



**CHA8-1853 & CHA8-2753  
SINGLE PACKAGE AIR CONDITIONERS  
HORIZONTAL & DOWN-FLO**

**\*200,000 to 273,000 Btuh Total Cooling Capacity  
72,400 to 288,700 Btuh Optional Electric Heat**

**\*At ARI standard test conditions**

ENGINEERING DATA

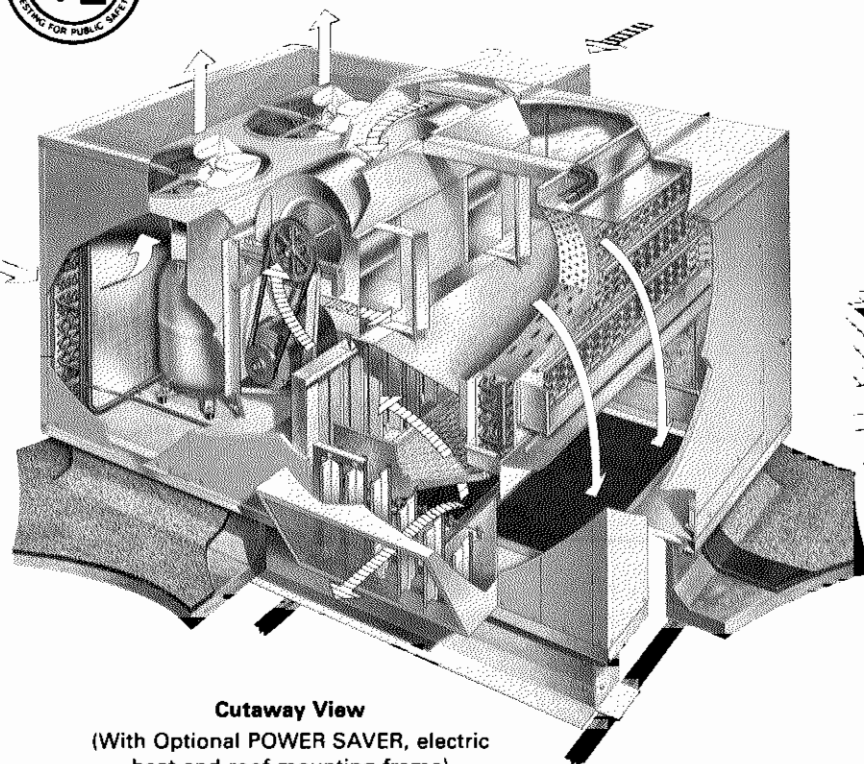
COOLING UNITS

PACKAGED

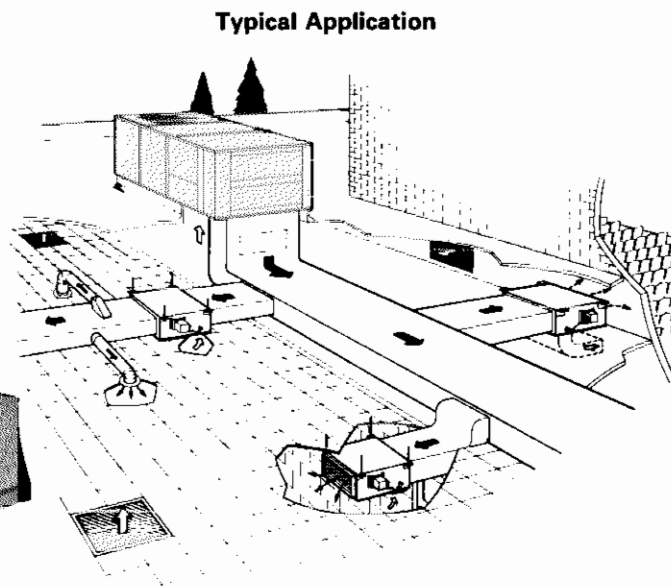
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April 1, 1981

Supersedes 10-15-79



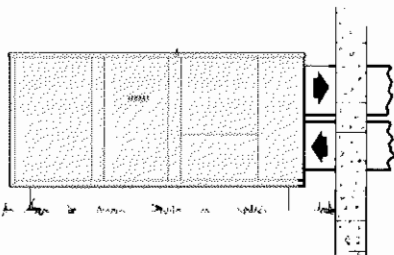
**Cutaway View**  
(With Optional POWER SAVER, electric heat and roof mounting frame)



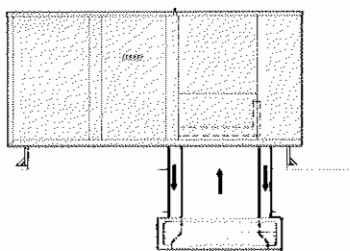
**Typical Application**  
Rooftop Installation with Optional ZDB1 Blower Powered Mixing Damper Boxes.

**Three Air Patterns Possible**

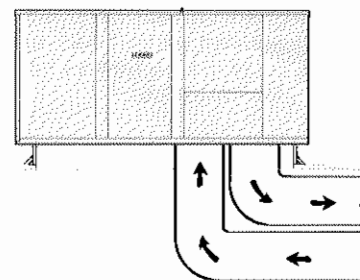
End panels fit bottom openings to give air pattern choice. Separate adapter required for combination ceiling supply and return application.



