

# LENNOX

## ENGINEERING DATA



### PACKAGED GAS

### GCS16

### -024-030-036-048-060

### 2 to 5 Ton (7.0 to 17.6 kW)

### AFUE - 80%

### SEER - up to 10.35

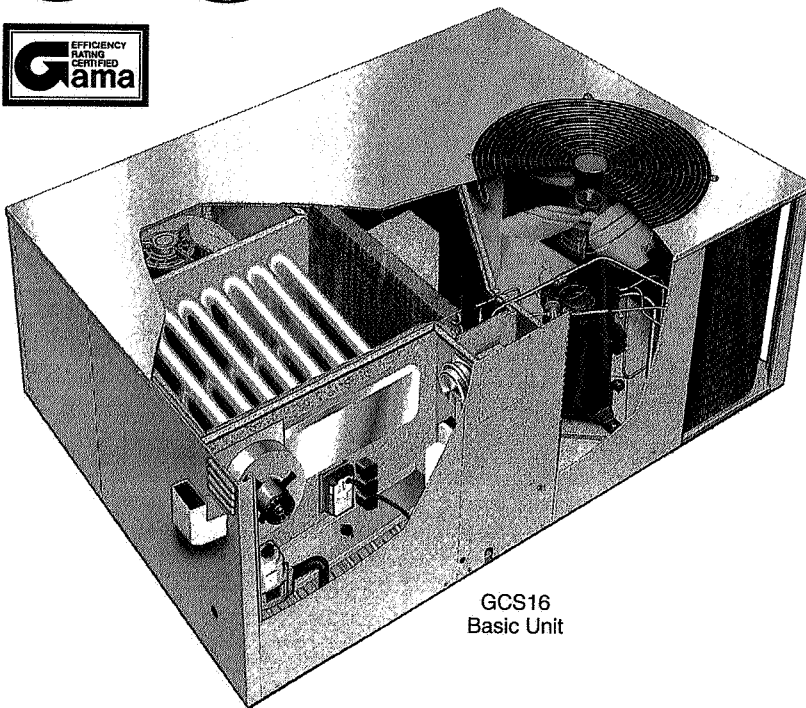
### Cooling Capacity - 23,200 to 58,500 Btuh (6.8 to 17.1 kW)

### Input Heating Capacity - 50,000 to 120,000 Btuh (14.7 to 35.2 kW)

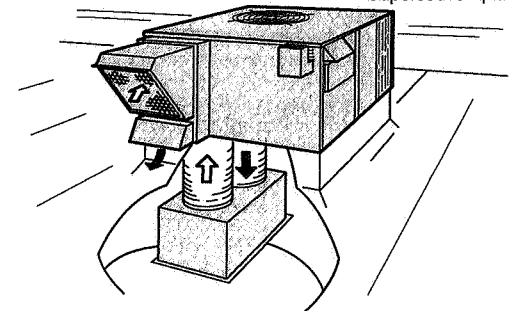
Bulletin No. 210169

December 2000

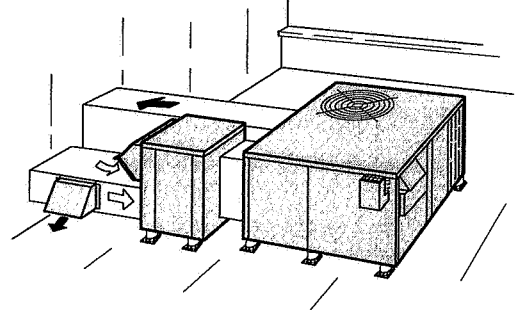
Supersedes April 2000



GCS16  
Basic Unit



Rooftop Installation With Combination  
Supply and Return Air System



Rooftop Installation With Horizontal Economizer

## MODEL NUMBER IDENTIFICATION

### GCS 16 X - 036 - 120 - 1 Y

**Unit Type**  
GCS = Packaged Gas heat/Cooling Unit

**Series**

**Low NO<sub>x</sub> Models**

**Cooling Capacity Tons (kW)**

- 024 - 2 (7.0)
- 030 - 2.5 (8.8)
- 036 - 3 (10.6)
- 048 - 4 (14.1)
- 060 - 5 (17.6)

**Voltage**

- P = 208/230v-1 phase-60hz
- Y = 208/230v-3 phase-60hz
- G = 460v-3 phase-60hz
- J = 575v-3 phase-60hz

**Minor Revision Number**

**Heating Capacity Btuh (kW)**

- 50 - 50,000 (14.6)
- 75 - 75,000 (22.0)
- 90 - 90,000 (26.4)
- 120 - 120,000 (35.1)

## FEATURES

### Application

- AFUE of 80%.
- SEER up to 10.35.
- 2 through 5 ton (7.0 through 17.6 kW).
- Single and three phase power supply.
- Bottom (down-flow) or horizontal supply and return air.
- Designed for outdoor rooftop or ground level installations in light commercial applications.

### Approvals

- Certified in accordance with the USE certification program, which is based on ARI Standard 210/240-94.
- Sound rated in the Lennox reverberant sound test room in accordance with test conditions included in ARI Standard 270-95.
- Tested in the Lennox Research Laboratory environmental test room.
- Rated according to U.S. Department of Energy (DOE) test procedures.
- Blower data is from unit tests conducted in the Lennox Laboratory air test chamber.
- Units certified by CSA International (formerly AGA/CGA) and ratings are certified by GAMA.
- Gas heat is tested according to DOE test procedures and FTC labeling regulations.
- All "X" models meet California Nitrogen Oxides (NO<sub>x</sub>) standards and California Seasonal Efficiency Requirements.
- Developed in accordance with ISO 9002 quality standards.
- Each unit test operated at the factory before shipment ensuring dependable operation at start-up.

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.

## FEATURES - CONTINUED

### Equipment Warranty

- Compressor — limited warranty for five years.
- Heat Exchanger — limited warranty for ten years.
- All other covered components — one year limited warranty.
- Refer to Lennox Equipment Limited Warranty certificate included with unit for specific details.

### Heat Exchanger

- Constructed of tubular, aluminized steel for superior resistance to corrosion and oxidation.
- Curving design allows complete exposure of heating surfaces to supply air stream.
- Round surfaces create minimum air resistance and allow air to surround all surfaces for excellent heat transfer. Internal baffles prolong flue gas passage resulting in maximum heat transfer.
- Compact design reduces space requirements in unit cabinet.
- Removable cabinet panels allow service access. Panel also has a peep hole for viewing flame.
- Heat exchanger has been laboratory life cycle tested.

### Combustion Air Inducer

- Prepurges heat exchanger and safely vents flue products.
- Pressure switch proves operation before allowing gas valve to open.
- Inducer operates only during heating cycle.
- Flame rollout switch (manual reset) protects against loss of combustion air due to flue vent or intake air blockage.

### Inshot Burners

- Aluminized steel inshot burners provide efficient trouble free operation, unaffected by adverse wind or atmospheric conditions.
- Burner venturi mixes air and gas in correct proportion for proper combustion.
- Burners can be removed individually for service.

### Gas Control Valve

- 24 volt redundant combination gas control valve combines a manual main shutoff valve, pressure regulation and automatic electric valve (dual) into one compact combination control.

### Direct Spark Ignition

- Solid-state electronic direct spark ignition control provides positive and safe main burner ignition.
- Spark is intermittent and occurs only when required.
- Separate electronic flame sensor control assures safe and reliable operation.
- Should loss of flame occur, flame sensor controls will initiate 3 attempts at re-ignition.

### Fan and Limit Controls

- Factory installed and accurately located limit control provides protection from abnormal operating conditions.
- Limit control has fixed temperature setting.

### Cabinet

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

### Refrigeration System

- All models include: expansion valve, liquid line strainer, suction and liquid line service gauge ports, high pressure switch (manual reset) and full refrigerant charge.
- Freezestat prevents coil freeze-up during low ambient operation or loss of air flow.
- Low ambient operation down to 30°F (-1°C) without additional controls.

### Compressor

- Designed for dependable efficiency with minimum operating cost.
- Suction cooled and overload protected with internal pressure relief.
- Hermetically sealed with built-in protection from excessive current and temperatures.
- Immersible self-regulating, crankcase heater assures proper compressor lubrication (-024, -030 and -060 models).
- Running gear assembly resiliently suspended internally inside case. Compressor installed in unit on resilient rubber mounts assuring low sound and vibration free operation.
- Scroll compressor on 3 and 4 ton (-036 and -048) models.

### Condenser Fan

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

### Copper Tube/Enhanced Fin Coil

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

### Blower

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

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## FEATURES - CONTINUED

### Air Filter

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

### Economizer Wiring

- Low voltage thermostat connections in main control area.
- Furnished and factory installed on all ton models.
- Economizer wiring harness with jack plug connections.
- See below for economizer options.

## OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Model No.		GCS16-024	GCS16-030	GCS16-036	GCS16-048	GCS16-060
<b>Coil Guards</b> — PVC coated steel wire guards to protect outdoor coil		LB-82199CF (47J23) 2 guards per order			LB-82199CG (47J24) 3 guards per order	
<b>Cold Weather Kit (Canada Only)</b> — Electric heater automatically controls minimum temperature in gas burner compartment when temperature is below 40°F (4°C). CGA certified to allow operation of unit down to -60°F (-50°C)		<b>65C03</b>				
<b>Control Systems</b> — See pages 4-5 for complete listing.		See pages 4-5				
<b>Compressor Monitor (Canada Only)</b> — Non-adjustable switch (low ambient cut-out) prevents compressor operation when outdoor temperature is below 32°F (0°C).		T6-1469 (45F08)				
<b>Diffusers</b> — Aluminum grilles, large center grille, insulated diffuser box with flanges, hanging rings furnished, interior transition (even air flow), internally sealed (prevents recirculation), adapts to T-bar ceiling grids or plaster ceilings - Net Weight		<b>Step-Down</b> - double deflection louvers		RTD9-65 - 67 lbs. (30 kg)		
		<b>Flush</b> - fixed blade louvers		FD9-65 - 37 lbs.(17 kg)		
<b>Economizer with Gravity Exhaust Dampers (Down-Flow)</b> — Installs directly in cabinet, recirculated air dampers with pressure operated gravity exhaust damper, formed, gasketed damper blades, nylon bearings, 24v damper motor has adjustable minimum position switch, electronic discharge air sensor, adjustable outdoor air enthalpy control. Utilizes filter furnished with unit, filter rack will accept up to 2 in. (51 mm) filter. Removable exhaust air hood and outdoor air intake hood with cleanable aluminum mesh filter. Choice of economizer controls.	<b>US Only</b>	3 Position	REMD16-41 - 48 lbs. (22 kg)		REMD16-65 - 66 lbs. (30 kg)	
		Fully Modulating	REMD16M-41 - 48 lbs. (22 kg)		REMD16M-65 - 66 lbs. (30 kg)	
		□ Indoor Filter	(1) 16 x 25 x 1 (406 x 635 x 25)		(1) 20 x 25 x 1 (508 x 635 x 25)	
		Outdoor Filter	(1) 14 x 25 x 1 (356 x 635 x 25)		(1) 18 x 25 x 1 (457 x 635 x 25)	
	<b>Canada Only</b>	Fully Modulating	REMD16M-41S - 85 lbs. (39 kg)		REMD16M-65S - 105 lbs. (48 kg)	
		□ Indoor Filter	(1) 16 x 25 x 1 (406 x 635 x 25)		(1) 20 x 25 x 1 (508 x 635 x 25)	
		Outdoor Filter	(1) 19-3/8 x 15-3/4 x 1		(1) 19-7/8 x 22-3/4 x 1 (505 x 578 x 25)	
<b>Economizer Dampers (Horizontal)</b> — Installs directly in cabinet, combination outdoor air and recirculated air damper, formed, gasketed damper blades, nylon bearings, 24v damper motor has adjustable minimum position switch, electronic discharge air sensor, adjustable outdoor air enthalpy control. 1 in (25 mm) fiberglass filter furnished, filter rack will accept up to 2 in. (51 mm) filter, outdoor air intake hood with aluminum mesh filter. Choice of economizer controls.	<b>US Only</b>	3 Position	EMDH16-41 110 lbs. (50 kg)		EMDH16-65 - 130 lbs. (59 kg)	
		Fully Modulating	EMDH16M-41 - 110 lbs. (50 kg)		EMDH16M-65 - 130 lbs. (59 kg)	
		Indoor Filter	(1) 20 x 24 x 1 (508 x 610 x 25)		(1) 16 x 25 x 1 (406 x 635 x 25) (1) 14 x 25 x 1 (356 x 635 x 1)	
		Outdoor Filter	(1) 8 x 24 x 1 (203 x 610 x 25)		(1) 8 x 28 x 1 (203 x 711 x 25)	
	<b>Canada Only</b>	Fully Modulating	EMDH16M-41S - 70 lbs. (32 kg)		EMDH16M-65S - 86 lbs. (39 kg)	
		Indoor Filter	(1) 20 x 20 x 1 (508 x 508 x 25)		(1) 20 x 25 x 1 (508 x 635 x 25)	
	Outdoor Filter	(1) 16-1/2 x 21-3/4 x 1 (419 x 552 x 25)		(1) 22-1/2 x 25-1/4 x 1 (571 x 641 x 25)		
<b>Enthalpy Control, Differential</b> — Used in conjunction with outdoor air enthalpy control. Determines and selects which air has the lowest enthalpy. Return air enthalpy sensor field installs in economizer damper section		<b>54G44</b>				
<b>Gravity Exhaust Dampers</b> — For use with EMDH16. Pressure operated assembly field installs in the return air duct adjacent to the economizer assembly. Includes bird screen. - Net Weight		GEDH16-65 - 4 lbs. (2 kg)				
<b>Horizontal Filter Kit (Canada Only)</b> — For horizontal applications, painted steel cabinet with filter access, disposable, pleated fiber filter furnished, see dimension drawing, No. and size of filter - Net Weight		HF16-46 - 18 lbs. (8 kg) (1) 20 x 20 x 2 in. (508 x 508 x 51 mm)		HF16-65 - 21 lbs. (10 kg) (1) 20 x 25 x 2 in. (508 x 635 x 51 mm)		
<b>Low Ambient Control Kit</b> — Units operate down to 30°F (-1°C) outdoor air temperature in cooling mode without any additional controls. Kit can be field installed, enables unit to operate properly down to 0°F (-18°C).		LB-57113BC (24H77)				
<b>LPG/Propane Kits</b> - Conversion from Natural Gas to LPG/Propane		<b>50L89</b> - 50-75-90K input <b>50L88</b> - 120K input				
<b>Roof Curb Power Entry Kit</b> — Allows power entry through roof mounting frame, knockouts provided in roof frame, kit contains 1/2 in. (13 mm) x 40 in. (1016 mm) armored conduit and installation hardware, two kits are required, one for low voltage and one for high voltage. See Dimension Drawing		<b>18H70</b>				
<b>Roof Mounting Frame</b> — Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down. RMF16-41 may be used on all sizes, with a slight unit overhang on GCS16-048 and GCS16-060 units - Net Weight NOTE (US Only) — Sound Reduction Plate must be ordered separately for field installation.		RMF16-41 - 75 lbs. (35 kg) Plate (ordered separately) (73H80)		RMF16-41 - 75 lbs. (35 kg) Plate (ordered separately) (73H80) RMF16-65 - 86 lbs. (39 kg) Plate (ordered separately) (73H82)		

