4.70 (3.51)	855	5.00 (3.73)	895	5.40 (4.03)	930	5.75 (4.29)	965	6.15 (4.59)	1000	6.50 (4.85)	1035	6.95 (5.18)	1065	7.30 (5.45)
8300 (3915)	***745***	***4.10 (3.06)***	785	4.45 (3.32)	825	4.80 (3.58)	865	5.20 (3.88)	900	5.55 (4.14)	935	5.90 (4.40)	970	6.30 (4.70)	1005	6.70 (5.00)	1040	7.10 (5.30)	1070	7.45 (5.56)
8400 (3965)	***755***	***4.25 (3.17)***	795	4.60 (3.43)	835	5.00 (3.73)	870	5.30 (3.95)	910	5.75 (4.29)	945	6.10 (4.55)	980	6.50 (4.85)	1010	6.85 (5.11)	1045	7.25 (5.41)	1075	7.65 (5.71)
8500 (4010)	***760***	***4.40 (3.28)***	800	4.75 (3.54)	840	5.10 (3.80)	880	5.50 (4.10)	915	5.90 (4.40)	950	6.25 (4.66)	985	6.65 (4.96)	1015	7.00 (5.22)	1050	7.45 (5.56)	1080	7.80 (5.82)
8600 (4060)	***770***	***4.55 (3.39)***	810	4.90 (3.66)	850	5.30 (3.95)	885	5.65 (4.21)	920	6.00 (4.48)	955	6.40 (4.77)	990	6.80 (5.07)	1025	7.25 (5.41)	1055	7.60 (5.67)	1085	8.00 (5.97)
8700 (4105)	***780***	***4.70 (3.51)***	815	5.05 (3.77)	855	5.45 (4.07)	890	5.80 (4.33)	925	6.15 (4.59)	960	6.55 (4.89)	995	6.95 (5.18)	1030	7.40 (5.52)	1060	7.80 (5.82)	1090	8.15 (6.08)
8800 (4155)	***785***	***4.85 (3.62)***	825	5.20 (3.88)	860	5.60 (4.18)	900	6.00 (4.48)	935	6.40 (4.77)	970	6.80 (5.07)	1000	7.15 (5.33)	1035	7.55 (5.63)	1065	7.95 (5.93)	1095	8.35 (6.23)
8900 (4200)	***795***	***5.00 (3.73)***	830	5.35 (3.99)	870	5.75 (4.29)	905	6.15 (4.59)	940	6.55 (4.89)	975	6.95 (5.18)	1010	7.35 (5.48)	1040	7.75 (5.78)	1070	8.15 (6.08)	1105	8.60 (6.42)
9000 (4245)	***800***	***5.15 (3.84)***	840	5.55 (4.14)	875	5.90 (4.40)	910	6.30 (4.70)	950	6.75 (5.04)	980	7.10 (5.30)	1015	7.55 (5.63)	1045	7.90 (5.89)	1080	8.40 (6.27)	***1110***	***8.80 (6.56)***

BLOWER DATA

ACCESSORY AIR RESISTANCE

Unit Model No.	Air Volume		Total Resistance											
			Wet Evaporator Coil		REMD16M Down-Flow Economizer		RTD11 Step-Down Diffuser						FD11 Flush Diffuser	
							2 Ends Open		1 Side 2 Ends Open		All Ends & Sides Open			
	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
GCS16-180	4800	2265	.14	35	.03	7	.46	114	.40	99	.36	90	.24	60
	5000	2360	.14	35	.03	7	.51	127	.44	109	.39	97	.27	67
	5200	2455	.15	37	.03	7	.56	139	.48	119	.42	104	.30	75
	5400	2550	.16	40	.04	10	.61	152	.52	129	.45	112	.33	82
	5600	2645	.17	42	.04	10	.66	164	.56	139	.48	119	.36	90
	5800	2735	.18	45	.05	12	.71	177	.59	147	.51	127	.39	97
	6000	2830	.19	47	.05	12	.76	189	.63	157	.55	137	.42	104
	6200	2925	.20	50	.05	12	.80	199	.68	169	.59	147	.46	114
	6400	3020	.21	52	.06	15	.86	214	.72	179	.63	157	.50	124
	6600	3115	.22	55	.06	15	.92	229	.77	191	.67	167	.54	134
	6800	3210	.23	57	.07	17	.99	246	.83	206	.72	174	.58	144
	7000	3305	.24	60	.07	17	1.03	256	.87	216	.76	189	.62	154
	7200	3400	.25	62	.08	20	1.09	271	.92	229	.80	199	.66	164
GCS16-240	6000	2830	.24	60	.05	12	.36	90	.31	77	.27	67	.29	72
	6500	3065	.28	70	.06	15	.42	104	.36	90	.31	77	.34	85
	7000	3305	.31	77	.07	17	.49	122	.41	102	.36	90	.40	99
	7500	3540	.34	85	.09	22	.51	127	.46	114	.41	102	.45	112
	8000	3775	.38	94	.10	25	.59	147	.49	122	.43	107	.50	124
	8500	4010	.42	104	.11	27	.69	172	.58	144	.50	124	.57	142
	9000	4245	.46	114	.13	32	.79	196	.67	167	.58	144	.66	164

PED16-18/24 POWER EXHAUST FANS PERFORMANCE

Model No.	Air Volume		Return Air System Static Pressure	
	cfm	L/s	In. w.g.	Pa
PED16-18/24	6000	2830	0	0
	5700	2690	.05	12
	5300	2500	.10	25
	5000	2360	.15	37
	4700	2210	.20	50
	4200	1980	.25	62
	3600	1700	.30	75

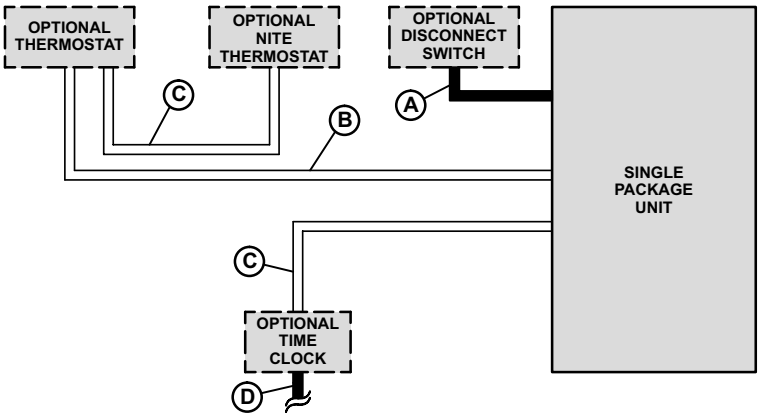
CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume		[1] Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	cfm	L/s	ft.	m	ft.	m
GCS16-180	5600	2645	39 - 49	12 - 15	28 - 37	9 - 11
	5800	2740	42 - 51	13 - 16	29 - 38	9 - 12
	6000	2830	44 - 54	13 - 17	40 - 50	12 - 15
	6200	2925	45 - 55	14 - 17	42 - 51	13 - 16
	6400	3020	46 - 55	14 - 17	43 - 52	13 - 16
	6600	3115	47 - 56	14 - 17	45 - 56	14 - 17
GCS16-240	7200	3400	33 - 38	10 - 12	26 - 35	8 - 11
	7400	3490	35 - 40	11 - 12	28 - 37	9 - 11
	7600	3585	36- 41	11 - 13	29 - 38	9 - 12
	7800	3680	38 - 43	11 - 13	40 - 50	12 - 15
	8000	3775	39 - 44	12 - 13	42 - 51	13 - 16
	8200	3870	41 - 46	12 - 14	43 - 52	13 - 16
	8400	3965	43 - 49	13 - 15	44 - 54	13 - 17
	8600	4060	44 - 50	13 - 15	46 - 57	14 - 17
	8800	4155	47 - 55	14 - 17	48 - 59	15 - 18

[1] Throw is the horizontal or vertical distance an air stream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 50 ft. (15 m) per minute. Four sides open.