Installation thru the wall — Slab or Roof



Combination Supply and Return Air Ceiling Diffuser  
Step-down or Flush Diffuser



Separate Supply and Return (Double) Duct

**Single Package Rooftop Air Conditioner & Mounting Frame Saves Installation Costs & Floor Space**

The CHA8 series DX air conditioning units, with bottom handling of conditioned air, are designed primarily for rooftop installation with the optional POWER SAVER™ and RMF3 roof mounting frame. The separate roof frame mates to the bottom of the CHA8 unit and when flashed into the roof it permits weatherproof duct connection and entry into the conditioned area. No additional roof curbing or flashing is required. The single package unit can also be installed on a slab at grade level with end handling of conditioned air. The insulated single cabinet houses highly efficient air cooled DX cooling, powerful belt drive blowers, air filters, optional electric heat and the optional POWER SAVER dampers which are shipped complete with all controls wired. Complete factory sealed refrigeration system consists of compressors, con-

denser coil and fans, evaporator coil and twin blowers, refrigerant drier, refrigerant lines connected and a full charge of refrigerant. Controls furnished consist of pressure switches, compressor relay, overload protection and timed-off cycle. Optional POWER SAVER equipment and controls reduce cooling operating costs and satisfy any local code fresh air requirements. An externally mounted OAD3 minimum fresh air damper (manual or auto) is also available. In addition optional ZDB1 series blower powered mixing damper boxes are available for zone control system installations. Units are shipped completely assembled wired and piped ready to install. Each unit is test operated at the factory insuring proper operation. Installer has only to set unit, connect ductwork and make necessary field wiring connections.

NOTE — Specifications, Ratings and Dimensions subject to change without notice.

## FEATURES

**Thoroughly Tested And Approved** — Units have been thoroughly tested in the Lennox environmental test room and rated at ARI Standard test conditions. In addition units have been sounded tested in the Lennox reverberant sound test room and rated according to ARI Standard 270. Units and components within are bonded for grounding to meet safety standards for servicing required by U.L. and NEC. Units and optional electric heaters are U.L. Listed.

**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 enamel. Large removable panels provide complete service access.

**Thick Interior Insulation** — All of the interior panels where conditioned air is handled and the entire bottom of unit is insulated with thick fiberglass insulation.

**Lennox Coils** — Extra large coils (condenser and evaporator) are constructed of ripple-edged aluminum fins machine fitted to copper tubes for maximum strength and heat transfer. Copper tubing construction provides maximum coil life and ease of service. Coils are thoroughly tested under pressure to insure leak proof construction.

**Efficient Condensing Section** — Direct drive fans draw large air volumes through the extra large condenser coils and discharges the air out the top. Condenser coils have sub-cooling rows for increased efficiency. Condenser discharge grille is furnished.

**Dependable Lennox Compressors** — Units have twin Lennox L2 compressors in separate refrigeration systems and two stage operation is controlled by the two stage cooling thermostat. The large casing, spring loaded discharge valve, high suction intake ports and crankcase heater 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 in-winding temperature sensing thermostats provide safe operation. High and low pressure controls (automatic reset) are provided and factory installed in compressor terminal box. A low ambient cut-out thermostat prevents compressor operation below 22°F. The entire running gear assembly is spring mounted within the sealed housing and the compressor is installed in the unit on resilient rubber mounts assuring quiet and vibration free operation.

**Powerful Blowers** — Twin resiliently mounted blowers deliver large air volumes with low power consumption. Rugged blower motor support allows quick belt adjustment and motor changeover.

**Cleanable Air Filters** — Washable, vacuum cleanable polyurethane filter media is furnished as standard. Filters are easily accessible for cleaning and are coated with oil for increased efficiency. Use RP products filter coating No. 418 (order number 30165) when reoiling. One inch frame filter is standard, filter rack will receive up to 2" filters.

**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 CHA8 base. A securing bolt kit (BM-6909), containing bolts to secure unit to frame, is available as optional equipment and must be ordered extra.

**Optional Electric Heat** — Available factory or field installed. See Electric Heat table for capacities and models available. Electric heat section installs upstream from evaporator coil. The heating elements are helix wound nichrome wire exposed to the air stream for instant heat transfer, lower coil temperatures and longer heater life. The elements are accurately located and insulated from the plated supporting frame by high quality insulators.

**Optional Thermostat** — Thermostat is not furnished and must be ordered extra. For cooling only applications a two stage cooling thermostat is required. When optional electric heat is ordered a heating-cooling thermostat is required. The heating portion may be two stage-cooling on most models. For two stage electric heat operation an additional relay (order no. P-8-3251) is required and must be ordered extra.

**Optional POWER SAVER (Fresh Air)** — Available factory or field installed. 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 24 volt modulating spring return damper motor and controlled by the room thermostat, adjustable mixed air controller, adjustable compressor monitor and enthalpy control. The enthalpy control senses the total heat content of the outdoor air. This unique control prevents excessive moisture laden outdoor air that will add to the cooling load from entering the unit and yet permits cool dry air capable of cooling to enter, thus taking full advantage of free outdoor air for cooling. For field installation the two damper sections simply slide in cavities provided in the unit cabinet. Equipment is shipped factory wired and only requires simple plug-in connection for operation. Fresh air intake section is furnished with cleanable polyurethane air filters. See Specification table for ordering data.

