

LENNOX®

ENGINEERING DATA

PACKAGED GAS - 50HZ

GCS16-180-240

52.8 and 70.3 kW (15 and 20 ton)

Cooling Capacity - 46.8 to 57.4 kW (160 000 and 196 000 Btuh)

(48 000 and 58 800 kcal)

Input Heating Capacity - 68.9 to 109.9 kW (235 000 to 375 000 Btuh)

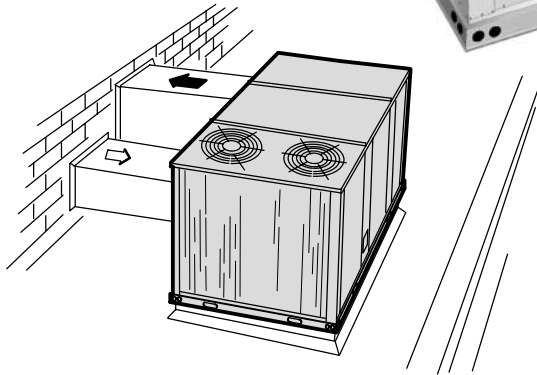
(59 200 to 94 500 kcal)

Bulletin No. 490096

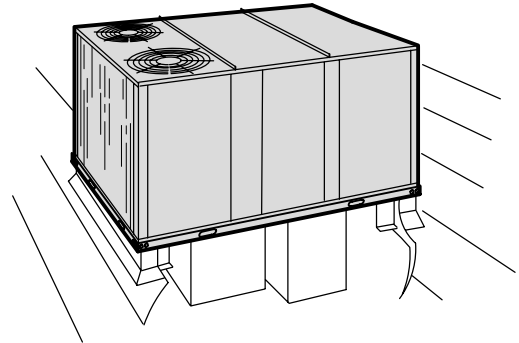
July 2000



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

GCS16 - 180 - 235 - 3HP - 1 M

Unit Type
GCS = Packaged Gas Unit

Series

Cooling Capacity Kw (Tons)

180 = 52.8 (15)
240 = 70.3 (20)

Heating Capacity

235 = 68.8 Kw (235 000 Btuh) (59 200 kcal)
375 = 109.8 Kw (375 000 Btuh) (94 500 kcal)

Voltage
M = 380/420v-3 phase-50hz

Minor Revision Number

Blower Motor Output

3HP = 2.24 kW (3 hp)
5HP = 3.73 kW (5 hp)
7.5HP = 5.60 kW (7.5 hp)

FEATURES

Air Flow Choice

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

Cabinet

- Heavy gauge galvanized steel, fully insulated, prepainted enamel paint finish, large removeable access panels, electrical inlets (bottom power entry) in cabinet base and indoor section, control box with factory installed controls, full perimeter base rails with forklift slots and holes for rigging.

Coil Construction (Evaporator and Condenser)

- Copper tube construction, ripple-edged enhanced aluminum fins, flared shoulder tubing connections, silver soldered construction, factory tested, evaporator coil face split with separate circuits, evaporator coil drain connection outside of unit cabinet.

NOTE - Due to Lennox' ongoing commitment 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.

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FEATURES		
Compressors - Reciprocating type, hermetically sealed, overload protected (-180 models). - Copeland® Compliant Scroll® type, hermetically sealed, overload protected (-240 models).		
Condenser Coils - "L" shaped formed coil construction.		
Condenser Fans - Low sound operating levels, polyvinyl chloride (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 - Disposable 51 mm (2 inch) pleated.		
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 -1 °C (30 °F) without additional controls.		
Supply Air Blower - Belt drive, forward curved blades with double inlet, blower wheel statically and dynamically balanced, permanently lubricated sleeve bearings, adjustable pulley (allows speed change).		
Supply Air Motor - Overload protected, equipped with ball bearings.		
Unit Testing - Test conditions are those included in Air Conditioning and Refrigeration Institute (ARI) Standard 340/360-93 while operating at rated voltage and air volumes. - Units and components are bonded for grounding to meet safety standards for servicing required by Underwriter's Laboratories (UL) and the International Electrotechnical Commission (IEC). - Blower data is from unit tests conducted in the Lennox Laboratory air test chamber.		
OPTIONAL ACCESSORIES (MUST BE ORDERED EXTRA)		
Item	GCS16-180	GCS16-240
Coil Guard - polyvinyl chloride coated steel wire guards to protect outdoor coil. Not used with Hail Guards.	78L49	
Control Systems	See Optional Temperature Controls Systems	
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	
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.	RTD11-185 178 kg (392 lbs.)	RTD11-275 183 kg (403 lbs.)
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.	FD11-185 131 kg (289 lbs.)	FD11-275 165 kg (363 lbs.)
Transitions (Supply and Return) - Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for duct connection, fully insulated.	SRT16-18 34 kg. (75 lbs)	SRT16-24 54 kg (120 lbs.)
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 Number - Net Weight	REMD16M-18/24 95 lbs. (43 kg) (order Economizer Damper Hood for complete assembly)
	Net face area	0.49 m ² (5.3 sq. ft.)
Economizer Damper Hood - Required with REMD16M economizer dampers (see above). Installs over outdoor air dampers. Includes cleanable aluminum mesh frame filters.	Order Number	81L45 - 16 kg (36 lbs.)
	Number and Size of Filters	(2) 635 x 635 x 25 mm (25 x 25 x 1 in.)
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 applications. See dimension drawings.	GED16-18/24 10 kg. (23 lbs)	
Economizer Power Exhaust Fans - For use with REMD16M economizer dampers (see above). Provides pressure relief. Installed between economizer and gravity exhaust dampers (required). Interlocked to run when return air dampers are closed and supply air blowers are operating. Overload protected. Must be ordered separately.	Model Number - Net Weight	PED16-18/24 - 36 kg (80 lbs.)
	Diameter - mm (inch) - Number of blades	508 (20) - 5
	Total air volume - m ³ /s (cfm)	2.36 (5000)
	Motor Watts (horsepower)	(2) - 250 (1/3)
	Total Watts input	650
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, filter access panel furnished.	HDK16-18/24 25 kg (55 lbs.)	
Low Ambient Controls - Allows unit operation down to -17.7 °C (0 °F).	LB-57113BY (85L42)	

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OPTIONAL ACCESSORIES (MUST BE ORDERED EXTRA)

Item	GCS16-180	GCS16-240
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) - 7°C (45°F) Maximum mixed air temperature: Cool mode - 32°C (90°F).	OAD16-18/24 (Order Air Damper Hood and Damper Panel Kit for complete assembly)	
Outdoor Air Damper/Hood - Cleanable aluminum mesh frame type filter furnished, installs over outdoor air damper section.	81L38 - 24 kg. (52 lbs)	
	Number and Size of Filters	(1) 660 x 711 x 25 mm (26 x 28 x 1 inch)
Outdoor Air Damper Panel Kit (Down-Flow Applications) - Interchangeable unit panel - Net Weight	81L39 - 9 kg (20 lbs.)	
Outdoor Air Damper Motorized Damper Kit - 3 position damper actuator, plug-in connection.	35G21 - 3 kg (7 lbs.)	
Propane Gas Conversion Kit	81L86	
Roof Mounting Frame - Nailer strip furnished, mates to unit, shipped knocked down.	RMF16-18/24 - 70 kg (154 lbs.)	

OPTIONAL TEMPERATURE CONTROL SYSTEMS

System and Component Description	Catalog Number
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
Subbase - Non-switching	13F16
Night Setback Operation - Order components below	-
Heating Thermostat - Single stage heat	13F12
Subbase - Non-switching	13F16
Night 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

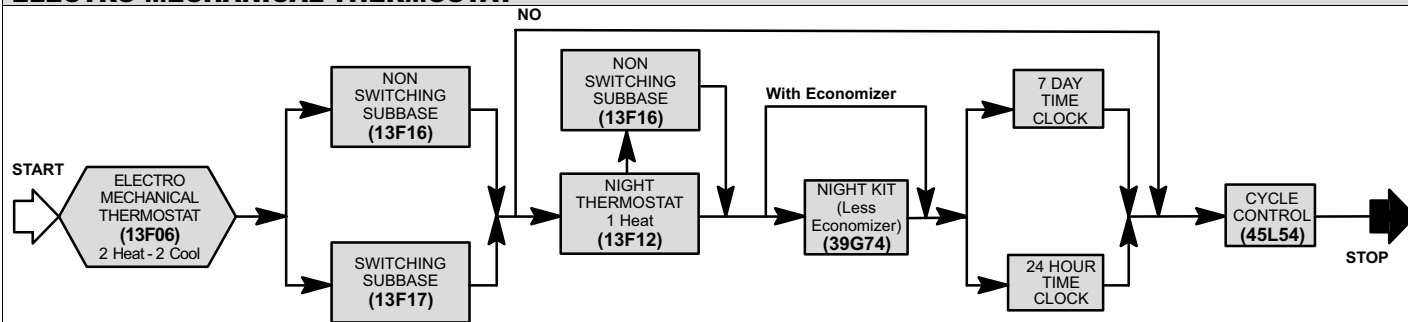
Thermostat — Programmable, internal or optional remote temperature sensing (sensor required), touch sensitive keyboard, automatic switching, °F or °C readout, no anticipator, droop/no droop selection, indicator LED's, hour/day programming, override capabilities, time and operational mode readout, stage status indicators, battery back-up, subbase choice, 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 and two stage cool Up to three stage heat and three stage cool
Sensor - Room temperature	37L55
Sensor - Room temperature with 3 hour override and setpoint adjustment	37L53
Sensor - Room temperature	58C92
Sensor - Room temperature with 3 hour override and setpoint adjustment	86G67
Sensor - Return air temperature	27C40

