

DOCUMENT RESUME

EF 001 954

ED 022 352

ALL SEASON-DX COOLING AND GAS HEATING. GCS3 SERIES - HORIZONTAL AND DOWN-FLO.

Lennox Industries, Inc., Marshalltown, Iowa.

Pub Date 1 Oct 67

Note-8p.

EDRS Price MF-\$0.25 HC-\$0.40

Descriptors-*AIR CONDITIONING, *HEATING, *MECHANICAL EQUIPMENT, THERMAL ENVIRONMENT,
*VENTILATION

Identifiers-Lennox

The Lennox single package all-season rooftop unit and mounting frame is described in detail. This piece of equipment is designed primarily for rooftop installation with bottom handling of conditioned air. In addition, an installation with end handling of conditioned air makes possible three air distribution patterns. Areas discussed are--(1) unit features, (2) accessories, (3) unit ratings, (4) electrical data, (5) dimensions, (6) mounting details, (7) blower data, and (8) guide specifications. (RH)

LENNOX

**ALL SEASON—DX COOLING & GAS HEATING
GCS3 SERIES—HORIZONTAL & DOWN-FLO**

COMBINATION UNITS

ROOFTOP

Page 37

Oct. 1, 1967

Supersedes #1-67

***93,000 to 273,000 Btuh Total Cooling Capacity
250,000 To 500,000 Btuh Input Heating Capacity
2600 To 10,000 Cfm Air Volume Capacity**

*At ARI standard test conditions.

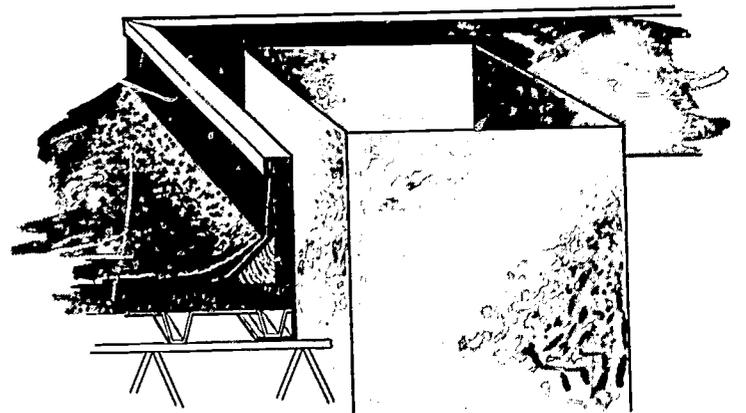


U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.



GCS3-953-250
(With optional POWER SAVER & roof mounting frame)



Roof Mounting Frame Detail

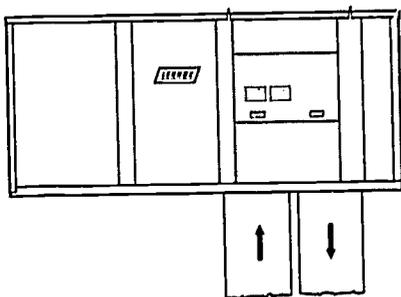
Roof mounting frame extends around entire perimeter of GCS3 base making a weather-proof installation. Duct connection and entry into the conditioned area are accomplished within the confines of the weatherproof frame.



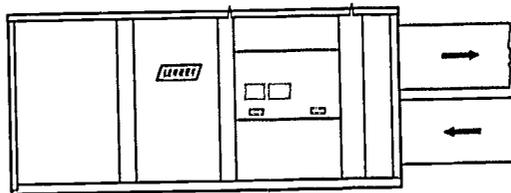
CERTIFICATION APPLIES ONLY WHEN USED WITH PROPER COMPONENTS AS DESIGNATED BY MANUFACTURER

Three Air Patterns Possible

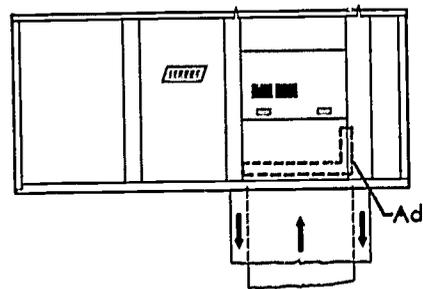
End panels fit bottom openings to give air pattern choice. Separate adaptor required for combination ceiling supply and return applications.



Down-flo



Horizontal



Down-flo

(Order separate combination supply & return adaptor)

Single Package All-Season Rooftop Unit & Mounting Frame Saves Installation Costs & Floor Space

Single package concept and optional roof mounting frame are Lennox exclusive features and give Lennox rooftop equipment a big edge over competition both in appearance and installation procedures. The insulated single cabinet houses highly efficient air cooled DX cooling, gas fired heating, powerful belt drive blowers, air filters and even enough room to receive the optional POWER SAVER dampers which are shipped complete with all controls wired and can be installed in less than 30 minutes. The separate roof mounting frame mates to the GCS3 bottom and when flashed into the roof, it permits weather-proof duct connection and entry into the conditioned area. No additional roof curbing or flashing is required—the RMF3 frame does the entire job. Equipment is

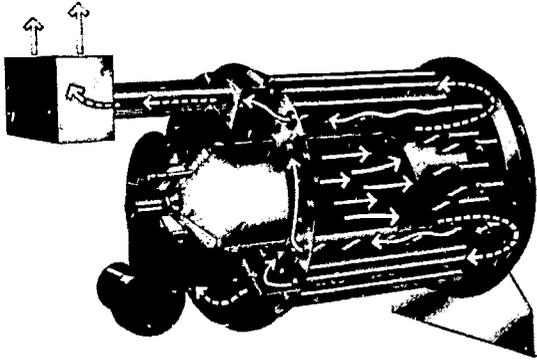
designed primarily for rooftop installation with bottom handling of conditioned air; however, it can also be installed with end handling of conditioned air. All three air patterns shown in sketches above are possible with the same unit. The tube and drum DURATUBE heat exchanger is constructed of aluminized steel and is capable of handling 100% outdoor air at any temperature. Optional POWER SAVER equipment and controls reduce cooling operating costs and satisfy any local code fresh air requirements. An externally mounted minimum fresh air damper (manual or auto) is also available. The complete line of equipment handles voltage inputs from 187 to 660 volts, see electrical data table. A deluxe wall mounted combination heating-cooling thermostat is furnished.

EF 001954

ED 022352

FEATURES

NEW DURATUBE HEAT SECTION—Cylindrical tube and drum construction permits normal heat element 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 of aluminized steel. True power burner principle using 100% secondary air gives top efficiency and extremely quiet operation.

GCS3-953-250 has a dual stainless steel burner with two separate combustion heads, one head fires when low fire is required while both heads operate for high fire requirements. Two stage operation is only available for natural gas fuel. Separate solenoid valves work off the two stage heating thermostat to give high or low fire operation. Intermittent spark ignition for low fire operation. High fire ignition is from proven low fire burner. Flame rod sensor with electronic controls assure safe and reliable operation.