**Optional Minimum Fresh Air Damper** — Externally mounted OAD3 fresh air damper section complete with cleanable polyurethane air filters is available. See Specification table for ordering. It can be either manually or automatically controlled with the addition of a damper motor.

**Optional Nite Setback Controls** — A nite thermostat (P-8-8899), subbase (P-8-8889) and adaptor plate (P-8-8954) (to adapt to vertical outlet box) is available. Two nite setback kits are provided: 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. An optional 24 hour skip day clock (P-8-3744 with carryover or P-8-4168 less carryover) to program the unit automatically is available. Clock is recommended to be used with the BM-4761 kit and is optional for use with kit BM-4762. In addition, a 7 day time clock (P-8-6858 less carryover or P-8-10213 with carryover) is also available as an option.

**Optional Remote Readout Panel** — Readout Panel (BM2-5358) and Rough-in Box (BM1-5385) must be ordered extra. See bulletin (page 71) in Accessories Section. When panel is used for nite setback operation the following controls must be used and ordered extra; nite thermostat (P-8-8899), subbase (P-8-8889), adaptor plate (P-8-8954) and 24 hour skip-day clock (P-8-3744 with carryover or P-8-4168 less carryover). A 7 day time clock (P-8-6858 less carryover or P-8-10213 with carryover) is also available as an option.

**Optional Combination Supply and Return Diffusers** — Lennox offers two different styles of air diffusers. The RTD step-down model extends below the ceiling level and discharges conditioned air out through grilles on all four sides. The FD model installs almost flush with the ceiling and discharges air down and out through the outside vanes. Both models are equipped with adjustable vanes for distribution and diffusion of conditioned air. Return air enters through the center grille on both models.

**Optional End Supply & Return Air Discharge Kit** — Available for field conversion from bottom supply and return air handling to end supply and return air pattern. Kit contains divider panel(s), fasteners and instructions. See Specification table for ordering data.

**Optional Low Ambient Controls** — 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. See Specification table for ordering.

**Optional Blower Powered Mixing Damper Boxes** — ZDB1 series mixing air boxes with a cfm range of 270 to 1900 are available for zone control system applications. Units install in the duct system within the structure. For data see Accessories section, page 7.

## SPECIFICATIONS

Model No.		CHA8-1853	CHA8-2753
★SRN @ ARI Standard Conditions		23	23
**Cooling Capacity @ARI Standard 210 Test Conditions	Total capacity (Btuh)	200,000	273,000
	Total unit watts	25,000	35,500
	*EER (Btuh/watt)	8.0	7.7
	Dehumidifying capacity	29%	26%
Refrigerant charge (R-22)		40 lbs.	48 lbs.
Evaporator Blower	Blower wheel nominal diam. x width (in.)	(2) — 15 x 11	(2) — 15 x 15
	Motor horsepower (Minimum — Maximum)	3 — 5	5 — 7-1/2
Condenser Coils	Net face area (sq. ft.)	(2) 10.75 ea.	(2) 12.15 ea.
	Tube diam. (in.) & No. of rows	1/2 — 4	1/2 — 6
	Fins per inch	13	13
Condenser Fans	Diam. (in.) & No. of blades	(2) 25-1/2 — 6	(2) 25-1/2 — 6
	Air volume (cfm)	13,500	13,250
	Motor hp	(2) 1	(2) 1
	Watts input (total)	2820	2500
Evaporator Coils	Net face area (sq. ft.)	(2) 7.67 ea.	(2) 8.75 ea.
	Tube diam. (in.) & No. of rows	1/2 — 4	1/2 — 4
	Fins per inch	13	13
No. & size of filters (in.) — Washable polyurethane filter media		(4) 20 x 20 x 1 (4) 16 x 20 x 1	(8) 20 x 20 x 1
Condensate drain size MPT (in.)		1-1/4	1-1/4
Net weight of basic unit (lbs.)		2785	3280
Optional POWER SAVER (Net Wt.) and No. & size of filters (in.)		RD3-185 (510 lbs.) (3) 20 x 36 x 1	RD3-275 (606 lbs.) (4) 20 x 36 x 1
Optional minimum fresh air damper (Net Wt.) and No. & size of filters (in.)		OAD3-185 (101 lbs.) (1) 25 x 27 x 1	OAD3-275 (107 lbs.) (1) 26 x 31 x 1
Optional Automatic Kit for OAD3 Damper (Net Wt.)		BM-5563 (9 lbs.)	BM-5563 (9 lbs.)
Optional RP2-1 Remote Readout Panel (Net Wt.)		BM2-5358 (5 lbs.)	BM2-5358 (5 lbs.)
Optional RP2-00-1 Rough-in Box (Net Wt.)		BM1-5358 (3 lbs.)	BM1-5358 (3 lbs.)
Optional Remote Readout Panel Kit (Net Wt.)		BM-5893 (5 lbs.)	BM-5893 (5 lbs.)
Optional Low Ambient Control Kit (Net Wt.)		LB-80249BA (8 lbs.)	LB-80249BA (8 lbs.)
Optional Roof Mounting Frame (Net Wt.)		RMF3-185/275 (200 lbs.)	RMF3-185/275 (200 lbs.)
Optional Combination Ceiling Supply and Return Kit		BM-3566 (40 lbs.)	BM-3567 (43 lbs.)
Optional Combination Ceiling Supply And Return Step Down Diffuser (Net wt.)		RTD-185/275 (172 lbs.)	RTD-185/275 (172 lbs.)
Optional Combination Ceiling Supply And Return Flush Diffuser (Net Wt.)		FD-185 (64 lbs.) †FD-185-D (64 lbs.)	FD-275 (69 lbs.) †FD-275-D (69 lbs.)
Optional End Supply & Return Air Discharge Kit (Net Wt.)		LB-44878CA (20 lbs.)	LB-44877CA (25 lbs.)
††Optional blower powered mixing damper boxes (Net Wt.)		ZDB1-400 (51 lbs.), ZDB1-800 (76 lbs.), ZDB1-1200 (108 lbs.), & ZDB1-1600 (119 lbs.)	