FIELD WIRING

ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM



A - Three wire power (See Electrical Data Table)

B - Six wire low voltage

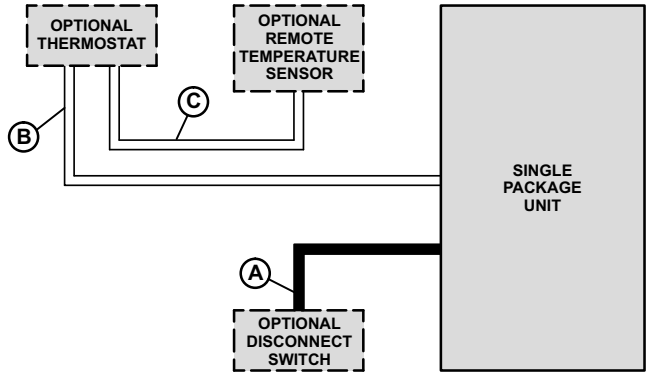
C - Two wire low voltage

D - Two wire power

- Field wiring not furnished -

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

T7300 OR T8600D/T8624D THERMOSTAT CONTROL SYSTEM



A - 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)

- Field wiring not furnished -

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

ELECTRICAL DATA

Model No.		GCS16-180						GCS16-240					
Line voltage data - 60 Hz - 3 phase		208/230V		460V		575V		208/230V		460V		575V	
Compressors (3)	Rated load amps each (total)	16.7 (50.1)		8.6 (25.8)		6.0 (18.1)		18.8 (56.4)		9.1 (27.3)		7.5 (22.5)	
	Locked rotor amps each (total)	110 (330)		55 (165)		44 (132)		156 (468)		75 (225)		54 (162)	
Condenser Fan Motor (2)	Full load amps (total)	3.7 (7.4)		1.9 (3.8)		1.6 (3.2)		4.8 (9.6)		2.4 (4.8)		2.0 (4.0)	
	Locked rotor amps (total)	7.3 (14.6)		3.7 (7.4)		2.9 (5.8)		23 (46)		11.5 (23)		8.9 (17.8)	
Evaporator Blower Motor	Motor Output - hp	3	5	3	5	3	5	5	7.5	5	7.5	5	7.5
	kW	2.2	3.7	2.2	3.7	2.2	3.7	3.7	5.6	3.7	5.6	3.7	5.6
	Full load amps	10.6	16.7	4.8	7.6	3.9	6.1	16.7	24.2	7.6	11	6.1	9
	Locked rotor amps	66	105	26.8	45.6	23.4	36.6	105	152	45.6	66	36.6	54
Recommended max. fuse size (amps)	With Exhaust Fan	90	90	45	50	30	35	110	125	50	50	40	45
	Less Exhaust Fan	80	90	45	45	30	35	100	110	50	50	40	45
†Minimum Circuit Ampacity	With Exhaust Fan	78	84	40	42	29	31	93	100	45	48	37	40
	Less Exhaust Fan	73	79	37	40	27	29	88	95	42	46	35	38
Optional Power Exhaust Fans	(No.) Horsepower (W)	(2) 1/3 (250)		(2) 1/3 (250)		(2) 1/3 (250)		(2) 1/3 (250)		(2) 1/3 (250)		(2) 1/3 (250)	
	Full load amps (total)	2.4 (4.8)		(2.6)		(2.0)		(4.8)		(2.6)		(2.0)	
	Locked rotor amps (total)	4.7 (9.4)		2.4 (4.8)		1.9 (3.8)		4.7 (9.4)		2.4 (4.8)		1.9 (3.8)	

†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.

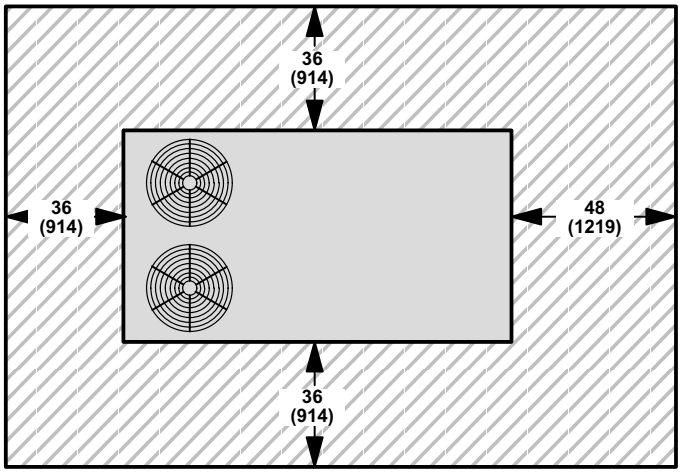
HIGH ALTITUDE INFORMATION

Derate is required when operating at altitudes from 4501 to 7500 ft. (1370 to 2285 m).
See below for correct manifold pressures for natural and LPG/Propane.

Altitude		Manifold Pressure				Derate Required
		Nat.		LPG		
ft.	m	in. w.g.	kPa	in. w.g.	kPa	
0 - 4500	0 - 1370	3.7	0.92	10.5	2.6	0%
4501 - 5500	1370 - 1675	3.4	0.84	9.7	2.4	4%
5501 - 6500	1675 - 1980	3.1	0.77	8.9	2.2	8%
6501 - 7500	1980 - 2285	2.9	0.72	8.1	2.0	12%

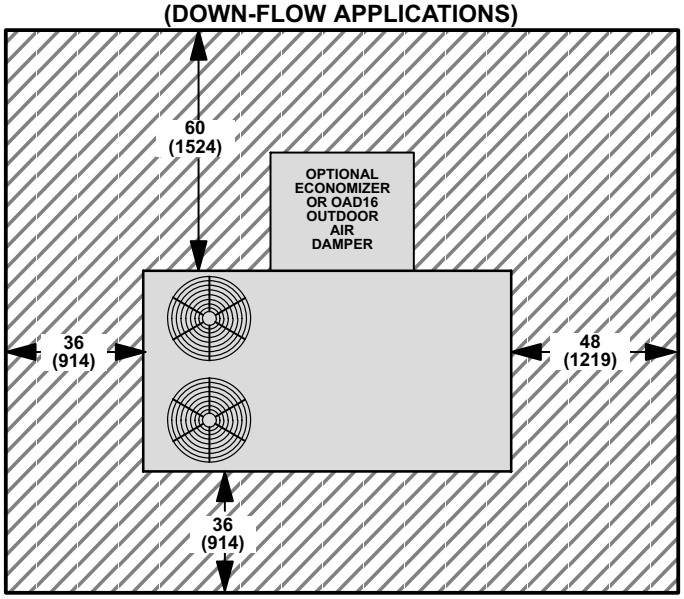
INSTALLATION CLEARANCES - INCHES (MM)