ALL OTHER MODELS have a stainless steel burner with a single combustion head. First stage and second stage solenoids feed the gas supply to the single combustion head. Two stage operation is only available for natural gas fuel. The stages are controlled by the two stage heating thermostat. Pilot flame is lit by an intermittent spark, pilot burns continuously during main operation. Electronic flame sensing controls are standard.

All controls are tested and listed for operation down to -30F outdoor air temperature.

TWO STAGE HEATING (Nat. Gas Only)—Deluxe wall mounted combination two stage heating and cooling thermostat controls two stage heating operation. The first stage mercury bulb opens the first stage solenoid valve and the unit operates at low fire. If the room temperature drops another 1/2F the second stage heat bulb makes and opens the second solenoid giving high fire operation.

LENNOX COILS—Extra large coils (condenser and evaporator) are constructed of ripple-edged aluminum fins flat bonded to seamless copper tubes for maximum strength and heat transfer. Coils are pressure leak tested at 450 to 500 psi.

DEPENDABLE LENNOX COMPRESSOR (S)—A result of many years research and development. The large casing, spring loaded discharge valve and high suction intake ports result in effective "slugging" protection. Crankshaft is statically and dynamically balanced and has patented 3 mode oil pumping for positive pressure lubrication. Contoured piston for increased volumetric efficiency. 17 strategically located discharge mufflers result in extremely quiet operation. Motor is located within refrigerant flow pattern resulting in low motor winding temperatures. Twin internally mounted motor overloads and discharge temperature limiter for safe operation. In addition, the entire running gear assembly is spring mounted within the sealed casing.

EFFICIENT CONDENSING SECTION—Axial flow fans pull large air volumes through the extra large condenser coil(s) and discharge the air out the top. Condenser coil(s) have sub-cooling rows for increased efficiency. Condenser discharge grille is furnished.

NO REFRIGERANT CHARGING ON THE JOB—Refrigeration system is completely charged. No expensive and time consuming charging procedures are necessary.

REFRIGERATION SYSTEM—Complete factory sealed refrigeration system consists of compressor, condenser coil and fans, evaporator coil and twin blowers, refrigerant drier, refrigerant lines connected and a full charge of refrigerant. Controls consist of pressure switches, compressor relay, overload protection and "timed-off" cycle. System will operate satisfactory down to 35F outdoor air temperature without additional controls. If air conditioning operation is required at outdoor air temperatures colder than 35F a field installed low ambient control kit is required. Order BM-3861 for GCS3-953 & 1353 models and BM-3860 for GCS3-1853 & 2753 models.

GCS3-953-250 & GCS3-1353-350 models have a single Lennox L2 compressor in a single refrigeration system giving single stage cooling operation.

GCS3-1853-500 & GCS3-2753-500 models have twin Lennox L2 compressors in separate refrigeration systems and two stage operation is controlled by the two stage cooling thermostat furnished.

THICK INTERIOR INSULATION—All of the interior panels where conditioned air is handled are lined with 1" thick fiberglass insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fiberglass. In addition the entire bottom of unit is insulated with 1" thick styrofoam.

STANDARD CONTROLS—Limit control and "electronic-flame" proving controls protect heating system from abnormal operating conditions. New Lennox "Timed-Off" controls protect the refrigeration system against fast cycling caused by thermostat "jiggling". Combination two stage heat and single or two stage cool thermostat has a blower selection switch for "continuous" or "intermittent" blower operation.

NITE SETBACK CONTROLS (optional)—Manual or automatic nite setback control is available. It consists of a thermostat, sub-base, toggle switch and mounting plate. The plate mounts to four standard electric switch boxes located within the wall. In order to receive the plate, edges of the switch boxes must be at least 3 1/2" from protruding trim, etc. The plate is finished on both sides for dual mounting purposes. One side is for manual day-nite control, the other side serves automatic day nite control. Complete mounting and wiring instructions are included.

POWERFUL BLOWERS—Twin resiliently mounted blowers deliver large air volumes with low power consumption. Rugged blower motor support allows quick belt adjustment and motor change over.

OPTIONAL POWER SAVER (Fresh Air)—Mounts internally and GCS3 control system has "plug-in" electrical connections to handle operation. The Lennox POWER SAVER system consists of: Mechanically linked outdoor air, recirculated air and exhaust air dampers. The positioning of these dampers is accomplished by a Lennox 24 volt, spring return multi-position damper motor and controlled by the room thermostat, adjustable mixed air temperature controller, adjustable compressor monitor, adjustable outdoor air monitor and a climate selection switch. It is completely factory wired, simply make plug-in connections and you're in business. The two damper sections simply slide into cavities provided in GCS3 cabinet. The fresh air intake section is furnished with cleanable polyurethane air filters. The entire POWER SAVER system including wiring, can be installed in less than 30 minutes.

OPTIONAL MINIMUM FRESH AIR DAMPER—Externally mounted fresh air damper section complete with cleanable polyurethane air filters is available. See dimension drawing for location. It can be either manually or automatically controlled with the addition of a damper motor.

CLEANABLE AIR FILTER—Washable, vacuum cleanable polyurethane filter media is furnished as standard. It is easily accessible for cleaning and is coated with oil for increased efficiency. Use RP products filter coating No. 418 when reoiling. One inch thick media is standard, however filter rack will receive media up to 2" thick.

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 acrylic enamel.

ASSEMBLED UNIT—Equipment is shipped completely assembled, wired and piped ready to install. Installer has only to set unit, connect ductwork, gas supply, power supply and thermostat wire.

OPTIONAL ROOF MOUNTING FRAME—Durable and serviceable frame is 13 inches high. It sets on the roof support members and is actually built into the roof structure. The top mates to the GCS3 base, see page 41.

OPTIONAL AF4 ADAPTOR FRAME—Required for down-flo applications when equipment is installed with combustible curbing. Not required when optional RMF3 roof mounting frame is used.

THOROUGHLY TESTED AND APPROVED—A.G.A. certified as a combination heating-cooling unit for outdoor installation. Complies with USAS1 safety codes. Cooling system has been thoroughly tested and rated in the Lennox calorimeter room according to ARI Standard 210-64. Laboratory life cycle testing of the heat exchanger proves long life of heating element. In addition each unit is test operated at the factory before shipment.

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.

ACCESSORIES

Accessory Description	Accessory Order No. & Net Weight (lbs.)			
	GCS3-953-250	GCS3-1353-350	GCS3-1853-500	GCS3-2753-500
POWER SAVER	RD3-95-205 lbs	RD3-135-269 lbs	RD3-185-365 lbs	RD3-275-428 lbs
Minimum Fresh Air Damper	OAD3-95-45 lbs	OAD3-135-60 lbs	OAD3-185-90 lbs	OAD3-275-90 lbs
Automatic Kit For OAD3 Damper	BM-3740-9 lbs	BM-3740-9 lbs	BM-3740-9 lbs	BM-3740-9 lbs
Roof Mounting Frame	RMF3-95-115 lbs	RMF3-135-160 lbs	RMF3-185/275-210 lbs	RMF3-185/275-210 lbs
Combustible Deck Adaptor	AF4-95-14 lbs	AF4-135-16 lbs	AF4-185/275-20 lbs	AF4-185/275-20 lbs
Combination Ceiling Supply and Return Kit	BM-3564-20 lbs	BM-3565-29 lbs	BM-3566-40 lbs	BM-3567-43 lbs
Combination Ceiling Supply And Return Step Down Diffuser	RTD-95-92 lbs	RTD-135-118 lbs	RTD-185/275-131 lbs	RTD-185/275-131 lbs
*Combination Ceiling Supply And Return Flush Diffuser	FD-95 33 lbs. *FD-95-D 40 lbs.	FD-135 49 lbs. *FD-135-D 60 lbs.	FD-185 65 lbs. *FD-185-D 80 lbs.	FD-275 105 lbs. *FD-275-D 135 lbs.