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

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

\*Energy Efficiency Ratio in accordance with ARI Standard 210.

†Flush diffuser with adjustable baffle blades.

††See bulletin (Page 7) in Accessories Section for complete data.

## RATINGS

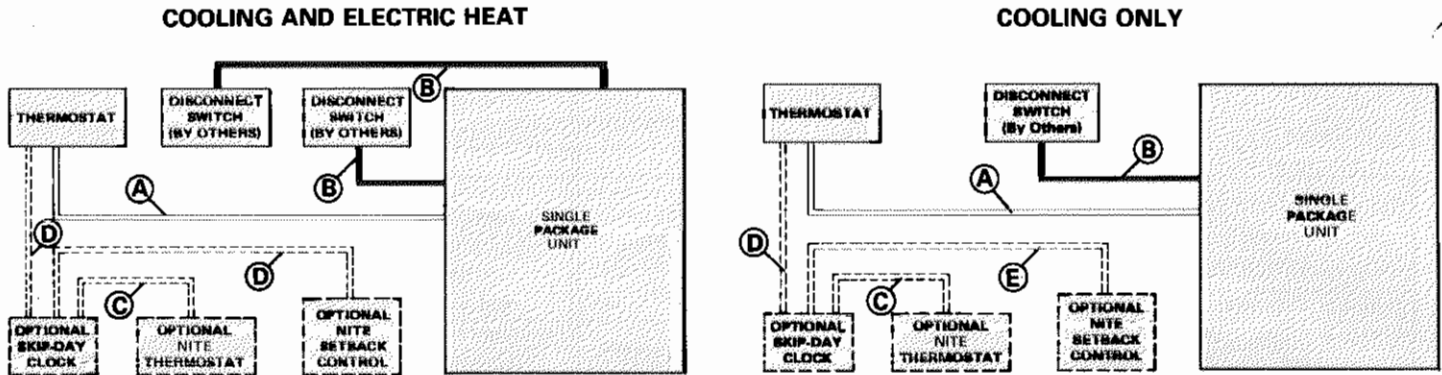
Unit Model No.	Evaporator Air 80F Dry Bulb		Outdoor Air Temperature Entering Condenser (F)											
	Entering Wet Bulb Degrees (F)	Total Air Volume (Cfm)	85			95			105			115		
			Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible 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
CHA8-1853	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
CHA8-2753	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.		CHA8-1853				CHA8-2753			
Line voltage data — 60hz — 3 phase		208/240		440/480		208/240		440/480	
Compressors (2)	Rated load amps (total)	64.6		29.2		85.6		41.2	
	Locked rotor amps (total)	370.0		186.0		480.0		256.0	
Condenser Fan motors (2)	Full load amps (total)	8.6		4.3		8.6		4.3	
	Locked rotor amps (total)	43.2		21.6		43.2		21.6	
Evaporator Blower Motor	Horsepower	3	5	3	5	5	7-1/2	5	7-1/2
	Full load amps	9.4	14.6	4.7	7.3	14.6	21.0	7.3	10.5
	Locked rotor amps	64.0	92.0	32.0	46.0	92.0	140.0	46.0	70.0
Recommended Maximum Fuse Size (amps)		110		125		50		50	
Unit Power Factor		.85	.85	.85	.85	.90	.90	.90	.90
†Minimum Circuit Ampacity		91.1	97.3	41.2	44.0	120.9	128.4	57.5	60.9

†Refer to National Electrical 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



NOTE — Connect main power supply to disconnect box with largest rating.

All wiring must conform to NEC and local electrical codes.

- A — \*Four wire low voltage (Two Stage Cool Only)  
 \*Five wire low voltage (Two Stage Cool and Single Stage Heat)  
 \*Six wire low voltage (Two Stage Cool and Two Stage Heat)

- B — 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)

\*If POWER SAVER and Nite Setback controls are used one additional wire is required.