T8621D THERMOSTAT CONTROL SYSTEM

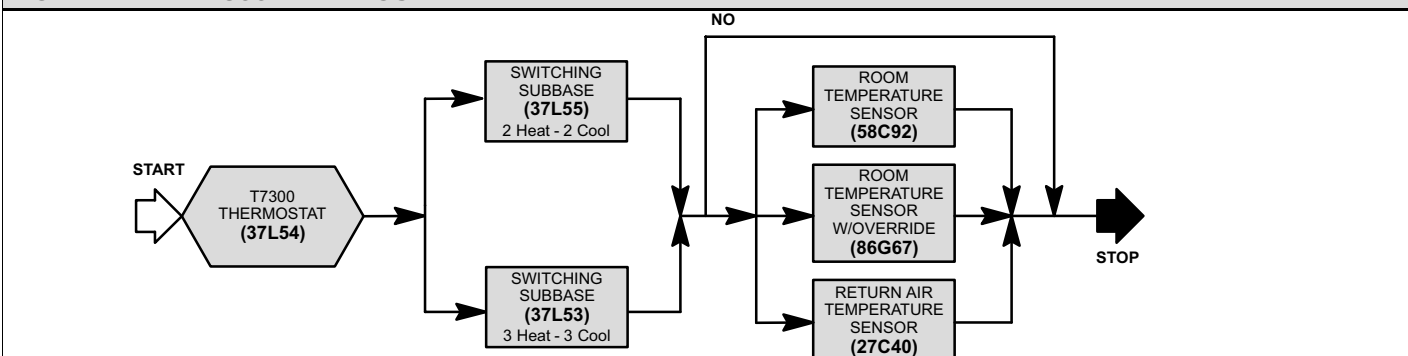
Thermostats — (T8621D) - Auto changeover, 2 hgt./2 clg. 7 day programming, built-in time delays, system switch (Heat-Off-Cool-Auto), fan switch (Auto-On), touch sensitive keyboard, LCD display (Time-Day-Status - Temperature readout in °F or °C), four different time and temperature settings per day, instant override capabilities for skipping current program, running previous program, temporarily raising or lowering temperature for current program or overriding program indefinitely, three "AAA" battery back-up.	27H29
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OPTIONAL TEMPERATURE CONTROL SYSTEMS FLOWCHARTS

ELECTRO-MECHANICAL THERMOSTAT

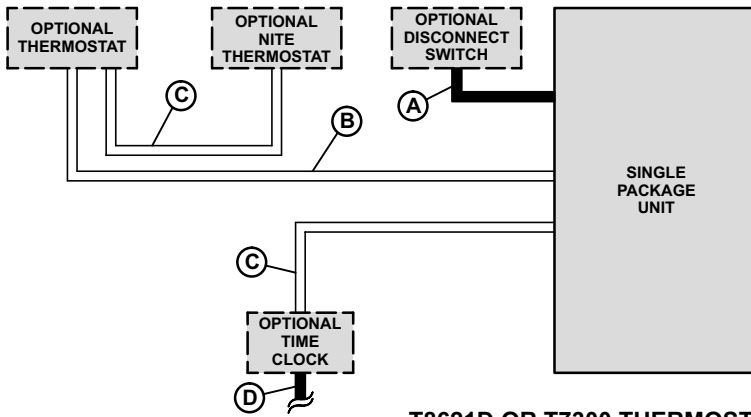


HONEYWELL T7300 THERMOSTAT



FIELD WIRING

ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM

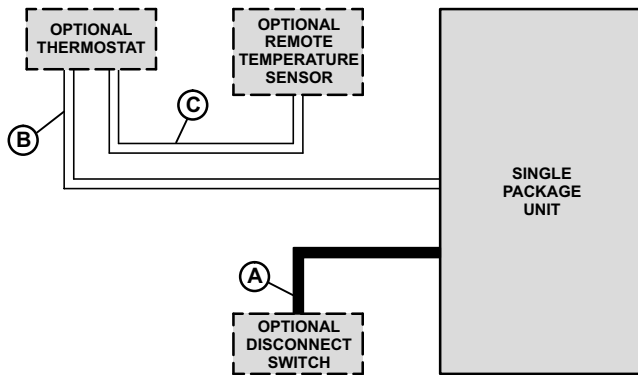


- A — Three phase with neutral (See Electrical Data Table)
- B — Six wire 24V
- C — Two wire 24V
- D — Two wire 24V

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

T8621D OR T7300 THERMOSTAT CONTROL SYSTEM



- A — Three phase with neutral (See Electrical Data Table)
- B — Nine wire 24V
- C — Two wire 24V

— Seven wire 24V (T7300 Room Sensor with Override)

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

ELECTRIC DATA

Model Number		GCS16-180		GCS16-240		
Line voltage data - 50 Hz - 3 phase with neutral		380/420V				
Compressors (3)	Rated load amps each (total)	8.6 (25.8)		9.1 (27.3)		
	Locked rotor amps each (total)	55.0 (165.0)		70.0 (210.0)		
Condenser Fan Motor (2)	Full load amps (total)	1.9 (3.8)		2.4 (4.8)		
	Locked rotor amps (total)	3.7 (7.4)		11.5 (23.0)		
Evaporator Blower Motor	Motor Output	kW	2.2	3.7	3.7	5.6
		hp	3	5	5	7.5
	Full load amps	5	7.8	7.8	11.8	
	Locked rotor amps	28	50	50	79.5	
Recommended maximum fuse size (amps)	With Exhaust Fan	45	50	50	60	
	Less Exhaust Fan	45	45	50	50	
*Minimum Circuit Ampacity	With Exhaust Fan	40	43	45	49	
	Less Exhaust Fan	37	40	43	47	
Optional Power Exhaust Fan	(Number) Watts (hp)	(2) - 250 (1/3)				
	Full load amps (total)	2.6 (5.2)				
	Locked rotor amps (total)	4.8 (9.6)				

HIGH ALTITUDE DERATE

Units must be derated when installed at an elevation of more than 610 m (2000 feet) above sea level. If unit is installed at an altitude higher than 610 m (2000 feet), the unit must be derated 4% for every 305 m (1000 feet) above sea level. Thus, at an altitude of 1210 m (4000 feet), the unit would require a derate of 16%.

NOTE - This is the only permissible derate for these units.

SPECIFICATIONS					
Model Number		GCS16-180	GCS16-240		
Nominal Tonnage (kW)		15 (52.5)	20 (70.0)		
Cooling Ratings	Gross cooling capacity - kW (Btuh) (kcal)		49.1 (167 700) (42 300)	60.6 (206 900) (52 100)	
	★Total cooling capacity - kW (Btuh) (kcal)		46.8 (160 000) (40 300)	57.4 (196 000) (49 400)	
	★Total unit kW		17.4	21.2	
	★EER (Btuh/Watts)		9.1	9.2	
	★Integrated Part Load Value		9.2	9.2	
C.O.P - Coefficient of Performance		2.7			
Refrigerant Charge Furnished (HCFC-22)	Circuit 1		3.40 kg (7 lbs. 8 oz.)	3.86 kg (8 lbs. 8 oz.)	
	Circuit 2		3.40 kg (7 lbs. 8 oz.)	3.86 kg (8 lbs. 8 oz.)	
	Circuit 3		3.40 kg (7 lbs. 8 oz.)	3.86 kg (8 lbs. 8 oz.)	
Evaporator Blower and Drive	Blower wheel nominal diameter x width - mm (inch)		457 x 457 (18 x 18)		
	2.2 kW Motor and Factory Installed ☐Drives	Nominal motor kW (hp)		2.24 (3)	----
		Maximum usable kW (hp)		2.57 (3.45)	----
		Voltage and phase		380/420v-3ph	----
		Rev/min range		640-845	----
	3.7 kW Motor and Factory Installed ☐Drives	Nominal motor kW (hp)		3.73 (5)	
		Maximum usable kW (hp)		4.29 (5.75)	
		Voltage and phase		380/420v-3ph with neutral	
		Rev/min range		760-960	
	5.6 kW Motor and Factory Installed ☐Drives	Nominal motor kW (hp)		----	5.60 (7.5)
		Maximum usable kW (hp)		----	6.42 (8.6)
		Voltage and phase		----	380/420v -3ph with neutral
Rev/min range		----	920-1110		
Evaporator Coil	Net face area - m ² (feet ²)		1.66 (17.9)		
	Tube diameter - mm. (inch) and number of rows		9.5 (3/8) - 3	9.5 (3/8) - 4	
	Fins per meter (inch)		551 (14)		
	Expansion device type		Thermostatic Expansion Valve		
	Drain connection size male pipe thread - mm (in.)		25.4 (1)		
Condenser Coil	Net face area - m ² (ft ²)		2.74 (29.5)		
	Tube diameter - in. (mm) and number of rows		9.5 (3/8) - 2		
	Fins per meter (inch)		787 (20)		
Condenser Fans	Diameter - mm (inch) and number of blades		(2) 610 (24) - 4	(2) 660 (26) - 4	
	Air volume - m ³ /s (cfm)		3.94 (8335)	5.31 (11 250)	
	Motor Watts (hp)		560 (3/4)	746 (1)	
	Motor rev/min		900	950	
	Motor watts		920	1570	
-235 Heat Models	Low fire input - kW (Btuh) (kcal)	Natural Gas		45.1 (154 000) (38 800)	
		Propane		49.8 (170 000) (42 800)	
	Input - kW (Btuh) (kcal)	Natural Gas		60.0 (205 000) (51 700)	
		Propane		60.0 (205 000) (51 700)	
	Output - kW (Btuh) (kcal)	Natural Gas		48.0 (164 000) (41 300)	
		Propane		48.9 (167 000) (42 100)	
-375 Heat Models	Low fire input - kW (Btuh) (kcal)	Natural Gas		72.1 (246 000) (62 000)	
		Propane		79.4 (271 000) (68 300)	
	Input - kW (Btuh) (kcal)	Natural Gas		96.0 (328 000) (82 700)	
		Propane		96.0 (328 000) (82 700)	
	Output - kW (Btuh) (kcal)	Natural Gas		87.9 (262 000) (75 600)	
		Propane		79.4 (267 000) (68 300)	
Gas Supply Connections female pipe thread - inch Natural and Propane			3/4		
Recommended Gas Supply Pressure - kPa (wc. in.)		Natural		1.7 (7)	
		Propane		2.7 (11)	
Filters (furnished)	Type of filter		Disposable, pleated		
	Number and size - mm (inch)		(6) 457 x 610 x 51 (18 x 24 x 2)		
Net weight of basic unit - kg (lbs.)		771 (1700)	828 (1825)		
Shipping weight of basic unit - kg (lbs.) (1 Package)		848 (1870)	903 (1990)		
Electrical characteristics		380/420v - 50 hertz - 3 phase with neutral			

★The rating test conditions are those included in Air Conditioning and Refrigeration Institute (ARI) Standard 340/360 while operating at rated voltage and air volumes.
☐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.

