

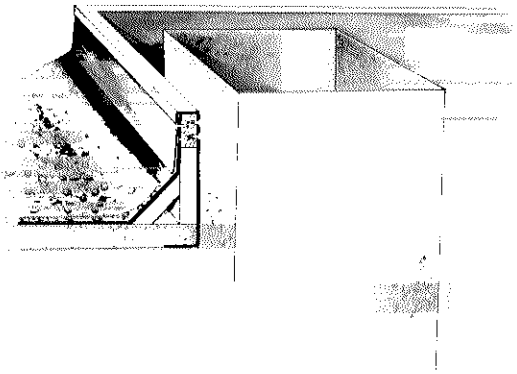
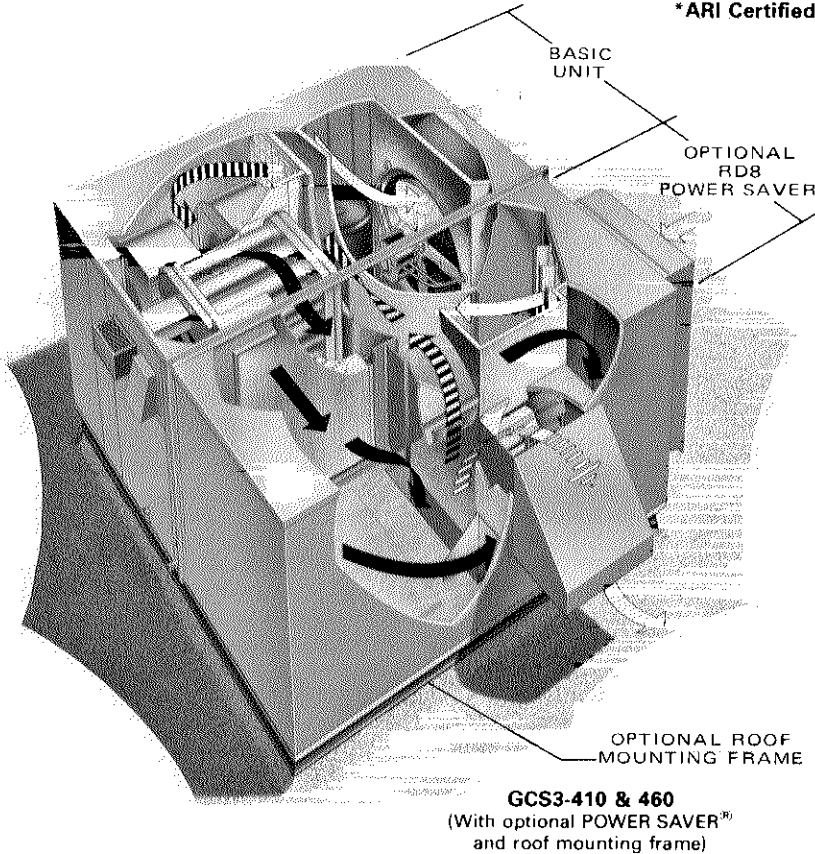


**ALL SEASON — DX COOLING & GAS HEATING  
GCS3-411-413 AND GCS3-461-463  
HORIZONTAL AND DOWN-FLO**

**\*37,000 to 43,000 Btuh Total Cooling Capacity  
80,000 to 120,000 Btuh Input Heating Capacity**

**\*ARI Certified Ratings**

**COMBINATION  
UNITS  
ROOFTOP**  
Page 29  
July 1, 1978  
Supersedes 12-1-76



**Roofmounting Frame Detail**

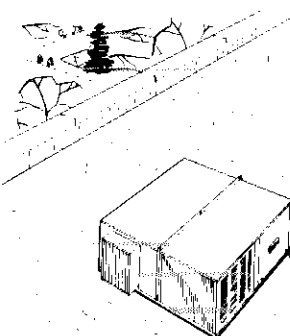
Optional roofmounting frame (RMF3-46) is used whenever RT8 duct enclosure or RD8 POWER SAVER is used. The frame extends around the entire perimeter of the GCS3 and RT8 or RD8. Duct connection and entry into the conditioned area are accomplished within the confines of the frame.

**Versatile All Season Equipment Is Adaptable To Most Any Application**

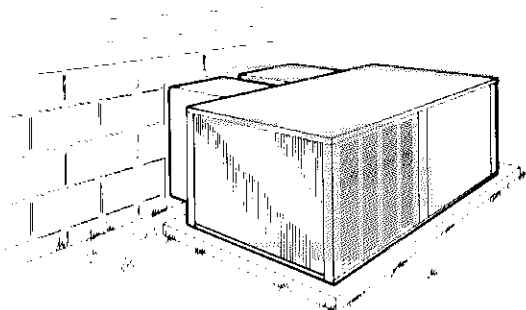
The GCS3 Series combination gas fired heating and DX cooling units are designed primarily for rooftop installation with the optional RT8 duct enclosure or RD8 POWER SAVER™. The single package unit can also be installed on a slab at grade level with end handling of conditioned air. The single piece optional roof mounting frame (RMF3) gives Lennox a big edge over competition both in appearance and installation. The frame mates to the bottom of the GCS3 and RT8 or RD8 and when flashed into the roof permits weatherproof duct connection and entry into the conditioned area. No additional roof curbing or flashing is required. The assembled GCS3 and RT8 or RD8 duct enclosure are easily hoisted to rooftop level by hoisting lugs factory installed on the equipment. A choice of heating capacity