Additional field wiring is not required when POWER SAVER is used. All wiring is provided in CHA8 and in POWER SAVER, simply make plug-on connections to complete job for field installations.

## OPTIONAL ELECTRIC HEAT

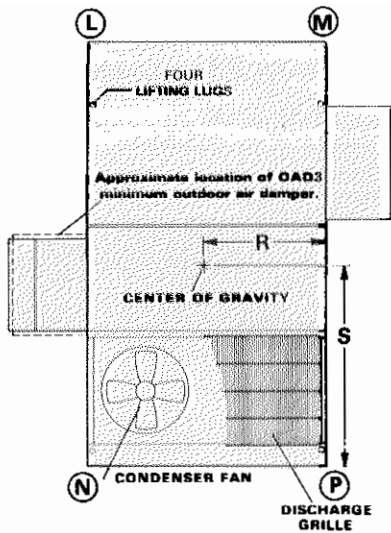
Model No.	Electric Heat Model No. & Net Weight (lbs.)	No. of Steps	Volts Input	Kw Input	Btuh Output	†Minimum Circuit Ampacity
CHA8-1853 CHA8-2753	ECH8-275-963 (200 lbs.)	1	208	21.1	72,400	85.0
		1	220	23.7	80,900	
		1	230	25.9	88,400	
		1	240	28.2	96,300	
	ECH8-275-963 (196 lbs.)	1	440	23.7	80,900	42.5
		1	480	28.2	96,300	
		2	208	42.4	144,700	
	*ECH8-275-1923 (196 lbs.)	2	220	47.4	161,800	170.0
		2	230	51.7	176,800	
		2	240	56.4	192,500	
	*ECH8-275-1923 (195 lbs.)	2	440	47.4	161,800	85.0
		2	480	56.4	192,500	
		3	208	63.6	217,100	
	*ECH8-275-2883 (196 lbs.)	3	220	71.1	242,700	255.0
		3	230	77.7	265,200	
3		240	84.6	288,700		
*ECH8-275-2883 (195 lbs.)	3	440	71.1	242,700	127.5	
	3	480	84.6	288,700		

NOTE — Cooling only applications require one disconnect switch. Heating-cooling applications require two disconnect switches, connect main power supply to switch with the largest rating. See field wiring diagrams.

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

\*May be two stage controlled.

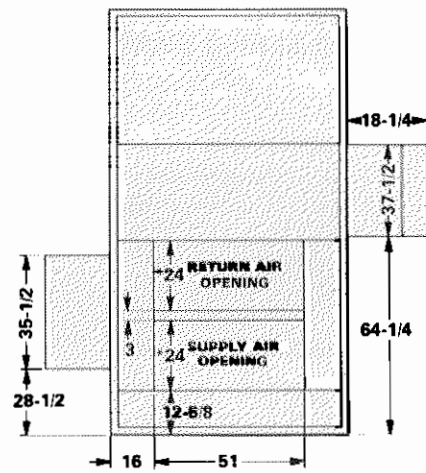
## DIMENSIONS (inches)



**TOP VIEW**

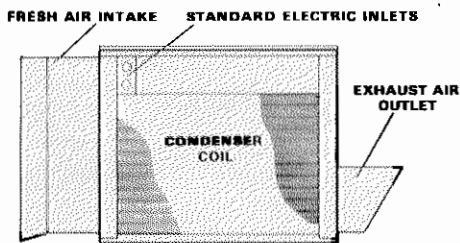
CORNER WEIGHTS (lbs.)					
Model No.	L	M	N	P	
CHA8-1853	With Power Saver	640	611	1047	997
	Without Power Saver	487	550	822	926
CHA8-2753	With Power Saver	773	702	1264	1147
	Without Power Saver	588	633	993	1066

CENTER OF GRAVITY (in.)			
Model No.	R	S	
CHA8-1853	With Power Saver	42½	52
	Without Power Saver	39	51
CHA8-2753	With Power Saver	43½	52
	Without Power Saver	40	51

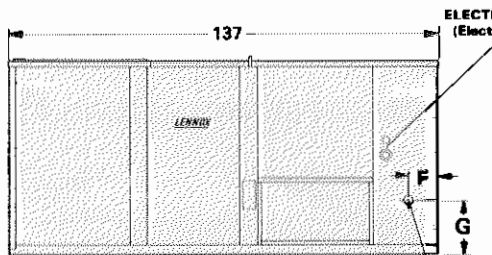


**BOTTOM VIEW (Looking Down)**

\*The two panels furnished fit either end or bottom opening to give choice of bottom or end handling of conditioned air.