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																							
			18°C (65°F)						24°C (75°F)						29°C (85°F)						35°C (95°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb		
					24°C 75°F	27°C 80°F	29°C 85°F	24°C 75°F			27°C 80°F	29°C 85°F	24°C 75°F	27°C 80°F			29°C 85°F	24°C 75°F	27°C 80°F	29°C 85°F						
17°C (63°F)	2.26	4800	33.9	115.6	7.80	.71	.85	.97	32.4	110.4	8.40	.72	.87	.99	30.8	105.0	9.06	.74	.89	1.00	29.1	99.4	9.76	.75	.92	1.00
	2.83	6000	35.1	119.8	7.90	.76	.92	1.00	33.5	114.4	8.54	.78	.94	1.00	31.9	108.8	9.24	.80	.97	1.00	30.2	103.2	9.98	.82	.99	1.00
	3.40	7200	36.2	123.4	8.00	.81	.98	1.00	34.6	118.2	8.66	.83	.99	1.00	33.0	112.6	9.40	.86	1.00	1.00	31.4	107.2	10.20	.89	1.00	1.00
19°C (67°F)	2.26	4800	35.9	122.6	7.98	.55	.68	.81	34.3	117.0	8.62	.56	.70	.83	32.6	111.2	9.34	.57	.71	.86	30.8	105.0	10.08	.58	.73	.88
	2.83	6000	37.0	126.2	8.08	.58	.74	.89	35.3	120.4	8.74	.59	.75	.91	33.5	114.4	9.48	.61	.77	.94	31.6	107.8	10.24	.62	.80	.97
	3.40	7200	37.8	129.0	8.14	.61	.79	.95	36.0	123.0	8.84	.63	.81	.97	34.2	116.6	9.58	.64	.84	.99	32.2	110.0	10.36	.66	.87	1.00
22°C (71°F)	2.26	4800	38.2	130.4	8.18	.42	.54	.66	36.5	124.6	8.90	.42	.55	.67	34.6	118.2	9.66	.42	.56	.69	32.8	111.8	10.46	.43	.57	.71
	2.83	6000	39.3	134.0	8.28	.43	.57	.71	37.5	127.8	9.02	.43	.58	.73	35.5	121.2	9.80	.43	.60	.75	33.5	114.4	10.60	.44	.61	.78
	3.40	7200	40.0	136.4	8.34	.44	.60	.77	38.1	130.0	9.10	.44	.62	.79	36.1	123.2	9.88	.45	.63	.82	34.1	116.2	10.70	.46	.65	.85

GCS16-180 — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			27°C (80°F)						35°C (95°F)						43°C (110°F)						52°C (125°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb		
					24°C 75°F	27°C 80°F	29°C 85°F	24°C 75°F			27°C 80°F	29°C 85°F	24°C 75°F	27°C 80°F			29°C 85°F	24°C 75°F	27°C 80°F	29°C 85°F						
17°C (63°F)	2.26	4800	48.8	166.5	12.49	.72	.86	.99	45.2	154.2	14.01	.74	.90	1.00	41.5	141.5	15.66	.77	.94	1.00	37.9	129.2	17.23	.81	.98	1.00
	2.83	6000	50.6	172.6	12.67	.77	.94	1.00	46.9	160.0	14.28	.81	.97	1.00	43.3	147.6	16.00	.85	1.00	1.00	39.8	135.9	17.74	.89	1.00	1.00
	3.40	7200	52.2	178.1	12.85	.83	.99	1.00	48.6	165.8	14.55	.87	1.00	1.00	45.0	153.4	16.38	.91	1.00	1.00	41.3	141.0	18.15	.96	1.00	1.00
19°C (67°F)	2.26	4800	51.7	176.5	12.81	.56	.70	.83	47.9	163.3	14.43	.58	.72	.87	43.8	149.4	16.14	.59	.75	.91	39.9	136.1	17.76	.62	.79	.96
	2.83	6000	53.3	181.7	12.99	.59	.75	.91	49.1	167.7	14.64	.61	.78	.95	44.9	153.3	16.40	.64	.82	.99	40.9	139.4	18.05	.66	.87	1.00
	3.40	7200	54.4	185.5	13.11	.63	.81	.97	50.1	171.1	14.81	.65	.85	1.00	45.8	156.3	16.58	.68	.89	1.00	41.8	142.5	18.29	.71	.94	1.00
22°C (71°F)	2.26	4800	55.1	188.0	13.17	.42	.54	.67	50.9	173.8	14.94	.42	.56	.70	46.6	159.0	16.76	.43	.58	.73	42.5	144.9	18.47	.44	.60	.77
	2.83	6000	56.5	192.8	13.35	.43	.58	.73	52.2	178.0	15.12	.44	.60	.76	47.7	162.9	16.97	.45	.62	.80	43.4	148.1	18.73	.46	.66	.85
	3.40	7200	57.5	196.3	13.46	.44	.62	.79	53.0	181.0	15.26	.45	.64	.83	48.4	165.3	17.12	.47	.67	.87	44.0	150.2	18.89	.48	.71	.92

GCS16-240 — TWO COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			18°C (65°F)						24°C (75°F)						29°C (85°F)						35°C (95°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb		
					24°C 75°F	27°C 80°F	29°C 85°F	24°C 75°F			27°C 80°F	29°C 85°F	24°C 75°F	27°C 80°F			29°C 85°F	24°C 75°F	27°C 80°F	29°C 85°F						
17°C (63°F)	2.72	5760	41.1	140.4	7.66	.71	.85	.98	40.0	136.4	8.50	.72	.86	.99	38.6	131.8	9.48	.72	.88	1.00	37.2	127.0	10.62	.74	.89	1.00
	3.40	7200	42.7	145.6	7.80	.76	.93	1.00	41.4	141.2	8.66	.77	.94	1.00	40.1	136.8	9.64	.79	.95	1.00	38.6	131.8	10.76	.80	.97	1.00
	4.08	8640	44.0	150.2	7.92	.82	.98	1.00	42.7	145.8	8.78	.83	.99	1.00	41.4	141.2	9.78	.85	1.00	1.00	40.0	136.6	10.92	.87	1.00	1.00
19°C (67°F)	2.72	5760	43.5	148.4	7.88	.55	.68	.81	42.2	144.0	8.74	.56	.69	.83	40.7	139.0	9.72	.57	.70	.84	39.3	134.0	10.84	.57	.72	.86
	3.40	7200	44.8	152.8	8.00	.59	.74	.89	43.4	148.2	8.88	.59	.75	.91	41.9	143.0	9.86	.60	.77	.93	40.3	137.6	11.00	.61	.78	.95
	4.08	8640	45.7	156.0	8.10	.62	.80	.96	44.3	151.2	8.98	.63	.81	.98	42.8	146.0	9.96	.64	.83	.99	41.1	140.4	11.08	.65	.85	1.00
22°C (71°F)	2.72	5760	46.1	157.4	8.14	.42	.54	.66	44.7	152.6	9.02	.42	.54	.67	43.3	147.6	10.00	.42	.55	.68	41.7	142.2	11.14	.42	.56	.69
	3.40	7200	47.3	161.4	8.28	.43	.58	.72	45.9	156.6	9.16	.43	.58	.73	44.3	151.2	10.14	.43	.59	.74	42.7	145.6	11.28	.44	.60	.76
	4.08	8640	48.2	164.4	8.38	.44	.61	.78	46.7	159.2	9.24	.44	.62	.80	45.0	153.6	10.24	.45	.63	.81	43.3	147.8	11.36	.45	.64	.83

GCS16-240 — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			27°C (80°F)						35°C (95°F)						43°C (110°F)						52°C (125°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb			kW	kBtu/h		Dry Bulb		
					24°C 75°F	27°C 80°F	29°C 85°F	24°C 75°F			27°C 80°F	29°C 85°F	24°C 75°F	27°C 80°F			29°C 85°F	24°C 75°F	27°C 80°F	29°C 85°F						
17°C (63°F)	2.72	5760	59.1	201.5	13.45	.72	.87	.99	56.0	191.0	15.91	.74	.89	1.00	52.6	179.5	18.84	.76	.93	1.00	48.8	166.6	22.40	.79	.96	1.00
	3.40	7200	61.3	209.0	13.67	.78	.95	1.00	58.1	198.2	16.12	.80	.98	1.00	54.7	186.8	19.11	.83	1.00	1.00	51.2	174.6	22.70	.87	1.00	1.00
	4.08	8640	63.2	215.7	13.88	.84	1.00	1.00	60.2	205.5	16.37	.87	1.00	1.00	56.9	194.0	19.39	.90	1.00	1.00	53.2	181.4	23.01	.94	1.00	1.00
19°C (67°F)	2.72	5760	62.4	212.8	13.81	.56	.70	.84	59.0	201.4	16.24	.57	.72	.86	55.3	188.8	19.23	.59	.74	.89	51.4	175.3	22.76	.60	.77	.93
	3.40	7200	64.1	218.8	13.99	.60	.76	.92	60.6	206.9	16.46	.61	.78	.95	56.9	194.2	19.41	.63	.81	.98	52.7	179.8	22.97	.65	.85	1.00
	4.08	8640	65.4	223.3	14.14	.64	.82	.99	61.8	211.0	16.59	.65	.85	1.00	58.0	197.8	19.56	.67	.89	1.00	53.7	183.4	23.15	.70	.92	1.00
22°C (71°F)	2.72	5760	66.1	225.5	14.23	.42	.55	.68	62.6	213.7	16.68	.42	.56	.70	58.7	200.3	19.67	.43	.57	.72	54.5	185.8	23.24	.43	.59	.75
	3.40	7200	67.7	231.1	14.43	.43	.59	.74	64.1	218.7	16.89	.44	.60	.76	60.1	204.9	19.86	.44	.62	.79	55.6	189.7	23.45	.45	.64	.83
	4.08	8640	68.8	234.9	14.56	.45	.63	.80	65.1	222.1	17.01	.45	.65	.83	61.0	208.0	20.00	.46	.67	.87	56.4	192.6	23.60	.48	.70	.91

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 (duct resistance, diffuser, etc.)