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

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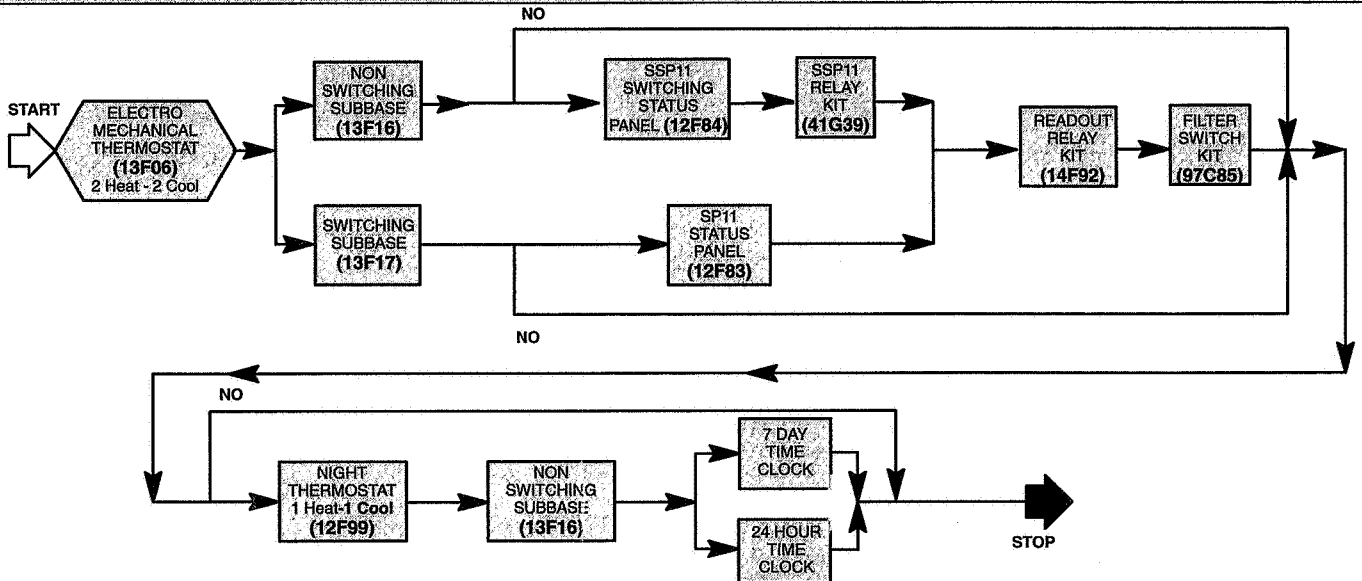
<b>OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA</b>						
Model No.		GCS16-024	GCS16-030	GCS16-036	GCS16-048	GCS16-060
<b>Outdoor Air Damper Section</b> — For down-flow applications, damper assembly replaces blower access panel, manually adjustable, 0 to 25% (fixed) outdoor air, outdoor air hood with cleanable filter included, number and size of filter - Net Weight Minimum mixed air temperature Heat mode - 45°F (7°C) Maximum mixed air temperature Cool mode - 90°F (32°C),	<b>US Only</b>	OAD16-41 - 12 lbs. (5 kg) (1) 5 x 17 x 1 in. (127 x 432 x 25 mm)		OAD16-65 - 12 lbs. (5 kg) (1) 8 x 17 x 1 in. (203 x 432 x 25 mm)		
	<b>Canada Only</b>	OAD16-41S - 10 lbs. (5 kg) (1) 14 x 6 x 1 in. (356 x 152 x 25 mm)		OAD16-65S - 16 lbs. (7 kg) (1) 18 x 6 x 1 in. (457 x 152 x 25 mm)		
<b>Outdoor Air Damper Section</b> — For horizontal applications, installs in return air duct adjacent to unit, manually adjustable (fixed) outdoor air - Net Weight		OAD3-46/65 - 8 lbs. (4 kg)				
<b>Timed Off Control</b> — Prevents compressor short-cycling and allows time for suction and discharge pressure to equalize, permitting the compressor to start in an unloaded condition. Automatic reset control provides a time delay between compressor shutoff and start-up.		LB-50709BK (47J27)		Not Available		
<b>Thermostat</b> — Not furnished with unit. See Thermostat bulletin in Thermostats and Controls section and Lennox Price book. For commercial control systems, see pages 4-5.		See Thermostat bulletin in Thermostats and Controls section, Lennox Price book and pages 4-5.				
<b>Transitions (Supply and Return)</b> — Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for round duct connection, fully insulated - Net Weight		SRT16-65 - 20 lbs. (9 kg)				
<b>Unit Stand-Off mounting Kit</b> — For horizontal applications, elevates units above mounting surface. Includes six high impact polystyrene stand-off mounts. See dimension drawings.		38H18				
<b>OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FIELD INSTALLED)</b>						
System and Component Description				Catalog No.		
<b>ELECTRO-MECHANICAL THERMOSTAT</b>						
<b>Thermostat</b> — Two stage heat & two stage cool with dual temperature levers, subbase choice				13F06		
<b>Subbase</b> — Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)				13F17		
<b>Subbase</b> — Non-switching				13F16		
<b>Status Panel/Switching Status Panel</b> — May be ordered extra				See below for Selection		
<b>Night Setback Operation</b> — Order components below				—		
<b>Thermostat</b> — One stage heat & one stage cool				12F99		
<b>Subbase</b> — Non-switching				13F16		
<b>Night Relay (Canada Only)</b> — for applications with economizer				20G52		
<b>Time Clock</b> — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up				See below for Selection		
<b>Time Clock</b> — 24 hour night setback operation, 15 minute increments, battery back-up				See below for Selection		
<b>HONEYWELL T7300 THERMOSTAT</b>						
<b>Thermostat</b> — 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		
<b>Subbase</b> — Selectable staging, indicator LED's, auxiliary relay output for economizer operation		Up to two stage heat & two stage cool		37L55		
		Up to three stage heat & three stage cool		37L53		
<b>Room Temperature Sensor</b> — May be ordered extra				58C92		
<b>Room Temperature Sensor with Override</b> — May be ordered extra				86G67		
<b>Return Air Temperature Sensor</b> — May be ordered extra				27C40		
<b>Status Panel</b> — May be ordered extra				See below for Selection		
<b>HONEYWELL T8600 THERMOSTAT</b>						
<b>Thermostat</b> — 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)				—		
<b>T8600 Thermostat</b> — 1 heat/1 cool, 5-1-1 day programming, wiring wall plate included				T8600D1079 (27H31)		
<b>T8600 Thermostat</b> — 1 heat, 5-1-1 day programming, wiring wall plate included - Canada Only				T8600A (72E02)		
<b>T8600 Thermostat</b> — 1 heat, 5-1-1 day programming, wiring wall plate included, Lennox Logo - Canada Only				T8600A (85E82)		
<b>Status Panel</b> — May be ordered extra				See below for Selection		

## OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FIELD INSTALLED)

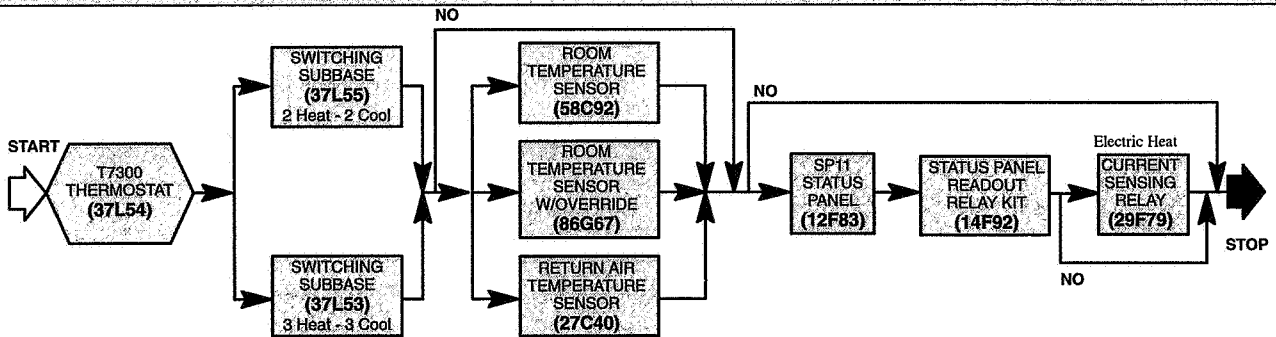
System and Component Description	Catalog No.																								
<b>STATUS PANEL/SWITCHING STATUS PANEL</b>																									
<b>SP11 Status Panel</b> — Allows remote monitoring of unit through status lights, requires Status Panel Readout Kit <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;"></th> <th style="width: 15%;">Status Light</th> <th style="width: 65%;">Definition</th> </tr> </thead> <tbody> <tr> <td>Cool Mode</td> <td>Green</td> <td>Cooling operation</td> </tr> <tr> <td>Heat Mode</td> <td>Green</td> <td>Heating operation</td> </tr> <tr> <td>Compressor 1</td> <td>Green</td> <td>Compressor operation</td> </tr> <tr> <td></td> <td>Red</td> <td>Compressor malfunction</td> </tr> <tr> <td>Compressor 2</td> <td></td> <td>Not used</td> </tr> <tr> <td>No Heat</td> <td>Red</td> <td>Requires service</td> </tr> <tr> <td>Filter</td> <td>Red</td> <td>Requires service</td> </tr> </tbody> </table>		Status Light	Definition	Cool Mode	Green	Cooling operation	Heat Mode	Green	Heating operation	Compressor 1	Green	Compressor operation		Red	Compressor malfunction	Compressor 2		Not used	No Heat	Red	Requires service	Filter	Red	Requires service	12F83
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<b>SSP11 Remote Switching Status Panel</b> — Allows remote monitoring and control of unit, requires Status Panel Readout Kit. Equipped with status lights, selector switch (Off-Heat-Auto-Cool-Emergency Heat) (Heat Pump Only), fan switch (Auto-On) and after hours timer (0 to 12 hours) <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;"></th> <th style="width: 15%;">Status Light</th> <th style="width: 65%;">Definition</th> </tr> </thead> <tbody> <tr> <td>Cool Mode</td> <td>Green</td> <td>Cooling operation</td> </tr> <tr> <td>Heat Mode</td> <td>Green</td> <td>Heating operation</td> </tr> <tr> <td>Compressor 1</td> <td>Green</td> <td>Compressor operation</td> </tr> <tr> <td></td> <td>Red</td> <td>Compressor malfunction</td> </tr> <tr> <td>Compressor 2</td> <td></td> <td>Not used</td> </tr> <tr> <td>No Heat</td> <td>Red</td> <td>Requires service</td> </tr> <tr> <td>Filter</td> <td>Red</td> <td>Requires service</td> </tr> </tbody> </table>		Status Light	Definition	Cool Mode	Green	Cooling operation	Heat Mode	Green	Heating operation	Compressor 1	Green	Compressor operation		Red	Compressor malfunction	Compressor 2		Not used	No Heat	Red	Requires service	Filter	Red	Requires service	12F84
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<b>SSP11 Relay Kit</b> — Required for switching functions with SSP11	41G39																								
<b>Status Panel Readout Kit</b> — Required to interface SP11 or SSP11 to unit operation	14F92																								
<b>Filter Switch Kit</b> — Required with Filter light option is used on SP11/SSP11	97C85																								

## CONVENTIONAL COMMERCIAL TEMPERATURE CONTROL SELECTION FLOWCHARTS

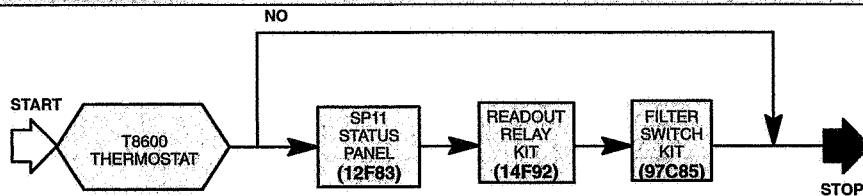
### ELECTRO-MECHANICAL THERMOSTAT



### HONEYWELL T7300 THERMOSTAT

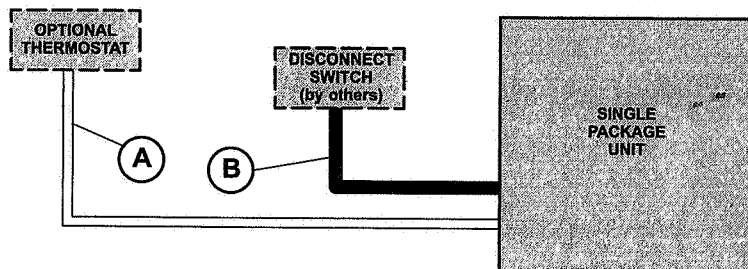


### HONEYWELL T8600 THERMOSTAT



## FIELD WIRING

### BASIC UNIT

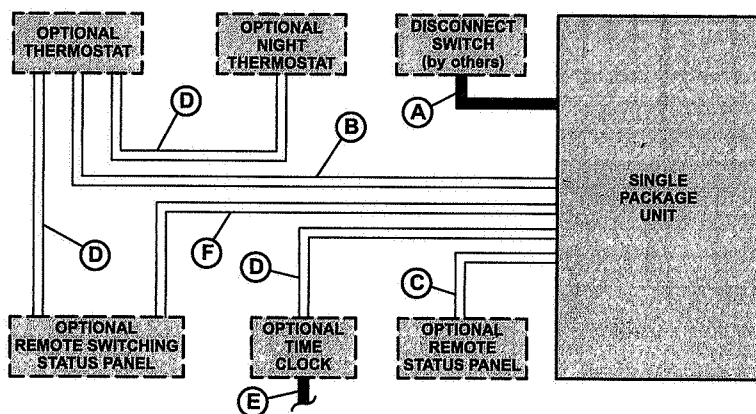


- A — \*Four Wire Low Voltage (Electro-mechanical)
  - \*Five Wire Low Voltage (Electronic)
  - B — Two or Three Wire Power (See Electrical Data Table)
- Field Wiring Not Furnished —

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

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

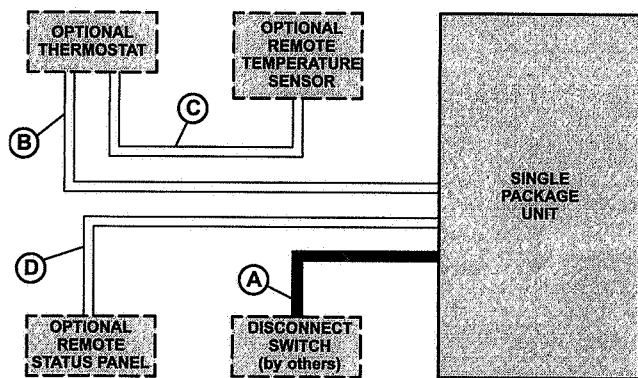
### ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM



- A - Two or Three wire power (See Electrical Data Table)
  - B - Six wire low voltage
  - Five wire low voltage - with SSP11 Switching Status Panel
  - C - Nine wire low voltage
  - D - Two wire low voltage
  - E - Two wire low voltage
  - F - Sixteen wire low voltage
- Field wiring not furnished -

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

### T7300/T8600 THERMOSTAT CONTROL SYSTEM



- A - Two or Three wire power (See Electrical Data Table)
  - B - Nine wire low voltage
  - C - Two wire low voltage
  - Seven wire low voltage (T7300 Room Sensor with override)
  - D - Nine wire low voltage (T7300 with optional override sensor)
  - Four wire low voltage (T8600)
- Field wiring not furnished -

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

## ELECTRICAL DATA - SINGLE PHASE

Model No.	GCS16-024	GCS16-030	GCS16-036	GCS16-048	GCS16-060	
Line voltage data - 60 hz						
208/230v - 1 phase						
► Recommended maximum fuse size (amps)	25	30	40	50	60	
† Minimum Circuit Ampacity	16	20	25	34	42	
Compressor	Rated load amps	10.1	12.4	16	21.8	27.6
	Locked rotor amps	60.0	69.4	100	131	135
Condenser Coil Fan Motor	Full load amps	1.1		2		
	Locked rotor amps	2.3		4.2		
Evaporator Blower Motor	Full load amps	2.2	3.0	3.9	4.6	
	Locked rotor amps	4.2	6.2	8.3	10.1	
□ Induced Draft Blower Motor (1 phase)				0.7		

† Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

► Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. Only).

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

## ELECTRICAL DATA - THREE PHASE

Model No.	GCS16-036			GCS16-048			GCS16-060			
Line voltage data - 60 hz - 3 phase	208/230v	460v	575v	208/230v	460v	575v	208/230v	460v	575v	
▶ Recommended maximum fuse size (amps)	25	15		35	15		45	20	15	
† Minimum Circuit Ampacity	18	10	8	23	12	10	29	16	12	
Compressor	Rated load amps	10.3	5.1	4.2	12.8	6.4	5.1	17.6	9.5	6.3
	Locked rotor amps	77	39	27	91	46	37	105	55	45
Condenser Coil Fan Motor	Full load amps	1.1	.80	Ⓜ.80	2	1.1	Ⓜ1.1	2	1.1	Ⓜ1.1
	Locked rotor amps	2.3	1.9	Ⓜ1.9	4.2	2.2	Ⓜ2.2	4.2	2.2	Ⓜ2.2
Evaporator Blower Motor	Full load amps	3.9	1.9	Ⓜ1.9	4.6	2.4	Ⓜ2.4	4.6	2.4	Ⓜ2.4
	Locked rotor amps	8.3	4.2	Ⓜ4.2	10.1	5.0	Ⓜ5.0	10.1	5.0	Ⓜ5.0
Ⓜ Induced Draft Blower Motor (1 phase)	0.7									
Unit Power Factor	.86			.84	.87		.86		.88	

† Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

▶ Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. Only).

Ⓜ Motor is rated at 230 volts. Full load amps shown are for step-down transformer output.

Ⓜ Motors are rated at 460 volts. Full load amps shown are for step-down transformer output.

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

## SPECIFICATIONS

Model No.		GCS16-024-50 GCS16X-024-50	GCS16-030-75 GCS16X-030-75	GCS16-036-90 GCS16X-036-90
Nominal Tonnage (kW)		2 (7.0)	2.5 (8.8)	3 (10.6)
Heating Capacity	Input - Btuh (kW)	50,000 (14.7)	75,000 (22.0)	90,000 (26.4)
	Output - Btuh (kW)	40,000 (11.7)	60,000 (17.6)	72,000 (21.1)
★ A.F.U.E.		80.0%		
★ ARI Certified Cooling Ratings	Cooling capacity - Btuh (kW)	23,200 (6.8)	27,400 (8.0)	35,400 (10.4)
	Total unit watts	2670	3150	3850
	SEER (Btuh/Watts)	10.00		10.10
	EER (Btuh/Watts)	8.70		9.20
* Sound Rating Number (db)		80		
Refrigerant Charge (HCFC-22)		3 lbs. 3 oz. (1.45 kg)	4 lbs. 3 oz. (1.90 kg)	4 lbs. 6 oz. (1.94 kg)
Evaporator Blower	Blower wheel nominal diameter x width - in. (mm)	9 x 8 (229 x 203)	10 x 8 (254 x 203)	
	Motor horsepower (W)	1/3 (249)		1/2 (373)
Evaporator Coil	Net face area - sq. ft. (m <sup>2</sup> )	3.2 (0.30)		4.10 (0.38)
	Tube diameter - in. (mm) & No. of rows	3/8 (9.5) - 2		
	Fins per inch (m)	15 (591)		
Condenser Coil	Net face area sq. ft. (m <sup>2</sup> )	Outer coil	8.70 (0.81)	
		Inner coil	----	8.40 (0.78)
	Tube diameter - in. (mm) & No. of rows	3/8 (9.5) - 1	3/8 (9.5) - 2	
	Fins per inch (m)	20 (787)		
Condenser Fan	Diameter - in. (mm) & No. of blades	20 (508) - 4		
	Air volume - cfm (L/s)	2450 (1155)	2200 (1040)	
	Motor horsepower (W)	1/6 (124)		
	Motor watts	220	240	
Gas Supply Connections fpt - in. (mm)		1/2 (12.7)		
Recommended Gas Supply Pressure in. w.c. (kPa)	Natural Gas	7 (1.7)		
	LPG/Propane	11 (2.7)		
Condensate drain size mpt - in. (mm)		3/4 (19)		
No. & size of cleanable polyurethane filters - in. (mm)		(1) 16 x 25 x 1 (406 x 635 x 25)		
Net weight of basic unit - lbs. (kg)		350 (159)	373 (169)	370 (168)
Shipping weight of basic unit - lbs. (kg) 1 pkg		432 (196)	455 (206)	470 (213)
Electrical characteristics - (60hz)		208/230v - 1 phase		208/230v - 1 ph 208/230v, 460v or 575v - 3 ph

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

★ Annual Fuel Utilization Efficiency based on DOE test procedures and FTC labeling regulations.