is available. Laboratory life cycle testing of the aluminized steel DURATUBE® heat exchanger assures maximum service life. Complete factory sealed refrigeration system consists of compressor, refrigerant lines connected and a full operating charge of refrigerant. Optional POWER SAVER and controls (RD8) reduce cooling costs. Externally mounted fresh air damper (manual) is available. In addition, a supply and return adapter kit (RT8), fiberglass duct kit and choice of flush or step-down diffusers are available for a complete combination ceiling supply and return air distribution system. A heating-cooling thermostat is furnished. Equipment is shipped completely assembled, wired and piped ready to install. In addition each unit is test operated on the assembly line before shipment.

**Typical Applications**



Rooftop Installation with Optional POWER SAVER



Unit on slab at grade level

NOTE — Specifications, ratings and dimensions subject to change without notice.

## FEATURES

**DURATUBE Heat Exchanger** — Cylindrical tube and drum heat exchanger construction permits normal expansion and contraction without metal fatigue. Design also results in high input to heat surface ratio, low resistance to air travel and cleanability. All heat element surfaces, inside and out, are aluminized steel.

**Gas Power Burner** — Provides efficient, trouble free operation and is unaffected by adverse wind or atmospheric conditions. Cast iron venturi mixes gas and air in correct proportion for perfect combustion. Stainless steel flame spreader fits flame to combustion chamber. Electric direct spark ignition system provides sure and safe main burner operation. Spark is continuous during burner operation. Burner is equipped with 100% safety shutoff controls, inspection glass for flame viewing and easy combustion air adjustment.

**Combustion Air Blower** — Equipped with an air pressure switch which proves blower operation before allowing automatic main gas valve to open. Motor is resiliently mounted.

**Dependable Compressor** — Resiliently mounted in unit and in addition the entire running gear assembly is spring mounted within the sealed housing. The GCS3-411-413 compressor has internal overload protection and automatic resetting high pressure relief. The GCS3-461-463 compressor has external overload protection and low pressure switch.

**Lennox Coils** — Extra large coils (condenser and evaporator) are constructed of ripple-edge aluminum fins machine fitted to seamless copper tubes. Condenser coil has subcooling rows for increased efficiency. Coils are thoroughly tested under pressure to insure leak-proof construction.

**Efficient Condenser Fan** — Direct Drive fan moves large air volumes through the entire condenser coil resulting in high refrigerant cooling capacity. Air enters unit through louvered panel and is discharged through coil at side of unit.

**Powerful Blowers** — Twin direct drive blowers deliver large air volumes with low power consumption. Multiple speed motor provides a choice of blower speeds. See blower performance charts. Change in blower speed is easily accomplished by a simple change in wiring.

**Rugged Cabinet** — Heavy gauge galvanized hot dipped steel cabinet panels. A five station wash metal preparation assures a perfect bonding surface for the finish coat of baked on outdoor enamel.

**Thick Interior Insulation** — All of the interior panels where conditioned air is handled are lined with thick fiberglass insulation. In addition the bottom of the unit is also insulated with thick fiberglass insulation.

**Cleanable Air Filter** — One inch thick filter is furnished as standard. Media is washable or vacuum cleanable polyurethane. Filter is easily accessible for cleaning and media is coated with oil for increased efficiency. Use RP products filter coating No. 418 (P-8-5069) when reoilng.

**Complete Service Access** — Large removable panels give complete service access to interior. Complete access to heating element is through the removable rear breaching. Remove vent cap for access to flue breaching. Burner assembly is easily removed for servicing.

**Fan and Limit Controls Furnished** — Factory installed and accurately located. Fan control assures blower operation within forty-five seconds after burner comes on and has adjustable blower off temperature setting. Dual limit controls have fixed temperature setting and protect heating system from abnormal operating conditions.

**Heating-Cooling Thermostat Furnished** — Combination single stage heat and single stage cool thermostat has temperature setting dial, system selector switch and blower selection switch for intermittent or continuous blower operation.

**Thoroughly Tested and Certified** — The design of the unit is A.G.A. Certified as a combination (natural or propane) heating-cooling unit for outdoor installation. Complies with USASI safety codes. Cooling system has been thoroughly tested and rated in the Lennox environmental test room according to ARI Standard 210 conditions. In addition, unit has been sound tested in the Lennox sound test room according to ARI Standard 270 conditions. Units coming within the scope of this standard (135,000 Btuh or less) carry the ARI Certification seal. Blower data is from unit tests conducted in the Lennox air test chamber.