Then determine from blower table blower motor output.

See Page 9 for wet coil and optional accessory air resistance data.

BOLD ITALIC INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (m ³ /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)				
	rev/ min	BHP (kW)	rev/ min	BHP (kW)	rev/ min	BHP (kW)	rev/ min	BHP (kW)	rev/ min	BHP (kW)	rev/ min	BHP (kW)	rev/ min	BHP (kW)
4800 (2.27)	450 <i>(0.67)</i>	0.90 <i>(0.67)</i>	510 <i>(0.82)</i>	1.10 <i>(0.82)</i>	575 <i>(1.01)</i>	1.35 <i>(1.01)</i>	630 <i>(1.16)</i>	1.55 <i>(1.16)</i>	680 (1.31)	730 (1.49)	775 (1.68)	820 (1.87)	860 (2.05)	900 (2.28)
4900 (2.31)	455 <i>(0.71)</i>	0.95 <i>(0.71)</i>	515 <i>(0.86)</i>	1.15 <i>(0.86)</i>	580 <i>(1.04)</i>	1.40 <i>(1.04)</i>	635 <i>(1.19)</i>	1.60 <i>(1.19)</i>	685 (1.38)	735 (1.57)	780 (1.75)	820 (1.90)	865 (2.13)	900 (2.31)
5000 (2.36)	460 <i>(0.75)</i>	1.00 <i>(0.75)</i>	520 <i>(0.90)</i>	1.20 <i>(0.90)</i>	585 <i>(1.08)</i>	1.45 <i>(1.08)</i>	640 (1.27)	690 (1.42)	735 (1.60)	780 (1.79)	825 (1.98)	865 (2.16)	905 (2.39)	
5100 (2.41)	465 <i>(0.78)</i>	1.05 <i>(0.78)</i>	530 <i>(0.97)</i>	1.30 <i>(0.97)</i>	590 <i>(1.12)</i>	1.50 <i>(1.12)</i>	645 (1.31)	695 (1.49)	740 (1.64)	785 (1.83)	830 (2.05)	870 (2.24)	910 (2.46)	
5200 (2.46)	470 <i>(0.82)</i>	1.10 <i>(0.82)</i>	535 <i>(1.01)</i>	1.35 <i>(1.01)</i>	595 <i>(1.16)</i>	1.55 <i>(1.16)</i>	645 (1.34)	700 (1.53)	745 (1.72)	790 (1.90)	830 (2.09)	870 (2.28)	910 (2.50)	
5300 (2.50)	475 <i>(0.86)</i>	1.15 <i>(0.86)</i>	540 <i>(1.04)</i>	1.40 <i>(1.04)</i>	600 <i>(1.23)</i>	1.65 <i>(1.23)</i>	650 (1.38)	700 (1.57)	750 (1.79)	795 (1.98)	835 (2.16)	875 (2.35)	915 (2.57)	
5400 (2.55)	480 <i>(0.90)</i>	1.20 <i>(0.90)</i>	545 <i>(1.08)</i>	1.45 <i>(1.08)</i>	605 <i>(1.27)</i>	1.70 <i>(1.27)</i>	655 (1.45)	705 (1.64)	755 (1.83)	795 (2.01)	840 (2.24)	880 (2.42)	915 (2.65)	
5500 (2.60)	490 <i>(0.97)</i>	1.30 <i>(0.97)</i>	550 <i>(1.12)</i>	1.50 <i>(1.12)</i>	610 <i>(1.31)</i>	1.75 <i>(1.31)</i>	660 (1.49)	710 (1.68)	755 (1.87)	800 (2.09)	840 (2.28)	880 (2.50)	920 (2.72)	
5600 (2.65)	495 <i>(1.01)</i>	1.35 <i>(1.01)</i>	555 <i>(1.19)</i>	1.60 <i>(1.19)</i>	615 <i>(1.38)</i>	1.85 <i>(1.38)</i>	665 (1.57)	715 (1.75)	760 (1.94)	805 (2.16)	845 (2.35)	885 (2.57)	925 (2.80)	
5700 (2.69)	500 <i>(1.04)</i>	1.40 <i>(1.04)</i>	560 <i>(1.23)</i>	1.65 <i>(1.23)</i>	620 <i>(1.42)</i>	1.90 <i>(1.42)</i>	670 (1.60)	720 (1.83)	765 (2.01)	810 (2.24)	850 (2.42)	890 (2.65)	925 (2.83)	
5800 (2.74)	505 <i>(1.08)</i>	1.45 <i>(1.08)</i>	570 <i>(1.31)</i>	1.75 <i>(1.31)</i>	625 <i>(1.49)</i>	2.00 <i>(1.49)</i>	675 (1.68)	725 (1.87)	770 (2.09)	810 (2.28)	850 (2.46)	890 (2.69)	930 (2.91)	
5900 (2.79)	515 <i>(1.16)</i>	1.55 <i>(1.16)</i>	575 <i>(1.34)</i>	1.80 <i>(1.34)</i>	630 <i>(1.53)</i>	2.05 <i>(1.53)</i>	680 (1.72)	725 (1.94)	775 (2.16)	815 (2.35)	855 (2.54)	895 (2.76)	935 (3.02)	
6000 (2.83)	520 <i>(1.19)</i>	1.60 <i>(1.19)</i>	580 <i>(1.38)</i>	1.85 <i>(1.38)</i>	635 <i>(1.60)</i>	2.15 <i>(1.60)</i>	685 (1.79)	730 (1.98)	775 (2.20)	820 (2.42)	860 (2.65)	900 (2.87)	935 (3.06)	
6100 (2.88)	525 <i>(1.23)</i>	1.65 <i>(1.23)</i>	585 <i>(1.45)</i>	1.95 <i>(1.45)</i>	640 (1.64)	690 (1.87)	735 (2.05)	780 (2.28)	825 (2.50)	865 (2.72)	900 (2.91)	940 (3.17)		
6200 (2.93)	530 <i>(1.31)</i>	1.75 <i>(1.31)</i>	590 <i>(1.49)</i>	2.00 <i>(1.49)</i>	645 (1.72)	695 (1.94)	740 (2.13)	785 (2.35)	830 (2.57)	870 (2.80)	905 (2.98)	945 (3.25)		
6300 (2.98)	540 <i>(1.38)</i>	1.85 <i>(1.38)</i>	595 <i>(1.57)</i>	2.10 <i>(1.57)</i>	650 (1.79)	700 (1.98)	745 (2.20)	790 (2.42)	830 (2.61)	870 (2.83)	910 (3.10)	945 (3.32)		
6400 (3.02)	545 <i>(1.42)</i>	1.90 <i>(1.42)</i>	605 <i>(1.64)</i>	2.20 <i>(1.64)</i>	655 (1.83)	705 (2.05)	750 (2.28)	795 (2.50)	835 (2.72)	875 (2.95)	915 (3.17)	950 (3.39)		
6500 (3.07)	550 <i>(1.49)</i>	2.00 <i>(1.49)</i>	610 <i>(1.72)</i>	2.30 <i>(1.72)</i>	660 (1.90)	710 (2.13)	755 (2.35)	800 (2.57)	840 (2.80)	880 (3.02)	915 (3.25)	955 (3.51)		
6600 (3.12)	560 <i>(1.57)</i>	2.10 <i>(1.57)</i>	615 <i>(1.75)</i>	2.35 <i>(1.75)</i>	665 (1.98)	715 (2.20)	760 (2.42)	805 (2.65)	845 (2.87)	885 (3.13)	920 (3.32)	960 (3.58)		
6700 (3.16)	565 <i>(1.60)</i>	2.15 <i>(1.60)</i>	620 <i>(1.83)</i>	2.45 <i>(1.83)</i>	670 (2.05)	720 (2.28)	765 (2.50)	810 (2.72)	850 (2.98)	890 (3.21)	925 (3.43)	960 (3.66)		
6800 (3.21)	575 <i>(1.68)</i>	2.25 <i>(1.68)</i>	625 <i>(1.90)</i>	2.55 <i>(1.90)</i>	680 (2.13)	725 (2.35)	770 (2.57)	815 (2.83)	855 (3.06)	890 (3.28)	930 (3.54)	965 <i>(3.77)</i>		
6900 (3.26)	580 <i>(1.75)</i>	2.35 <i>(1.75)</i>	635 <i>(1.98)</i>	2.65 <i>(1.98)</i>	685 (2.20)	730 (2.42)	775 (2.65)	815 (2.87)	855 (3.13)	895 (3.36)	935 (3.62)	970 <i>(3.88)</i>		
7000 (3.31)	585 <i>(1.83)</i>	2.45 <i>(1.83)</i>	640 (2.05)	690 (2.28)	735 (2.50)	780 (2.76)	820 (2.98)	860 (3.21)	900 (3.47)	935 (3.69)	975 (3.99)			
7100 (3.35)	590 <i>(1.87)</i>	2.50 <i>(1.87)</i>	645 (2.13)	695 (2.35)	740 (2.57)	785 (2.83)	825 (3.06)	865 (3.32)	905 (3.54)	940 (3.80)	975 <i>(4.03)</i>			
7200 (3.40)	600 <i>(1.98)</i>	2.65 <i>(1.98)</i>	650 (2.20)	700 (2.42)	745 (2.69)	790 (2.91)	830 (3.13)	870 (3.39)	910 (3.66)	945 (3.92)	980 <i>(4.14)</i>			

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 (duct resistance, diffuser, etc.)

Then determine from blower table blower motor output.

See Page 9 for wet coil and optional accessory air resistance data.

