

Installation Instructions & Parts List

7 1/2 and 10 Ton Split System Air Handlers

MODELS

BMB090N2MB

DB080E3

BMB090N3MB

DB080E30SM

BMB120N2MB

DB100D3

BMB120N3MB

DB100D30SM

These instructions must be read and understood completely before attempting installation.

WARNING

Danger Of Electrical Shock.

Before Adjusting Blower Speed Shut Off Electric Power To The Furnace Or Blower Module.

Failure To Shut Off Electric Power Can Result In Bodily Injury Or Death.

Location of Unit

1. Service access is required on all sides of the unit. A minimum of 36 inches should be allowed.
2. The unit should be located as close as possible to the environmentally controlled area.
3. Location of the unit should achieve the shortest pipeline distance to the condensing unit.
4. Provisions must be made for condensate drainage. The unit must be equipped with a trap to prevent build-up of evaporator coil condensate in the drain pan.

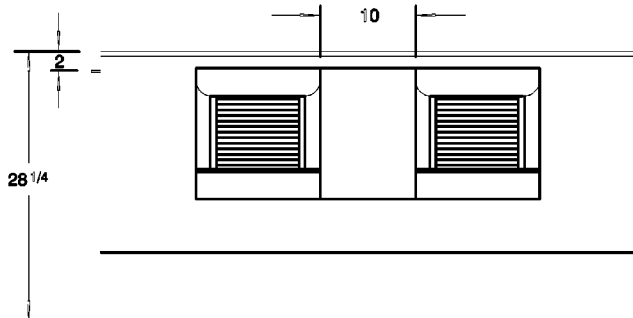
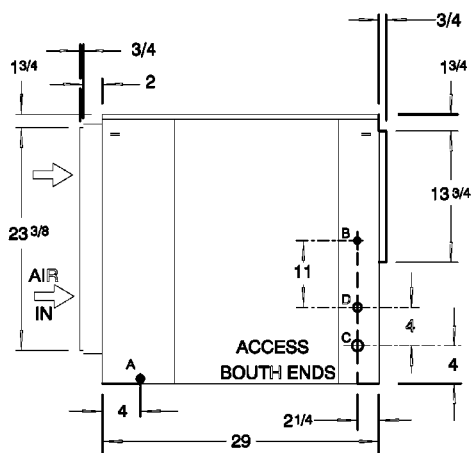
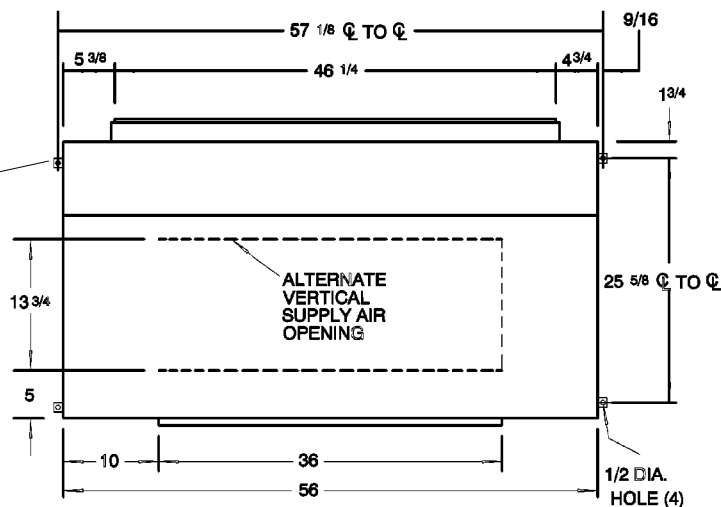
Figure 1 DIMENSIONS AND WEIGHTS

OPERATING WEIGHTS

TON	WEIGHT (lbs)
7 1/2	270
10	330

NOTE: Hanger brackets field installed. See Installation instructions enclosed with brackets shipped within the unit.