GCS16 BASIC UNIT



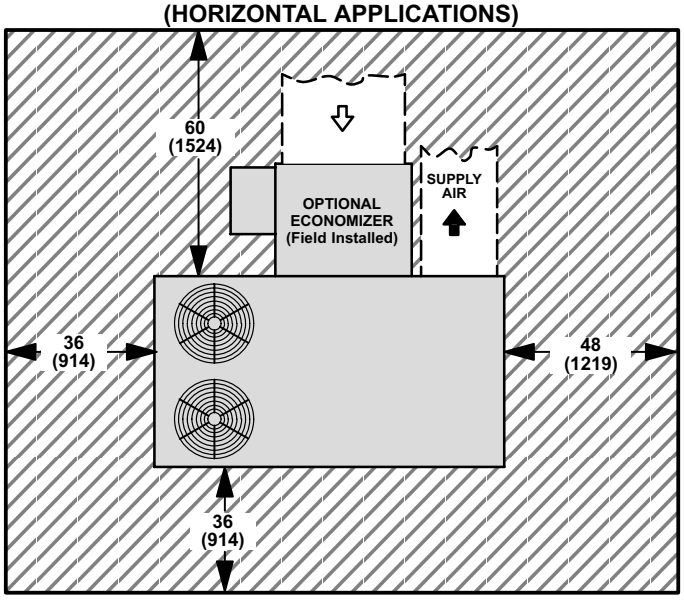
NOTE - Top Clearance Unobstructed.
NOTE - Entire perimeter of unit requires support when elevated above mounting surface.

GCS16 UNIT WITH REMD16M ECONOMIZER DAMPER SECTION OR OAD16 OUTDOOR AIR DAMPER SECTION (DOWN-FLOW APPLICATIONS)



NOTE - Top Clearance Unobstructed.

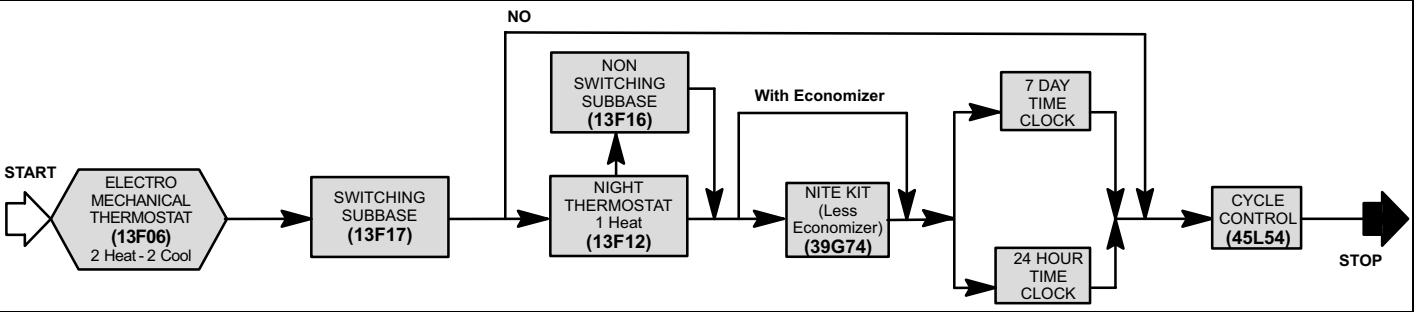
GCS16 UNIT WITH REMD16M ECONOMIZER DAMPER SECTION (HORIZONTAL APPLICATIONS)



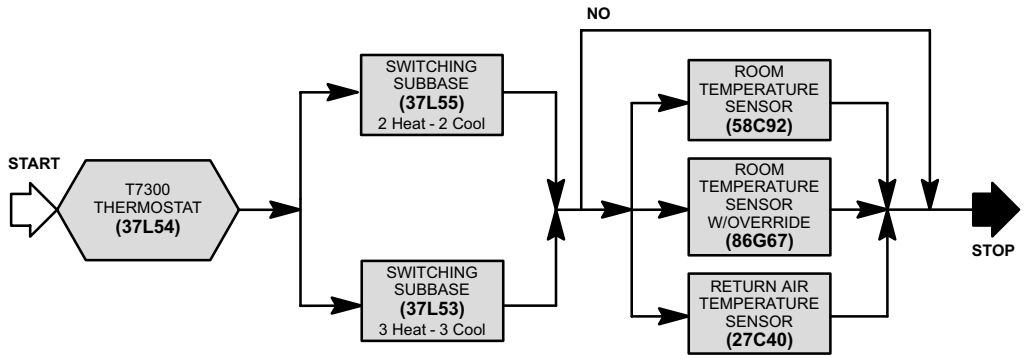
NOTE - Top Clearance Unobstructed.

OPTIONAL TEMPERATURE CONTROL SYSTEMS

System and Component Description	Catalog No.
ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM	
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**
Night Setback Operation - Order components below	- - -
Heating Thermostat - Single stage heat	**13F12**
Subbase - Non-switching	**13F16**
Nite Kit - Required if economizer is not used, contains plug-in relay, overrides operation of day thermostat	**39G74**
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**
Cycle Control (Required) - provides timed-on and off function, prevents compressor short cycling	**45L54**



T7300 THERMOSTAT CONTROL SYSTEM	
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	**37L54**
Subbase - Selectable staging up to two stage heat & two stage cool, manual system switch (Heat-Off-Auto-Cool), fan switch (Auto-On), indicator LED's, auxiliary relay output for economizer operation	**37L55**
Subbase - Selectable staging up to three stage heat & three stage cool, manual system switch (Auto-Cool-Off-Heat-Emergency Heat) (heat pump only), fan switch (Auto-On), indicator LED's, auxiliary relay output for economizer operation	**37L53**
Sensor - Room temperature	**58C92**
Sensor - Room temperature with 3 hour override and setpoint adjustment	**86G67**
Sensor - Return air temperature	**27C40**



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**

DIMENSIONS - INCHES (MM)

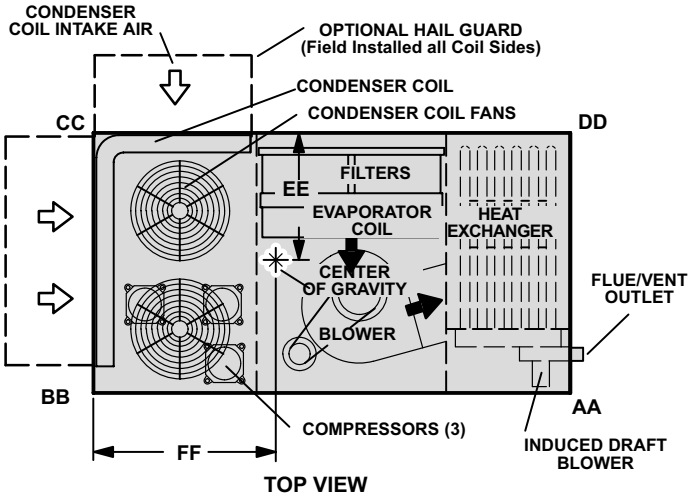
Basic Unit

CORNER WEIGHTS

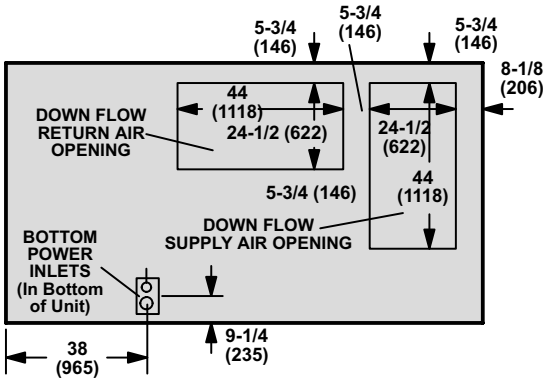
Model Number	AA lbs.	AA kg	BB lbs.	BB kg	CC lbs.	CC kg	DD lbs.	DD kg
GCS16-180	413	187	474	215	430	195	383	174
GCS16-240	434	197	522	237	468	212	401	182