*Flush diffuser with adjustable dampers.

SPECIFICATIONS

Model No.		GCS3-953-250	GCS3-1353-350	GCS3-1853-500	GCS3-2753-500
Heating Capacity Input (Btuh)	Low stage	175,000	200,000	275,000	275,000
	High stage	250,000	350,000	500,000	500,000
Heating Capacity Output (Btuh)	Low stage	131,250	150,000	206,100	206,100
	High stage	187,500	262,500	375,000	375,000
Cooling Capacity @ ARI Standard Conditions	Total capacity (Btuh)	*93,000	*130,000	200,000	273,000
	Compressor watts	9700	13,400	19,500	28,000
	Dehumidifying capacity	29%	25%	29%	26%
Blower wheel nom. diam. x wid. (in)		(2)-12 x 6	(2) 15 x 9	(2) 15 x 11	(2) 15 x 15
Blower Motor Hp. See Drive Selection Table	Minimum	2	3	3	5
	Maximum	3	5	5	7 1/2
Condenser Coil	Net face area (sq ft)	10.38	14.32	(2) - 10.75	(2)-12.15
	Tube diam. (in.) & No. of rows	1/2-4	1/2-4	1/2-4	1/2-6
	Fins per inch	13	13	13	13
Condenser Fan	Diam. (in.) & No. of blades	(2) 22-4	(2) 22-4	(2) 25 1/2-6	(2) 25 1/2-6
	Air volume (cfm)	6400	8000	13,500	13,250
	Motor hp	(2) 1/2	(2) 3/4	(2) 1	(2) 1
	Watts input (total)	1000	1560	2820	2500
Evaporator Coil	Net face area (sq ft)	7.70	9.35	(2) 7.67	(2) 8.75
	Tube diam. (in.) & No. of rows	1/2-4	1/2-4	1/2-4	1/2-4
	Fins per inch	10	13	10	13
‡No. & size of filters (in)		(1) 20 x 25 x 1 (2) 16 x 25 x 1	(6) 16 x 20 x 1	(4) 16 x 20 x 1 (4) 20 x 20 x 1	(8) 20 x 20 x 1
Gas supply connection MPT (in)		3/4 Nat. 3/4 Propane	1 Nat. 3/4 Propane	1 1/4 Nat. 1 Propane	1 1/4 Nat. 1 Propane
Recommended gas supply pressure WC (in)		6	6	6	6
Condensate drain size MPT (in)		3/4	3/4	1 1/4	1 1/4
Net weight of basic unit (lbs)		1540	1855	3000	3450

*ARI certified rating.

‡Cleanable polyurethane filter media.

NOTE—Two stage operation is not available for units fired with propane.

Fresh Air Filter Specifications For Optional RD3 & OAD3 Series

Model No.	RD3-95	RD3-135	RD3-185	RD3-275	OAD3-95	OAD3-135	OAD3-185	OAD3-275
*No. & Size of filters (in.)	(2) 20 x 25 x 1	(4) 16 x 25 x 1	(3) 20 x 36 x 1	(4) 20 x 36 x 1	(1) 16 x 20 x 1	(1) 20 x 20 x 1	(1) 25 x 27 x 1	(1) 26 x 31 x 1

Cleanable polyurethane media furnished.