**Optional OAD3-46/65 Minimum Fresh Air Damper** — Externally mounted in RT8-46 duct enclosure. Equipped with manually operated damper and necessary fittings for installing.

**Optional Combination Supply & Return Adapter Kit (RT8)** — The combination supply and return adapter kit (LB-33111BB) adapts the RT8 enclosure to combination ceiling supply and return applications (not required on RD8). The insulated adapter assembly field installs in the RT8 enclosure. See Installation Instructions.

**Optional Combination Supply and Return Diffusers** — Lennox offers two different styles of air diffusers. The RTD step-down model extends below ceiling level when installed. The FD model is almost flush with the ceiling when installed. Supply air is discharged through the outside grilles and return air enters through the center grille on both models. Adjustable vanes are available on both models for air distribution.

**Optional Nite Setback Controls** — A nite thermostat (P-8-8899), subbase (P-8-8890) and adapter plate (P-8-8954) (to adapt to vertical outlet box) is available. Two nite setback kits are available: BM-4762 includes a manual nite setback switch and stainless steel mounting plate. Kit BM-4761 includes a manual set 12 hour nite setback timer and a stainless steel mounting plate. Mounting plate mounts to two standard electrical outlet boxes, furnished by installer, located within the wall. In order to receive the plate, clearance should be provided between outlet box and any door or window. A skip-day clock (P-8-3744) to program this unit automatically is available. Clock is required with kit (BM-4761) and is optional with kit (BM-4762).

**Optional Remote Readout Panel** — Readout Panel (BM2-5358) and Rough-In Box (BM1-5358) must be ordered extra. See bulletin in Accessories Section for complete data. When panel is used for nite setback operation the following controls must be used and ordered extra; nite thermostat (P-8-8899) subbase (P-8-8890), adapter plate (P-8-8954) and skip-day clock (P-8-3744).

**Optional RD8 POWER SAVER and RT8 Duct Enclosure** — Application flexibility is possible with the options available as follows:

- 1—Completely assembled RD8-46 Power Saver & Duct Enclosure:
  - A—With wired and linked Power Saver installed.
    - a—With hole cut for ceiling supply & return distribution.
    - b—With holes cut for double duct distribution system.
  - 2—Completely assembled RT8-46 duct enclosure.
    - A—Without Power Saver (Power Saver cannot be added to RT8, if Power Saver is required order RD8-46).
      - a—With optional Combination Supply & Return Adapter Kit
      - b—With holes cut for double duct distribution system.

**Optional Mounting Frame** — The RMF3-46 mounting frame is available for mounting the RT8 or RD8 duct enclosure and GCS3 unit. Frame provides an automatic weather sealed rooftop installation. Approved by National Roofing Contractors Association. A securing bolt kit (BM-6908), containing bolts to secure unit to frame, is available as optional equipment and must be ordered extra.

**POWER SAVER Operation** — The entire Power Saver control system is factory installed and wired, simply make plug-in connections to complete the job. The only field wiring required is when the optional nite setback thermostat is used. Basic control system consists of:

1 — **Lennox DO-3-S** — 24 volt, spring return multiposition damper motor with motor and gear train sealed in nontemperature sensitive oil. It controls the position of the outdoor air, recirculated air and pressure relief dampers as dictated by the room thermostat and controlled by the following:

2 — **Mixed Air Temperature Controller** — This adjustable highly sensitive device controls the damper motor to position the dampers to give the selected mixed air temperature. Inherent quick sensing of this control coupled with the fast acting Lennox damper motor gives in effect modulated control of the entering mixed air temperature.

3 — **Compressor Monitor** — An outdoor thermostat switch (adjustable) which locks out compressor operation below approximately 58F outdoor air temperature. This allows the outdoor air to handle the entire cooling load below 58F.

4 — **Outdoor Air Monitor** — A temperature sensing control (adjustable) returns the outdoor air dampers to minimum when the outdoor air has more heat than recirculated room air, usually set at 70F.

5 — **Climate Selection Switch** — A manually operated toggle switch with one position labeled "Dry Climate — Maximum Power Saving" and the other labeled "Humid Climate — Maximum Dehumidification." In the "Dry Climate" position, above the Compressor Monitor temperature setting (usually 58F) and below the Outdoor Air Monitor setting (usually 70F) the outdoor air damper can open 100% as dictated by the mixed air temperature controller. This provides the maximum "Free Cooling" benefits from the outdoor air. In the "Humid Climate" position above 58F and below 70F, the outdoor air damper can open 100% (controlled by mixed air temperature controller) only when the compressor is operating. This gives maximum dehumidification because in moist climates the humid outdoor air enters the structure in maximum quantity only when the compressor is operating, thus "drying out" the air.