Ton	'A' Condensate Drain	'B' Liquid Line 1 1/8" K.O.	'C' Suction Line 2" K.O.	'D' Electrical K.O.
7 1/2	3/4" FPT	5/8" ODF	1 1/8" ODF	7/8"
10	3/4" FPT	5/8" ODF	1 3/8" ODF	7/8"



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Electrical Data

Unit Size	Voltage/ Phase/Hertz	Fuse Size Motor		Wire Size Type R AWG	Max. Run FT. Std. Motor	Evaporator Blower				Required Disconnect Switch
		STD.	OSM*			STD.		OVERSIZE		
						**FLA	HP	**FLA	HP	
7 1/2 Ton	208/230/3/60	15	15	14	350	7.8	2	-	-	30 amp
	460/3/60	15	15	14	1450	3.9	2	-	-	30 amp
10 Ton	208/230/3/60	15	20	14-(12 OSM)	250	7.8	2	9.2	3	30 amp
	460/3/60	15	15	14	1000	3.9	2	4.6	3	30 amp

Setting Unit in Place - Horizontal

1. Elevate the unit to the exact location where it is to be installed.
2. Locate hanger brackets enclosed in plastic bag within the unit and refer to their installation instructions for proper installation.
3. Fasten unit securely to the supporting structure using vibration isolator-type mounts and level as required.
4. Connect duct to blower discharge.

Setting Unit in Place - Vertical

1. Position the unit in the exact location where it is to be installed. (A suitable mounting base is recommended).
2. Level the unit.
3. Connect duct to the top of the unit.

Evaporator Blower Discharge - Field Conversion

These air handlers are shipped with the evaporator blower discharging the air horizontally from the front. If necessary, the unit can be field converted to top vertical discharge as follows: (See Figure 5)

1. Remove both end panels.
2. Remove top panel. After screws are removed, panel can be lifted slightly at coil end and then slid back.
3. Loosen motor base, remove belt and allow motor base to rest at its lowest position.
4. Remove upper bracket from its shipping position by removing 2 screws. Using the same screws, fasten this bracket to the side of the blower housing similar to the other two already secured. Holes are provided for mounting.
5. Remove 2 screws (3 places) holding blower housing to lower brackets. Center bracket can be reached through the top of the unit.
6. Remove screws from front panel. Pull panel out slightly and rotate panel and housing 90° so fans discharge vertically. The three upper brackets are now resting on top of the lower brackets. Fasten with screws removed earlier.
7. Replace old top panel on front of unit. Replace all screws previously removed.

8. Replace belt and adjust belt tension. Proper belt tension is achieved when the belt can be depressed about 3/4" per foot of span (distance between motor pulley and blower pulley) by pressing the belt firmly. Secure motor base in proper position.
9. Reassemble end panels.

Refrigerant Piping

Refrigerant piping should follow good practice. Refer to the Condensing Unit instructions for proper sizing information and connect refrigerant piping to the evaporator first, then work back to the compressor. All piping connections must consider the following: (See figure 2 & 3)