CENTER OF GRAVITY

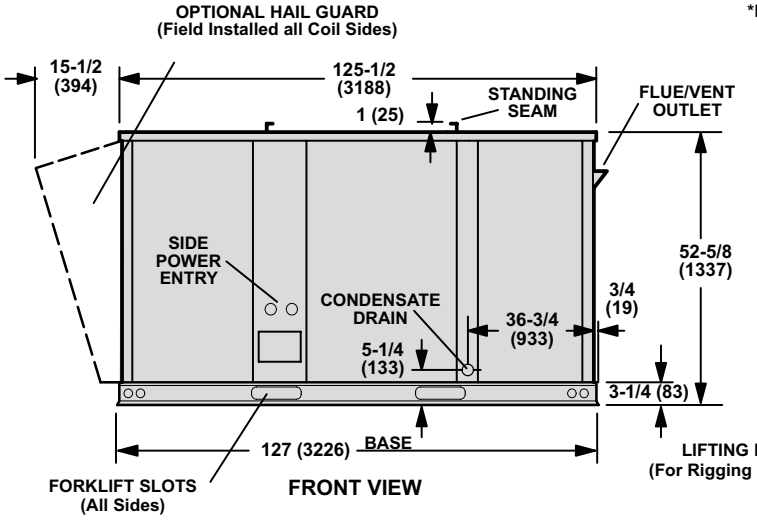
Model Number	EE inch	EE mm	FF inch	FF mm
GCS16-180	41-3/8	1051	58-1/4	1480
GCS16-240	41-7/8	1064	56-1/2	1435



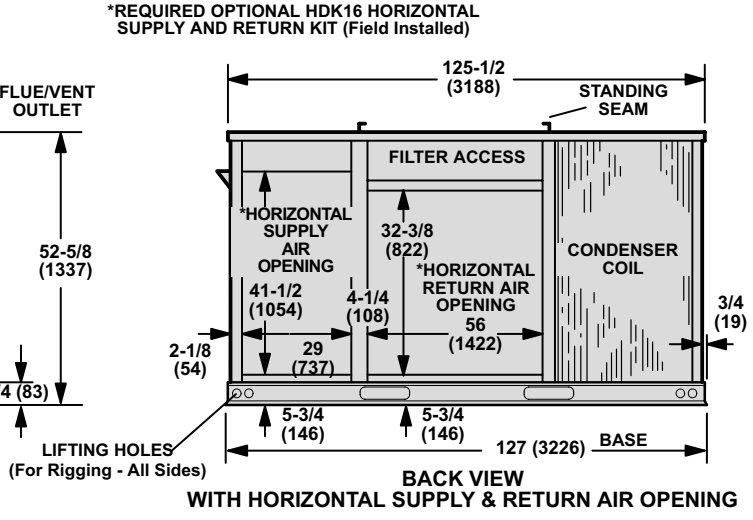
TOP VIEW



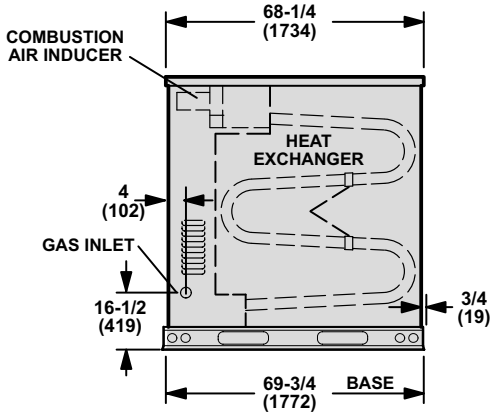
TOP VIEW BASE SECTION



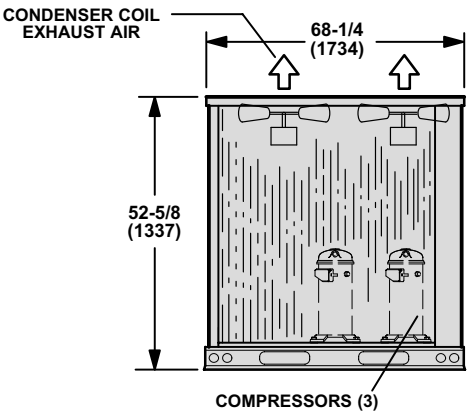
FRONT VIEW



BACK VIEW
WITH HORIZONTAL SUPPLY & RETURN AIR OPENING



HEAT SECTION END VIEW



CONDENSER SECTION END VIEW

ACCESSORY DIMENSIONS - INCHES (MM)

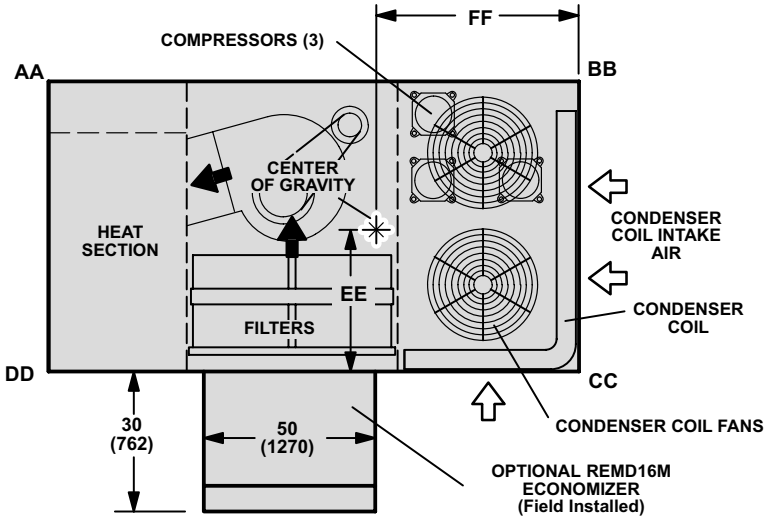
Basic Unit With REMD16M Economizer & RMF16 Roof Mounting Frame (Down-Flow Application)

