

## CB3 SERIES UNITS

### I - INTRODUCTION

The CB3 features a two cabinet design consisting of a C3 coil and a B3 blower. They may be installed for up-flow, down-flow or horizontal supply air pattern. Figure 1 shows the different stacking arrangements. Lennox duct furnaces can be added for heating-cooling or reheat applications. Figure 2 shows some typical applications.

The CB3 is available in 7-1/2, 11, 15, 17 and 25 nominal tons of cooling. A choice of optional 50/50 split evaporators is available for all models except CB3-95V. Each refrigeration circuit includes an expansion valve. The 50/50 split coil is used with a solenoid valve on HS7-1853 applications. The solenoid valve controls refrigerant flow to one coil section for capacity reduction and latent heat control. It in-

stalls directly ahead of the expansion valve and must be sized for 50% of the total CB3 evaporator capacity. Figure 3 illustrates the field piping for the CB3 50/50 split coil application.

The CB3-95V model can be used as a heat pump indoor unit with the field installation of a check valve kit (M-2438).

B3 drive kits are available in various size motors and voltages. Refer to the drive selection chart for specific information. A motor start contactor (P-8-6075 for single phase, P-8-6076 for three phase) can be used on all applications except the 7-1/2 HP motor used with the CB3-305. The 7-1/2 HP motor requires a magnetic starter (P-8-9271) with three overload heaters.

Figure 4 shows a CB3 cutaway.