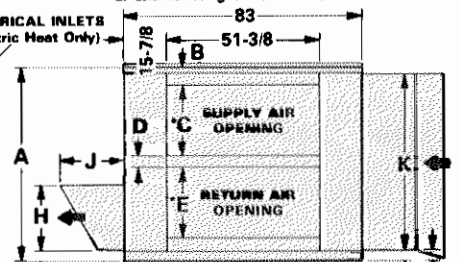


**LEFT SIDE VIEW**



**FRONT VIEW**

CONDENSATE DRAIN  
(both sides)

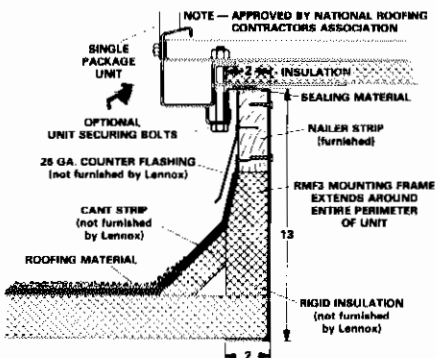


**RIGHT SIDE VIEW**

Model No.	A	B	C	D	E	F	G	H	J	K
CHA8-1853	52-5/8	1-1/2	23-3/8	1	23-3/8	15-1/2	17	15-3/4	15-5/16	48-3/4
CHA8-2753	62-5/8	2-3/8	24-3/8	6-3/8	24-3/8	16-3/16	22-5/16	24-1/8	20-1/8	58-3/4

## RMF3-185/275 ROOF MOUNTING FRAME

### RECOMMENDED FLASHING DETAIL

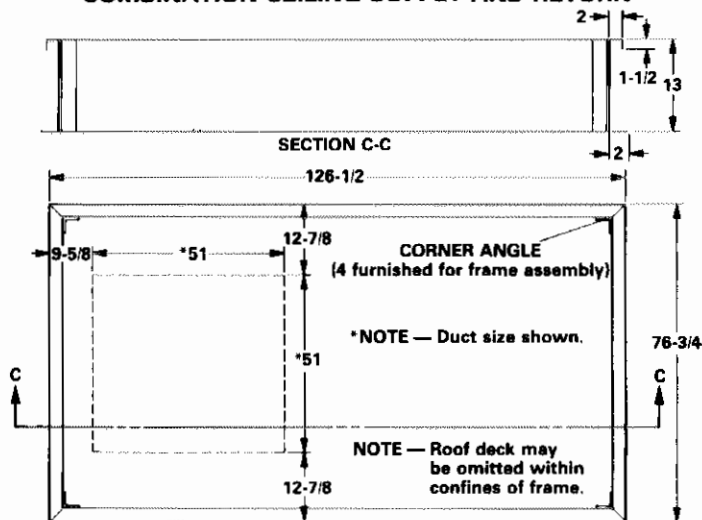


### FRAME SPECIFICATIONS

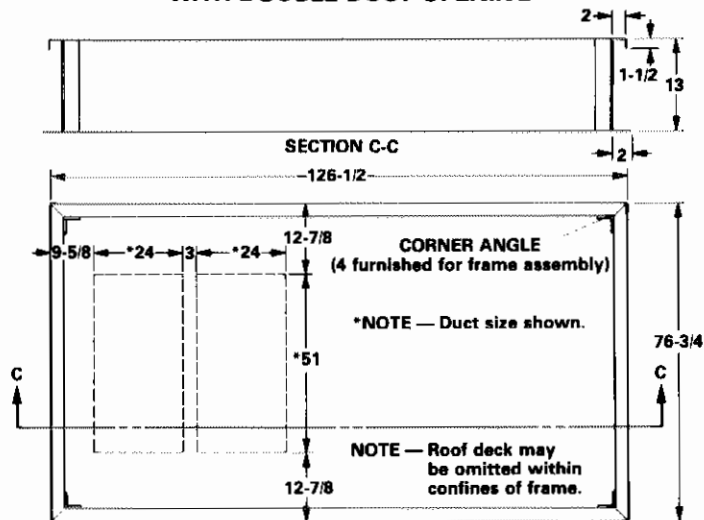
Roof Mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on either side of the center of gravity. The side joint plate must be welded to the RMF3-185/275 frame if it is spanned more than 80 inches or cantilevered more than 40 inches.

Mounting Frame Height	13 inches
Frame moment of inertia (I)	70 in. <sup>4</sup>
Frame section modulus $\frac{I}{C}$	10.8 in. <sup>3</sup>
Mounting frame weight (foot of length)	5.3
Mounting frame design strength (psi)	20,000

### ROOF MOUNTING FRAME COMBINATION CEILING SUPPLY AND RETURN

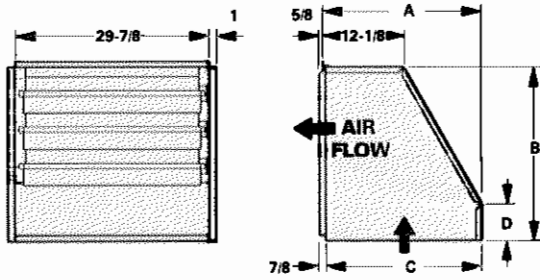


### ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING



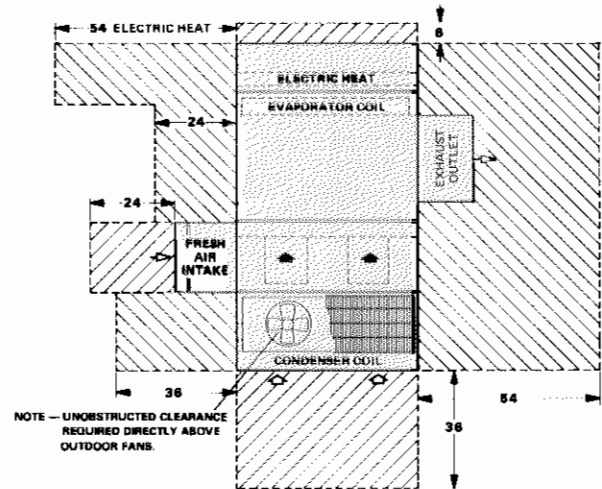
## DIMENSIONS (inches)