CORNER WEIGHTS

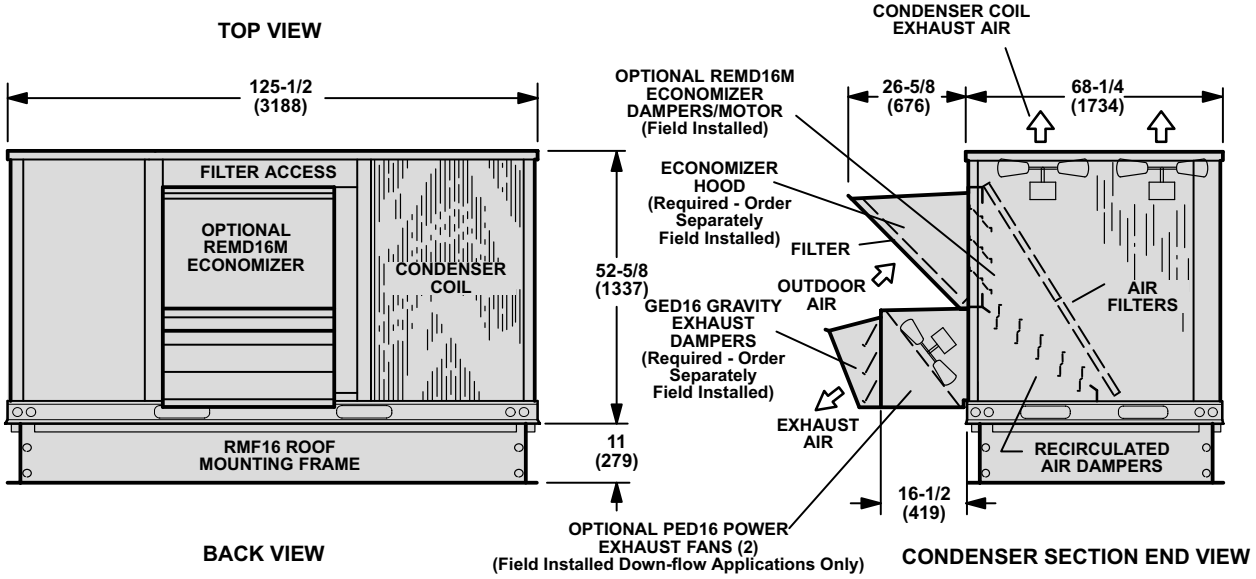
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
GCS16-180	455	206	517	235	512	232	451	205
GCS16-240	474	215	563	255	554	251	469	213

CENTER OF GRAVITY

Model Number	EE		FF	
	inch	mm	inch	mm
GCS16-180	35-3/8	899	58-1/4	1480
GCS16-240	35-7/8	911	56-1/2	1435



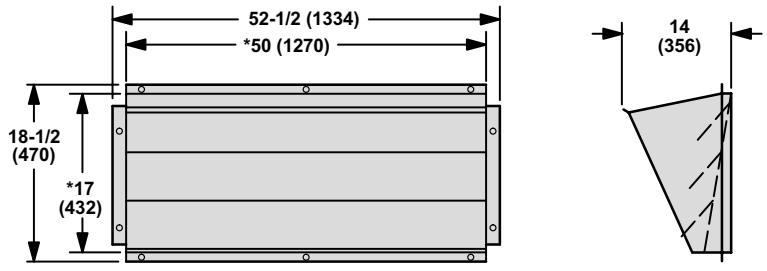
TOP VIEW



BACK VIEW

CONDENSER SECTION END VIEW

GED16 GRAVITY EXHAUST DAMPERS



FRONT VIEW

SIDE VIEW

*NOTE — Opening size required in return air duct for horizontal applications.

ACCESSORY DIMENSIONS - INCHES (MM)

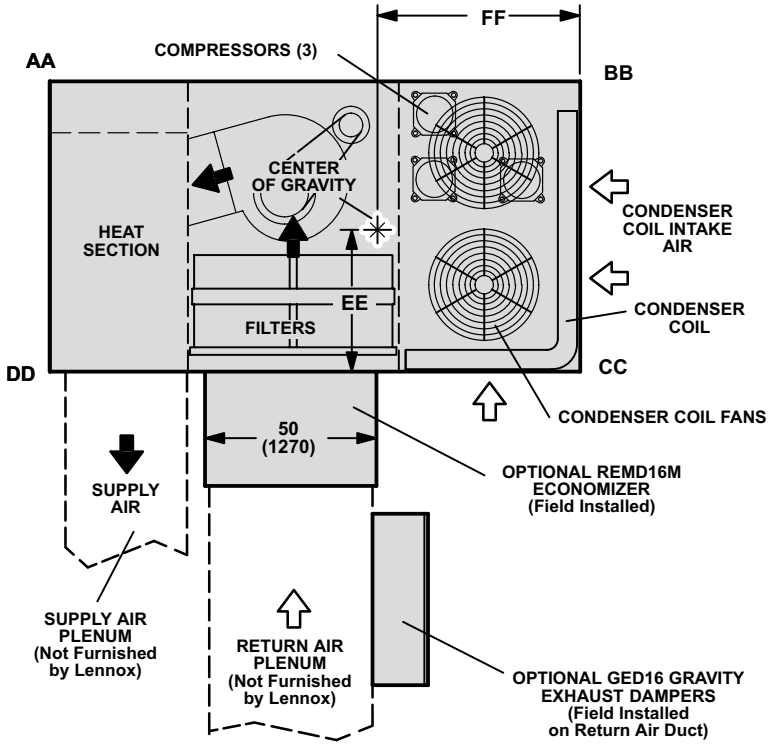
Basic Unit With REMD16M Economizer (Horizontal Application)

CORNER WEIGHTS

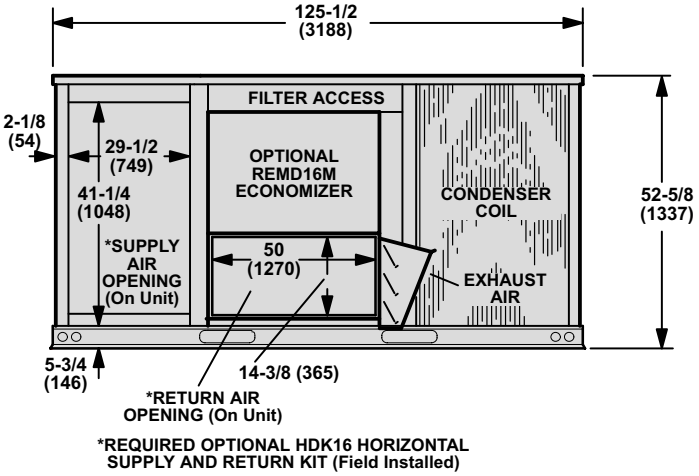
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
GCS16-180	449	204	511	232	496	225	436	198
GCS16-240	468	212	559	254	533	242	453	205

CENTER OF GRAVITY

Model Number	EE		FF	
	inch	mm	inch	mm
GCS16-180	37-3/8	949	58-1/4	1480
GCS16-240	37-7/8	962	56-1/2	1435

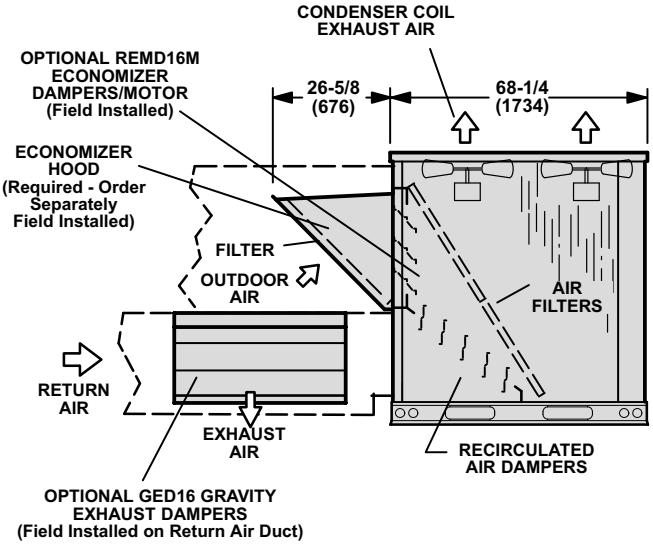


TOP VIEW



*REQUIRED OPTIONAL HDK16 HORIZONTAL SUPPLY AND RETURN KIT (Field Installed)