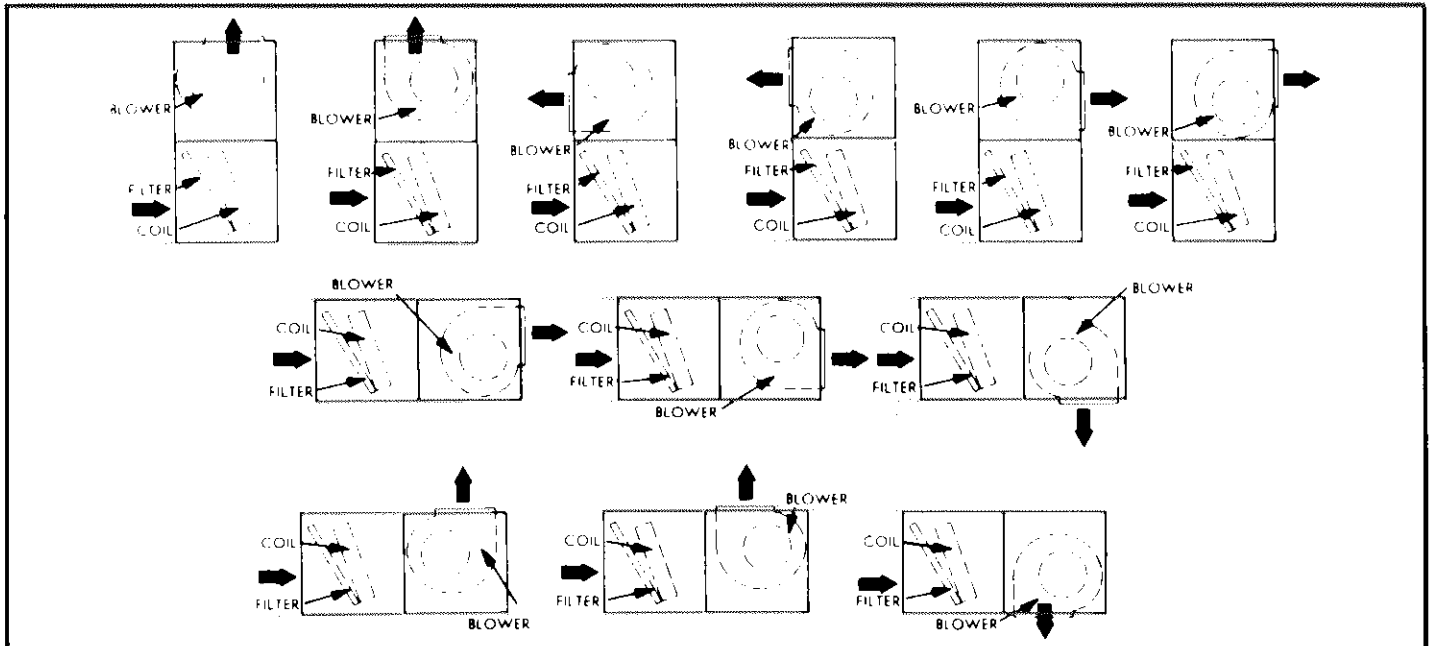


FIGURE 1

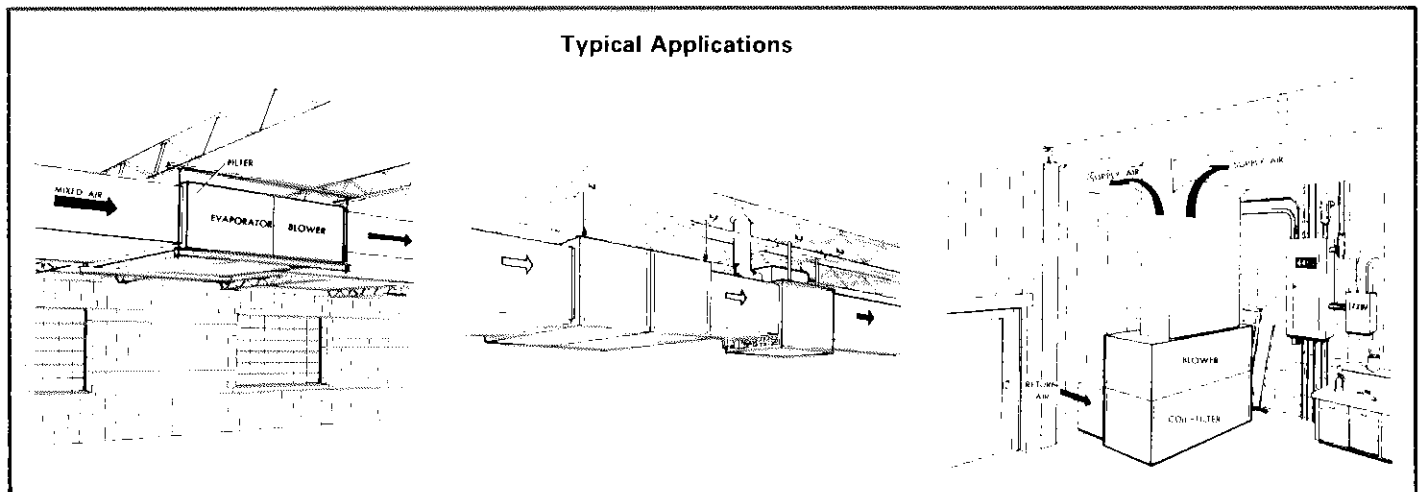