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

## SPECIFICATIONS

Model No.		GCS16-048-75 GCS16X-048-75	GCS16-048-120 GCS16X-048-120	GCS16-060-75 GCS16X-060-75	GCS16-060-120 GCS16X-060-120
Nominal Tonnage (kW)		4 (10.1)		5 (17.6)	
Heating Capacity	Input - Btuh (kW)	75,000 (22.0)	120,000 (35.2)	75,000 (22.0)	120,000 (35.2)
	Output - Btuh (kW)	60,000 (17.0)	96,000 (28.1)	60,000 (17.0)	96,000 (28.1)
★A.F.U.E		80.0%			
★ARI Certified Cooling Ratings	Cooling capacity - Btuh (kW)	46,500 (13.6)		58,500 (17.1)	
	Total unit watts	4890		6570	
	SEER (Btuh/Watts)	10.35		10.00	
	EER (Btuh/Watts)	9.5		8.90	
*Sound Rating Number (db)		82			
Refrigerant Charge (HCFC-22)		5 lbs. 11 oz. (2.58 kg)		7 lbs. 0 oz. (3.18 kg)	
Evaporator Blower	Blower wheel nominal diameter x width - in. (mm)	11-1/2 x 9 (292 x 229)			
	Motor horsepower (W)	3/4 (560)			
Evaporator Coil	Net face area - sq. ft. (m <sup>2</sup> )	5.30 (0.49)		6.20 (0.58)	
	Tube diameter - in. (mm) & No. of rows	3/8 (9.5) - 2			
	Fins per inch (m)	15 (591)			
Condenser Coil	Net face area sq. ft. (m <sup>2</sup> )	Outer coil	14.30 (1.33)		
		Inner coil	5.90 (0.55)		13.70 (1.27)
	Tube diameter - in. (mm) & No. of rows	3/8 (9.5) - 1.4		3/8 (9.5) - 2	
	Fins per inch (m)	20 (787)			
Condenser Fan	Diameter - in. (mm) & No. of blades	24 (610) - 4			
	Air volume - cfm (L/s)	3880 (1830)		3770 (1780)	
	Motor horsepower (W)	1/4 (187)			
	Motor watts	340		360	
Gas Supply Connections fpt - in. (mm)		1/2 (12.7)			
Recommended Gas Supply Pressure in. w.c. (kPa)	Natural Gas	7 (1.7)			
	LPG/Propane	11 (2.7)			
Condensate drain size mpt - in. (mm)		3/4 (19)			
No. & size of cleanable polyurethane filters - in. (mm)		(1) 20 x 25 x 1 (508 x 635 x 25)			
Net weight of basic unit - lbs. (kg)		496 (225)		526 (239)	
Shipping weight of basic unit - lbs. (kg) 1 package		605 (274)		635 (288)	
Electrical characteristics - (60hz)		208/230v - 1 ph, 208/230v or 460v - 3 ph	208/230v - 1 ph, 208/230v, 460v or 575v - 3 ph	208/230v - 1 ph, 208/230v or 460v - 3 ph	208/230v - 1 ph, 208/230v, 460v or 575v - 3 ph

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

★Annual Fuel Utilization Efficiency based on DOE test procedures and FTC labeling regulations.

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

### HIGH ALTITUDE INFORMATION

No gas pressure adjustment is needed when operating from 0 to 7500 ft. (0 to 2248 m). See below for correct manifold pressures for natural gas and LPG/propane.

FUEL	Manifold Absolute Pressure (outlet) 0 to 7500 ft. (0 to 2248 m) above sea level
Natural Gas	3.5 in. w.g. (0.87 kPa)
LPG/Propane	7.5 in. w.g. (1.86 kPa)





**COOLING RATINGS**

**GCS16-060 COOLING CAPACITY**

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
L/s	cfm	kW	Btuh	75°F/24°C	80°F/27°C	85°F/29°C	kW	Btuh	75°F/24°C	80°F/27°C	85°F/29°C	kW	Btuh	75°F/24°C	80°F/27°C	85°F/29°C	kW	Btuh	75°F/24°C	80°F/27°C	85°F/29°C					
63°F (17.2°C)	825	1750	17.3	59,000	4910	.74	.88	1.00	16.5	56,300	5270	.76	.90	1.00	15.7	53,500	5640	.78	.92	1.00	14.9	50,700	6040	.80	.95	1.00
	945	2000	17.8	60,900	4980	.77	.91	1.00	17.0	58,000	5340	.78	.93	1.00	16.2	55,300	5720	.80	.96	1.00	15.2	51,900	6110	.83	.99	1.00
	1060	2250	18.3	62,500	5030	.79	.94	1.00	17.4	59,500	5400	.81	.97	1.00	16.4	56,000	5790	.83	1.00	1.00	15.6	53,100	6180	.86	1.00	1.00
67°F (19.4°C)	825	1750	18.2	62,000	5010	.58	.72	.84	17.4	59,300	5400	.59	.73	.86	16.6	56,500	5800	.61	.75	.88	15.7	53,700	6230	.62	.77	.91
	945	2000	18.8	64,100	5080	.60	.74	.87	17.9	61,200	5480	.61	.76	.90	17.1	58,300	5900	.62	.78	.92	16.2	55,400	6330	.64	.80	.95
	1060	2250	19.3	65,800	5140	.61	.76	.90	18.4	62,800	5550	.62	.78	.93	17.5	59,800	5970	.64	.80	.96	16.6	56,800	6430	.65	.83	.99
71°F (21.7°C)	825	1750	19.0	65,000	5120	.44	.57	.69	18.3	62,300	5520	.44	.58	.70	17.4	59,400	5950	.45	.59	.72	16.6	56,600	6420	.46	.60	.74
	945	2000	19.7	67,200	5190	.44	.58	.71	18.8	64,300	5610	.45	.59	.73	18.0	61,400	6060	.45	.60	.75	17.1	58,500	6550	.46	.62	.77
	1060	2250	20.2	68,900	5250	.45	.60	.74	19.3	66,000	5690	.45	.61	.75	18.5	63,000	6160	.46	.62	.77	17.6	60,100	6660	.47	.64	.79

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

**BLOWER DATA**

**GCS16-024-50 BLOWER PERFORMANCE @ 230v (Down-Flow Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1335	630	1000	470	905	425	665	315
.05	12	1330	630	1010	475	915	430	680	320
.10	25	1315	620	1015	480	920	435	685	325
.15	37	1300	615	1015	480	925	435	690	325
.20	50	1280	605	1010	475	920	435	695	330
.25	62	1255	590	1005	475	915	430	695	330
.30	75	1225	580	990	465	900	425	690	325
.40	100	1160	545	945	445	865	410	665	315
.50	125	1075	505	885	420	815	385	630	295
.60	150	975	460	805	380	745	350	585	275
.70	175	860	405	705	335	655	310	520	245
.75	185	795	375	650	305	605	285	485	230

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

**GCS16-024-50 BLOWER PERFORMANCE @ 230v (Horizontal Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1315	620	915	430	840	395	615	290
.05	12	1300	615	930	440	855	405	640	300
.10	25	1285	605	945	445	870	410	655	310
.15	37	1265	595	950	450	875	415	670	315
.20	50	1240	585	950	450	880	415	680	320
.25	62	1220	575	950	450	880	415	685	325
.30	75	1195	565	945	445	875	415	685	325
.40	100	1140	540	915	430	850	400	675	320
.50	125	1080	510	870	410	815	385	650	305
.60	150	1010	475	905	425	760	360	610	290
.70	175	935	440	725	340	690	325	550	260
.75	185	890	420	675	320	650	305	515	245

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

**GCS16-030-75 BLOWER PERFORMANCE @ 230v (Down-Flow Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1480	700	1360	640	1155	545	1015	480
.05	12	1465	690	1345	635	1145	540	1010	475
.10	25	1445	680	1335	630	1135	535	1000	470
.15	37	1425	670	1315	620	1120	530	985	465
.20	50	1400	660	1295	610	1105	520	970	460
.25	62	1375	650	1270	600	1085	510	955	450
.30	75	1345	635	1245	590	1060	500	930	440
.40	100	1275	600	1180	555	1005	475	875	415
.50	125	1195	565	1100	520	940	445	805	380
.60	150	1095	515	1010	475	865	410	720	340
.70	175	990	465	900	425	780	370	625	295
.75	185	930	440	845	400	730	345	570	270

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

**GCS16-030-75 BLOWER PERFORMANCE @ 230v (Horizontal Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1365	645	1235	585	1050	495	910	430
.05	12	1365	645	1225	580	1050	495	905	425
.10	25	1360	640	1215	575	1045	495	900	425
.15	37	1350	635	1205	570	1040	490	890	420
.20	50	1335	630	1190	560	1030	485	880	415
.25	62	1320	625	1170	550	1020	480	865	410
.30	75	1300	615	1155	545	1005	475	850	400
.40	100	1250	590	1110	525	965	455	815	385
.50	125	1185	560	1060	500	915	430	770	365
.60	150	1105	520	1000	470	855	405	715	335
.70	175	1010	475	930	440	780	370	655	310
.75	185	960	455	895	420	740	350	620	295

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

**BLOWER DATA**

**GCS16-036-90 BLOWER PERFORMANCE @ 230v (Down-Flow Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1700	800	1580	745	1430	675	1315	620
.05	12	1665	785	1550	730	1420	670	1300	615
.10	25	1635	770	1520	715	1405	665	1285	605
.15	37	1600	755	1490	705	1390	655	1270	600
.20	50	1570	740	1460	690	1370	645	1250	590
.25	62	1540	725	1430	675	1345	635	1230	580
.30	75	1505	710	1400	660	1315	620	1215	575
.40	100	1430	675	1340	630	1260	595	1165	550
.50	125	1370	645	1280	605	1200	565	1110	525
.60	150	1300	615	1215	675	1130	535	1030	485
.70	175	1235	585	1150	545	1045	495	970	460
.75	185	1200	565	1115	525	1000	470	930	440

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

**GCS16-036-90 BLOWER PERFORMANCE @ 230v (Horizontal Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1740	820	1585	750	1500	710	1370	645
.05	12	1710	805	1565	740	1475	695	1350	635
.10	25	1675	790	1545	730	1450	685	1330	630
.15	37	1645	775	1525	720	1425	670	1310	620
.20	50	1615	760	1490	705	1400	660	1290	610
.25	62	1580	745	1465	690	1375	650	1265	595
.30	75	1550	730	1440	680	1345	635	1240	585
.40	100	1485	700	1380	650	1290	610	1190	560
.50	125	1420	670	1320	620	1230	580	1135	535
.60	150	1350	635	1260	595	1165	550	1075	510
.70	175	1255	590	1165	550	1105	520	1015	480
.75	185	1220	575	1125	530	1070	505	980	460

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

**GCS16-036-90 BLOWER PERFORMANCE @ 460/575v (Down-Flow Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1570	740	1480	700	1135	535
.05	12	1545	730	1455	685	1135	535
.10	25	1520	715	1430	675	1130	535
.15	37	1490	705	1405	665	1125	530
.20	50	1465	690	1375	650	1115	525
.25	62	1435	675	1350	635	1105	520
.30	75	1405	665	1320	625	1090	515
.40	100	1345	635	1265	595	1050	500
.50	125	1285	605	1200	565	1020	480
.60	150	1220	575	1140	540	975	460
.70	175	1155	545	1070	505	920	435
.75	185	1120	530	1040	490	885	420

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

**GCS16-036-90 BLOWER PERFORMANCE @ 460/575v (Horizontal Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1610	760	1515	715	1165	550
.05	12	1585	745	1490	705	1165	550
.10	25	1560	735	1465	690	1160	545
.15	37	1525	720	1440	680	1155	545
.20	50	1500	710	1410	665	1145	540
.25	62	1470	695	1385	655	1135	535
.30	75	1440	680	1355	640	1115	525
.40	100	1380	650	1295	610	1085	515
.50	125	1315	620	1230	580	1045	495
.60	150	1250	590	1170	550	1000	470
.70	175	1185	560	1095	520	945	445
.75	185	1150	540	1065	505	905	430