RATINGS

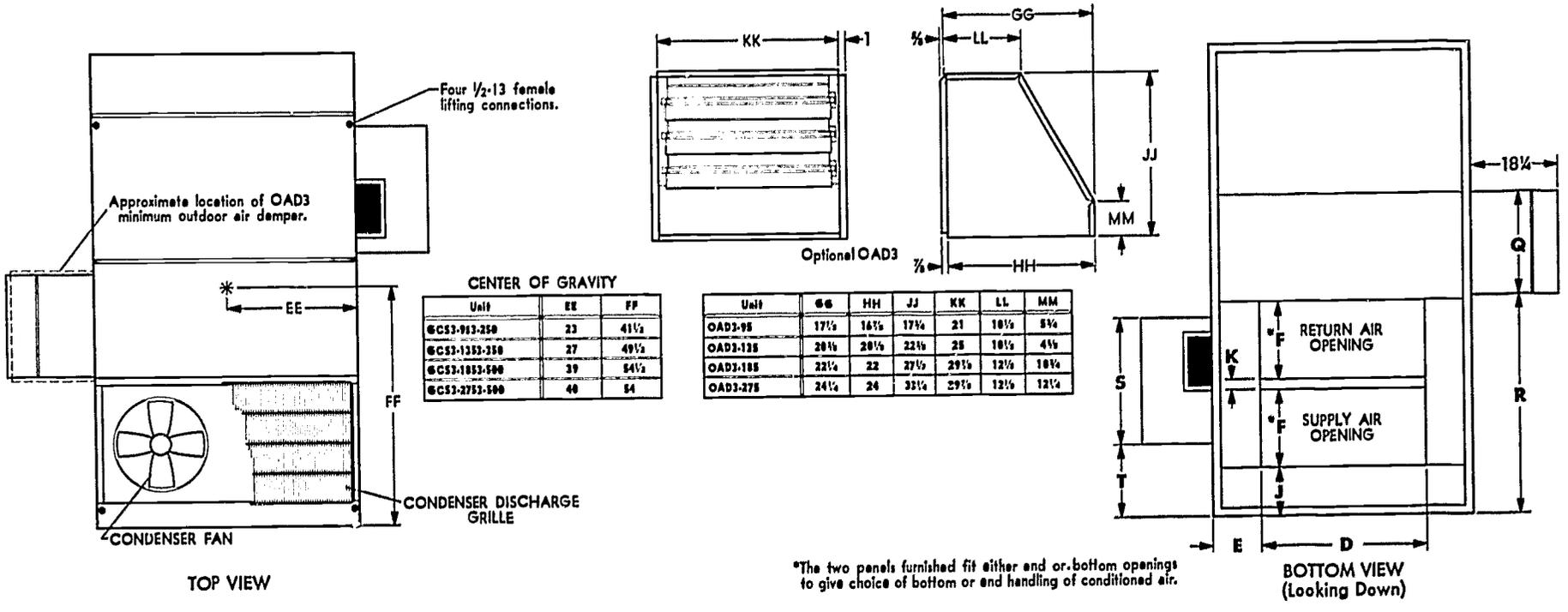
Unit Model No.	Evaporator Air, 80F Dry Bulb		Outdoor Air Temperature Entering Condenser (F)											
			85			95			105			115		
			Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total 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
GCS3-953-250	63	3000	95,000	.85	8500	89,700	.88	9100	84,300	.91	9800	79,500	.93	10,700
		3375	96,800	.87	8600	91,200	.91	9200	85,800	.94	9900	80,880	.97	10,800
		3750	98,400	.90	8700	92,700	.93	9300	87,200	.96	10,000	82,100	.99	10,900
	67	3000	102,200	.68	8900	96,600	.69	9500	91,200	.72	10,300	86,000	.73	11,100
		3375	104,200	.70	9000	98,500	.71	9600	92,800	.73	10,400	87,600	.75	11,300
		3750	106,000	.71	9100	101,000	.72	9700	94,400	.75	10,500	89,000	.77	11,400
	71	3000	109,700	.53	9300	103,800	.54	9900	98,300	.55	10,700	92,800	.56	11,600
		3375	112,000	.53	9400	106,000	.54	10,000	100,200	.56	10,800	94,700	.57	11,700
		3750	113,900	.54	9500	107,700	.55	10,100	101,800	.57	10,900	96,200	.58	11,800
GCS3-1353-350	64	4400	133,000	.84	12,150	127,000	.86	12,900	120,500	.89	13,750	112,000	.92	14,850
		4950	136,000	.87	12,300	129,000	.90	13,000	123,000	.92	13,850	114,000	.96	14,950
		5500	137,500	.90	12,400	131,000	.93	13,150	124,000	.96	13,950	115,500	1.00	15,050
	67	4400	141,000	.71	12,600	134,000	.72	13,350	127,000	.74	14,150	118,500	.77	15,300
		4950	143,500	.73	12,750	136,000	.75	13,500	129,000	.77	14,300	120,500	.80	15,400
		5500	144,500	.76	12,850	138,500	.77	13,650	131,000	.80	14,400	123,000	.82	15,500
	70	4400	148,500	.58	13,000	141,500	.59	13,850	134,000	.61	14,550	125,000	.63	15,700
		4950	151,000	.60	13,150	144,000	.61	14,000	136,000	.63	14,700	127,000	.65	15,800
		5500	154,000	.62	13,300	146,500	.63	14,150	139,000	.64	14,850	129,000	.67	15,900
GCS3-1853-500	63	6000	191,600	.84	17,000	181,400	.86	18,400	170,800	.90	19,900	160,100	.93	21,300
		6750	195,500	.87	17,100	185,000	.90	18,600	174,000	.93	20,100	162,900	.96	21,500
		7500	199,100	.89	17,300	188,300	.92	18,800	177,100	.95	20,300	165,700	.98	21,600
	67	6000	206,600	.67	17,800	195,800	.69	19,300	184,600	.71	20,800	173,100	.73	22,200
		6750	210,900	.69	18,000	199,800	.71	19,500	188,200	.73	21,000	176,300	.75	22,400
		7500	214,900	.71	18,200	203,400	.72	19,700	191,300	.74	21,200	179,200	.76	22,600
	71	6000	222,200	.52	18,600	210,600	.53	20,200	198,300	.54	21,600	186,100	.55	23,000
		6750	226,400	.53	18,900	214,500	.54	20,400	201,800	.55	22,000	189,100	.56	23,200
		7500	230,400	.54	19,100	218,100	.55	20,600	205,000	.56	22,000	192,000	.56	23,500
GCS3-2753-500	63	8800	261,000	.89	25,100	248,000	.92	26,600	235,000	.94	28,100	222,000	.98	30,000
		9900	266,500	.92	25,300	252,500	.95	26,800	239,200	.97	28,400	225,500	1.00	30,300
	67	8800	282,600	.70	26,000	268,000	.72	27,700	254,000	.74	29,400	239,400	.76	31,500
		9900	288,500	.73	26,400	273,000	.75	28,000	258,000	.76	29,700	242,700	.78	31,800
	71	8800	304,500	.54	27,300	288,000	.55	29,000	272,000	.56	30,800	255,800	.58	32,900
		9900	309,800	.55	27,600	292,600	.56	29,300	276,000	.58	31,200	259,500	.59	33,200

ELECTRICAL DATA

Model No.	GCS3-953-250				GCS3-1353-350				GCS3-1853-500				GCS3-2753-500				
	220/240	208/220	440/480	550/600	220/240	208/220	440/480	550/600	220/240	208/220	440/480	550/600	220/240	208/220	440/480	550/600	
Line voltage (3Ø 60 cy)	220/240 208/220 440/480 550/600 220/240 208/220 440/480 550/600 220/240 208/220 440/480 550/600 220/240 208/220 440/480 550/600																
Operating range (volts)	198-264 187-242 396-528 495-660 198-264 187-242 396-528 495-660 198-264 187-242 396-528 495-660 198-264 187-242 396-528 495-660																
Compressor(s)	FLA (total)	29.1	31.8	14.6	11.7	41.1	42.8	20.6	16.5	59.2	63.6	29.2	23.4	82.2	85.6	41.2	33.0
	LRA (total)	158.0	172.4	79.0	69.0	220.0	240.4	110.0	88.0	244.8	316.0	158.0	127.0	440.0	480.8	220.0	176.0
	Power factor	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85
Condenser Fan motors (2)	FLA (total)	6.0	6.0	*3.0	*2.4	7.6	7.6	*3.8	*3.0	8.6	8.6	4.3	3.5	8.6	8.6	4.4	3.5
	LRA (total)	24.0	24.0	24.0	24.0	28.0	28.0	28.0	28.0	38.4	38.4	19.2	15.4	38.4	38.4	19.2	15.4
350 VA control transformer (FLA)	1.6	1.7	**	**	1.6	1.7	**	**	1.6	1.7	.80	.70	1.6	1.7	.80	.70	
Evaporator Blower Motor	Horsepower	2	3	2	3	2	3	2	3	3	5	3	5	3	5	3	5
	FLA	5.6	9.4	5.6	9.4	2.8	4.7	2.2	3.8	9.4	14.6	9.4	14.6	4.7	7.3	3.8	5.9
	LRA	44.0	64.0	44.0	64.0	22.0	32.0	17.6	25.6	64.0	92.0	64.0	92.0	32.0	46.0	25.6	36.8
Maximum unit amps	42.3	46.1	45.1	48.9	20.4	22.3	16.3	17.9	59.7	64.9	61.5	66.7	29.1	31.7	23.3	25.4	78.8
Wire size up to 100 ft. of run	6	4	6	4	10	10	10	10	4	3	3	3	8	8	10	8	2
Time delay fuse, fuse-tron (amps)	50	70	60	70	30	30	30	30	70	80	80	80	40	40	30	40	90
Maximum allowable fuse (amps)	70	80	80	80	35	40	30	30	100	110	110	110	50	50	40	45	110
Disconnect rating (hp)	20	20	20	20	20	20	20	20	25	30	30	30	25	25	25	30	40

*Motors are rated at 230V, FLA shown is for step down transformer.
 **Not required control circuit is from step down transformer.