BOLD ITALIC INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (m ³ /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)		
	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min	BHP (kW)	rev/min
6000 (2.83)	565	1.65 <i>(1.23)</i>	620	1.95 <i>(1.45)</i>	670	2.20 <i>(1.64)</i>	720	2.50 <i>(1.87)</i>	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 (2.88)	575	1.75 <i>(1.31)</i>	625	2.00 <i>(1.49)</i>	675	2.25 <i>(1.68)</i>	725	2.55 <i>(1.90)</i>	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 (2.93)	580	1.80 <i>(1.34)</i>	635	2.10 <i>(1.57)</i>	685	2.40 <i>(1.79)</i>	730	2.65 <i>(1.98)</i>	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 (2.98)	590	1.90 <i>(1.42)</i>	640	2.20 <i>(1.64)</i>	690	2.45 <i>(1.83)</i>	735	2.75 <i>(2.05)</i>	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 (3.02)	595	2.00 <i>(1.49)</i>	650	2.30 <i>(1.72)</i>	695	2.55 <i>(1.90)</i>	740	2.85 <i>(2.13)</i>	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 (3.07)	605	2.10 <i>(1.57)</i>	655	2.35 <i>(1.75)</i>	700	2.65 <i>(1.98)</i>	750	2.95 <i>(2.20)</i>	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 (3.12)	610	2.15 <i>(1.60)</i>	660	2.45 <i>(1.83)</i>	710	2.75 <i>(2.05)</i>	755	3.05 <i>(2.28)</i>	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 (3.16)	620	2.25 <i>(1.68)</i>	670	2.55 <i>(1.90)</i>	715	2.85 <i>(2.13)</i>	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 (3.21)	630	2.35 <i>(1.75)</i>	675	2.65 <i>(1.98)</i>	720	2.95 <i>(2.20)</i>	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 (3.26)	635	2.45 <i>(1.83)</i>	685	2.75 <i>(2.05)</i>	730	3.05 <i>(2.28)</i>	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 (3.31)	645	2.55 <i>(1.90)</i>	690	2.85 <i>(2.13)</i>	735	3.15 <i>(2.35)</i>	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 (3.35)	650	2.65 <i>(1.98)</i>	700	2.95 <i>(2.20)</i>	740	3.25 <i>(2.42)</i>	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 (3.40)	660	2.75 <i>(2.05)</i>	705	3.05 <i>(2.28)</i>	750	3.40 <i>(2.54)</i>	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 (3.45)	665	2.85 <i>(2.13)</i>	710	3.15 <i>(2.35)</i>	755	3.50 <i>(2.61)</i>	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 (3.49)	675	3.00 <i>(2.24)</i>	720	3.30 <i>(2.46)</i>	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 (3.54)	680	3.05 <i>(2.28)</i>	725	3.40 <i>(2.54)</i>	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 (3.59)	690	3.20 <i>(2.39)</i>	735	3.55 <i>(2.65)</i>	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 (3.64)	700	3.35 <i>(2.50)</i>	740	3.65 <i>(2.72)</i>	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 (3.68)	705	3.45 <i>(2.57)</i>	750	3.80 <i>(2.83)</i>	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 (3.73)	715	3.60 <i>(2.69)</i>	755	3.90 <i>(2.91)</i>	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 (3.78)	720	3.70 <i>(2.76)</i>	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 (3.82)	730	3.85 <i>(2.87)</i>	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 (3.87)	740	4.00 <i>(2.98)</i>	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 (3.92)	745	4.10 <i>(3.06)</i>	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 (3.97)	755	4.25 <i>(3.17)</i>	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 (4.01)	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 (4.06)	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 (4.11)	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 (4.16)	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 (4.20)	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 (4.25)	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 Number	Air Volume		Total Resistance - Pa (inches water gauge)						
			Wet Evaporator Coil	Electric Heat	REMD16M Down-Flow Economizer	RTD11 Step-Down Diffuser			FD11 Flush Diffuser
	m ³ /s	cfm				2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
GCS16-180	2.27	4800	35 (.14)	37(.15)	7 (.03)	114 (.46)	99 (.40)	90 (.36)	60 (.24)
	2.36	5000	35 (.14)	42 (.17)	7 (.03)	127 (.51)	109 (.44)	97 (.39)	67 (.27)
	2.46	5200	37 (.15)	50 (.20)	7 (.03)	139 (.56)	119 (.48)	104 (.42)	75 (.30)
	2.55	5400	40 (.16)	55 (.22)	10 (.04)	152 (.61)	129 (.52)	112 (.45)	81 (.33)
	2.65	5600	42 (.17)	55 (.22)	10 (.04)	164 (.66)	139 (.56)	119 (.48)	90 (.36)
	2.74	5800	45 (.18)	62 (.25)	12 (.05)	177 (.71)	147 (.59)	127 (.51)	97 (.39)
	2.83	6000	47 (.19)	64 (.26)	12 (.05)	189 (.76)	157 (.63)	137 (.55)	104 (.42)
	2.93	6200	50 (.20)	72 (.29)	12 (.05)	199 (.80)	169 (.68)	147 (.59)	114 (.46)
	3.02	6400	52 (.21)	77 (.31)	15 (.06)	214 (.86)	179 (.72)	157 (.63)	124 (.50)
	3.12	6600	55 (.22)	80 (.32)	15 (.06)	229 (.92)	191 (.77)	167 (.67)	134 (.54)
	3.21	6800	57 (.23)	82 (.33)	17 (.07)	246 (.99)	206 (.83)	179 (.72)	144 (.58)
	3.31	7000	60 (.24)	82 (.33)	17 (.07)	256 (1.03)	216 (.87)	189 (.76)	154 (.62)
3.40	7200	62 (.25)	85 (.34)	20 (.08)	271 (1.09)	229 (.92)	199 (.80)	164 (.66)	
GCS16-240	2.83	6000	60 (.24)	64 (.26)	12 (.05)	90 (.36)	77 (.31)	67 (.27)	72 (.29)
	3.06	6500	70 (.28)	80 (.32)	15 (.06)	104 (.42)	90 (.36)	77 (.31)	85 (.34)
	3.31	7000	77 (.31)	82 (.33)	17 (.07)	122 (.49)	102 (.41)	90 (.36)	99 (.40)
	3.54	7500	85 (.34)	99 (.40)	22 (.09)	127 (.51)	114 (.46)	102 (.41)	112 (.45)
	3.78	8000	94 (.38)	104 (.42)	25 (.10)	147 (.59)	122 (.49)	107 (.43)	124 (.50)
	4.01	8500	104 (.42)	124 (.50)	27 (.11)	172 (.69)	144 (.58)	124 (.50)	142 (.57)
	4.25	9000	114 (.46)	144 (.58)	32 (.13)	196 (.79)	167 (.67)	144 (.58)	164 (.66)

PED16-18/24 POWER EXHAUST FANS PERFORMANCE

Model Number	Air Volume		Return Air System Static Pressure	
	m ³ /s	cfm	Pa	In. w.g.
PED16-18/24	2.83	6000	0	0
	2.69	5700	12	.05
	2.50	5300	25	.10
	2.36	5000	37	.15
	2.21	4700	50	.20
	1.98	4200	62	.25
	1.70	3600	75	.30

CEILING DIFFUSER AIR THROW DATA

Model Number	Air Volume		Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	m ³ /s	cfm	m	ft.	m	ft.
GCS16-180	2.65	5600	12 - 15	39 - 49	9 - 11	28 - 37
	2.74	5800	13 - 16	42 - 51	9 - 12	29 - 38
	2.83	6000	13 - 17	44 - 54	12 - 15	40 - 50
	2.93	6200	14 - 17	45 - 55	13 - 16	42 - 51
	3.02	6400	14 - 17	46 - 55	13 - 16	43 - 52
	3.12	6600	14 - 17	47 - 56	14 - 17	45 - 56
GCS16-240	3.40	7200	10 - 12	33 - 38	8 - 11	26 - 35
	3.49	7400	11 - 12	35 - 40	9 - 11	28 - 37
	3.59	7600	11 - 13	36 - 41	9 - 12	29 - 38
	3.68	7800	11 - 13	38 - 43	12 - 15	40 - 50
	3.78	8000	12 - 13	39 - 44	13 - 16	42 - 51
	3.87	8200	12 - 14	41 - 46	13 - 16	43 - 52
	3.97	8400	13 - 15	43 - 49	13 - 17	44 - 54
	4.06	8600	13 - 15	44 - 50	14 - 17	46 - 57
4.16	8800	14 - 17	47 - 55	15 - 18	48 - 59	

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

GUIDE SPECIFICATIONS

General

- Furnish and install a single package air to air direct expansion 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 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.

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 propane gas (optional kit required).
- Complete service access shall be provided for controls and wiring.

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 sleeve 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 51 mm (2 inch) thick pleated filters shall be furnished.

OPTIONAL ACCESSORIES

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.

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 13 °C (55 °F) 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.

Outdoor Air Damper Section

- Optional 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.
- Damper section field installs external to the unit.
- Hood with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal.
- Optional panel kit that installs in return air opening shall be required for down-flow installations.

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.

Ceiling Diffusers

- Furnish and install a (flush or stepdown) optional combination ceiling supply and return air diffuser.
- Supply and return transitions shall be available, for field installation in the roof mounting frame, to provide duct connection to the diffuser.

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.