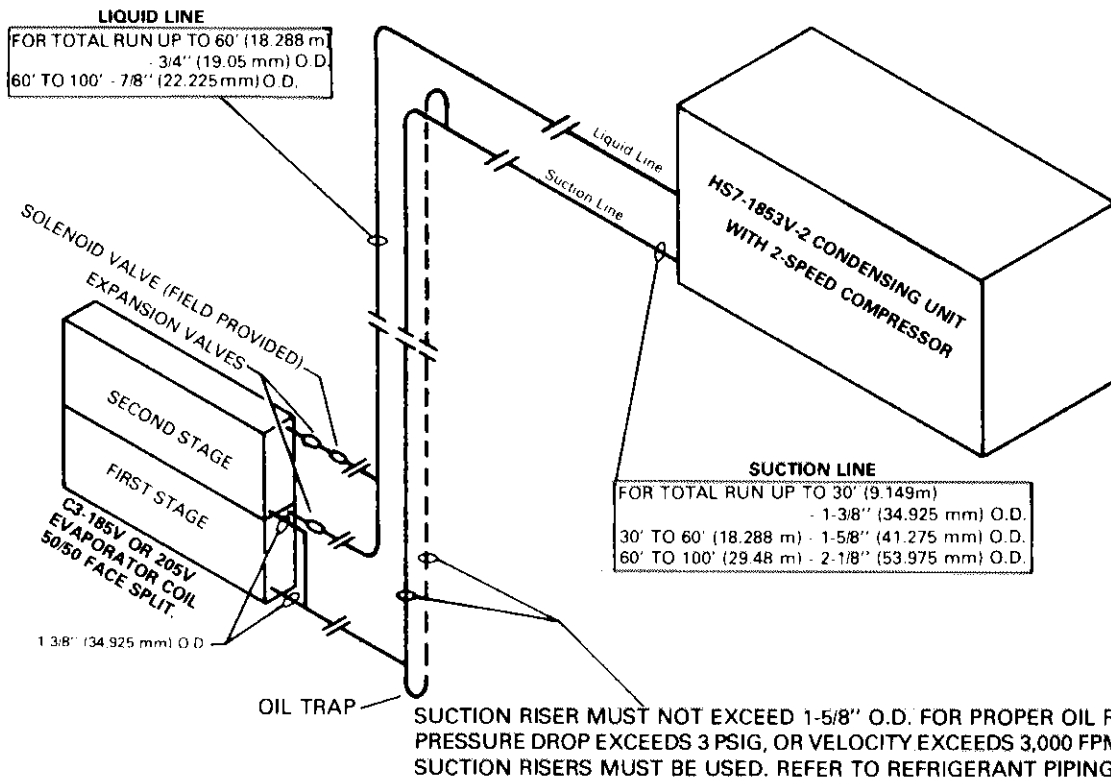
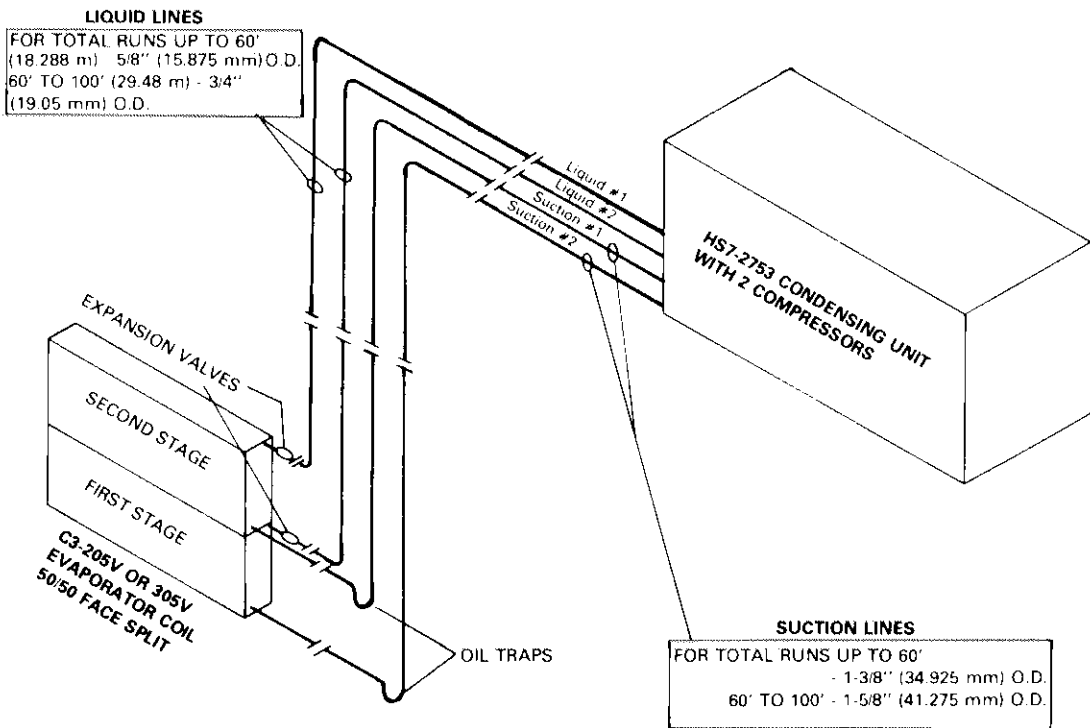