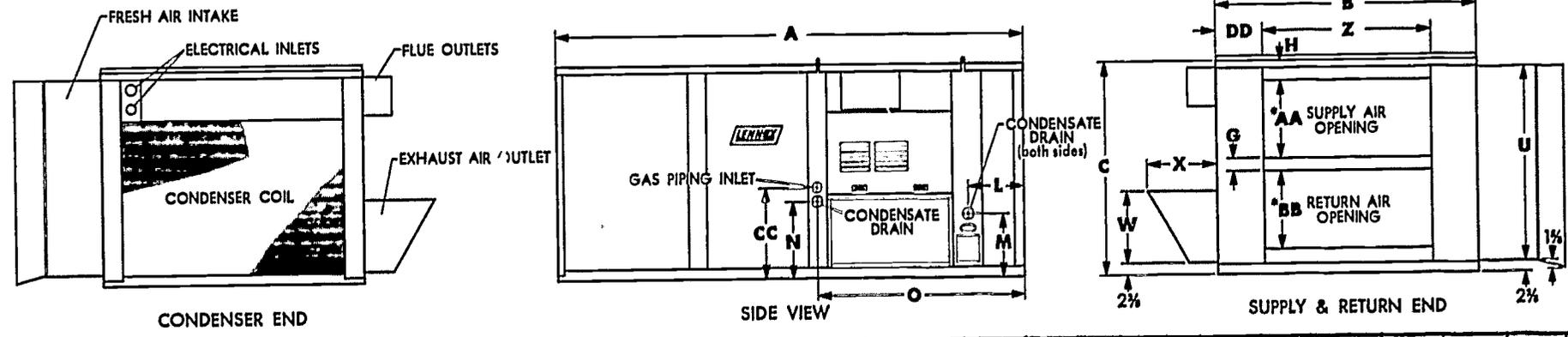
DIMENSIONS (in.)



CENTER OF GRAVITY

Unit	EE	FF
GCS3-953-250	23	41 1/2
GCS3-1353-350	27	49 1/2
GCS3-1853-500	39	54 1/2
GCS3-2753-500	40	54

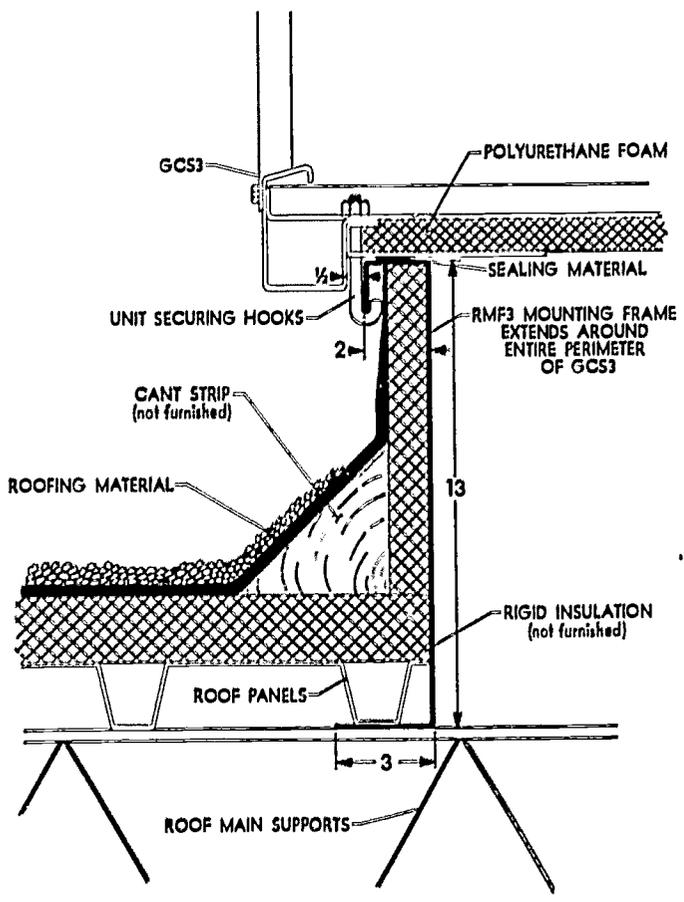
Unit	GG	HH	JJ	KK	LL	MM
OAD3-95	17 1/2	16 1/2	17 1/2	21	10 1/2	8 1/2
OAD3-135	20 1/2	20 1/2	22 1/2	25	10 1/2	4 1/2
OAD3-185	22 1/2	22	27 1/2	29 1/2	12 1/2	18 1/4
OAD3-275	24 1/2	24	32 1/2	29 1/2	12 1/2	12 1/4



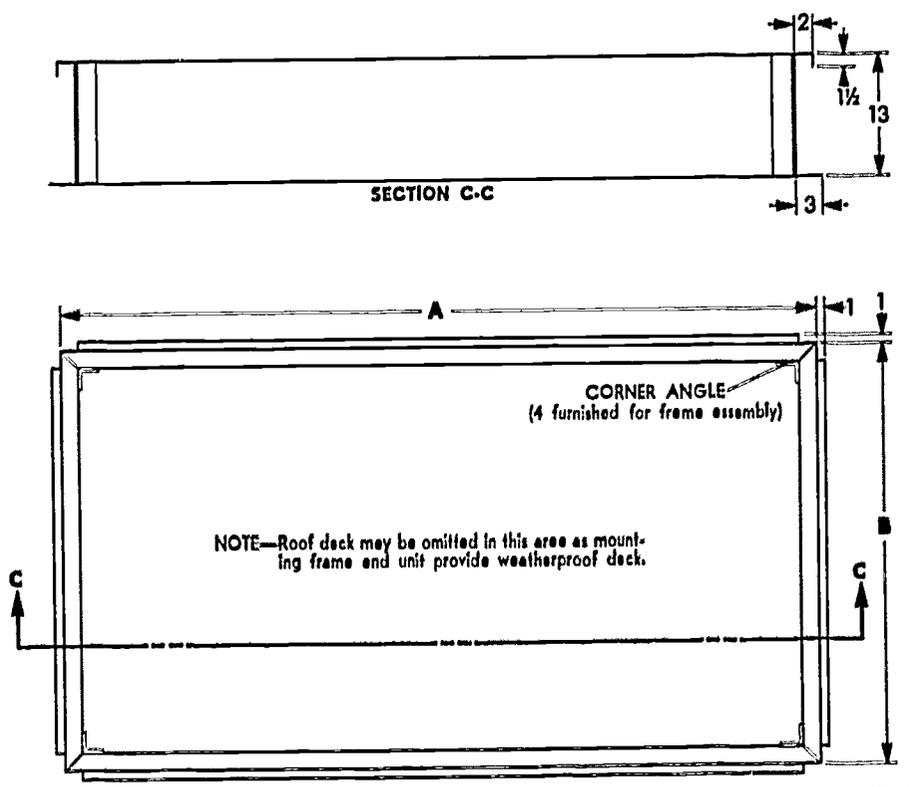
Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	Q	R	S	T	U	W	X	Z	AA	BB	CC	DD
GCS3-953	97	54	44 5/8	34 3/16	9 13/16	16 1/16	2 1/2	4 1/4	10	2	11 7/8	13 3/8	17 1/2	43 1/4	21	45 1/8	25 7/8	15 1/8	40 3/4	14 7/8	14 5/8	34 3/8	16 3/8	16 3/8	19 1/8	9 13/16
GCS3-1353	117	63	50 5/8	40 1/16	11 5/16	20 1/16	2 1/2	2 1/2	12 1/2	2	15 5/8	13 3/4	17 5/8	56 7/8	31 1/2	58 7/8	36 1/2	18 3/8	46 3/4	14 7/8	14 5/8	40 3/8	20 3/8	20 3/8	19 5/8	11 5/16
GCS3-1853	137	83	52 5/8	51	16	24	2	1 1/2	12 1/4	3	15 1/2	17	18 1/2	66 1/8	37 1/2	68	35 1/2	28 1/2	48 3/4	15 3/4	15 5/16	51 3/8	23 7/16	22 3/16	20 7/8	15 7/8
GCS3-2753	137	83	62 5/8	51	16	24	6 3/8	2	12 5/8	3	16 3/16	22 5/16	26 3/4	66 1/8	37 1/2	68	35 1/2	28 1/2	58 3/4	24 1/8	20 1/8	51 3/8	24 3/8	24 3/8	29 1/4	15 7/8