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

**GCS16-048-75/120, GCS16-060-75/120 BLOWER PERFORMANCE @ 230v (Down-Flow Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2775	1310	2505	1180	2270	1070	1970	930	1710	805
.05	12	2725	1285	2465	1160	2240	1055	1950	920	1685	795
.10	25	2675	1260	2430	1145	2210	1045	1925	910	1665	785
.15	37	2630	1240	2395	1130	2180	1030	1905	900	1645	775
.20	50	2580	1220	2360	1115	2150	1015	1885	890	1620	765
.25	62	2540	1200	2320	1095	2120	1000	1860	880	1595	750
.30	75	2490	1175	2285	1080	2100	990	1840	870	1570	740
.40	100	2400	1130	2220	1045	2040	960	1795	845	1515	715
.50	125	2300	1085	2145	1010	1980	935	1740	820	1450	685
.60	150	2200	1035	2070	975	1910	900	1680	790	1365	645
.70	175	2130	1005	2000	945	1865	880	1620	765	1305	615
.75	185	2090	985	1965	930	1840	870	1590	750	1260	595

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

**GCS16-048-75/120, GCS16-060-75/120 BLOWER PERFORMANCE @ 230v (Horizontal Air Openings)**

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2700	1275	2470	1165	2235	1055	1900	895	1650	780
.05	12	2675	1260	2450	1155	2225	1050	1890	890	1640	775
.10	25	2650	1250	2425	1145	2210	1045	1880	885	1630	770
.15	37	2625	1240	2405	1135	2200	1040	1870	880	1620	765
.20	50	2595	1225	2380	1125	2185	1030	1855	875	1610	760
.25	62	2570	1210	2360	1115	2165	1020	1840	870	1600	755
.30	75	2535	1195	2335	1100	2150	1015	1830	865	1585	750
.40	100	2480	1170	2280	1075	2110	995	1795	850	1550	730
.50	125	2410	1135	2220	1050	2085	985	1750	825	1510	715
.60	150	2340	1105	2160	1020	2000	945	1680	795	1455	685
.70	175	2255	1065	2080	980	1965	925	1640	775	1410	665
.75	185	2215	1045	2045	965	1940	915	1610	760	1385	655

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

### BLOWER DATA

#### GCS16-048-75/120, GCS16-060-75/120 BLOWER PERFORMANCE @ 460/575v (Down-Flow Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2630	1240	2330	1100	1905	900
.05	12	2605	1230	2310	1090	1890	890
.10	25	2580	1220	2285	1080	1870	885
.15	37	2555	1205	2260	1065	1850	875
.20	50	2525	1190	2235	1055	1830	865
.25	62	2495	1175	2210	1045	1810	855
.30	75	2445	1155	2180	1030	1790	845
.40	100	2400	1135	2125	1005	1745	825
.50	125	2325	1100	2065	975	1695	800
.60	150	2250	1060	2000	945	1640	775
.70	175	2165	1020	1930	910	1580	745
.75	185	2125	1005	1895	895	1550	730

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

#### GCS16-048-75/120, GCS16-060-75/120 BLOWER PERFORMANCE @ 460/575v (Horizontal Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2655	1255	2350	1110	1920	905
.05	12	2630	1240	2330	1100	1905	900
.10	25	2605	1230	2310	1090	1890	890
.15	37	2580	1220	2285	1080	1870	880
.20	50	2555	1205	2260	1065	1850	875
.25	62	2525	1190	2235	1055	1830	865
.30	75	2495	1175	2210	1045	1810	855
.40	100	2435	1150	2155	1015	1765	835
.50	125	2365	1115	2095	990	1720	810
.60	150	2200	1040	2030	960	1665	785
.70	175	2205	1040	1965	930	1610	760
.75	185	2165	1020	1930	910	1580	745

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

### ACCESSORY BLOWER DATA

#### FILTER AND ACCESSORY AIR RESISTANCE

Unit Model No.	Air Volume		Total Air Resistance — inches water gauge (Pa)					
			1 in. (25mm) Filter Furnished	REMD16 Down-Flow Economizer			EMDH16 Horizontal Economizer	
				Less Filter	With Optional Pleated Polyester 2 in. (51mm) Filter	With Optional Fiberglass Filter 2 in. (51mm)	With Furnished 1 in. (25mm) Filter	Less Filter
GCS16-024 GCS16-030 GCS16-036	800	380	.15 (37)	.05 (12)	.27 (67)	.13 (32)	.18 (45)	.10 (25)
	1000	470	.18 (45)	.06 (15)	.34 (85)	.18 (45)	.26 (65)	.15 (37)
	1200	565	.21 (52)	.09 (22)	.42 (104)	.24 (60)	.35 (87)	.21 (52)
	1400	660	.25 (62)	.15 (37)	.51 (127)	.31 (77)	.46 (114)	.29 (72)
GCS16-048 GCS16-060	1600	755	.15 (37)	.05 (12)	.40 (99)	.27 (67)	.30 (75)	.17 (42)
	1800	850	.17 (42)	.06 (15)	.48 (119)	.33 (82)	.35 (87)	.19 (47)
	2000	945	.20 (50)	.08 (20)	.56 (139)	.39 (97)	.40 (99)	.22 (55)
	2200	1040	.23 (57)	.13 (32)	.66 (164)	.46 (114)	.47 (117)	.26 (65)

#### DIFFUSER AIR RESISTANCE

Unit Model No.	Air Volume		Total Air Resistance — inches water gauge (Pa)			
			RTD9-65 Diffuser			FD9-65 Diffuser
			2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
GCS16-024 GCS16-030 GCS16-036	800	380	.15 (37)	.13 (32)	.11 (27)	.11 (27)
	1000	470	.19 (47)	.16 (40)	.14 (35)	.14 (35)
	1200	565	.25 (62)	.20 (50)	.17 (42)	.17 (42)
	1400	660	.33 (82)	.26 (65)	.20 (50)	.20 (50)
GCS16-048 GCS16-060	1600	755	.43 (107)	.32 (80)	.20 (50)	.24 (60)
	1800	850	.56 (139)	.40 (90)	.30 (75)	.30 (75)
	2000	945	.73 (182)	.50 (124)	.36 (90)	.36 (90)
	2200	1040	.95 (236)	.63 (157)	.44 (109)	.44 (109)

#### CEILING DIFFUSER AIR THROW DATA

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

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

#### WET INDOOR COIL AIR RESISTANCE

Model Number	Air Volume		Air Resistance	
	cfm	L/s	in. w.g.	Pa
GCS16-024	800	380	0.06	15
	1000	470	0.07	17
	1200	565	0.08	20
GCS16-030	800	380	0.09	22
	1000	470	0.10	25
	1200	565	0.11	27
GCS16-036	800	380	0.09	22
	1000	470	0.10	25
	1200	565	0.11	27
GCS16-048	1400	660	0.12	30
	1600	755	0.11	27
	1800	850	0.12	30
GCS16-060	2000	945	0.13	32
	2200	1040	0.14	35
	1600	755	0.08	20
GCS16-060	1800	850	0.09	22
	2000	945	0.10	25
	2200	1040	0.11	27

## GUIDE SPECIFICATIONS

### General

- Furnish and install a single package combination air to air DX mechanical heating/cooling system, complete with automatic controls.
- The single package unit shall be a standard product of a firm regularly engaged in the manufacture of heating-cooling equipment. The manufacturer shall have parts and service available throughout the U.S. and Canada.
- The manufacturer shall test operate system at the factory before shipment.

### Air Distribution

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

### Approvals

- All electrical components shall have UL and CSA Listing. All wiring shall be in compliance with NEC and CEC.
- Shall be certified by CSA International (formerly AGA/CGA) and ratings are certified by GAMA.
- Shall be rated and certified in accordance with the USE certification program, which is based on ARI Standard 210/240-94.

### Equipment Warranty

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

### 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 control, automatic redundant gas valve and blower prove switch on combustion air inducer.
- Unit shall be available for use with LPG/propane as an option.

### Refrigeration System

- The coils shall be non-ferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested.
- Outdoor coil shall be formed coil construction. Single phase units shall have coil guards. Optional coil guards shall be available for three phase units.
- Compressors shall be resiliently mounted and have overload protection. The refrigeration system shall have discharge, suction and liquid line service gauge ports, freeze stat, high pressure switch, liquid line strainer, expansion valve and full refrigerant charge.
- Control options available shall consist of low ambient controls, timed-off control and thermostat.

### Cabinet

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

### Economizer Wiring

- Economizer wiring harness shall be furnished and factory installed.

### Service Access

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

### Supply Air Blowers

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

### Outdoor Coil Fans

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

### Air Filters

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

## OPTIONAL ACCESSORIES

### Ceiling Diffusers

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

### Ceiling Diffuser Supply and Return Air Transitions

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

### Coil Guards

- Furnish and install PVC (polyvinyl chloride) coil guards shall be available for field installation to protect outdoor coils.

### Control Systems

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

### Economizer Dampers

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

### Horizontal Gravity Exhaust Dampers

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

### Outdoor Air Damper Section

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

### Remote Status Panel

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

### Remote Switching Status Panel

- Shall be available for installation within the conditioned area to control and observe equipment operation.
- The panel shall include signal lights for Cool Mode, Heat Mode, Compressor 1, Compressor 2, No Heat and Filter.
- System selector switch and fan switch shall provide operational mode and blower operation.
- After hours timer switch shall override night setback controls and provide normal operation for time period set.

### Roof Curb Power Entry Kit

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

### Roof Mounting Frame

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

### Stand-Off Mounting Kit

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

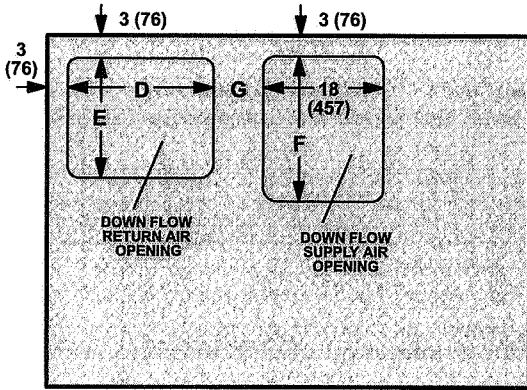
**DIMENSIONS - INCHES (MM) - BASE UNIT**

**CORNER WEIGHTS**

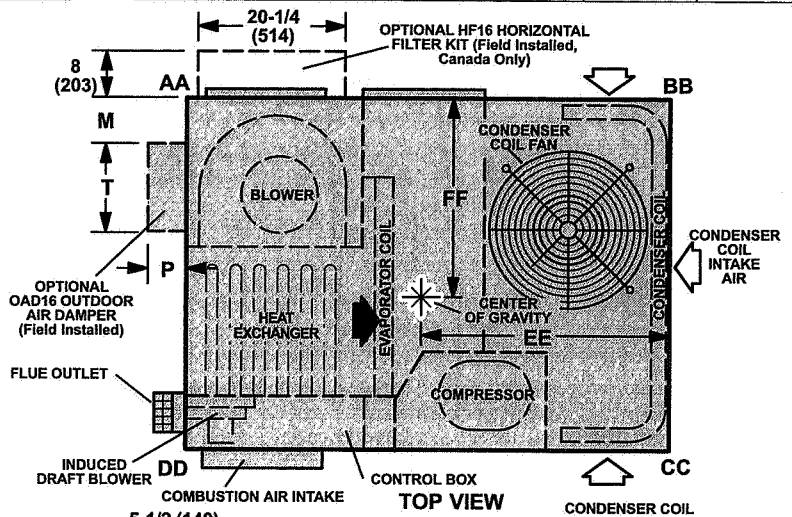
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
GCS16-024	98	44	112	51	75	34	66	30
GCS16-030	104	47	119	54	80	36	70	32
GCS16-036	103	47	118	54	79	36	69	32
GCS16-048	111	50	97	44	135	61	154	70
GCS16-060	117	53	103	47	143	65	163	74

**CENTER OF GRAVITY**

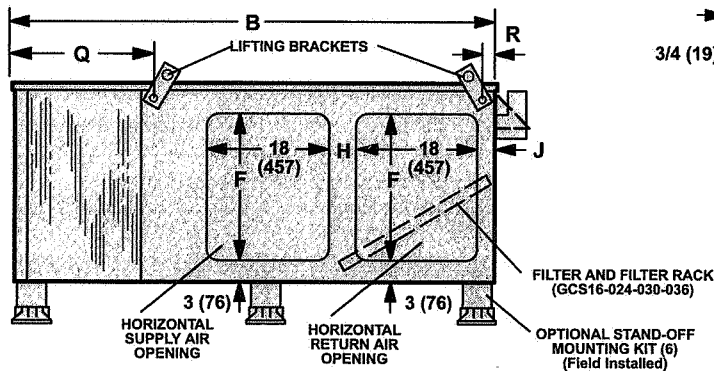
Model Number	EE		FF	
	inch	mm	inch	mm
GCS16-024 GCS16-030 GCS16-036	28	711	18-1/2	470
GCS16-048 GCS16-060	38-5/8	981	30-1/4	768