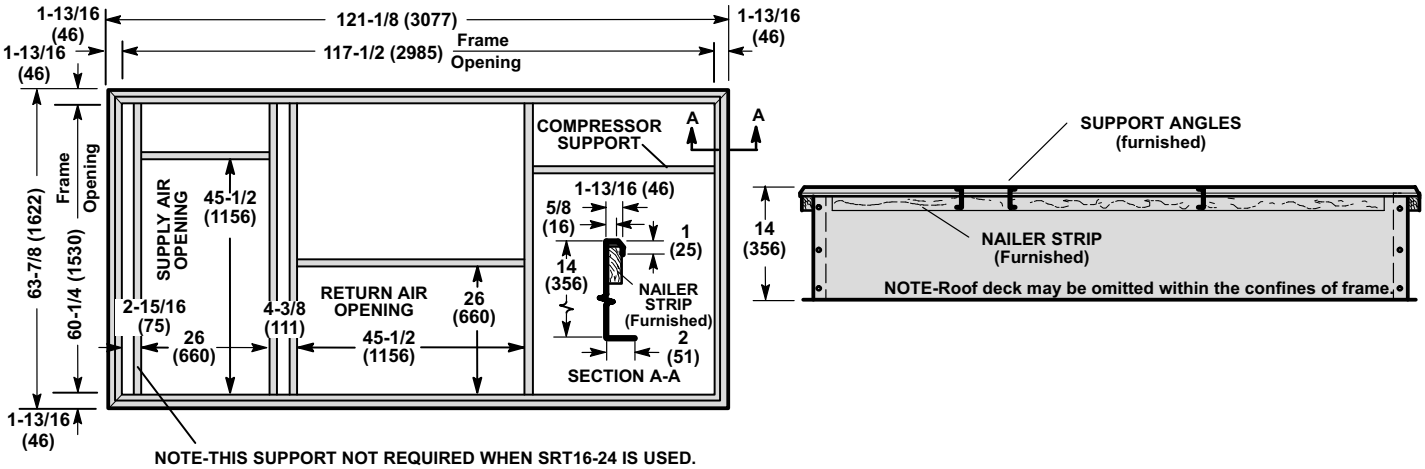
BACK VIEW
WITH HORIZONTAL SUPPLY & RETURN AIR OPENING



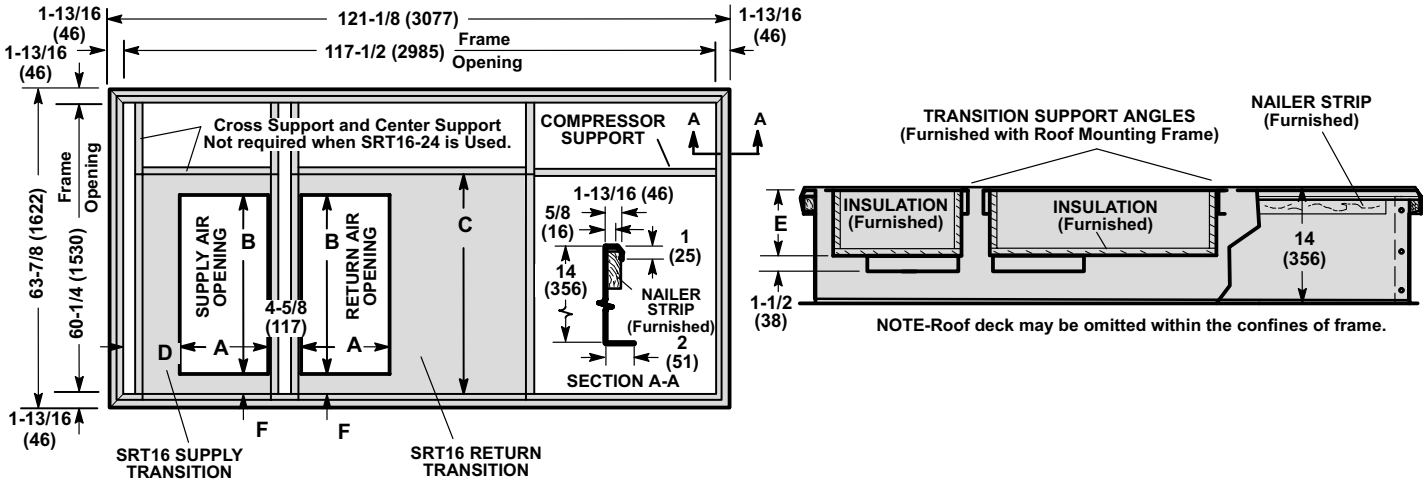
CONDENSER SECTION END VIEW

ACCESSORY DIMENSIONS - INCHES (MM) NOT FOR CANADA

RMF16-18/24 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING

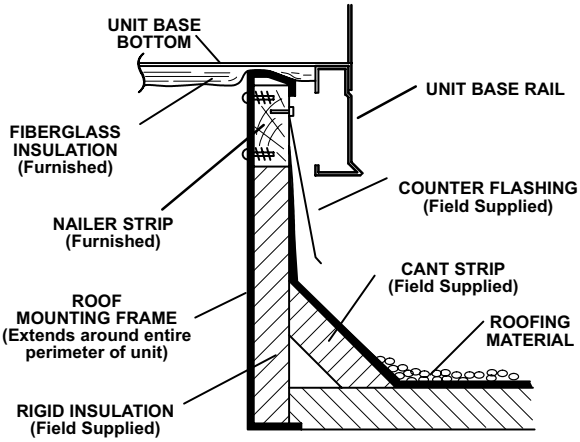


RMF16-18/24 ROOF MOUNTING FRAME WITH SRT16-18 and SRT16-24 SUPPLY AND RETURN AIR TRANSITIONS FOR FD11 & RTD11 CEILING DIFFUSERS



Model No.	A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
RMF16-18/24 with SRT16-18	18	457	36	914	45	1143	7-1/2	191	8	203	4-1/2	114
RMF16-18/24 with SRT16-24	24	610	48	1219	50	1270	4-1/2	114	12	305	1	25

TYPICAL FLASHING DETAIL FOR RMF16 ROOF MOUNTING FRAME



ROOF MOUNTING FRAME SPECIFICATIONS

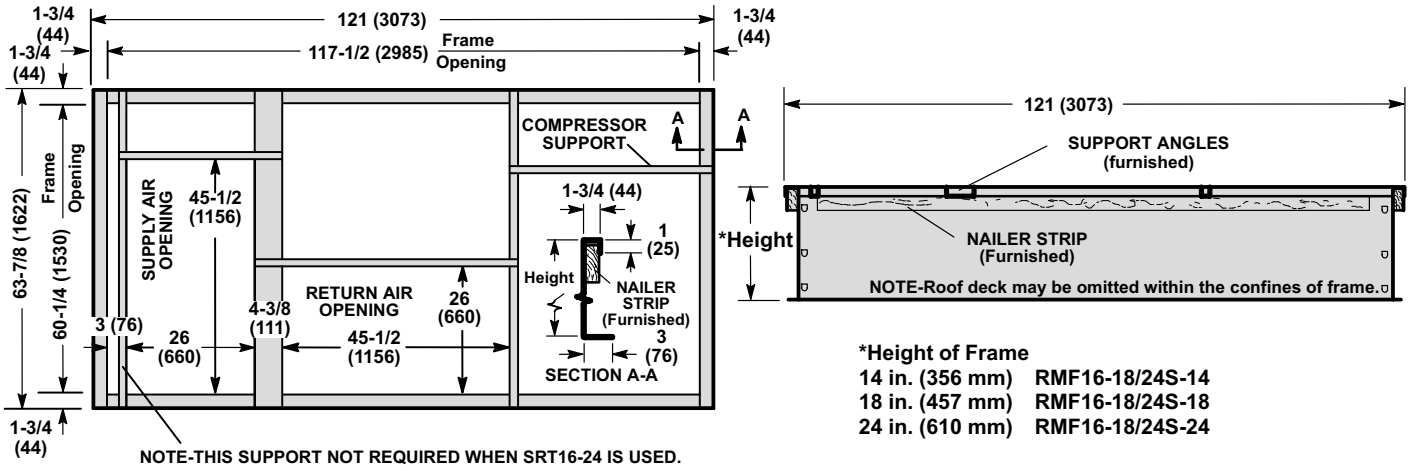
Roof Mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on both sides of center of gravity.