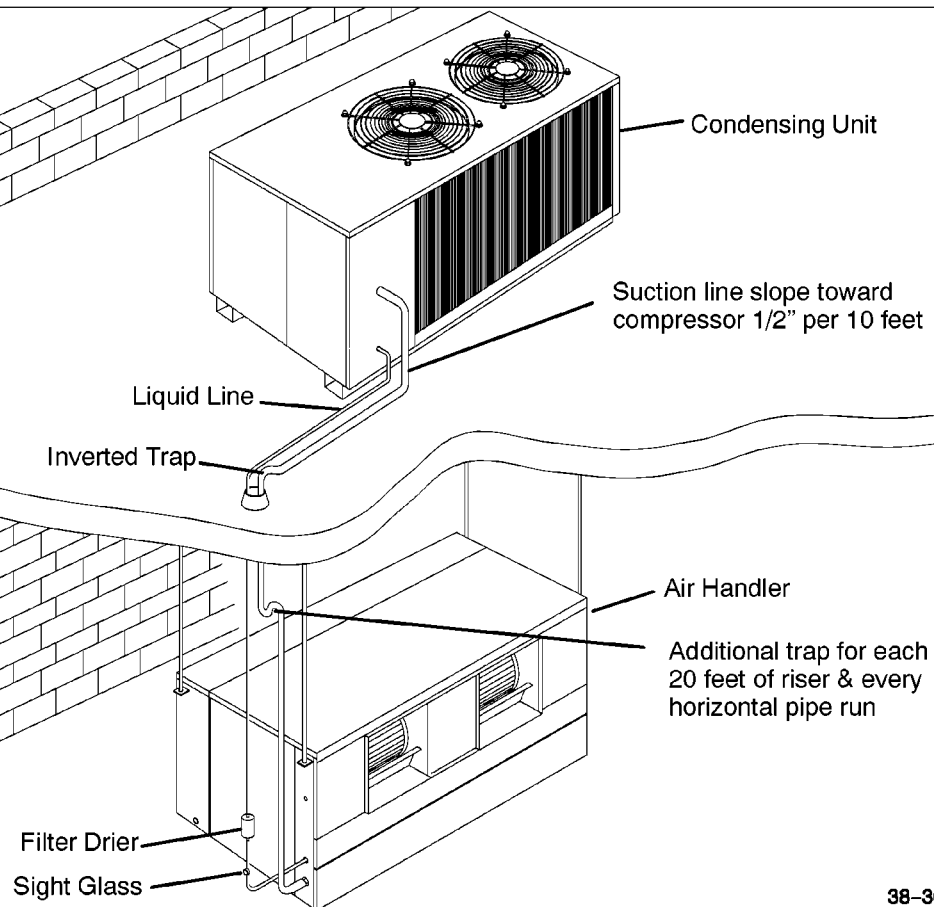
1. Refrigerant grade copper tubing properly sealed against contamination and charged with nitrogen must be used for both liquid and suction lines.
2. The suction line should be pitched toward the compressor sloping approximately 1/2 inch every ten feet to facilitate oil return. "P" traps (not supplied) are required for all suction line risers. Oil trapping may be further avoided by making the risers as close as possible to the evaporator. It is recommended that a sight glass (not supplied) be installed in the liquid line. A filter-drier (not supplied) should be installed in the liquid line.
3. Silver solder should be used for all refrigerant line joints. All pipe ends and fittings should be thoroughly cleaned before fluxing.
4. When fluxing, limit the soldering paste or flux to the minimum required to prevent internal contamination of the solder joint.

NOTE: Always apply flux to the male portion of the solder joint.

5. Refrigerant lines should be insulated to reduce heat pickup and prevent the loss of sub-cooling in the liquid lines. The suction line should be insulated against abnormal heat and to prevent condensation.
6. Care should be exercised, when anchoring refrigerant lines or penetration through walls or roof, to isolate against mechanical and acoustical vibration transmission.
7. To prevent the refrigerant lines from transmitting vibration to the unit casing, it is recommended that rubber grommets be used.