DIMENSIONS - MM (INCHES)

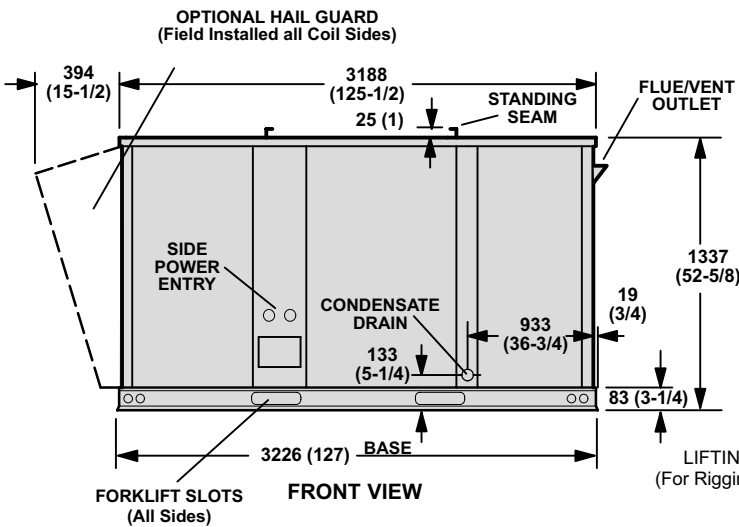
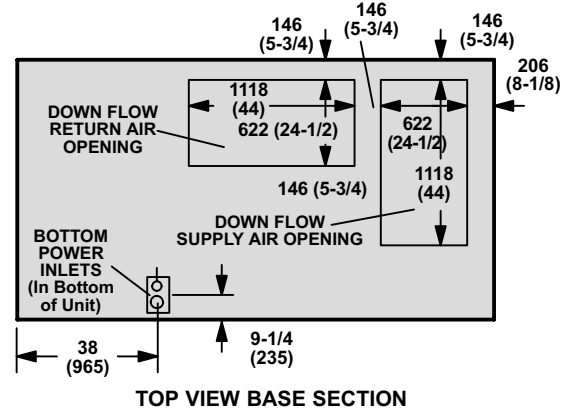
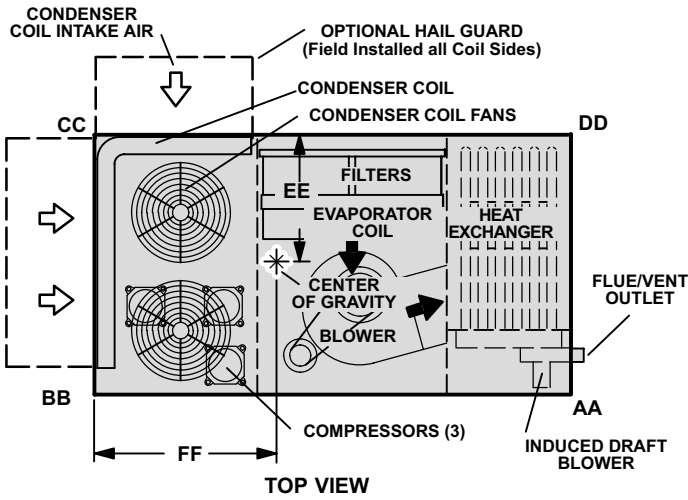
Basic Unit

CORNER WEIGHTS

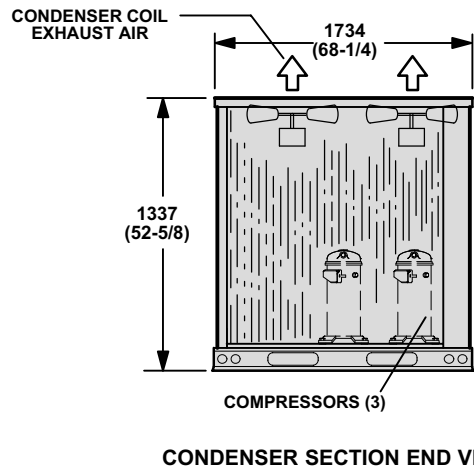
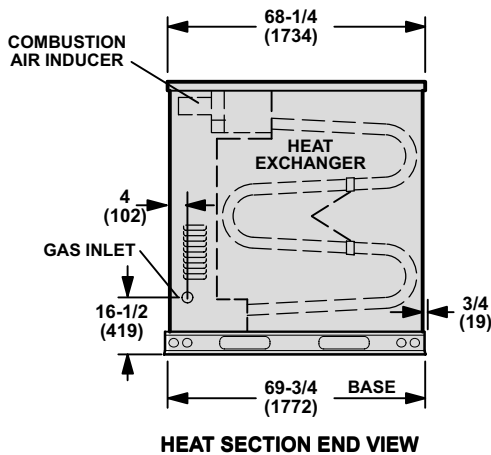
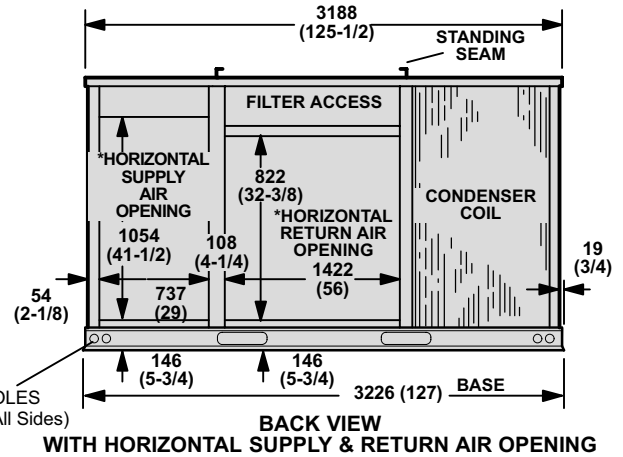
Model Number	AA		BB		CC		DD	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.
GCS16-180	187	413	215	474	195	430	174	383
GCS16-240	197	434	237	522	212	468	182	401

CENTER OF GRAVITY

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



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



DIMENSIONS - MM (INCHES)

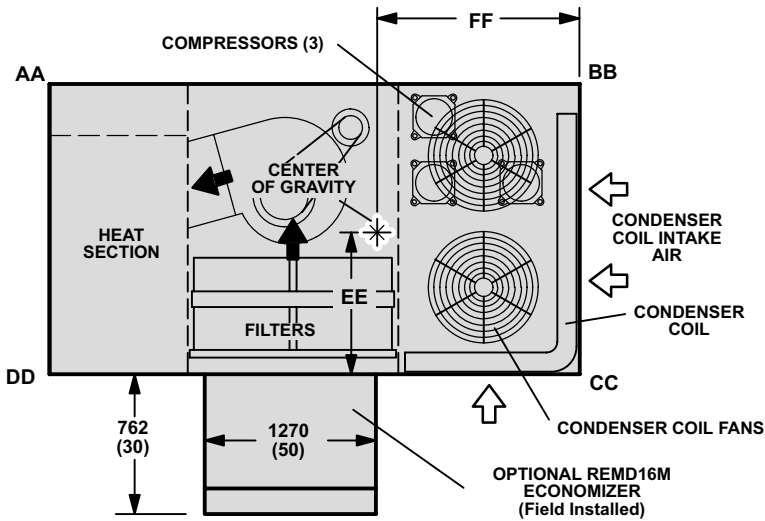
Basic Unit With REMD16M (Down-Flow Application) Economizer & RMF16 Roof Mounting Frame

CORNER WEIGHTS

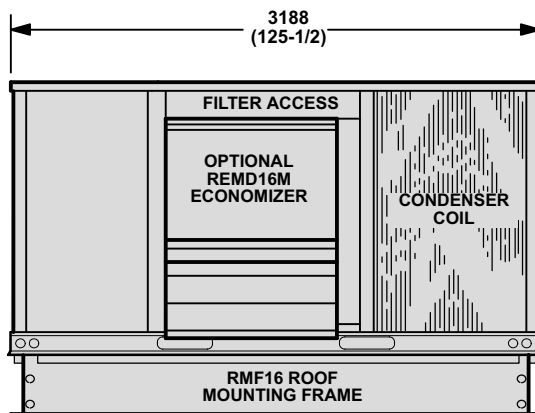
Model Number	AA		BB		CC		DD	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.
GCS16-180	206	455	235	517	232	512	205	451
GCS16-240	215	474	255	563	251	554	213	469

CENTER OF GRAVITY

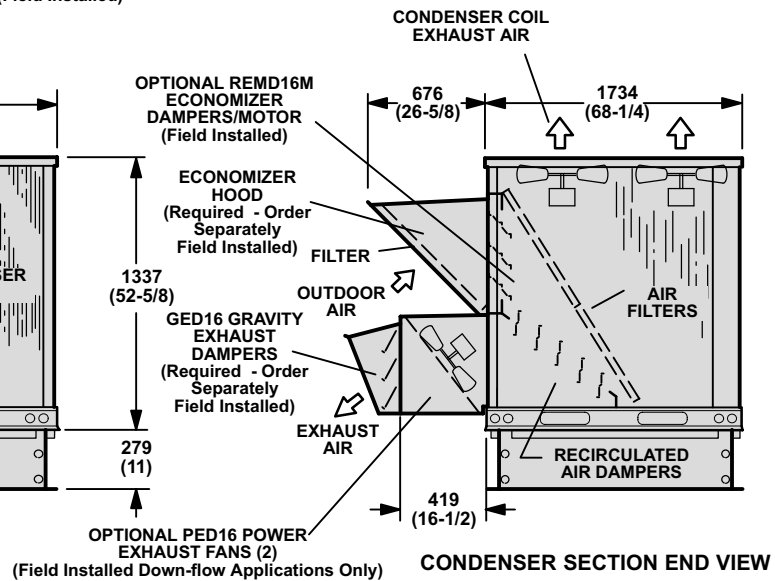
Model Number	EE		FF	
	mm	inch	mm	inch
GCS16-180	899	35-3/8	1480	58-1/4
GCS16-240	911	35-7/8	1435	56-1/2



TOP VIEW

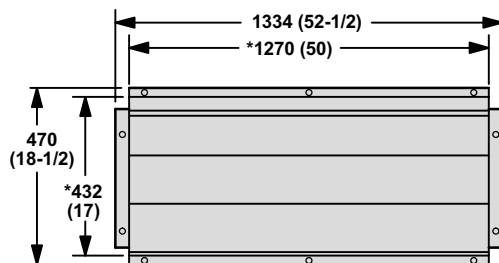


BACK VIEW

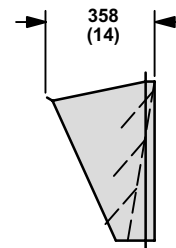


CONDENSER SECTION END VIEW

GED16 GRAVITY EXHAUST DAMPERS



FRONT VIEW



SIDE VIEW

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

DIMENSIONS - MM (INCHES)