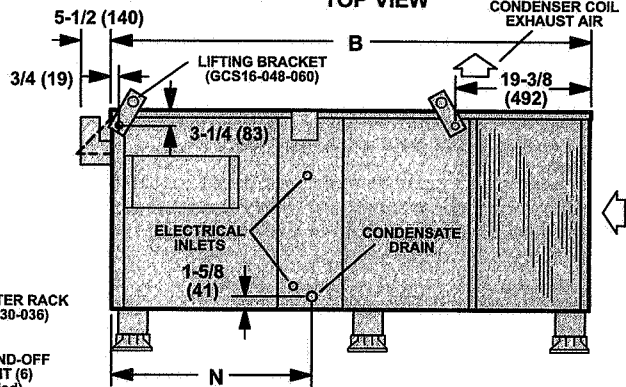
**TOP VIEW BASE SECTION**



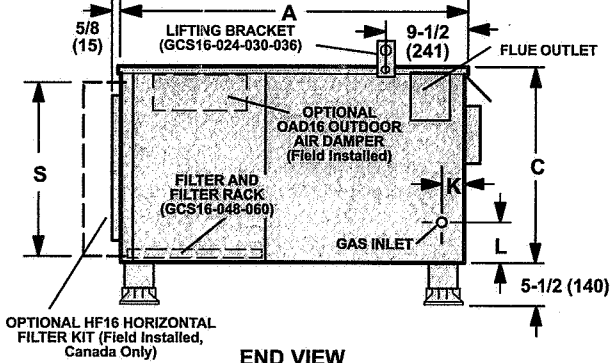
**TOP VIEW**



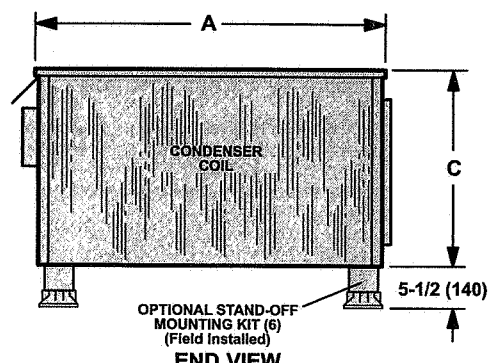
**BACK VIEW  
(With Horizontal Supply & Return Air)**



**FRONT VIEW**



**END VIEW**



**END VIEW**

Model Number	A		B		C		D		E		F		G		H		J		K	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
GCS16-024 GCS16-030 GCS16-036	46	1168	60	1524	23	584	18	457	13	330	13	330	10	254	3	76	4	102	2-1/4	57
GCS16-048 GCS16-060	52	1321	72-1/2	1842	29	737	22	559	18	457	22	559	7-1/2	191	5	127	3	76	3-3/8	86

Model Number	L		M		N		P		P		Q		R		S		T		T	
	inch	mm	inch	mm	inch	mm	inch	mm	in.	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
GCS16-024 GCS16-030 GCS16-036	10-5/8	270	2	51	26-3/4	679	5	127	6	152	16-5/8	429	4	102	22	559	13-3/4	349	14-1/2	368
GCS16-048 GCS16-060	13-1/8	333	5	127	28	711	8	203	6	152	19-3/8	492	3/4	19	27	686	13-3/4	349	18-5/8	473

☐ Canada Only

## ACCESSORY DIMENSIONS - INCHES (MM)

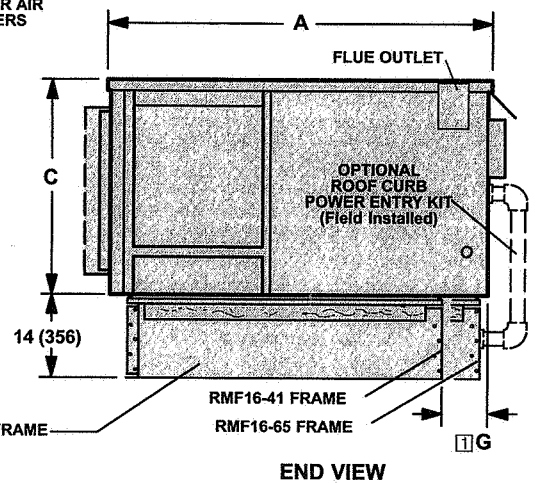
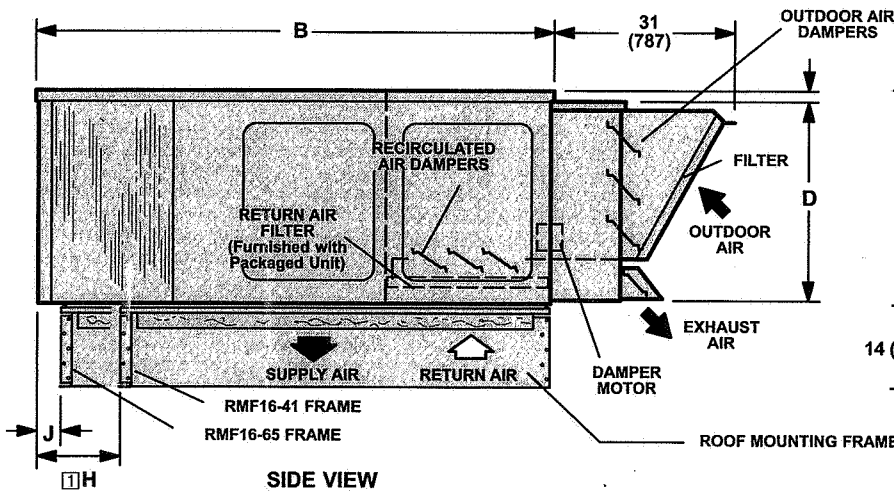
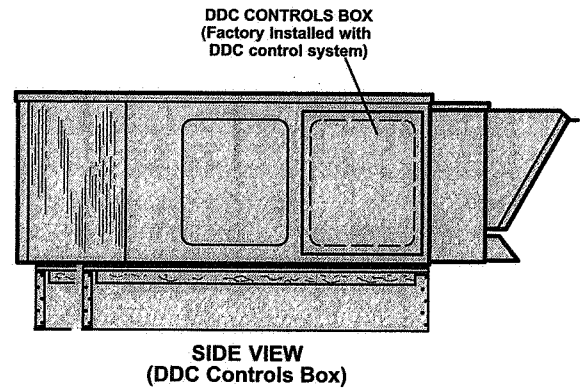
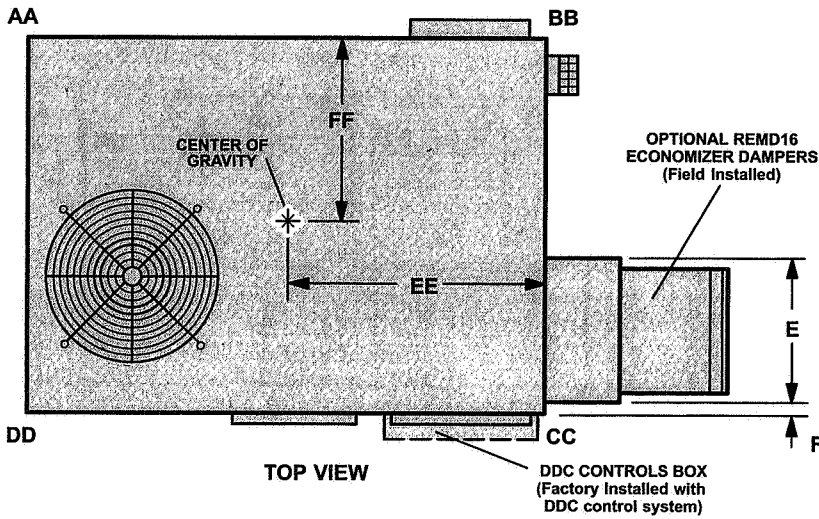
### GCS16 UNIT WITH REMD16M ECONOMIZER DAMPER SECTION AND RMF16 ROOF MOUNTING FRAME

#### CORNER WEIGHTS

Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
GCS16-024	109	50	148	67	124	56	92	42
GCS16-030	115	52	155	70	130	59	96	44
GCS16-036	114	52	154	70	129	59	96	43
GCS16-048	145	66	197	90	176	80	129	59
GCS16-060	152	69	206	94	184	84	135	62

#### CENTER OF GRAVITY

Model Number	EE		FF	
	GCS16-024	25-1/2	648	21
GCS16-030				
GCS16-036				
GCS16-048	30-3/4	781	24-1/2	622
GCS16-060				



Model Number	A		B		C		D		E		F		G		H		J		
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
GCS16-024																			
GCS16-030	46	1168	60	1524	23	584	21-3/4	552	16-1/4	413	3/4	19	---	---	---	---	---	---	
GCS16-036																			
GCS16-048	52	1321	72-1/2	1842	29	737	27-3/4	705	20-7/16	519	1-1/2	38	7	178	16	406	3-1/2	89	
GCS16-060																			

Dimensions reflect usage with RMF16-41 mounting frame.

## ACCESSORY DIMENSIONS - INCHES (MM) - CANADA ONLY

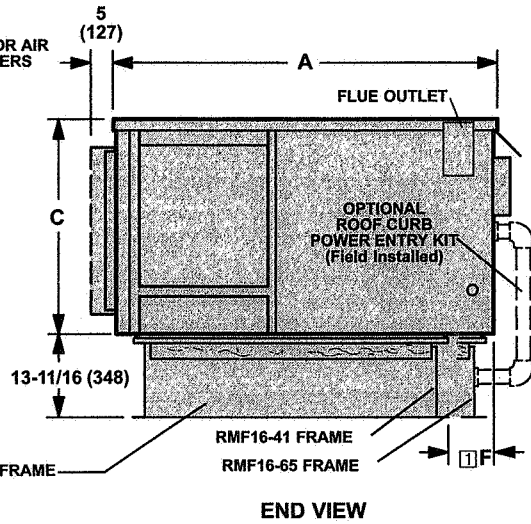
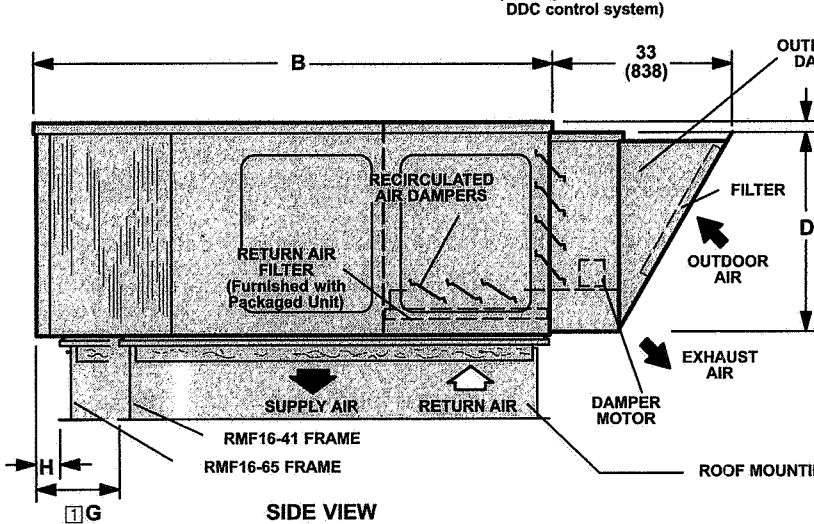
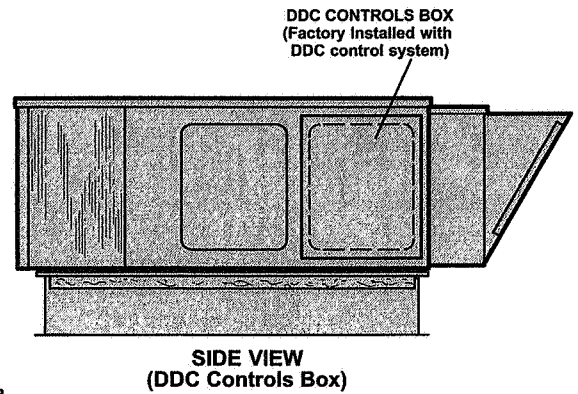
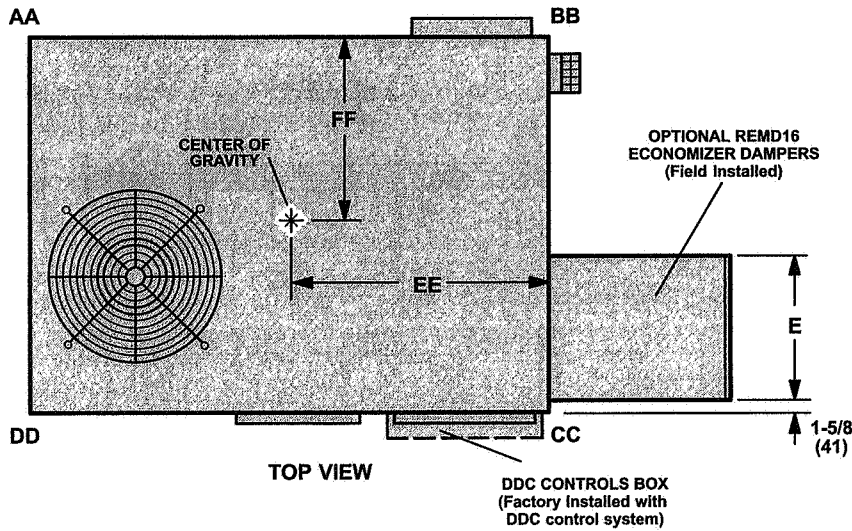
### GCS16 UNIT WITH REMD16M ECONOMIZER DAMPER SECTION AND RMF16 ROOF MOUNTING FRAME