6 — **Room Thermostat** — The Lennox Power Saver will co-operate perfectly with any heating-cooling thermostat.

## SPECIFICATIONS

Model No.		GCS3-411-80 GCS3-413-80	GCS3-411-120 GCS3-413-120	GCS3-461-80 GCS3-463-80	GCS3-461-120 GCS3-463-120
Heating capacity input (Btuh)		80,000	120,000	80,000	120,000
Heating capacity bonnet output (Btuh)		60,000	90,000	60,000	90,000
★ARI Standard 270 SRN		21		21	
*ARI Standard 210 Ratings	Total cooling capacity (Btuh)	37,000		43,000	
	Total unit watts	53,000		16100	
	EER (Btuh/Watts)	7.0		7.0	
	Dehumidifying capacity	29%		29%	
Blower wheel nominal diameter x width (in.)		(2) 9 x 7		(2) 9 x 7	
Blower motor horsepower		1/2		1/2	
Refrigerant (R-22) charge		4 lbs. 9 oz.		5 lbs. 8 oz.	
Condenser Coil	Net face area (sq. ft.)	6.88		6.88	
	Tube diam. (in.) & No. rows & fins per inch	1/2 — 2 — 20		1/2 — 2 — 20	
Condenser Fan	Diameter (in.) & No. of blades	20 — 4		20 — 4	
	Air volume (factory setting)	2600		2600	
	Motor horsepower	1/3		1/3	
	Motor watts (factory setting)	450		450	
Evaporator Coil	Net face area (sq. ft.)	3.75		4.58	
	Tube diam. (in.) & No. rows & fins per inch	1/2 — 3 — 10		1/2 — 3 — 10	
No. & size of filters (in.)		(1) 28 x 28 x 1		(1) 28 x 28 x 1	
Gas supply connection MPT (in.) (Natural & Propane)		1/2		1/2	
Recommended gas supply pressure WC (in.)	Natural	6		6	
	Propane	11		11	
Condensate drain size MPT (in.)		3/4		3/4	
Net weight of basic unit (lbs.) (1-Package)		700		740	
Optional Ceiling Supply & Return Step-down Diffuser		RTD-41 (Net wt. — 32 lbs.)		RTD-41 (Net wt. — 32 lbs.)	
		FD-41 (Net wt. — 24 lbs.)		FD-65 (Net wt. — 26 lbs.)	
Optional Ceiling Supply & Return Flush Diffuser		**FD-41-D (Net wt. — 30 lbs.)		**FD-65-D (Net wt. — 33 lbs.)	
		FD-65 (Net wt. — 26 lbs.)		FD-65 (Net wt. — 26 lbs.)	
		**FD-65-D (Net wt. — 33 lbs.)		**FD-65-D (Net wt. — 33 lbs.)	
Optional Combination Supply & Return Adapter Kit (RT8)		LB-3311BB (Net wt. — 45 lbs.)			
Optional Duct Enclosure (Without Power Saver)		RT8-46 (Net wt. — 174 lbs.)			
Optional Duct Enclosure with Power Saver & Controls Installed		RD8-46 (Net wt. — 281 lbs.)			
Optional Roof Mounting Frame		RMF3-46 (Net wt. — 145 lbs.)			
Optional Minimum Fresh Air Damper		OAD3-46/65 (Net wt. — 7 lbs.)			

NOTE — Propane gas models are field converted with a changeover kit (LB-19632D). Kit must be ordered extra.

★Rated in accordance with ARI Standard 270.

\*Rated in accordance with ARI Standard 210; 450 cfm (maximum) evaporator air volume per ton of cooling capacity, 95F outdoor air temperature and 80F db/67F wb entering evaporator air. \*\*Flush diffuser with adjustable baffle blades.

†Deduct 100 watts for 208 volt operation on single phase units.

### HIGH ALTITUDE DERATE

If the heating value of the gas does not exceed values listed in the table, derating of the unit is not required. Should the heating value of the gas exceed the table values, or if the elevation is greater than 6,000 feet above sea level it will be necessary to derate the unit. Lennox requires that derate conditions be 4% 1 per thousand feet above sea level. Thus as an altitude of 4000 feet, if the heating value of the gas exceeds 1000 Btu/ft<sup>3</sup>, unit will require a 16% derate.