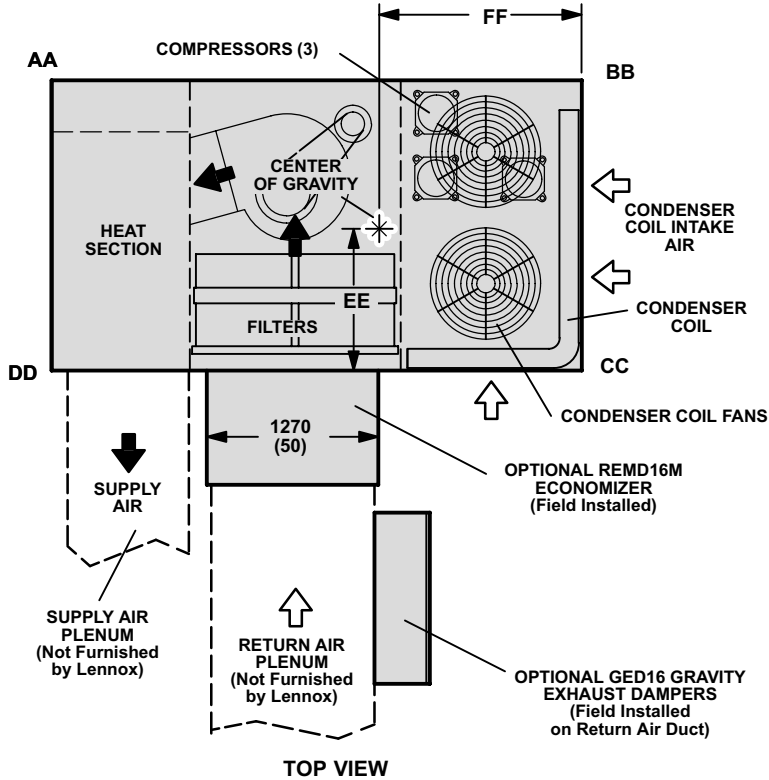
Basic Unit With REMDH16M (Horizontal Application) Economizer Damper Section

CORNER WEIGHTS

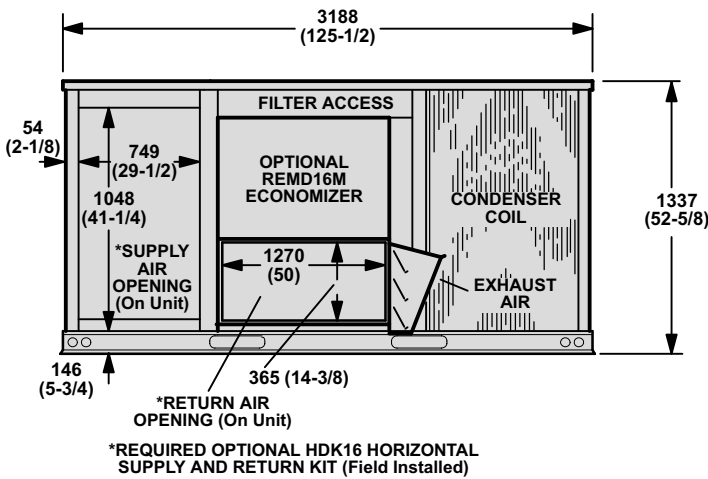
Model Number	AA		BB		CC		DD	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.
GCS16-180	204	449	232	511	225	496	198	436
GCS16-240	212	468	254	559	242	533	205	453

CENTER OF GRAVITY

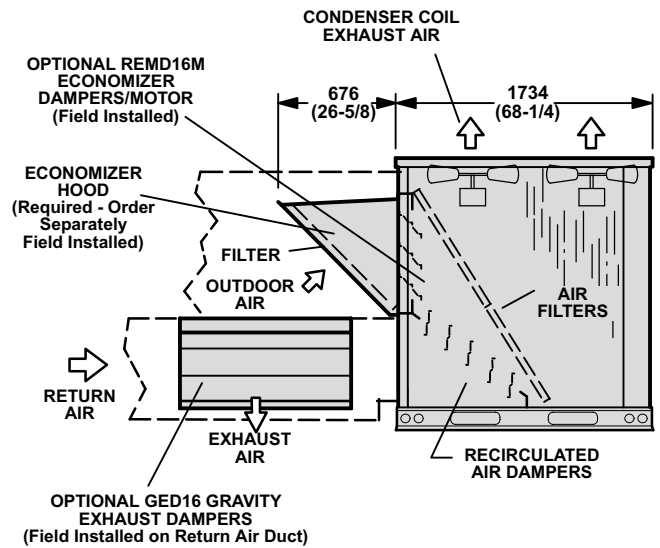
Model Number	EE		FF	
	mm	inch	mm	inch
GCS16-180	949	37-3/8	1480	58-1/4
GCS16-240	962	37-7/8	1435	56-1/2



TOP VIEW



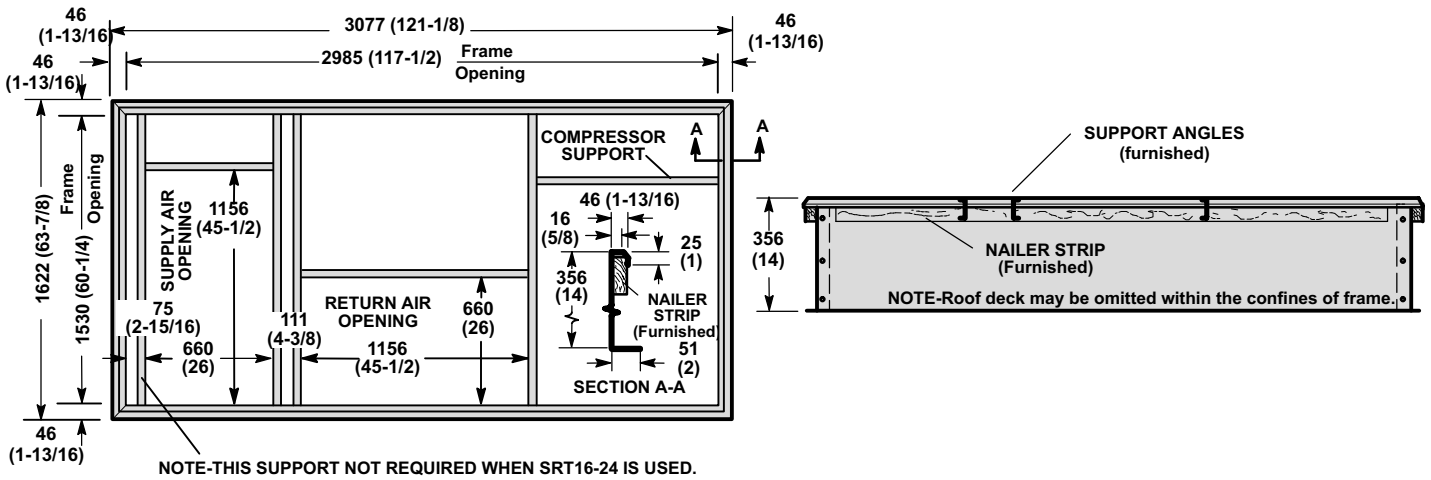
BACK VIEW WITH HORIZONTAL SUPPLY & RETURN AIR OPENING



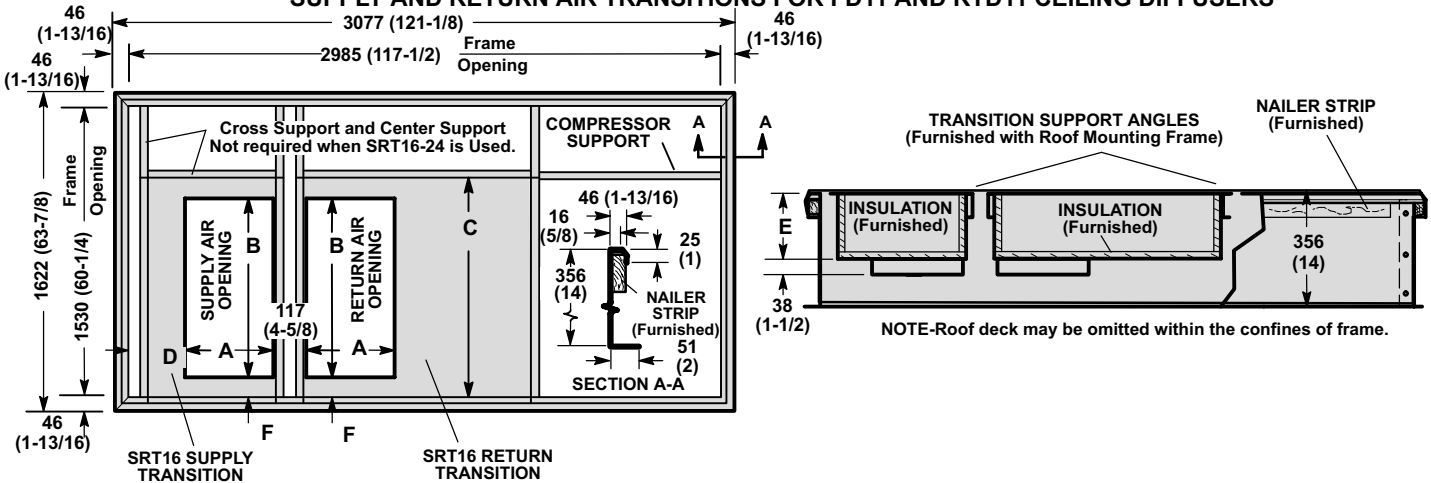
CONDENSER SECTION END VIEW

ACCESSORY DIMENSIONS - MM (INCHES)

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

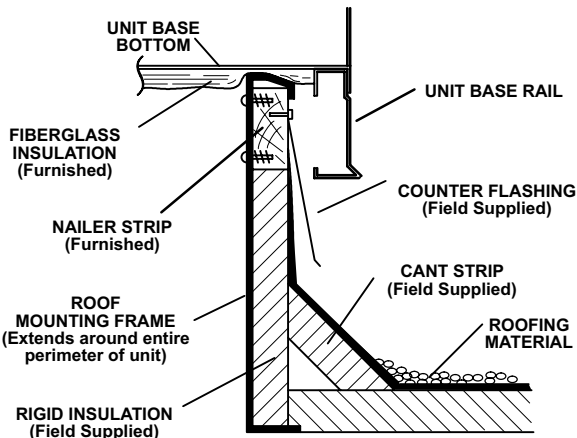


RMF16-18/24 ROOF MOUNTING FRAME WITH SRT16-18 AND SRT16-24 SUPPLY AND RETURN AIR TRANSITIONS FOR FD11 AND RTD11 CEILING DIFFUSERS