INSTALLATION CLEARANCES Furnace Side — 54" Right Side — 6" Left Side — 36" Rear — 24" Floor — Combustible

RECOMMENDED FLASHING FOR RMF3 ROOF MOUNTING FRAME

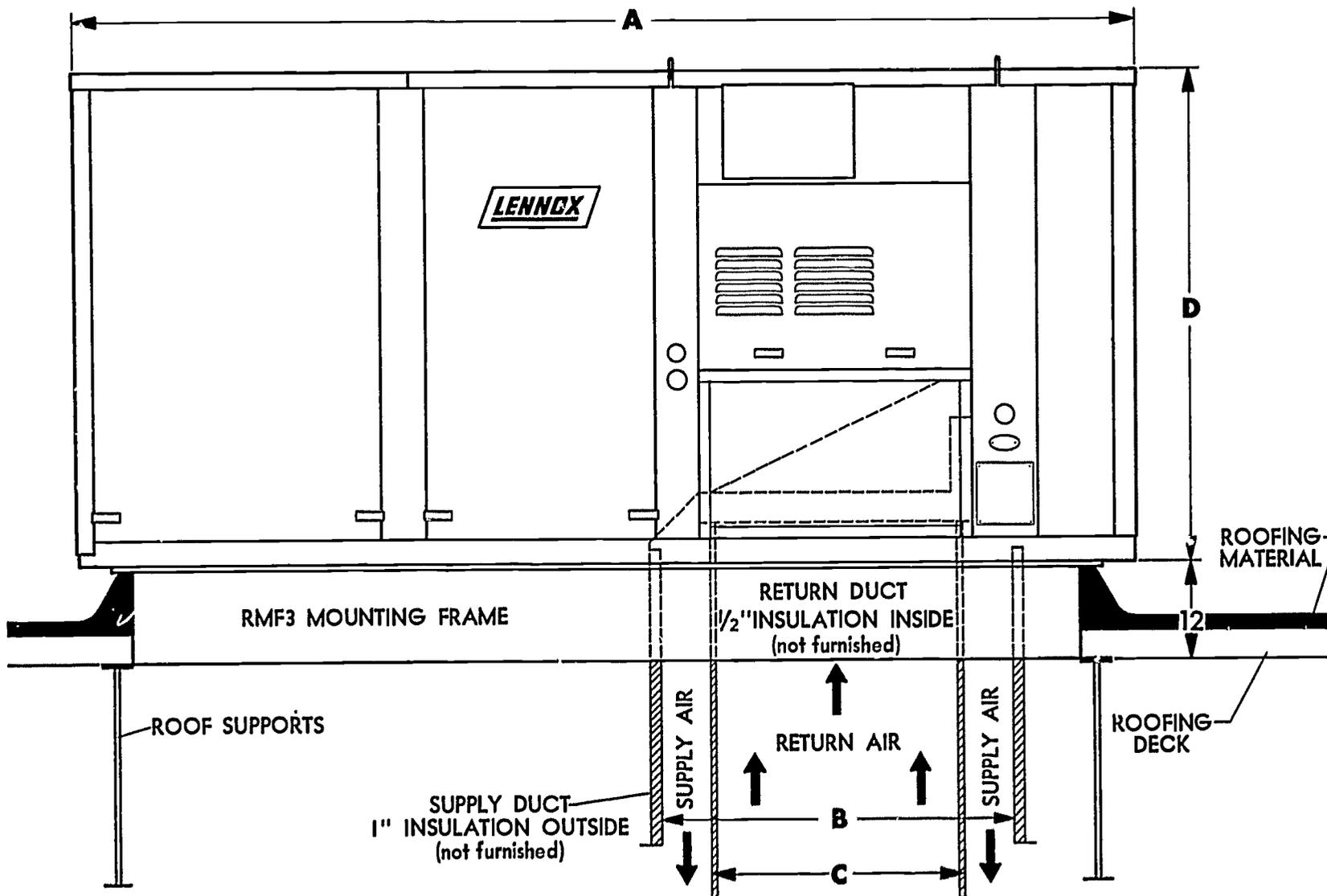


RMF3 ROOF MOUNTING FRAME



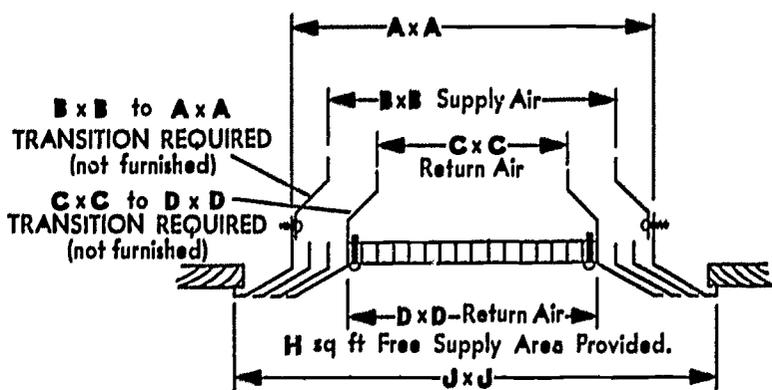
Unit Model No.	Roof Mounting Frame	A	B
GCS3-953-250	RMF3-95	86 3/8	47 3/4
GCS3-1353-350	RMF3-135	106 1/4	56 3/4
GCS3-1853-500 GCS3-2753-500	RMF3-185/275	126 1/2	76 3/4