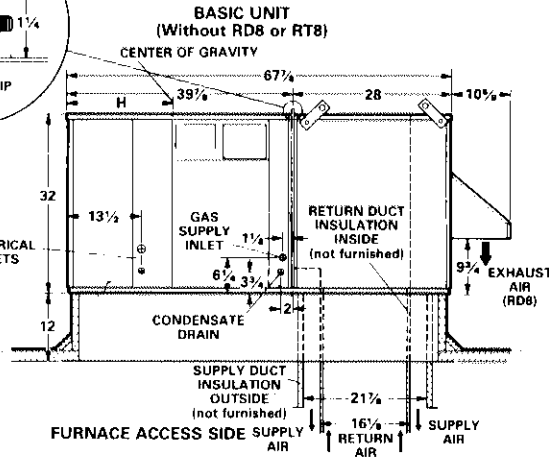
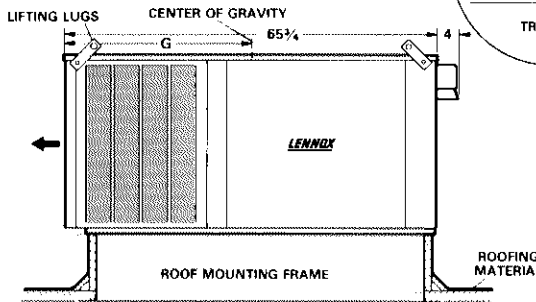
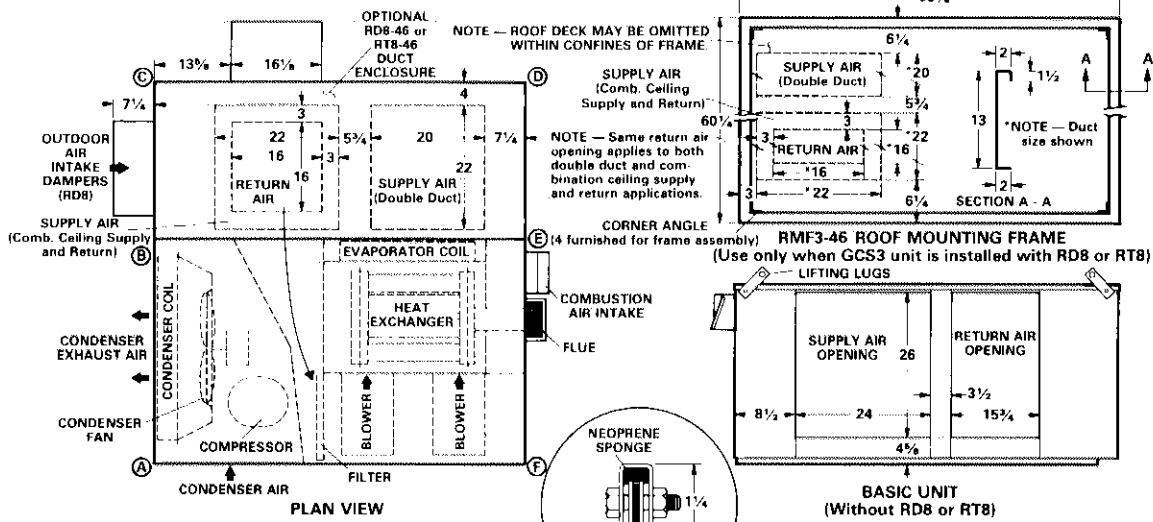
Elevation Above Sea Level (feet)	Maximum Heating Value (Btu/ft <sup>3</sup> )
5001 — 6000	900
4001 — 5000	950
3001 — 4000	1000
2001 — 3000	1050
Sea Level — 2000	1100

### RATINGS

Unit Model No.	Evaporator Air 80F Dry Bulb		Outdoor Air Temperature Entering Condenser (F)											
	Entering Wet Bulb Degrees (F)	Total Air Volume (cfm)	85			95			105			115		
			Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
GCS3-411 GCS3-413	63	1200	35,900	.83	3920	32,800	.86	4200	29,500	.89	4480	26,700	.92	4850
		1350	37,400	.87	3970	34,600	.90	4260	31,000	.93	4540	28,000	.96	4900
		1500	38,800	.91	4020	36,000	.94	4320	32,500	.97	4600	29,400	.99	4940
	67	1200	39,300	.66	4040	36,500	.67	4340	32,700	.69	4610	29,500	.72	4950
		1350	40,400	.69	4080	38,000	.71	4400	34,300	.73	4670	30,800	.76	5000
		1500	41,500	.72	4110	39,500	.74	4450	35,800	.77	4730	32,200	.80	5050
	71	1200	41,600	.50	4120	40,000	.51	4470	36,200	.52	4750	33,000	.53	5080
		1350	42,200	.52	4140	41,200	.53	4510	38,600	.54	4830	34,300	.56	5130
		1500	43,000	.54	4160	43,800	.55	4600	39,400	.56	4860	35,500	.59	5170
GCS3-461 GCS3-463	63	1400	42,200	.83	4600	38,500	.86	4900	35,500	.89	5300	31,200	.92	5620
		1575	43,900	.87	4780	41,000	.90	5020	37,100	.93	5370	32,600	.96	5700
		1750	45,200	.91	4800	42,200	.94	5080	38,200	.97	5430	33,600	.99	5720
	67	1400	45,900	.66	4880	42,900	.67	5120	38,500	.69	5450	33,500	.72	5760
		1575	47,100	.69	4940	44,500	.71	5200	39,900	.73	5520	35,000	.76	5820
		1750	48,500	.72	5010	45,700	.74	5270	41,200	.77	5580	36,900	.80	5920
	71	1400	48,800	.50	5030	45,800	.51	5280	41,600	.52	5600	37,200	.53	5930
		1575	49,600	.52	5060	47,000	.53	5330	43,100	.54	5680	38,800	.56	6020
		1750	50,500	.54	5100	48,400	.55	5400	44,500	.56	5750	40,400	.59	6100