FIGURE 2

### CB3 50/50 SPLIT COIL FIELD REFRIGERANT PIPING



### C3-185/205V APPLIED TO A HS7-1853V (2 SPEED COMPRESSOR)



### C3-205V/305V APPLIED TO A HS7-2753V (TWO SINGLE SPEED COMPRESSORS)

FIGURE 3

CB3 CUTAWAY (CB3-135V SHOWN)

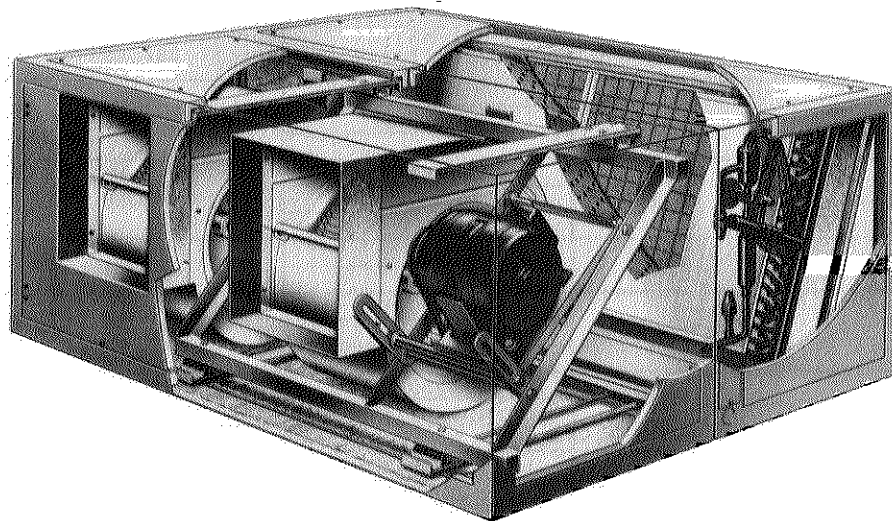


FIGURE 4

II - UNIT INFORMATION

A - Specifications

Model No.		CB3-95V	CB3-135V	CB3-185V	CB3-205V	CB3-305V
<b>Blower section model number</b>		<b>B3-95</b>	<b>B3-135</b>	<b>B3-185</b>	<b>B3-205</b>	<b>B3-305</b>
*Net weight (lbs.)		200	263	470	640	720
Air volume range (cfm)		2000 - 4500	3000 - 6500	4000 - 9000	5000 - 10,500	6000 - 15,500
Blower wheel nominal diameter x width (in.)		(1) 15 x 15	(2) 15 x 11	(2) 15 x 11	(2) 15 x 15	(2) 18 x 18
Blower motor hp & blower drives		Choice from drive selection table (shipped separately)				
<b>**Evaporator section model number</b>		<b>C3-95V</b>	<b>C3-135V</b>	<b>C3-185V</b>	<b>C3-205V</b>	<b>C3-305V</b>
Nominal cooling capacity (tons)		7-1/2	11	15	17	25
†Number and size of air filters (in.)		(2) 16x20x1 (1) 20x20x1	(3) 16x20x1 (1) 20x20x1	(6) 16x20x1 (2) 16x25x1	(4) 16x20x1 (4) 16x25x1	(2) 16x20x1 (3) 20x20x1 (2) 16x25x1 (3) 20x25x1
Condensate drain connection FPT (in.)		3/4	3/4	3/4	1-1/4	1-1/4
Lennox refrigerant		R-22	R-22	R-22	R-22	R-22
4 row single circuit DX coil (standard)	Net face area (sq. ft.)	6.88	9.38	Not Available	Not Available	Not Available
	Tube diam. (in.) & fins per inch	1/2 — 10	1/2 — 13			
	Suction line connection o.d.m. (in.)	1-3/8	1-3/8			
	Liquid line connection o.d.m. (in.)	5/8	3/4			
	Net weight (lbs.)	165	250			
4 row 50/50 dual circuit DX coil (standard)	Net face area (sq. ft.)	Not Available	Not Available	14.32	16.25	24.40
	Tube diam. (in.) & fins per inch			1/2 — 10	1/2 — 10	1/2 — 10
	Suction line connections o.d.m. (in.)			2 — 1-3/8	2 — 1-3/8	2 — 1-3/8
	Liquid line connections o.d.m. (in.)			2 — 5/8	2 — 5/8	2 — 3/4
	Net weight (lbs.)			530	710	830
6 row 50/50 dual circuit DX coil (optional)	Net face area (sq. ft.)	Not Available	8.34	14.32	16.25	24.40
	Tube diam. (in.) & fins per inch		1/2 — 10	1/2 — 10	1/2 — 10	1/2 — 10
	Suction line connections o.d.m. (in.)		2 — 1-1/8	2 — 1-3/8	2 — 1-3/8	2 — 1-3/8
	Liquid line connections o.d.m. (in.)		2 — 1/2	2 — 5/8	2 — 5/8	2 — 3/4
	Net weight (lbs.)		287	599	765	910
††Number of packages in shipment		3	3	3	3	3

\*Weight listed is less blower motor and drive weight.

\*\*C3 coil section will be shipped with coil selected mounted and plumbed. Refer to evaporator curves and capacity curves in condensing unit section for various capacities available.

†Standard filters are one inch thick. Two inch filters are optional.

††Packages consist of Blower section with driven pulley, Coil-Filter section and Blower Motor with Drives.