**Air Handler Below
Condensing Unit**

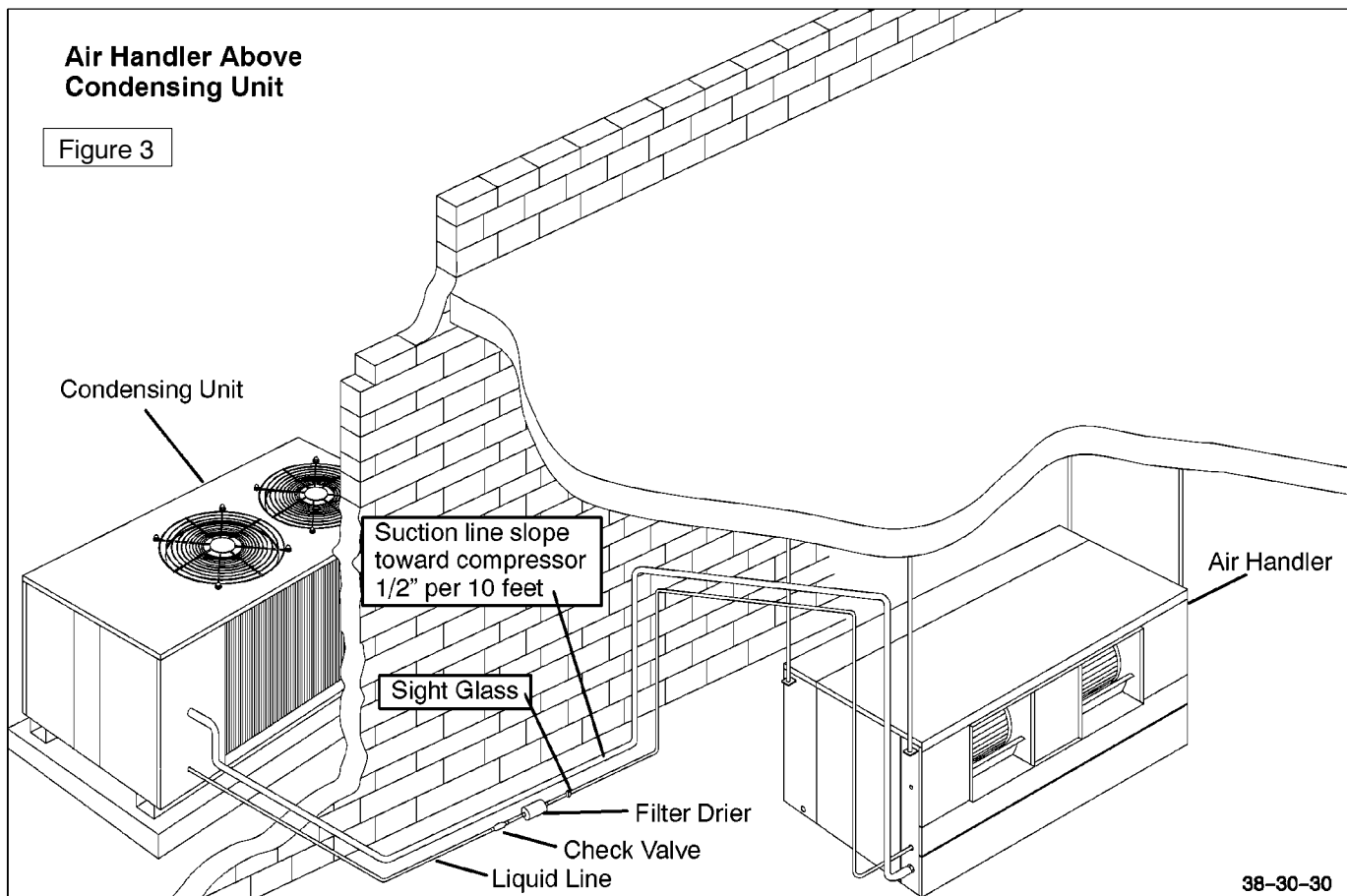
Figure 2



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**Air Handler Above
Condensing Unit**