### OAD3 SERIES DAMPER ASSEMBLY (Optional)

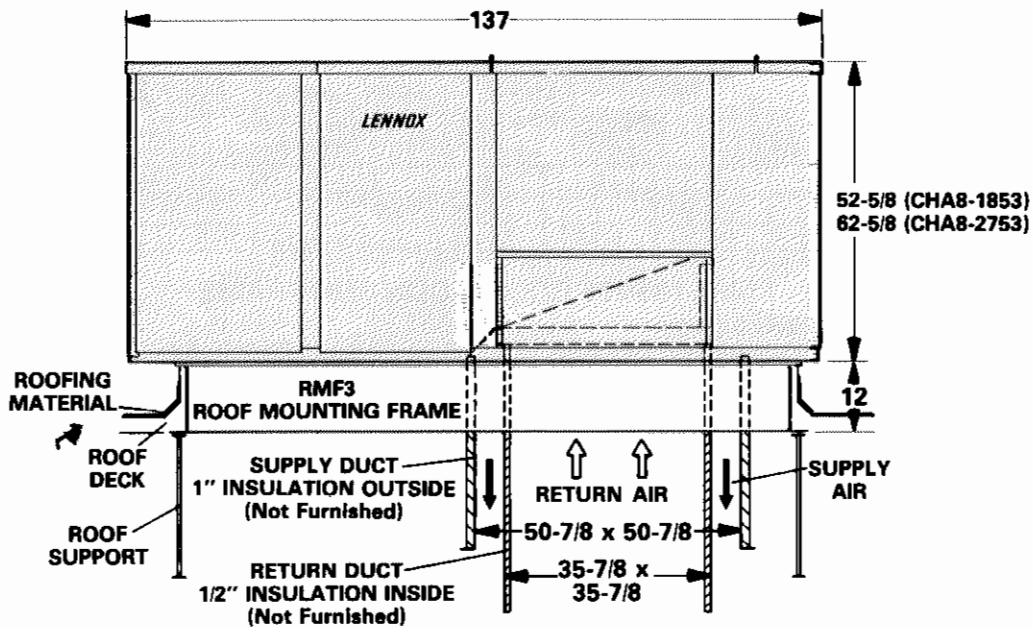


Unit	A	B	C	D
OAD3-185	22-1/4	27-1/2	22	10-3/4
OAD3-275	24-1/4	33-1/4	24	12-1/4

### INSTALLATION CLEARANCES — (inches)

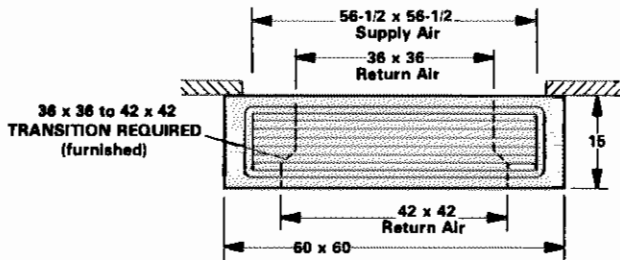


### COMBINATION CEILING SUPPLY AND RETURN AIR DISTRIBUTION SYSTEM



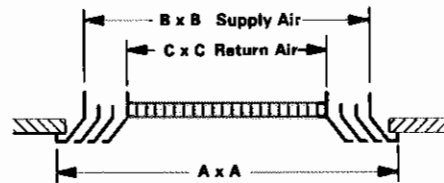
### CEILING DIFFUSERS

#### RTD Step-down



(4) 48 x 12 Supply Air Grilles Furnished  
(1) 15 x 15 Return Air Grille Furnished

#### FD Flush



D Sq. ft. Free Supply Area Provided

NOTE — Also available with adjustable baffle blades. Same dimensions as above.

Unit Model No.	Supply and Return Air Grille Model No.	A	B	C	D
CHA8-1853	FD-185 Flush	56-3/4	51	36	9.06 sq. ft.
	FD-185-D Flush (Adj. Baffle Blades)				
CHA8-2753	FD-275 Flush	68-3/4	63	45	13.50 sq. ft.
	FD-275-D Flush (Adj. Baffle Blades)				

# BLOWER DATA

## CHA8-1853 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 filters in place.

## CHA8-2753 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 filters in place.

### ACCESSORY PRESSURE DROP

Model No.	Air Volume (cfm)	Power Saver	Total Pressure Drop (inches water gauge)				
			RTD Combination Supply and Return			FD Ceiling Supply and Return	
			2 Sides Open	3 Sides Open	4 Sides Open	2 Sides Open	4 Sides Open
CHA8-1853	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	
	7500	.04	1.06	.86	.74	.47	
*CHA8-2753	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	.24	
	9000	.00	----	.85	.70	.38	
	9500	.00	----	----	.81	.43	
	10,000	.00	----	----	.94	.49	

\*NOTE — POWER SAVER has no appreciable pressure drop with CHA8-2753.  
 NOTE — Pressure drop includes grille and 3' of ductwork.  
 NOTE — ECH8 electric heaters have no appreciable pressure drop.