### B - Drive Selection Chart

Model Number	Nominal Motor hp	*Maximum Usable hp	Voltage & Phase	RPM Range at 1750 Rpm Motor Speed	Net Weight (lbs.)
B3-95	3/4	.938	115/230 (1)	382-700	33
			208/220-440 (3)		
	1	1.25	115/230 (1)	541-795	39
			230/460 (3)		
	1-1/2	1.72	208 (3)	541-795	39
			115/230 (1)		
	2	2.30	230/460 (3)	732-891	45
			208 (3)		
B3-135	1	1.25	115/230 (1)	400-733	39
			230/460 (3)		
	1-1/2	1.72	208 (3)	566-733	39
			115/230 (1)		
	2	2.30	230/460 (3)	566-833	45
			208 (3)		
	3	3.45	230/460 (3)	636-890	71
			208 (3)		
B3-185	1-1/2	1.72	230/460 (3)	522-747	39
	2	2.30	230/460 (3)	607-832	45
	3	3.45	230/460 (3)	607-918	71
			208 (3)		
B3-205	3	3.45	230/460 (3)	409-918	71
			208 (3)	776-918	
	5	5.75	230/460 (3)	607-988	81
B3-305	3	3.45	230/460 (3)	420-534	71
	5	5.75	230/460 (3)	557-795	81
	7-1/2	8.62	230/460 (3)	660-795	130

\*Maximum usable HP of motors furnished by Lennox. If other motors are used, keep within service factor limitations outlined on the motor nameplate.  
NOTE - In Canada nominal HP is maximum usable HP.

### C - Blower Performance Charts

#### B3-95 BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)												
	0	10	20	30	40	50	60	70	80	90	1.00	1.25	
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	
2000	220 .09	280 .13	340 .16	400 .22	450 .27	500 .36	540 .42	580 .50	615 .56	645 .62	690 .72	----	----
2500	270 .16	320 .19	375 .25	420 .31	465 .38	515 .47	555 .54	590 .63	625 .70	655 .77	700 .89	775 1.08	
3000	315 .26	365 .32	410 .37	450 .45	490 .53	530 .61	570 .70	600 .78	630 .85	670 .96	710 1.07	780 1.28	
3500	370 .42	410 .47	450 .55	490 .63	525 .72	560 .81	590 .90	625 1.00	660 1.11	690 1.21	720 1.30	790 1.54	
4000	420 .60	460 .70	500 .79	530 .86	560 .95	590 1.05	620 1.15	650 1.26	680 1.36	710 1.47	740 1.59	805 1.84	
4500	475 .85	510 .94	540 1.04	570 1.14	600 1.25	630 1.38	655 1.48	685 1.58	710 1.70	740 1.83	765 1.94	825 2.21	

#### B3-135 BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)												
	0	10	20	30	40	50	60	70	80	90	1.00	1.25	
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	
3000	245 .15	295 .20	350 .25	400 .32	445 .37	485 .42	-----	-----	-----	-----	-----	-----	-----
3500	275 .20	325 .27	370 .34	415 .40	460 .48	500 .55	530 .60	565 .66	600 .72	-----	-----	-----	-----
4000	315 .27	355 .36	400 .45	440 .52	485 .61	515 .69	550 .75	580 .82	615 .90	650 1.00	-----	-----	-----
4500	355 .40	395 .50	430 .57	470 .67	505 .78	540 .86	570 .93	600 1.02	635 1.12	665 1.22	695 1.32	-----	-----
5000	400 .59	430 .67	460 .75	500 .86	530 .95	565 1.05	590 1.14	625 1.25	650 1.35	680 1.45	710 1.57	775 1.81	
5500	435 .76	465 .86	495 .96	525 1.06	555 1.17	585 1.27	615 1.39	645 1.51	670 1.61	700 1.74	725 1.84	785 2.10	
6000	475 1.00	500 1.10	530 1.20	560 1.32	585 1.42	610 1.53	640 1.66	670 1.80	700 1.95	725 2.06	750 2.18	-----	-----
6500	510 1.25	540 1.38	565 1.50	590 1.62	615 1.74	640 1.86	665 2.00	695 2.14	720 2.28	-----	-----	-----	-----