#### CORNER WEIGHTS

Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
GCS16-024	104	47	159	72	149	68	98	44
GCS16-030	109	50	166	76	156	71	102	46
GCS16-036	108	49	165	75	155	70	101	46
GCS16-048	141	64	209	95	202	92	135	62
GCS16-060	147	67	219	99	210	96	141	64

#### CENTER OF GRAVITY

Model Number	EE		FF	
	inch	mm	inch	mm
GCS16-024	23-3/4	603	22-1/4	565
GCS16-030				
GCS16-036				
GCS16-048	29-1/8	740	25-1/2	648
GCS16-060				



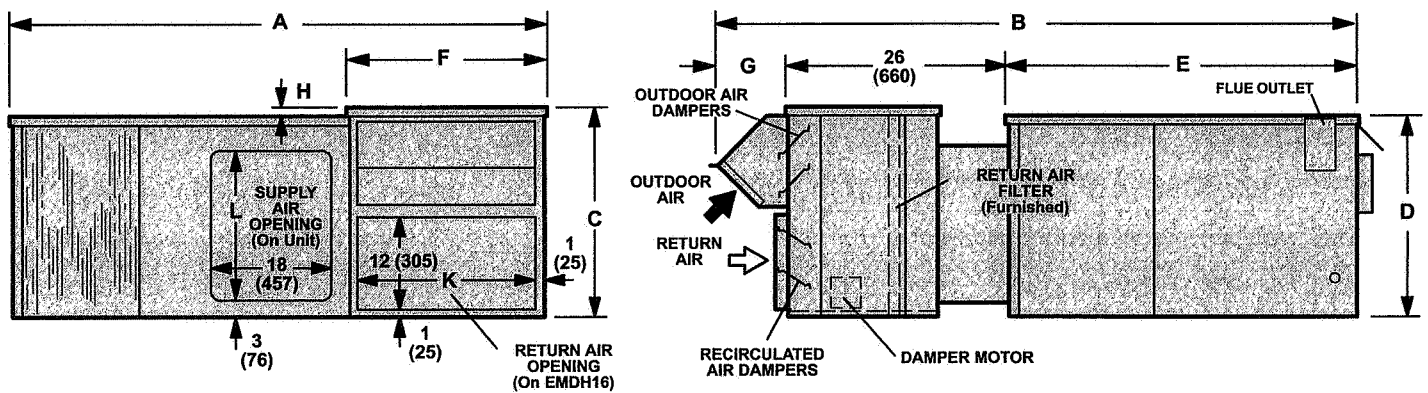
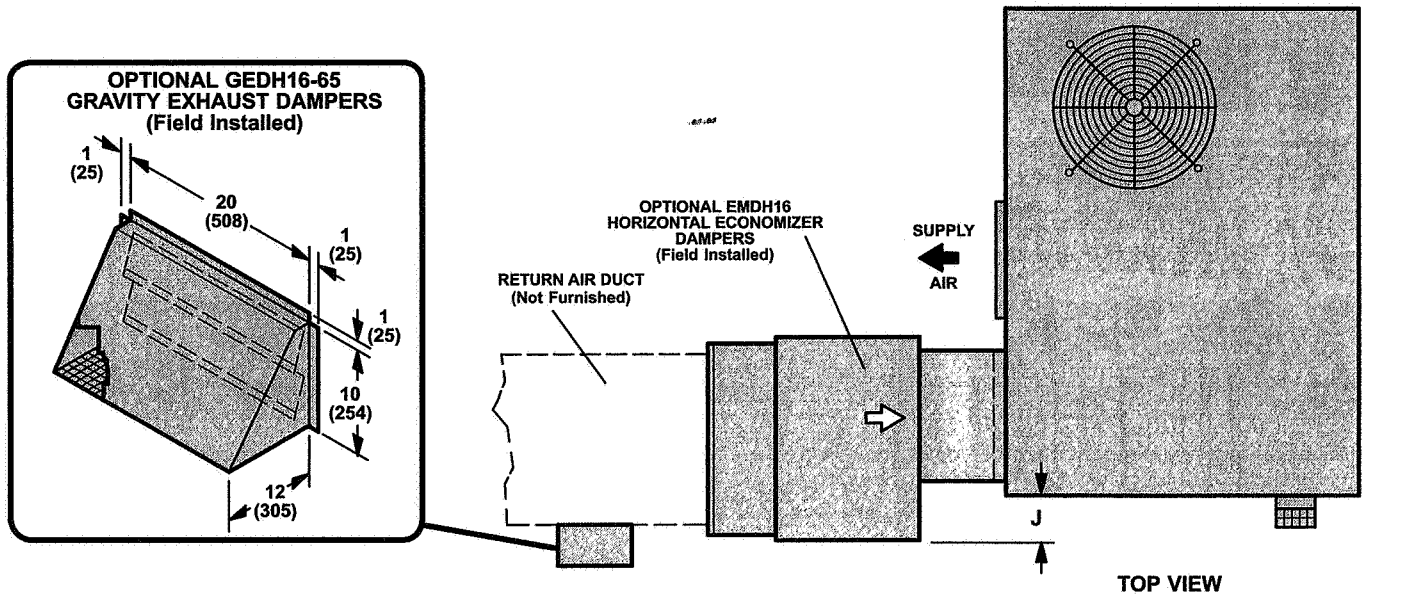
Model Number	A		B		C		D		E		F		G		H	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
GCS16-024	46	1168	60	1524	23	584	21-3/4	552	16	406	---	---	---	---	---	---
GCS16-030																
GCS16-036																
GCS16-048	52	1321	72-1/2	1842	29	737	27-3/4	705	20-1/4	514	7	178	16	406	3-1/2	89
GCS16-060																

☐ Dimensions reflect usage with RMF16-41 mounting frame.



## ACCESSORY DIMENSIONS - INCHES (MM)

GCS16 UNIT WITH EMDH16 HORIZONTAL ECONOMIZER DAMPER SECTION AND GEDH16-65 GRAVITY EXHAUST DAMPERS

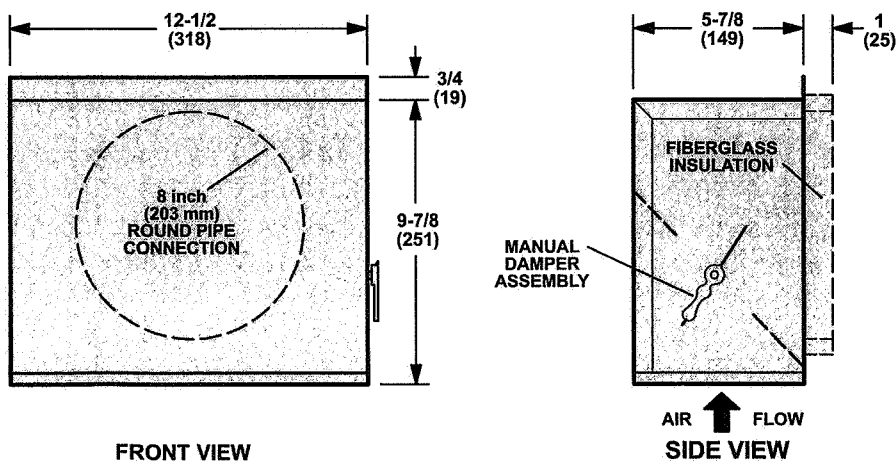


END VIEW

SIDE VIEW

Model Number	A		B		C		D		E		F		G		H		J		K		L	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
GCS16-024 GCS-030 GCS16-036	63	1600	81-1/2	2070	26	660	23	584	46	1168	26	660	9-1/2	241	3	76	3	76	24	610	13	330
GCS16-048 GCS16-060	79-1/2	2019	90	8100	30-3/8	772	29	737	52	1321	30-1/2	775	12	305	1-1/2	38	7	178	28-7/8	733	22	559