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

# DIMENSIONS (inches)



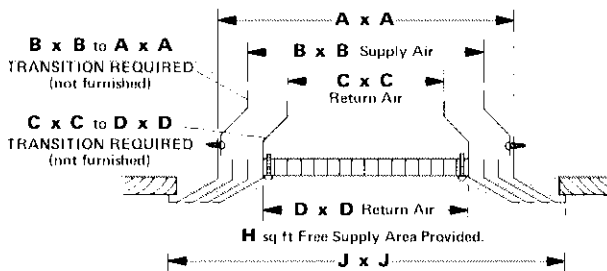
**CORNER WEIGHTS (lbs.)**

Unit	A	B	C	D	E	F
Basic unit	165	151	---	---	154	170
With RT8	262	---	150	149	---	259
WITH RD8	280	---	200	180	---	250

**CENTER OF GRAVITY**

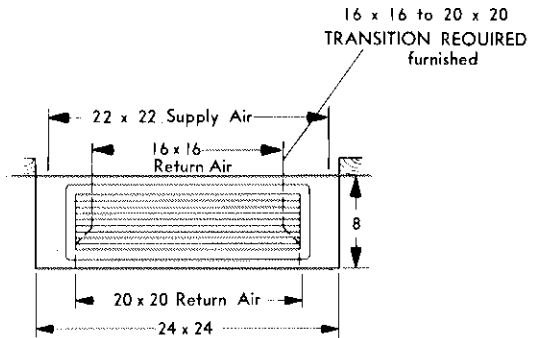
Unit	G	H
Basic unit	33-1/4	19
With RT8	32-3/4	23-7/8
With RD8	31	28-1/8

## FLUSH CEILING GRILLE



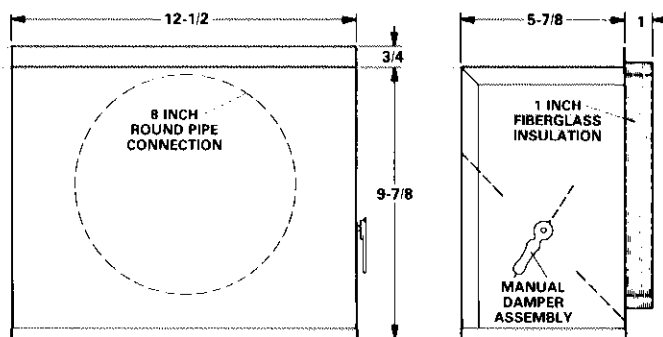
NOTE—Also available with blade adjustment and tinned core. Same dimensions as above.

## RTD-41 STEP DOWN GRILLE



(4) 20 x 5 Supply Air Grilles Furnished  
(1) 20 x 20 Return Air Grille Furnished

## OPTIONAL OAD3-46/65 MINIMUM FRESH AIR DAMPER



**FRONT VIEW**

**AIR FLOW SIDE VIEW**

# ELECTRICAL DATA

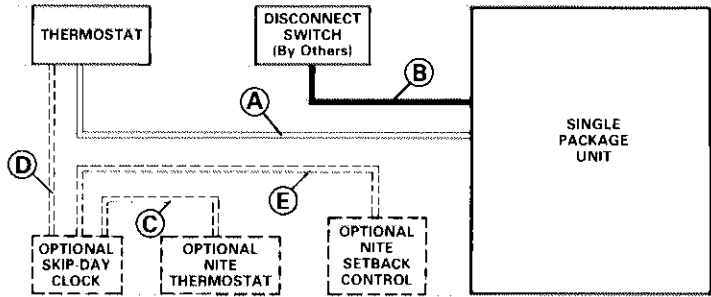
Model No.		GCS3-411-80 GCS3-411-120	GCS3-413-80 GCS3-413-120		GCS3-461-80 GCS3-461-120	GCS3-463-80 GCS3-463-120
Line voltage data		230v 60 Hz — 1 ph	208/240v 60 Hz — 3 ph	440/480v 60 Hz — 3 ph	208/230v 60 Hz — 1 ph	208/240v 60 Hz — 3 ph
Compressor	Rated load amps	23.2	17.0	8.0	29.2	13.5
	Power factor	.92	.85	.85	.92	.85
	Locked rotor amps	102.0	92.0	46.0	114.0	93.0
Condenser Coil Fan	Full load amps	3.0	3.0	*1.5	3.0	3.0
	Locked rotor amps	5.4	5.4	2.7	5.4	5.4
Evaporator Coil Blower	Full load amps	4.0	4.0	*2.0	4.0	4.0
	Locked rotor amps	7.8	7.8	3.9	7.8	7.8
**Minimum circuit ampacity		36.0	28.3	17.0	43.5	23.9

\*Motors are rated at 230v, FLA shown is for step-down transformer.