**B3-185 BLOWER PERFORMANCE**

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)												
	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00	1.25	1.50
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
4000	250 .30	310 .40	370 .45	420 .55	465 .65	505 .75	550 .85	590 .95	-----	-----	-----	-----	-----
4500	285 .35	340 .45	390 .55	435 .65	480 .75	520 .85	565 1.00	600 1.10	635 1.25	670 1.35	700 1.50	-----	-----
5000	315 .50	365 .60	410 .70	455 .80	500 .90	530 1.00	575 1.15	605 1.25	640 1.40	675 1.55	710 1.70	780 2.05	-----
5500	345 .65	395 .75	430 .85	475 .95	515 1.05	550 1.20	585 1.40	620 1.60	650 1.75	680 1.85	715 2.05	790 2.50	855 2.95
6000	375 .80	420 .90	465 1.05	500 1.15	530 1.25	565 1.40	600 1.50	630 1.65	665 1.85	695 1.95	725 2.10	800 2.60	865 3.00
6500	405 1.00	450 1.10	485 1.20	520 1.35	550 1.50	585 1.60	620 1.70	650 1.90	680 2.10	710 2.20	735 2.35	810 2.85	875 3.30
7000	435 1.15	475 1.30	510 1.45	545 1.55	575 1.70	610 1.90	635 2.05	665 2.15	700 2.35	725 2.50	750 2.65	820 3.15	-----
7500	470 1.40	500 1.55	540 1.70	570 1.85	600 2.00	625 2.15	655 2.30	685 2.45	715 2.65	740 2.80	770 3.00	-----	-----
8000	500 1.70	530 1.85	565 1.95	595 2.10	620 2.25	650 2.45	680 2.65	710 2.80	735 3.00	760 3.15	785 3.35	-----	-----
8500	535 2.00	565 2.15	595 2.30	620 2.45	645 2.60	675 2.82	705 3.00	725 3.15	-----	-----	-----	-----	-----
9000	565 2.35	595 2.50	620 2.65	645 2.85	675 3.05	700 3.20	725 3.40	-----	-----	-----	-----	-----	-----