Roof Mounting Frames	RMF16
*Moment of inertia (I) (in.^{4}) (cm^4)	42 (1748)
*Section modulus $\frac{I}{C}$ (in.^{3}) (cm^3)	5.8 (95)
Maximum weight (lb/ft.) (kg/m) of length	5.5 (8.2)
Design strength (psi) (kPa)	20,000 (137,900)

*Includes both sides of frame.

ACCESSORY DIMENSIONS - INCHES (MM) CANADA ONLY

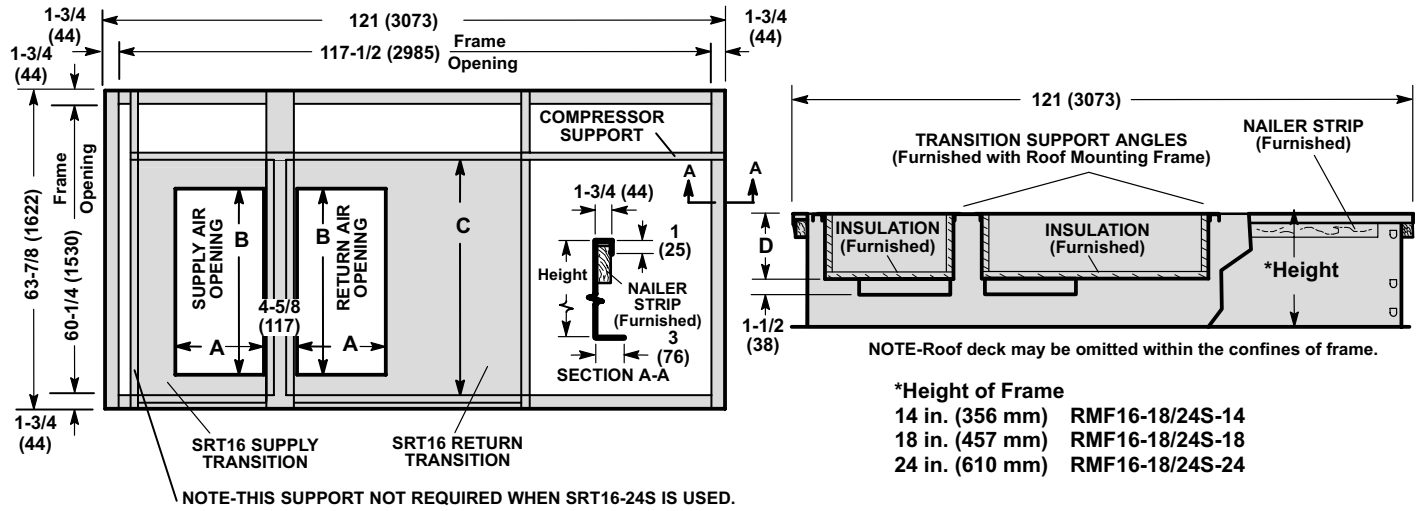
RMF16-18/24S ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING



***Height of Frame**

14 in. (356 mm)	RMF16-18/24S-14
18 in. (457 mm)	RMF16-18/24S-18
24 in. (610 mm)	RMF16-18/24S-24

RMF16-18/24S ROOF MOUNTING FRAME WITH SRT16-18S and SRT16-24S SUPPLY AND RETURN AIR TRANSITIONS FOR FD11 & RTD11 CEILING DIFFUSERS



***Height of Frame**

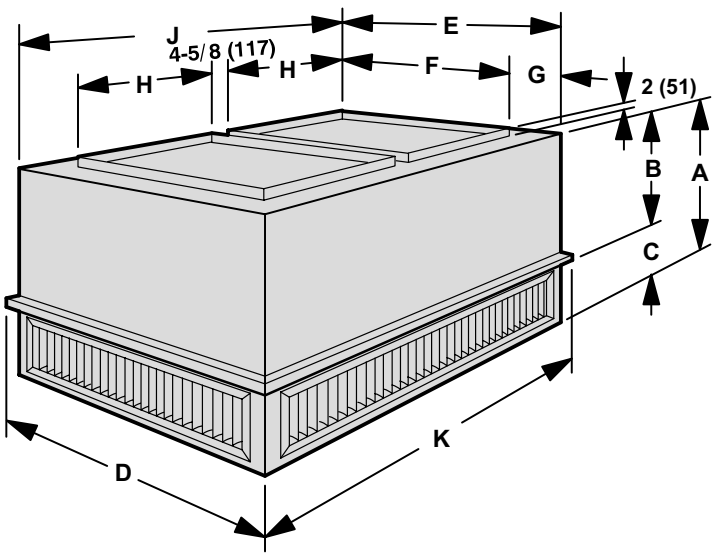
14 in. (356 mm)	RMF16-18/24S-14
18 in. (457 mm)	RMF16-18/24S-18
24 in. (610 mm)	RMF16-18/24S-24

Model No.	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
RMF16-18/24 with SRT16-18	18	457	36	914	45	1143	8	203
RMF16-16/24 with SRT16-24	24	610	48	1219	50	1270	12	305

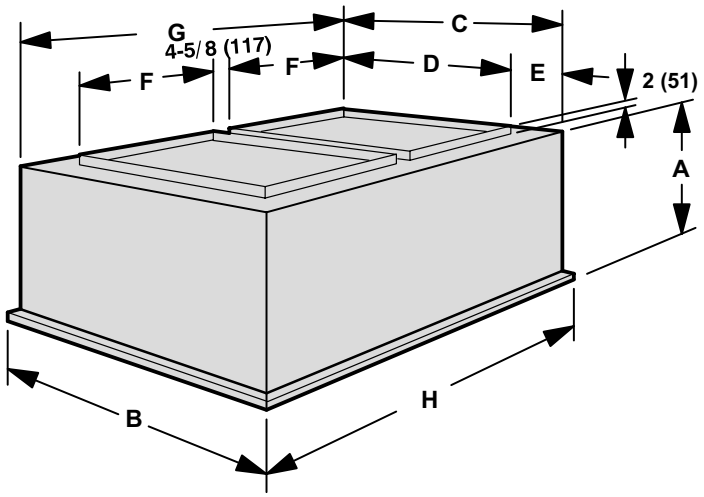
ACCESSORY DIMENSIONS - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



Model Number	A		B		C		D		E	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RTD11-185	34	864	23-7/8	606	10-1/8	257	47-5/8	1210	45-5/8	1159
RTD11-275	40	1016	28-7/8	225	11-1/8	283	59-5/8	1514	57-7/8	1470