MOUNTING DETAILS



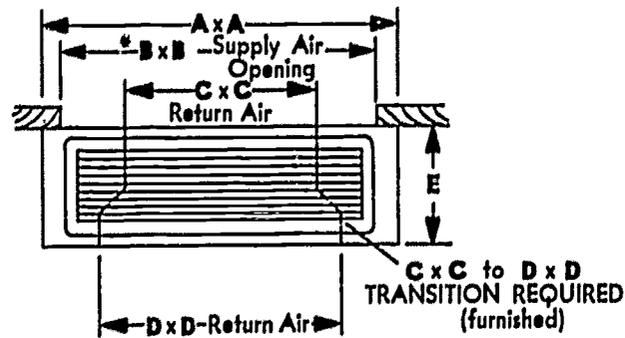
Unit Model No.	A	B	C	D
GCS3-953-250	97	34 x 33 ⁷ / ₈	22 ¹ / ₈	44 ⁵ / ₈
GCS3-1353-350	117	42 x 39 ⁷ / ₈	28 ⁷ / ₈	50 ⁵ / ₈
GCS3-1853-500	137	50 ⁷ / ₈	35 ⁷ / ₈	52 ⁵ / ₈
GCS3-2753-500	137	50 ⁷ / ₈	35 ⁷ / ₈	62 ⁵ / ₈

FLUSH



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

RTD STEP-DOWN



(4) F x G Supply Air Grilles Furnished
(1) D x D Return Air Grille Furnished

Unit Model No.	Supply and Return Air Grille Model No.	A	B	C	D	E	F	G	H	J
GCS3-953-250	RTD-95 step-down	42	34 ¹ / ₈	23 ¹ / ₈	30	10	36	6		
	FD-95 Flush (Removable Core)	42	34 ¹ / ₈	23 ¹ / ₈	30				6 sq. ft.	46
	FD-95-D Flush (Hinged Core)									
GCS3-1353-350	RTD-135 step-down	48	*42 ¹ / ₈ x 40	29 ¹ / ₈	36	12	36	8		
	FD-135 Flush (Removable Core)	48	*42 ¹ / ₈ x 40	29 ¹ / ₈	36				7 sq. ft.	52
	FD-135-D Flush (Hinged Core)									
GCS3-1853-500	RTD-185/275 step-down	60	51	36	42	15	48	12		
	FD-185 Flush (Removable Core)	†51			†36				9.06 sq. ft.	55
	FD-185-D Flush (Hinged Core)									
GCS3-2753-500	RTD-185/275 step-down	60	51	36	42	15	48	12		
	FD-275 Flush (Removable Core)	63	51	36	45				13.50 sq. ft.	67
	FD-275-D Flush (Hinged Core)									

*Opening in ceiling is not square for GCS3-1353-350 unit. The 42¹/₈ dimension shown in table is parallel with dimension B on side elevation drawing.

†No transition required.

BLOWER DATA

GCS3-953 BLOWER PERFORMANCE CHART

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT—Inches Water Gauge										
	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
2600	700 .70	750 .80	795 .90	840 1.00	880 1.07	920 1.15	960 1.25	995 1.35	1030 1.45	1065 1.55	1100 1.70
2800	750 .90	800 1.00	845 1.10	885 1.20	925 1.30	960 1.40	1000 1.50	1035 1.60	1070 1.70	1100 1.80	1130 1.90
3000	810 1.10	850 1.20	890 1.30	930 1.40	970 1.50	1005 1.60	1040 1.75	1075 1.85	1110 1.95	1140 2.05	1170 2.15
3200	860 1.30	900 1.40	940 1.55	980 1.65	1015 1.75	1050 1.90	1080 2.00	1115 2.15	1145 2.25	1175 2.35	1210 2.50
3400	915 1.55	950 1.70	990 1.80	1025 1.95	1060 2.05	1090 2.15	1125 2.30	1150 2.40	1185 2.50	1215 2.65	1245 2.80
3600	970 1.85	1005 2.00	1045 2.15	1075 2.25	1105 2.40	1135 2.50	1165 2.65	1195 2.80	1225 2.90	1255 3.00	1285 3.15
3800	1020 2.20	1050 2.35	1085 2.45	1120 2.60	1150 2.75	1180 2.90	1210 3.05	1240 3.15	1270 3.30	1300 3.45	.....

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

GCS3-1353 BLOWER PERFORMANCE CHART

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT—Inches Water Gauge										
	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
3800	555 1.00	600 1.15	640 1.30	680 1.45	725 1.60	765 1.85	800 2.05	835 2.25	.....	.....	.....
4000	585 1.20	625 1.35	665 1.50	705 1.65	745 1.85	780 2.00	815 2.20	850 2.45	890 2.65	.....	.....
4200	615 1.40	650 1.50	690 1.65	730 1.85	770 2.05	800 2.25	835 2.50	870 2.70	905 2.90	935 3.15	.....
4400	645 1.60	680 1.75	720 1.90	755 2.10	790 2.30	825 2.55	855 2.70	890 2.90	925 3.20	955 3.45	985 3.65
4600	675 1.80	710 2.00	745 2.15	780 2.35	815 2.60	845 2.80	880 3.00	910 3.20	945 3.50	975 3.70	1005 3.95
4800	700 2.05	740 2.25	770 2.40	805 2.65	835 2.80	865 3.00	900 3.25	930 3.50	965 3.75	995 4.00	1020 4.25
5000	735 2.35	765 2.55	800 2.75	830 2.95	860 3.10	890 3.30	920 3.55	950 3.75	985 4.10	1015 4.30	1040 4.55
5200	765 2.65	795 2.85	825 3.05	855 3.25	885 3.45	915 3.60	945 3.85	975 4.15	1005 4.35	1035 4.60	1060 4.90
5400	795 2.95	820 3.15	850 3.35	880 3.55	910 3.75	940 4.00	965 4.25	995 4.45	1025 4.75	1050 5.00	1080 5.30
5600	825 3.30	850 3.45	880 3.70	905 3.90	930 4.10	960 4.30	990 4.50	1015 4.75	1045 5.05	1070 5.35	1095 5.60

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

GCS3-1853 BLOWER PERFORMANCE CHART

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT—Inches Water Gauge										
	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
5000	490 .95	530 1.15	570 1.30	605 1.40	635 1.55	670 1.70	700 1.85	730 2.00	760 2.15	785 2.30	815 2.50
5500	540 1.30	575 1.45	615 1.65	645 1.80	675 1.95	705 2.10	735 2.25	765 2.40	790 2.60	820 2.80	840 2.95
6000	590 1.70	620 1.85	650 2.00	685 2.20	715 2.40	740 2.60	775 2.80	800 3.00	825 3.15	850 3.30	875 3.50
6500	640 2.15	670 2.35	700 2.55	725 2.70	750 2.85	780 3.05	810 3.30	835 3.50	860 3.65	885 3.85	910 4.10
7000	685 2.65	715 2.90	740 3.10	770 3.30	800 3.50	825 3.70	850 3.90	875 4.15	900 4.35	920 4.55	940 4.75
7500	735 3.25	765 3.45	790 3.70	815 3.95	840 4.15	865 4.35	890 4.60	910 4.80	930 5.00	955 5.25	980 5.55