\*\*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.

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

## FIELD WIRING



†A — \*Four wire low voltage (Single Stage Cool & Single Stage Heat)  
\*If POWER SAVER and Nite Setback controls are used one additional wire is required.

B — Two or three wire power (See Electrical Data Table)

†C — Two wire low voltage

†D — Two wire low voltage (Without POWER SAVER)

Three wire low voltage (With POWER SAVER)

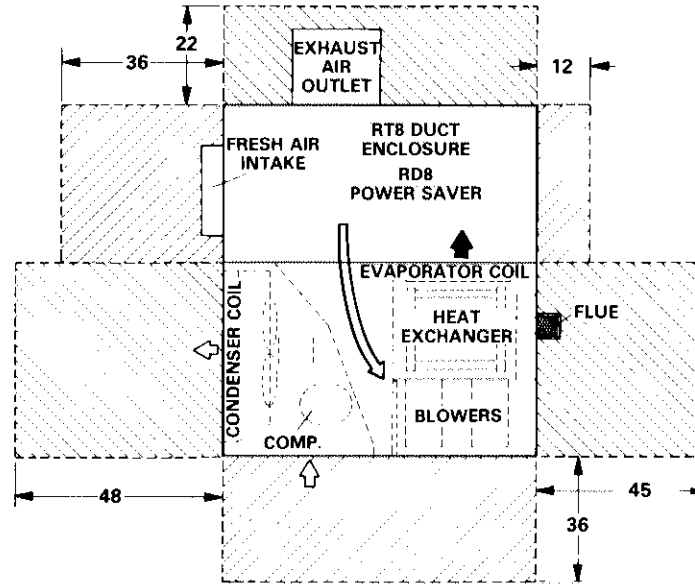
†E — Three wire low voltage.

Additional field wiring is not required when POWER SAVER is used. All wiring is provided in GCS3 and in POWER SAVER, simply make plug-in connections to complete job.

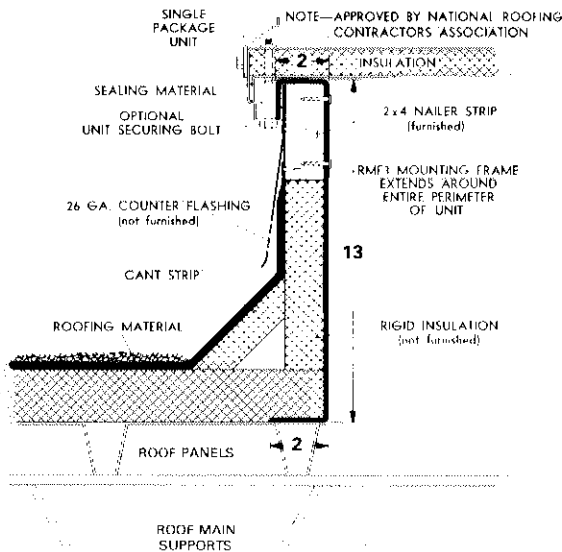
All wiring must conform to NEC and local electrical codes.

†If local electrical code permits may be class 2 wiring.

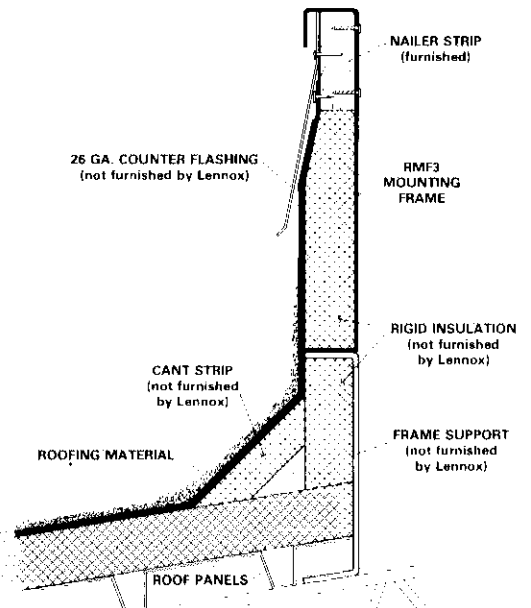
## INSTALLATION CLEARANCES (inches)