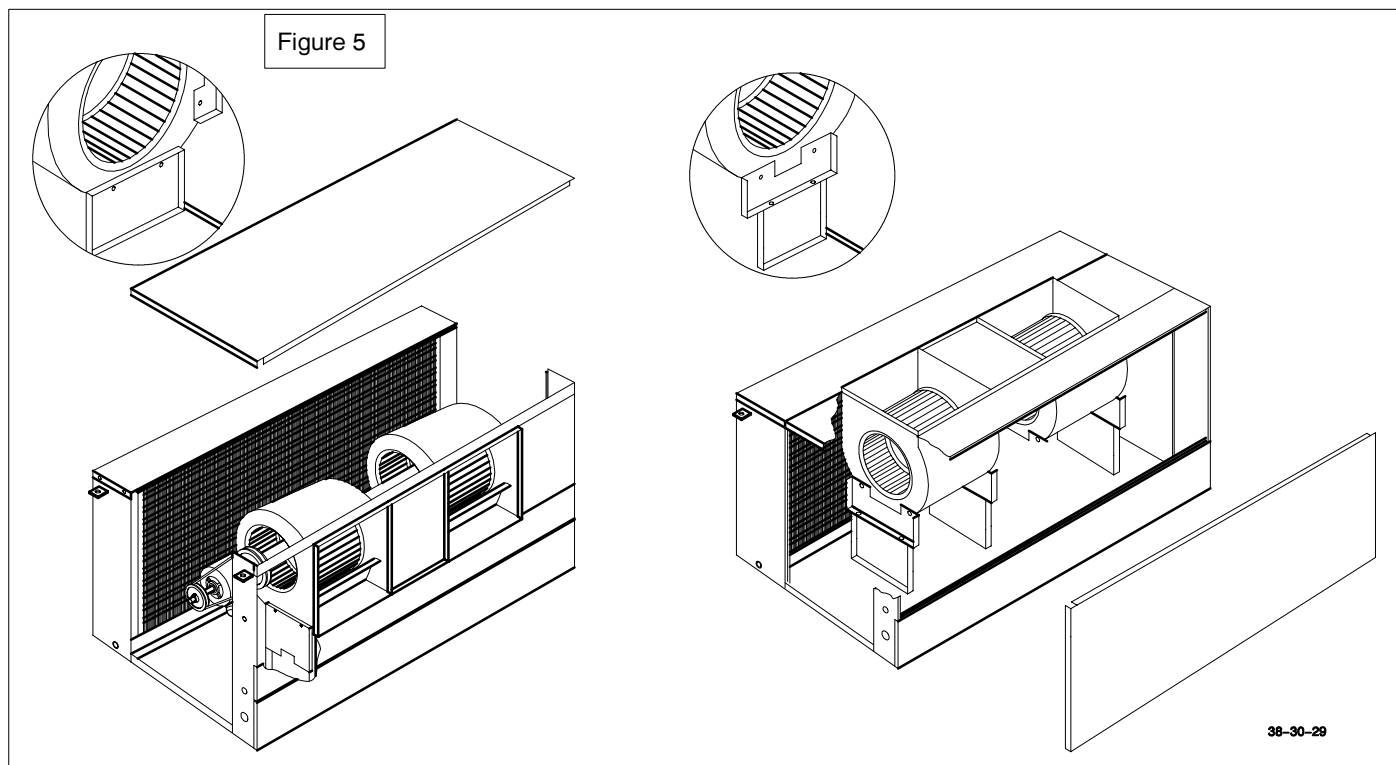
Figure 3



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Figure 4	Maximum Allowable Tonnage For Equivalent Line Length			
	Equivalent Line Length (Line + Valves + Fittings) - Type L Copper Tube			
O.D. (inches)	25' (7.6m)	50' (15.2m)	75' (22.9m)	100' (30.5m)
Liquid 5/8"	13.7	9.4	7.4	-
Suction 1 1/8"	12.5	8.5	-	-
Suction 1 3/8"	20.4	14.6	11.6	10.0

NOTE: Equivalent suction line length is designed for a pressure drop due to friction equivalent to 2° F (1.1° C)



ELECTRICAL INSTALLATION

Electrical Connections

Remove blower motor access panel and accomplish electrical connections as follows;

NOTE

The blower motor is factory connected for 208/230 Volt operation. If the application is for 460v, the voltage selector plug must be moved to the 460V connections on the motor. See Figure for the converting to 460 Volt. It is posted adjacent to the 4 x 4 junction box. Power supply connections from the blower contactor are made in this box.

Main power supply must be within 10 percent of rated voltage and not more than 2 percent variation between phases as indicated on the unit nameplate.

1. A means of disconnecting power from the unit shall be placed adjacent to the unit. If the disconnect switch cannot be located in this position, it must be a type that can be locked in the open position while the unit is being serviced. NOTE: The disconnection device should

be a fused disconnect switch sized in accordance with NFPA 70A and the unit nameplate amps.

2. Locate electrical entrance on side of cabinet.
3. Wire the disconnect switch to the blower motor contactor or starter (Field supplied).
4. Wiring from the blower contactor to the blower motor is connected in the 4 x 4 junction box located on the blower support leg.
5. Ground the unit in accordance with local codes.
6. The use of color-coded power and control wiring is recommended to simplify connections and service.

Control Circuit . . . All operating controls are connected through the condensing unit. Refer to the applicable condensing unit installation instructions.

Operation Sequence . . . The operation sequence of the condensing unit is described in the applicable condensing unit installation instructions. The air handler is energized when the condensing unit compressor contactor is energized.