### DRIVE SELECTION

Model No.	Nominal Motor Hp	Maximum Usable Hp	*Rpm Range of All Available Drive Setups @ 1720 Rpm Motor Speed
CHA8-1853	3	3.45	720-875
	5	5.75	815-970
CHA8-2753	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
CHA8-1853	6000	40	30
	6750	44	34
	7500	47	38
CHA8-2753	8800	51	33
	9900	55	37

\*Four sides open and terminates at a point where conditioned air reaches a velocity of 50 fpm at the ceiling.

\*\*Four sides open and terminates at a point where conditioned air reaches a velocity of 35 fpm at the ceiling.

### FD CEILING DIFFUSER RECOMMENDED MAX. AIR FLOW

Ceiling Height (feet)	8	9	10	12	15	20
Air Flow (cfm) per side	200	350	550	900	1500	4000

NOTE — This data is based on differentials between 15 and 25 degrees.

## GUIDE SPECIFICATIONS

**Prepared for the guidance of architects, consulting engineers and mechanical contractors.**

**General** — Furnish and install a single package air to air DX mechanical cooling system complete with automatic controls. The single package unit shall be a standard product of a firm regularly engaged in the manufacture of heating-cooling equipment. The manufacturer shall have parts and service available through the United States.

The installed weight shall not be more than . . . . . lbs. Entire unit shall have a width of not more than . . . . . inches, a depth of not more than . . . . . inches and an overall height of not more than . . . . . inches. The equipment shall be shipped completely factory assembled, precharged, piped and wired internally ready for field connections. In addition, manufacturer shall test operate system at the factory before shipment.

**Approvals** — Single package unit shall be U.L. Listed. All wiring shall be in compliance with NEC.

**Roof Mounting Frame** — Furnish and 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. 13 inch high frame shall be approved by National Roofing Contractors Association.

**Air Distribution** — Equipment shall be capable of bottom or end handling of conditioned air. All air distribution ducts shall be fiberglass or . . . . . ga. galvanized steel insulated with . . . . . inch thick . . . . . lb. density fiberglass or equivalent.

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

**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 temperature of . . . . . F. The compressor power input shall not exceed . . . . . kw at these conditions.

The coils shall be non-ferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested. Coil face area shall be not less than . . . . . sq. ft. (evaporator) and . . . . . sq. ft. (condenser).

The coils shall be non-ferrous construction with aluminum fins mechanically bonded to seamless copper tubes. Condenser coil shall have sub-cooling rows.

The compressor shall be resiliently mounted, have built-in 3 mode crankshaft lubrication, crankcase heater, discharge temperature limiter, current and temperature sensing motor overloads.

The cooling system shall be protected by high and low pressure switches and a five minute compressor timed off cycle controller.

**Additive Electric Heaters** — The certified total heating capacity output shall be . . . . . Btuh with . . . . . kw input at . . . . . volts power supply.

Optional electric heaters shall be available. Heating elements shall be nichrome bare wired exposed directly to the air stream. They shall be equipped with fusible links. Time delays shall bring the elements on and off in sequence with a time delay between each element.

**Cabinet** — Shall be galvanized steel with a baked-on outdoor enamel paint finish. 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. Lifting lugs shall be provided for rigging.

**Service Access** — All components, wiring and inspection areas shall be completely accessible through removable panels.

**Supply Air Blowers** — Twin centrifugal blowers shall have permanently lubricated ball bearings, adjustable belt drive and motor mount where belt tension can be easily adjusted. The entire assembly shall be floated on resilient rubber mounts. Blower wheel shall be statically and dynamically balanced. Blower shall be capable of delivering . . . . . cfm at an external static pressure of . . . . . inches water gauge requiring . . . . . bhp and . . . . . rpm.

**Condenser Fans** — Twin propeller type condenser fans shall discharge vertically and be direct driven by a . . . . . hp motor. Fan motor shall be totally enclosed with sleeve bearings, permanently lubricated, inherently protected and equipped with rain shield. Fan shall be protected by a steel guard.

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

**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 CHA8 casing. Damper motor shall be 24 volt, modulating spring return.

**Night Setback Controls** — Complete controls shall be available to program the equipment for day-night operation.

**Remote Readout Panel** — Shall be available for installation within the conditioned area to control and observe equipment operation. The panel shall include signal lights to indicate: system on, combustion lockout, condensing unit inoperative and dirty filter. 7 day time clock, factory installed in the unit, shall provide night setback operation.

**Blower Powered Mixing Damper Boxes** — Shall be available for zone control system applications. Furnish and install complete with controls an air mixing blower powered unit including conditioned air dampers, recirculated air dampers and direct drive blower(s). Capable of delivering . . . . . Cfm at an external static pressure of . . . . . inches water gauge. The blower powered unit shall install in the duct system within the structure.