## RECOMMENDED FLASHING FOR RMF3 ROOF MOUNTING FRAME

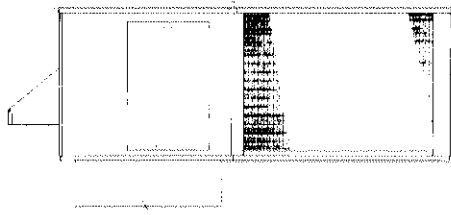


## RMF3 ROOF MOUNTING FRAME INSTALLATION ON A PITCHED ROOF

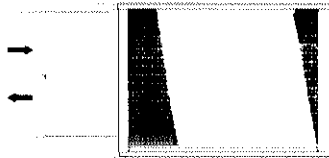


## AIR PATTERN CHOICE

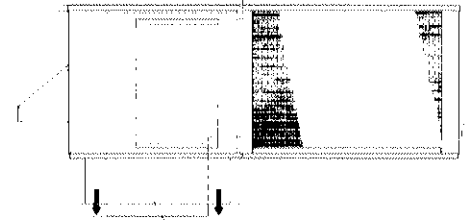
Basic unit is horizontal with end delivery of conditioned air. Use of optional RT8 duct enclosure or RD8 POWER SAVER allows bottom handling of conditioned air.



**Down-flo**  
(Extended duct distribution system)  
RT8 or RD8 required



**Horizontal (Basic unit)**



**Down-flo**  
(Combination ceiling supply and return)  
RT8 or RD8 required

## BLOWER DATA

### GCS3-411-413 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1990	1770	1650
.05	1940	1730	1615
.10	1890	1680	1575
.15	1840	1635	1535
.20	1785	1585	1495
.25	1730	1535	1450
.30	1675	1485	1410
.40	1555	1375	1305
.50	1410	1255	1190
.60	1245	1105	1025
.70	1045	---	---

NOTE — All cfm data is measured external to the unit using standard return air opening and with the air filter in place.

### GCS3-461-463 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	2045	1810	1670
.05	1990	1770	1635
.10	1935	1725	1600
.15	1875	1680	1560
.20	1820	1635	1525
.25	1765	1585	1485
.30	1710	1535	1440
.40	1590	1430	1350
.50	1455	1305	1240
.60	1300	1150	1090
.70	1070	---	---

NOTE — All cfm data is measured external to the unit using standard return air opening and with the air filter in place.

### GCS3-411-413 BLOWER PERFORMANCE WITH RD8-46 AND DUCT DISTRIBUTION

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1710	1535	1420
.05	1655	1485	1375
.10	1595	1435	1325
.15	1535	1380	1280
.20	1475	1325	1230
.25	1410	1270	1180
.30	1350	1210	1125
.40	1210	1085	1010
.50	1050	940	880

NOTE — All cfm data is measured external to the unit using standard return air opening and with the air filter in place.

### GCS3-461-463 BLOWER PERFORMANCE WITH RD8-46 AND DUCT DISTRIBUTION

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1750	1585	1460
.05	1700	1535	1410
.10	1640	1485	1360
.15	1580	1430	1310
.20	1525	1375	1255
.25	1460	1320	1200
.30	1400	1260	1150
.40	1265	1135	1040
.50	1115	---	---

NOTE — All cfm data is measured external to the unit using standard return air opening and with the air filter in place.

### GCS3-411-413 WITH RD8-46 AND CEILING SUPPLY & RETURN      GCS3-461-463 WITH RD8-46 AND CEILING SUPPLY & RETURN

Blower Speed Setting	Cfm @ Various Speeds				
	With Various Discharge Grille Arrangements				
	FD-41 or FD-41-D Flush Model	FD-65 or FD-65-D Flush Model	RTD-41 Step-down Model		
			2 Sides Open	3 Sides Open	4 Sides Open
High	1200	1340	1325	1380	1405
Medium	1150	1270	1255	1300	1325
Low	1125	1240	1255	1265	1290

Blower Speed Setting	Cfm @ Various Speeds			
	With Various Discharge Grille Arrangements			
	FD-65 or FD-65-D Flush Model	RTD-41 Step-down Model		
		2 Sides Open	3 Sides Open	4 Sides Open
High	1370	1355	1408	1432
Medium	1300	1290	1335	1360
Low	1270	1255	1300	1315

### RTD-41 CEILING GRILLE AIR THROW DATA

RTD-41 Step-down Model	Air Volume (cfm)	*Effective Throw (ft.)		
		Horiz. Vanes 180° straight	Horiz. Vanes 22° down	Horiz. Vanes 45° down
Two Sides Open	1200	48	42	29
	1400	54	48	33
	1600	60	54	37
Three Sides Open	1200	34	30	26
	1400	39	34	24
	1600	44	38	27
Four Sides Open	1200	27	24	17
	1400	30	26	19
	1600	34	29	21

\* Effective throw is terminated at a point where conditioned air velocity has decreased to 50 fpm.

### FLUSH CEILING GRILLE AIR THROW DATA

Grille Model No.	Air Volume (cfm)	*Effective Throw (ft.)
FD-41 and FD-41-D	1000	14
	1200	16
	1400	18
	1600	21
FD-65 and FD-65-D	1200	11
	1350	12
	1500	14
	2000	18
	2250	20

\* Terminated at the point where conditioned air velocity has decreased to 50 fpm.