Figure 6

TYPICAL 24 VOLT CONTROL-SINGLE SYSTEM

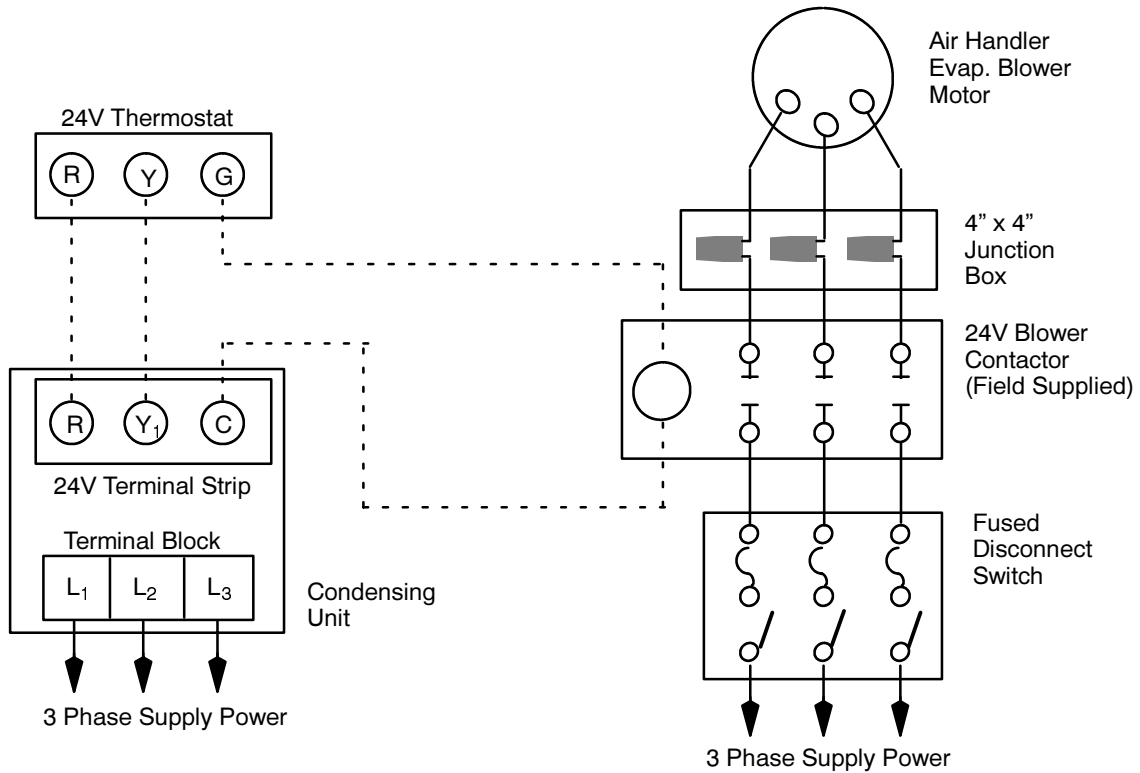