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

GCS3-2753 BLOWER PERFORMANCE CHART

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT—Inches Water Gauge										
	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
6500	530 1.40	570 1.60	605 1.80	640 1.95	675 2.15	705 2.35	730 2.55	760 2.75	785 2.95	810 3.10	835 3.30
7000	570 1.80	605 1.95	640 2.15	675 2.35	705 2.55	735 2.75	760 2.95	790 3.15	815 3.35	840 3.55	865 3.85
7500	615 2.20	645 2.40	675 2.60	705 2.80	735 3.00	765 3.20	795 3.45	820 3.65	845 3.90	870 4.10	895 4.35
8000	650 2.65	680 2.85	715 3.10	745 3.30	770 3.50	800 3.75	825 3.95	850 4.20	875 4.45	900 4.70	920 4.90
8500	690 3.15	720 3.40	750 3.65	780 3.85	805 4.10	830 4.30	855 4.55	880 4.80	905 5.10	930 5.35	950 5.55
9000	730 3.80	760 4.05	790 4.30	815 4.50	840 4.75	865 5.05	890 5.25	915 5.50	940 5.80	960 6.05	980 6.25
9500	775 4.55	800 4.75	825 5.00	850 5.20	875 5.45	900 5.75	925 6.05	950 6.30	970 6.55	990 6.80	1015 7.15
10,000	815 5.25	840 5.50	860 5.70	885 6.00	915 6.30	935 6.55	960 6.85	980 7.15	1000 7.40	1020 7.65	1040 7.95

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

ACCESSORY PRESSURE DROP

Model No.	Air Volume (cfm)	Total Pressure Drop (inches water gauge)				
		Power Saver	RTD Combination Ceiling Supply and Return			FD Ceiling Supply & Return
			2 Sides Open	3 Sides Open	4 Sides Open	
GCS3-953-250	2600	.08	.31	.28	.23	.19
	2800	.08	.38	.34	.29	.23
	3000	.09	.43	.39	.34	.26
	3200	.09	.49	.44	.38	.29
	3400	.09	.55	.49	.43	.32
	3600	.10	.62	.54	.48	.36
	3800	.10	.68	.59	.53	.40
GCS3-1353-350	3800	.03	.39	.31	.25	.18
	4000	.03	.43	.35	.28	.21
	4200	.03	.49	.40	.33	.25
	4400	.04	.55	.45	.38	.29
	4600	.04	.62	.51	.43	.34
	4800	.04	.70	.57	.49	.39
	5000	.05	.79	.66	.57	.46
	5200	.05	.87	.73	.63	.51
GCS3-1853-500	5400	.05	.93	.79	.68	.55
	5000	.02	.555	.465	.425	.22
	5500	.02	.64	.53	.475	.27
	6000	.03	.73	.605	.54	.32
	6500	.03	.84	.685	.60	.37
	7000	.04	.95	.78	.67	.42
GCS3-2753-500	7500	.04	1.06	.86	.74	.47
	6500	.00	.45	.39	.35	.17
	7000	.00	.53	.44	.39	.20
	7500	.00	.64	.50	.44	.24
	8000	.00	.79	.58	.51	.29
	8500	.00	.....	.69	.60	.34
	9000	.00	.....	.85	.70	.38
	9500	.00	.....	.....	.81	.43
10,000	.00	.....	.....	.94	.49	

NOTE—POWER SAVER has no appreciable pressure drop with GCS3-2753-500.
NOTE—Pressure drop includes grille and 3' of ductwork.

DRIVE SELECTION

Model No.	Nominal Motor Hp	Maximum Usable Hp	*Rpm Range Of All Available Drive Setups @ 1720 Rpm Motor Speed
GCS3-953-250	2	2.30	860-1200
	3	3.45	990-1200
GCS3-1353-350	3	3.45	765-955
	5	5.75	893-1087
GCS3-1853-500	3	3.45	720-875
	5	5.75	815-970
GCS3-2753-500	5	5.75	740-890
	7 1/2	8.63	830-980

*Specify exact Bhp, Rpm and power characteristics required when ordering unit.

CEILING SUPPLY AIR THROW DATA

Model No.	Air Volume (cfm)	Radius of Diffusion (Feet)	
		*RTD Step Down	*Flush
GCS3-953-250	3000	33	18
	3375	37	21
	3750	41	25
GCS3-1353-350	4400	44	27
	4950	48	32
	5500	53	37
GCS3-1853-500	6000	40	38
	6750	44	43
	7500	47	48
GCS3-2753-500	8800	51	50
	9900	55	57

*Four sides open

GUIDE SPECIFICATIONS

General—Furnish and install an A.G.A. approved one piece combination air to air DX mechanical cooling system and gas fired heating system, complete with automatic controls.

The installed weight shall not be more than lbs. The equipment shall be shipped completely assembled, precharged, piped and wired internally ready for field connections. In addition, manufacturer shall test operate system at the factory before shipment.

Roof Mounting Frame—Furnish and install a steel roof mounting frame. 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.

Air Distribution—Equipment shall be capable of (end or bottom) handling of conditioned air.

Furnish and install a (flush or stepdown) combination ceiling supply and return grille. It shall be capable of not less than ft. radius of effective throw.

Power Saver (Fresh Air Dampers)—Furnish and install complete with all controls an air mixing damper assembly including fresh air, recirculated air and exhaust air dampers. The fresh air section shall be equipped with cleanable air filters. The assembly shall mount within the confines of the GCS3 casing.

Cooling System—The total certified cooling capacity shall not be less than Btuh with an evaporator air volume of cfm, an entering wet bulb air temperature of F, an entering dry bulb air temperature of F and a condenser entering air temperature of F. The total compressor power input shall not exceed KW at the above conditions. The coils shall be non-ferrous construction with aluminum fins mechanically bonded to seamless copper tubes. Condenser coil(s) shall have sub-cooling rows.

The compressor(s) shall be resiliently mounted, have built-in 3 mode crankshaft lubrication, crankcase heater,

discharge temperature limiter, current and temperature sensing motor overloads and be guaranteed for five years. The cooling system shall be protected by high and low pressure switches and a five minute compressor timed off cycle controller.

Heating System—The heating capacity output shall be Btuh with a gas input of Btuh. Automatic controls furnished shall give 50/50 two stage operation.

Cylindrical tube and drum heat exchanger shall be constructed of aluminized steel. Heat exchanger shall be capable of handling 100% outdoor air at any temperature and have a 10 year warranty when handling uncontaminated air. Stainless steel power burner shall use 100% secondary air and have intermittent spark ignition and 100% safety shutoff electronic flame sensing controls. Visual inspection of burner flame shall be possible without removing casing panels.

Air Movers—Twin centrifugal conditioned air blowers shall have permanently lubricated ball bearings, adjustable belt drives and be capable of delivering cfm at an external static pressure of inches water gauge requiring not more than bhp and rpm. The condenser fans shall be direct driven. All motors shall have inherent protection devices.

Frame and Casing—The frame shall be of welded construction. The casing shall be of galvanized panels with a baked on outdoor acrylic finish. The entire bottom of cabinet shall be insulated with not less than 1" thick styrofoam. Cabinet panels shall be insulated with not less than 1" thick fiberglass.

Air Filters—Cleanable filters furnished shall have not less than sq. ft. of free area.

Service Access—All components, wiring and inspection areas shall be completely accessible through removable panels which have locking door handles.