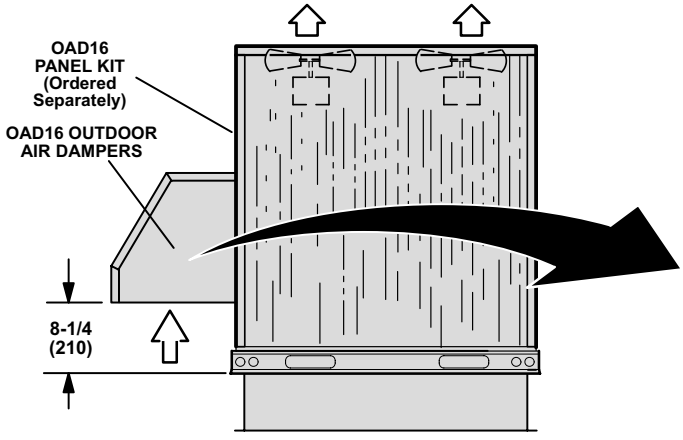
Model Number	F		G		H		J		K	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RTD11-185	36	914	4-13/16	122	18	457	45-5/8	1159	47-5/8	1210
RTD11-275	48	1219	4-13/16	122	24	610	57-5/8	1464	59-5/8	1521

Model Number	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
FD11-185	30-1/8	613	47-5/8	1210	45-5/8	1159	36	914
FD11-275	36-1/8	918	59-5/8	1514	57-5/8	1464	48	1219

Model Number	E		F		G		H	
	in.	mm	in.	mm	in.	mm	in.	mm
FD11-185	4-13/16	122	18	457	45-5/8	1159	47-5/8	1210
FD11-275	4-13/16	122	24	610	57-5/8	1464	59-5/8	1521

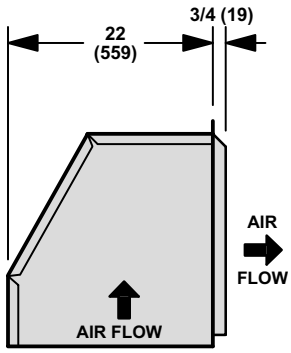
GCS16 UNIT WITH OAD16 OUTDOOR AIR DAMPER SECTION
DOWN-FLOW SUPPLY AND RETURN AIR

NOTE - For Horizontal (Side) Supply And Return Air, OAD16 Field Installs on Return Air Duct Panel Kit not required for horizontal applications.

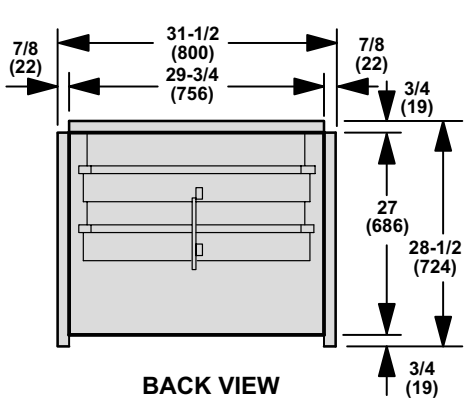


END VIEW

OAD16 OUTDOOR AIR DAMPER SECTION



SIDE VIEW



BACK VIEW

GUIDE SPECIFICATIONS

General

- Furnish and install a single package combination air to air DX mechanical cooling system and gas fired heating 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 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

- Units shall be design certified by CSA International (formerly AGA/CGA) as a combination heating/cooling unit for outdoor installation.
- All electrical components shall have U.L. and C.S.A. Listing. All wiring shall be in compliance with NEC and CEC.
- Shall be rated and certified in accordance with the ULE certification program, which is based on ARI Standard 340/360-2000.

Equipment Warranty

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

Cooling System

- The coils shall be non-ferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested.
Condenser coil shall be formed coil construction.
- Compressors shall be resiliently mounted and have overload protection. The refrigeration system shall have discharge, suction and liquid line service gauge ports, driers, freezestats and full refrigerant charge.
- Control option available shall consist of low ambient controls.

Heating System

- Tubular heat exchanger and inshot type gas burners shall be constructed of aluminized steel.
- Controls shall consist of direct spark ignition, electronic flame sensor controls, flame rollout switch, limit controls and automatic redundant dual gas valve with staging control and centrifugal switch on induced draft blower.
- Unit shall be available for use with LPG/propane (optional kit required).
- Complete service access shall be provided for controls and wiring.
- Shall be CSA International design certified for outdoor installation.

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. Bottom power entry shall be furnished.
- Shall have peep hole with cover for flame viewing of burners.
- Evaporator coil condensate drain extended outside cabinet shall be provided.
- Lifting holes in full perimeter base rails shall be provided for rigging.

Service Access

- Large removeable panels shall allow complete service access to compressor/heating/controls, blower and air filter/economizer compartments.

Supply Air Blowers

- Centrifugal supply air blower shall have permanently lubricated ball bearings and adjustable belt drive.
- Motor mount base shall permit ease of motor changeover and belt tension adjustment with a belt tensioning lead screw.
- Blower wheel shall be statically and dynamically balanced.
- Supply air blower motor shall have ball bearings.

Condenser Fans

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

Air Filters

- Disposable 2 inch (51 mm) pleated MERV 7 rated filters (Minimum Efficiency Reporting Value based on ASHRAE 52.2) 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) 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 Damper Section

- Furnish and install economizer complete with recirculated air dampers, outside air dampers, damper actuator and controls.
- Low leakage dampers shall ride in nylon bearings. The economizer section shall provide for the introduction of up to 100% outdoor air for minimum ventilation and free cooling.
- Integrated economizer cycle shall allow compressors to cycle for dehumidification and additional cooling, as needed, with 100% outdoor air intake.
- Damper actuator shall be 24 volt, fully modulating spring return. Controls shall include fixed 55 °F (13 °C) mixed air controller, damper actuator, adjustable minimum position switch and solid-state adjustable outdoor air enthalpy control.
- Damper hood (required and ordered separately) with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal.
- Gravity exhaust dampers shall be required and ordered separately for down-flow air applications and optional for horizontal applications.

Economizer Gravity Exhaust Dampers

- Pressure operated dampers shall be required for field installation on economizer in down-flow air applications.
- Dampers shall be available as an option for field installation in return air duct for horizontal air applications.
- Neoprene coated fiberglass dampers shall prevent blow-back and outdoor air infiltration during off cycle.

Economizer Power Exhaust Fans

- Shall be available for all models with economizer (down-flow applications only).
- Direct drive propeller type fans shall exhaust air through optional gravity exhaust dampers (required).
- Motor shall be overload protected.
- Fans shall be field installed between economizer and gravity exhaust dampers.

Electric Heaters

- Electric heaters shall be available for field installation.
Heating elements shall be nichrome bare wire exposed directly to the air stream. Time delays shall bring the elements on and off in sequence with a time delay between each element.
- Limit controls shall provide overload and short circuit protection.
- Optional unit fuse block shall be required on electric heaters.

Hail Guards

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

Horizontal Supply & Return Air Kit

- Optional kit shall provide necessary cabinet parts to field convert unit for side (horizontal) supply and return air duct connections.

Outdoor Air Damper Section

- Outdoor dampers shall be available to provide outdoor air requirements of up to 25%.
- Shall be available for manual or automatic (with optional motorized damper kit) operation.
- Hood with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal.
- Damper/hood assembly shall be field installed external to the unit in down-flow applications.
- Optional panel kit that replaces unit panel shall be required for damper/hood installation in down-flow applications.
- Damper/hood assembly field shall be field installed in return air duct in in horizontal applications.

Roof Mounting Frame

- Mechanical contractor shall install a steel roof mounting frame for bottom discharge and return air duct connection.
- 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.
- RMF16 frame shall be approved by U.S. National Roofing Contractors Association.