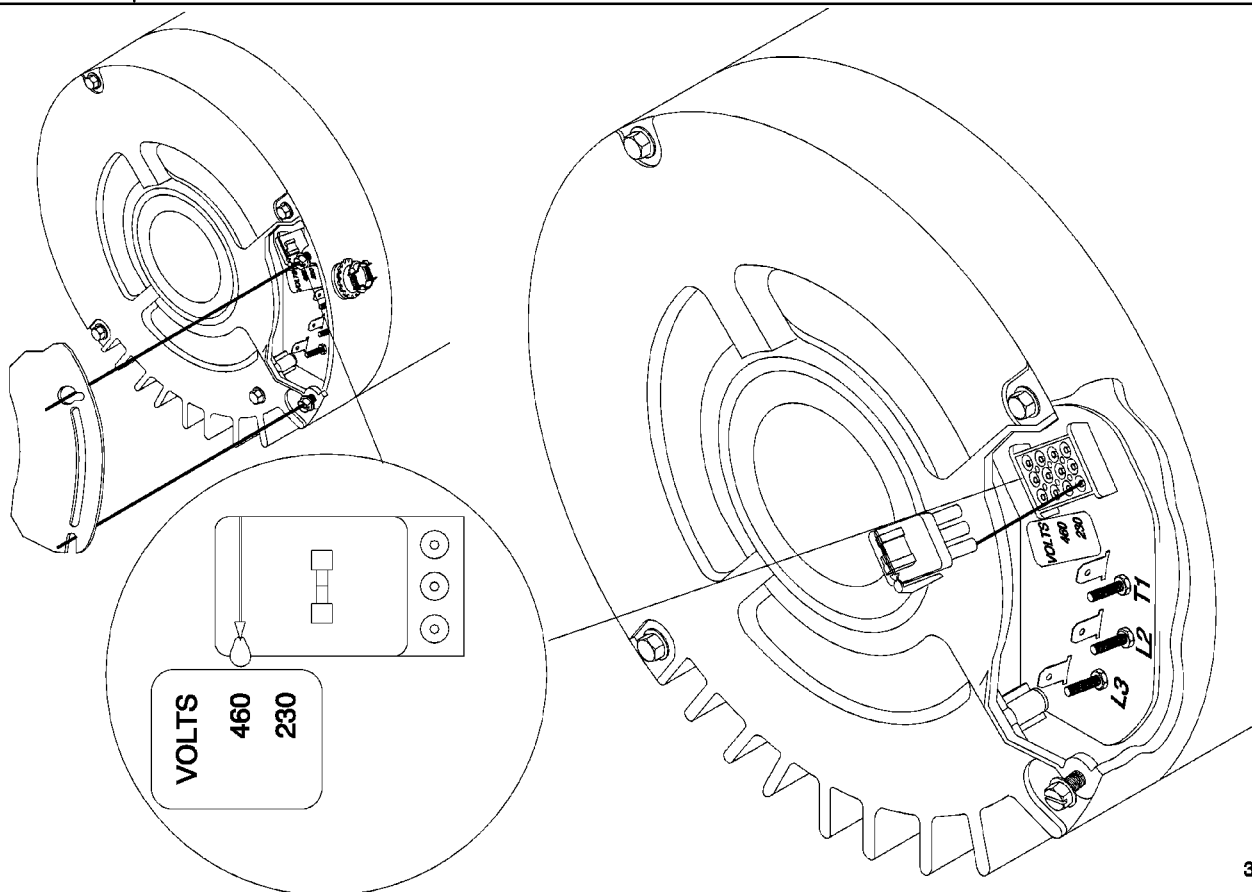
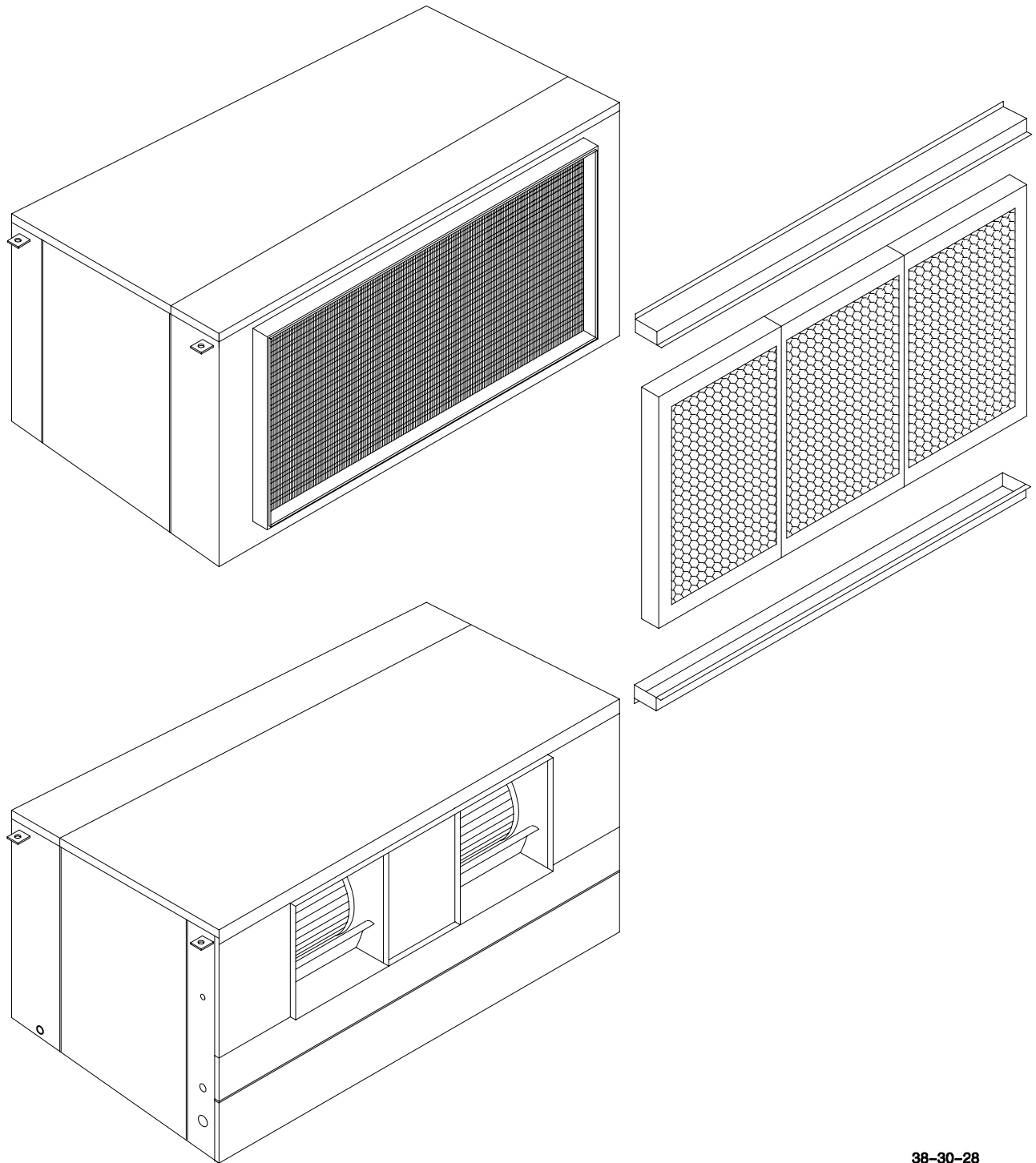