**B3-205 BLOWER PERFORMANCE**

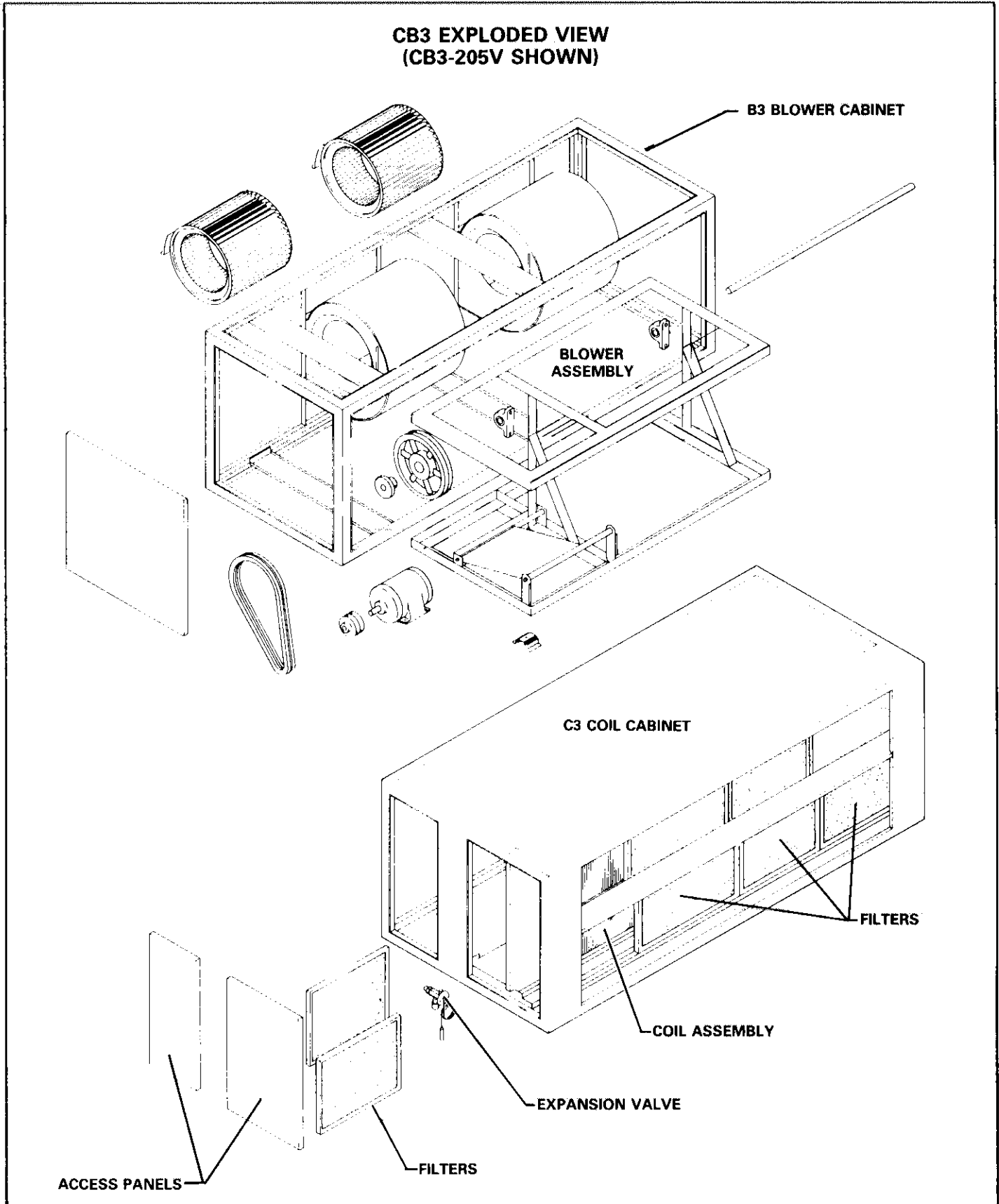
Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)												
	0	.10	.20	.30	.40	.50	.75	1.00	1.25	1.50	1.75	2.00	
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
5000	290 .50	350 .60	395 .65	445 .80	480 .90	520 1.00	615 1.30	-----	-----	-----	-----	-----	
5500	320 .65	375 .75	420 .85	465 .95	500 1.05	535 1.15	625 1.45	710 1.75	-----	-----	-----	-----	
6000	345 .75	395 .85	440 .95	480 1.10	515 1.20	555 1.35	635 1.60	715 1.95	790 2.35	-----	-----	-----	
6500	375 .90	420 1.05	465 1.15	500 1.25	535 1.35	570 1.50	650 1.80	720 2.15	795 2.55	870 3.10	-----	-----	
7000	400 1.15	450 1.25	485 1.35	520 1.50	555 1.65	590 1.70	670 2.05	730 2.35	800 2.85	870 3.35	935 3.85	-----	
7500	430 1.35	475 1.45	505 1.60	545 1.70	575 1.85	605 2.00	680 2.30	750 2.70	815 3.15	875 3.65	935 4.00	1010 4.85	
8000	460 1.55	495 1.62	530 1.80	565 2.00	595 2.10	625 2.20	695 2.60	770 3.00	825 3.45	885 4.00	945 4.50	1015 5.20	
8500	485 1.75	520 1.95	555 2.15	590 2.20	615 2.35	650 2.50	715 2.90	780 3.40	840 3.80	885 4.25	955 4.95	-----	
9000	510 2.05	550 2.25	580 2.40	610 2.55	645 2.70	670 2.80	735 3.25	800 3.75	855 4.20	910 4.75	965 5.30	-----	
9500	540 2.40	575 2.55	605 2.70	635 2.85	665 3.00	690 3.20	760 3.70	820 4.15	875 4.70	925 5.25	-----	-----	
10,000	565 2.70	595 2.85	625 3.00	655 3.20	685 3.40	715 3.60	780 4.15	840 4.65	895 5.20	-----	-----	-----	
10,500	590 3.00	620 3.15	655 3.45	685 3.70	715 3.90	740 4.10	800 4.55	855 5.10	-----	-----	-----	-----	