## OAD3-46/65 MANUAL MINIMUM OUTDOOR AIR DAMPER

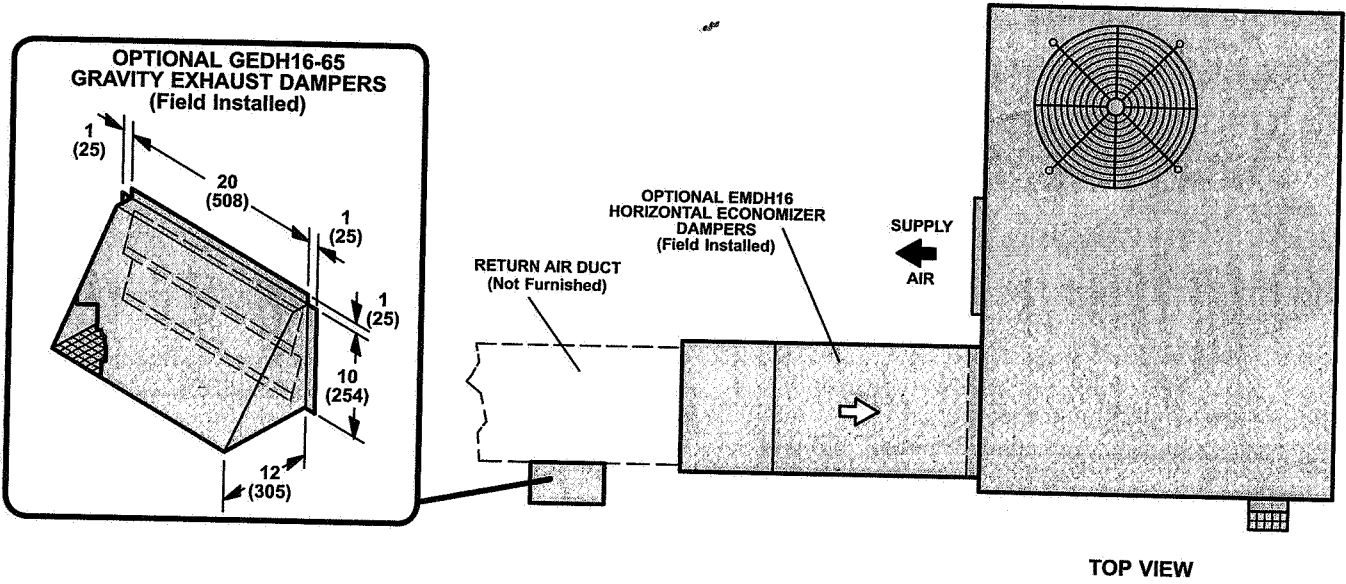


FRONT VIEW

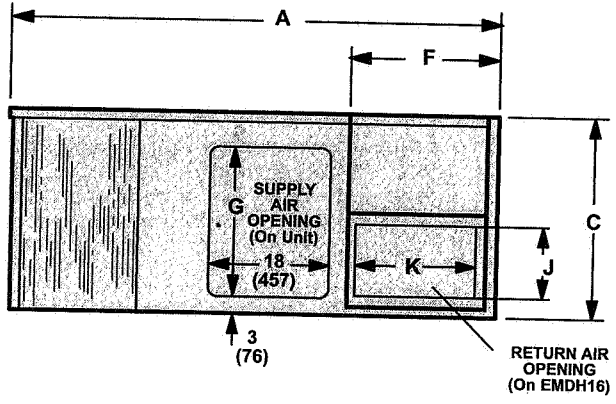
SIDE VIEW

**ACCESSORY DIMENSIONS - INCHES (MM) - CANADA ONLY**

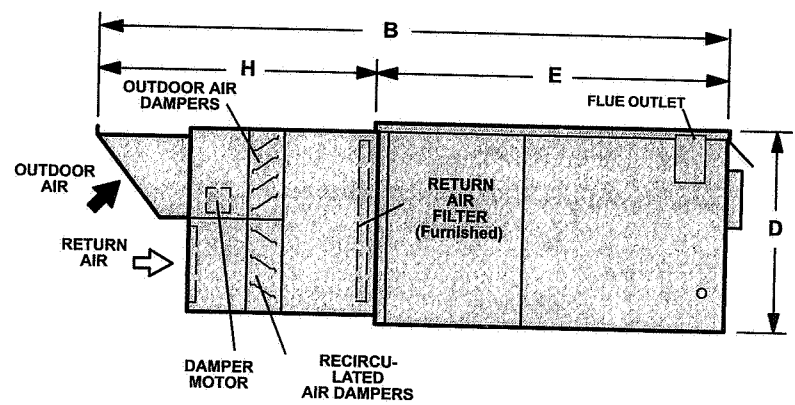
**GCS16 UNIT WITH EMDH16M HORIZONTAL ECONOMIZER DAMPER SECTION AND GEDH16-65 GRAVITY EXHAUST DAMPERS**



**TOP VIEW**



**END VIEW**

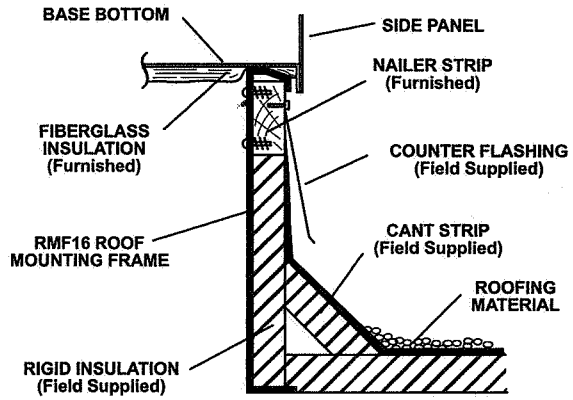


**SIDE VIEW**

Model Number	A		B		C		D		E		F		G		H		J		K	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
GCS16-024 GCS16-030 GCS16-036	60	1524	84-1/2	2146	22	559	23	584	46	1168	22	559	13	330	38-1/2	979	9	229	20	508
GCS16-048 GCS16-060	72-1/2	1842	97-7/8	2486	27	686	29	737	52	1321	23-5/8	600	22	559	45-7/8	1165	12	305	21-3/4	552

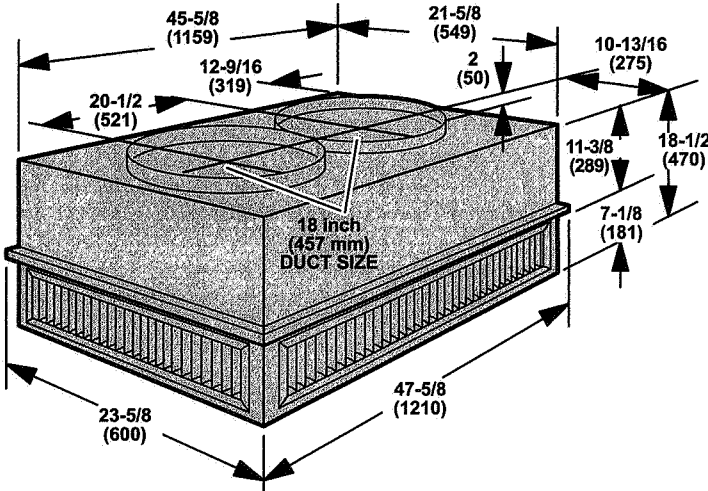
**ACCESSORY DIMENSIONS - INCHES (MM)**

**TYPICAL FLASHING DETAIL FOR RMF16 ROOF MOUNTING FRAME**

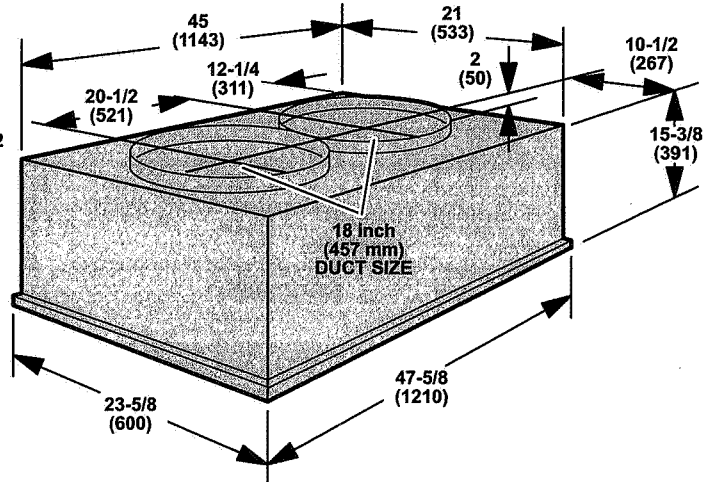


**COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS**

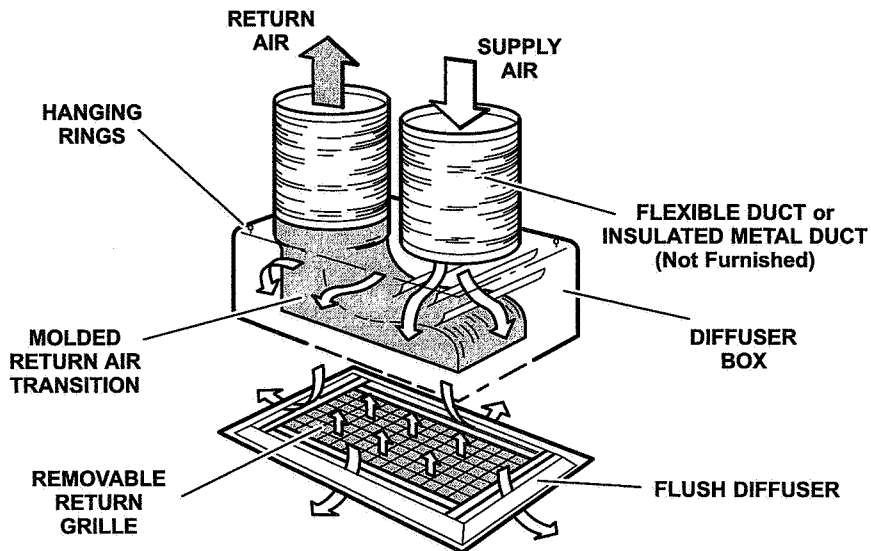
**RTD9-65 STEP-DOWN CEILING DIFFUSER**



**FD9-65 FLUSH CEILING DIFFUSER**

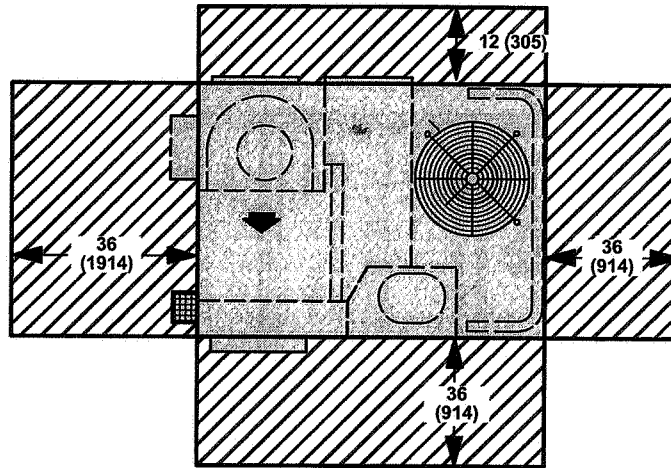


**AIR DIFFUSER PATTERN**



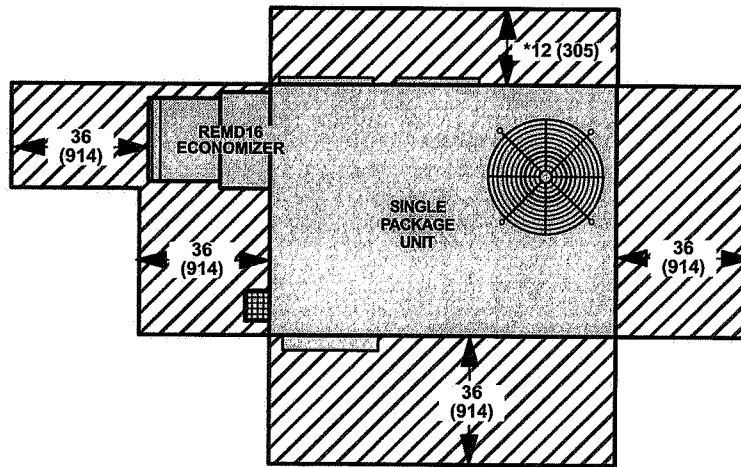
**INSTALLATION CLEARANCES - INCHES (MM)**

**GCS16 BASIC UNIT**



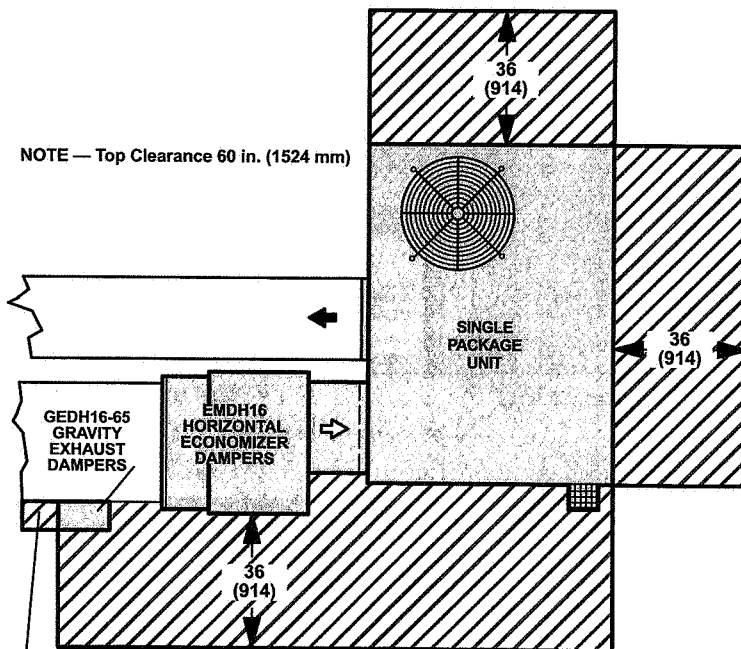
NOTE — Top Clearance 60 in. (1524 mm)  
 NOTE — Entire perimeter of unit requires support when elevated above mounting surface.

**GCS16 UNIT WITH REMD16 ECONOMIZER DAMPER SECTION AND DDC CONTROLS**



NOTE — Top Clearance 60 in. (1524 mm)

**GCS16 UNIT WITH EMD16M HORIZONTAL ECONOMIZER AND GEDH16-65 GRAVITY EXHAUST DAMPER**



NOTE — Top Clearance 60 in. (1524 mm)

Allow adequate clearance for duct & GEDH16-65 installation