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

TYPICAL FLASHING DETAIL FOR RMF16 ROOF MOUNTING FRAME



ROOF MOUNTING FRAME SPECIFICATIONS

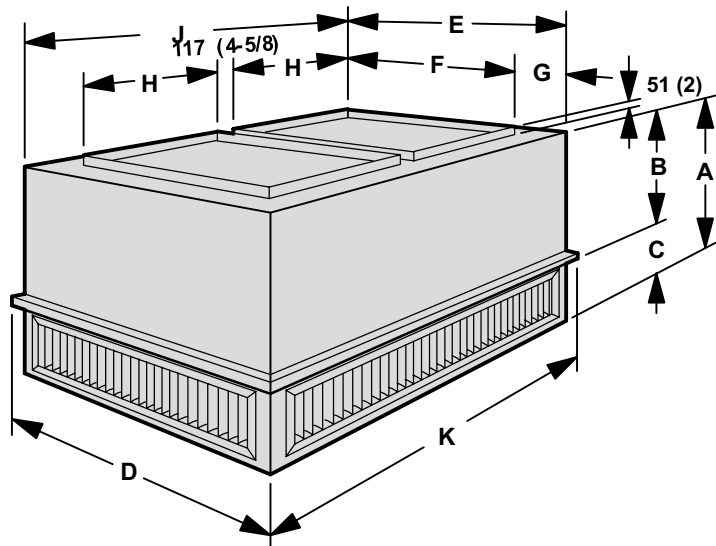
Roof Mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on both sides of center of gravity.

Roof Mounting Frame	RMF16
*Moment of inertia (I) (mm ⁴) (in. ⁴)	1.75 x 10 ⁷ (42)
*Section modulus $\frac{I}{C}$ (mm ³) (in. ³)	9.5 x 10 ³ (5.8)
Maximum weight (kg/m) (lb/ft.) of length	8.2 (5.5)
Design strength (mPa) (psi)	138 (20 000)

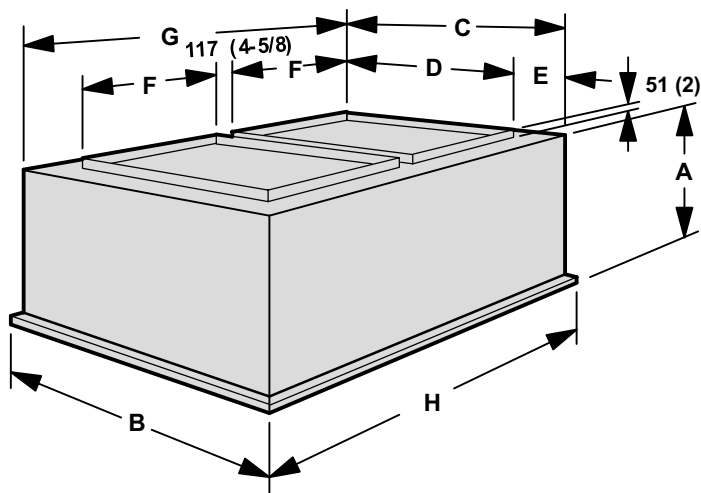
*Includes both sides of frame.

ACCESSORY DIMENSIONS - MM (INCHES)

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



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

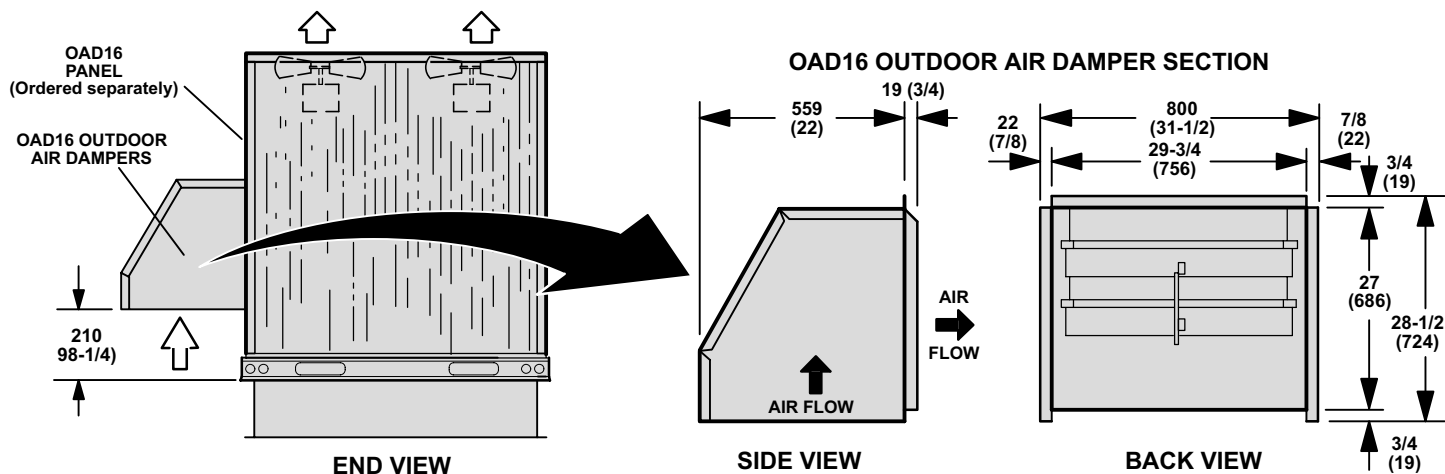
Model Number	A		B		C		D	
	mm	in.	mm	in.	mm	in.	mm	in.
FD11-185	613	30-1/8	1210	47-5/8	1159	45-5/8	914	36
FD11-275	918	36-1/8	1514	59-5/8	1464	57-5/8	1219	48

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

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

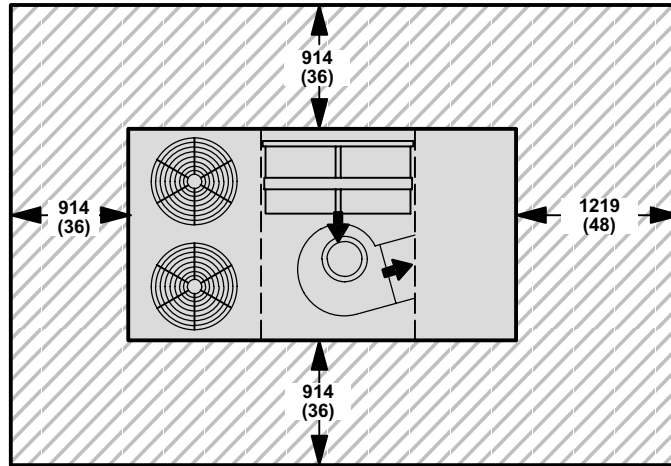
GCS16 UNIT WITH OAD16 OUTDOOR AIR DAMPER SECTION DOWN-FLOW SUPPLY AND RETURN AIR

NOTE - For Horizontal (Side) Supply And Return Air, OAD16 Field Installs on Return Air Duct



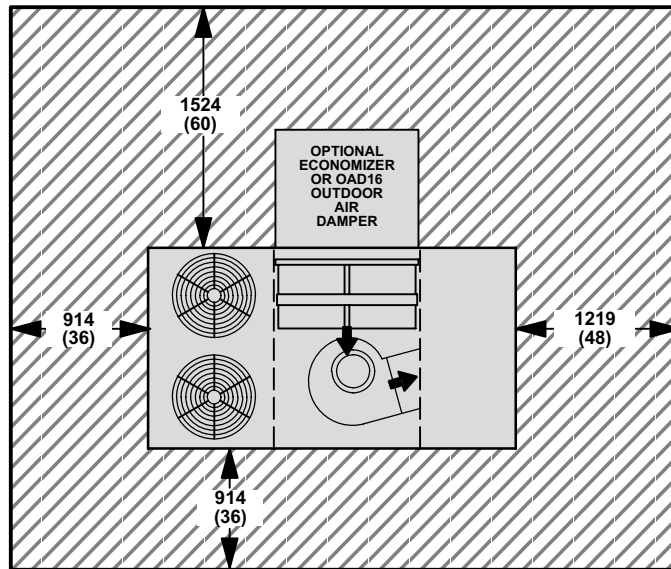
INSTALLATION CLEARANCES - MM (INCHES)

GCS16 BASIC UNIT



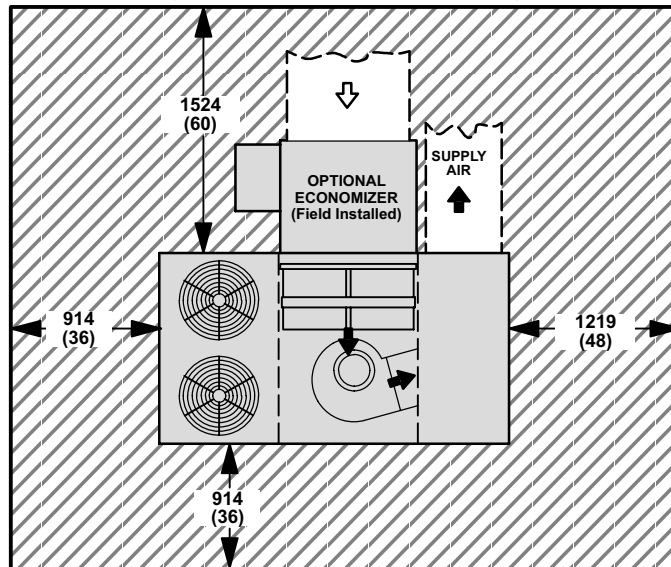
NOTE - Top Clearance Unobstructed.
NOTE - Entire perimeter of unit requires support when elevated above mounting surface.

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.