**B3-305 BLOWER PERFORMANCE**

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)												
	0	.10	.20	.30	.40	.50	.75	1.00	1.25	1.50	1.75	2.00	
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
6000	235 .40	295 .50	340 .75	375 .90	410 1.00	440 1.10	-----	-----	-----	-----	-----	-----	
6500	260 .50	310 .60	350 .80	385 .95	420 1.05	450 1.15	525 1.60	-----	-----	-----	-----	-----	
7000	275 .55	325 .70	360 .85	400 1.00	430 1.15	465 1.30	530 1.72	600 2.20	-----	-----	-----	-----	
7500	300 .70	345 .85	380 .95	415 1.20	445 1.35	475 1.50	540 1.90	610 2.40	-----	-----	-----	-----	
8000	320 .85	355 1.00	400 1.20	425 1.35	460 1.50	485 1.65	555 2.15	615 2.60	660 3.00	-----	-----	-----	
8500	340 .95	375 1.15	415 1.35	445 1.50	475 1.70	500 1.85	565 2.30	625 2.85	670 3.25	-----	-----	-----	
9000	355 1.15	395 1.35	430 1.55	460 1.70	490 1.90	515 2.05	575 2.55	630 3.05	685 3.60	740 4.25	-----	-----	
9500	375 1.35	410 1.55	450 1.75	475 1.95	500 2.10	530 2.30	585 2.80	645 3.35	700 4.00	750 4.55	800 5.25	-----	
10,000	395 1.55	430 1.80	465 2.00	490 2.20	520 2.35	545 2.55	600 3.10	655 3.60	710 4.75	760 4.90	805 5.55	850 6.20	
10,500	420 1.85	450 2.05	480 2.30	510 2.45	530 2.60	560 2.85	615 3.40	670 3.95	720 4.55	770 5.25	810 5.85	860 6.60	
11,000	440 2.10	470 2.30	500 2.50	525 2.70	550 2.90	575 3.15	630 3.75	680 4.30	730 4.95	775 5.60	820 6.30	865 7.00	
11,500	465 2.40	485 2.60	515 2.80	540 3.00	565 3.25	590 3.50	640 4.05	690 4.65	745 5.35	785 6.00	830 6.75	875 7.45	
12,000	475 2.65	505 2.85	530 3.05	560 3.35	585 3.60	605 3.85	655 4.40	710 5.10	755 5.75	800 6.55	840 7.25	880 7.85	
12,500	495 2.90	520 3.15	550 3.45	575 3.70	600 4.00	620 4.20	675 4.90	725 5.50	770 6.30	810 6.95	850 7.65	890 8.40	
13,000	515 3.20	540 3.50	570 3.85	590 4.10	615 4.35	635 4.60	690 5.25	735 6.00	780 6.75	820 7.40	855 8.05	-----	
13,500	535 3.65	565 3.95	585 4.20	610 4.50	630 4.75	650 5.00	705 5.75	755 6.55	795 7.35	830 8.00	-----	-----	
14,000	550 3.95	580 4.35	605 4.70	625 4.90	650 5.20	670 5.45	720 6.20	770 7.15	810 7.90	-----	-----	-----	
14,500	575 4.40	600 4.80	620 5.05	645 5.35	665 5.65	690 6.00	735 6.75	785 7.65	820 8.40	-----	-----	-----	
15,000	595 4.95	615 5.20	640 5.50	660 5.80	685 6.15	705 6.50	755 7.40	800 8.05	-----	-----	-----	-----	
15,500	615 5.40	635 5.65	660 6.05	680 6.35	700 6.70	725 7.15	770 7.95	-----	-----	-----	-----	-----	

### III - COMPONENTS

Figure 5 shows a CB3 exploded view.



**FIGURE 5**

**IV - BLOWER SPEED AND BELT TENSION ADJUSTMENTS**

CFM checks must be made with a clean filter, unit panels in place and a dry evaporator coil (blower only operating). To find actual CFM, measure the coil pressure drop as follows and then compare to Table 1.

- 1 - Remove snaphole plugs from air test holes located on each side of coil. Connect zero end of an inclined manometer to entering air side of coil. Insert hoses 1/4 inch past the inside edge of cabinet insulation. Seal around hoses with permagum or sealing compound.
- 2 - With only the indoor blower operating, observe manometer reading and compare to Table 1. If reading is above desired air volume, decrease blower speed. If reading is below desired air volume, increase blower speed.

*NOTE - ARI testing is based on 450 CFM per nominal ton of cooling.*

- 3 - After obtaining the desired air volume, determine if the motor is operating within the normal range by comparing the reading obtained by an ammeter with the full load amps listed on the motor nameplate. An overloaded motor must be replaced with a larger size motor.
- 4 - After check is completed, re-insert snaphole plugs.
- 5 - Maximum life and wear can only be obtained from belts if proper pulley alignment and belt tension are maintained. Initially tension new belts at the maximum deflection force recommended (1/64 inch per inch of span),

**TABLE 1**

DRAFT GAUGE READING (DRY EVAPORATOR)			
UNIT	CFM	Reading (In. Water)	
		4 Row Coil	6 Row Coil
C3-95V	2625	.22	.29
	3000	.27	.35
	3375	.33	.42
	3750	.40	.51
C3-135V	3850	.24	.30
	4400	.30	.39
	4950	.37	.49
	5500	.45	.59
C3-185V-1	5250	.20	.27
	6000	.27	.34
	6750	.33	.42
	7500	.39	.50
C3-205V-1	5950	.22	.27
	6800	.28	.35
	7650	.35	.44
	8500	.41	.52
C3-305V-1	8750	.20	.26
	10000	.26	.33
	11250	.32	.41
	12500	.39	.49

*NOTE - These readings are taken from coil header end of unit and are pressure drop readings across the coil.*

and then re-tension belt after a 24-48 hour run in period. This allows belt to stretch and seat in grooves.

To remove or tension belt, loosen the bolt on the hinged motor cradle and slide up or down.