Figure 7

CONVERTING FROM 208/230 VOLT TO 460 VOLT



3

Figure 8 - Changing Filters

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AIRFLOW CORRECTION FACTORS

PERCENT STD. CFM	TOTAL COOLING	SENSIBLE COOLING
-20	0.92	0.90
-10	0.96	0.94
STD.	1.00	1.00
+10	1.04	1.06
+20	1.07	1.10

PERFORMANCE - Wet Coil Pressure Drop (in W.G.)

	Evaporator Air CFM		
	3000	4000	5000
7 1/2 Ton	0.04	0.05	0.08
10 Ton	0.05	0.08	0.11

Add wet coil pressure drop to system external static pressure.

CFM (Dry Coil)	7 1/2 TON - BLOWER PERFORMANCE DATA - EXTERNAL STATIC PRESSURE - W.G.											
	0.2			0.4			0.6			0.8		
	RPM	WATTS	BHP	RPM	WATTS	BHP	RPM	WATTS	BHP	RPM	WATTS	BHP
2000	514	N/A	.22	635	N/A	.33	763	469	.53	859	622	.71
2500	583	N/A	.36	688	N/A	.50	792	586	.67	885	757	.86
3000	657	N/A	.65	750	N/A	.70	839	790	.90	923	956	1.08
3500	737	N/A	.83	819	N/A	1.00	898	1036	1.18	973	1234	1.41
4000	818	1036	1.18	893	1202	1.37	964	1395	1.59	1030	1576	1.79

CFM (Dry Coil)	(CONT.) 7 1/2 TON - BLOWER PERFORMANCE DATA - EXTERNAL STATIC PRESSURE - W.G.														
	1.0			1.2			1.4			1.6			1.8		
	RPM	WATT	BHP	RPM	WATT	BHP	RPM	WATT	BHP	RPM	WATT	BHP	RPM	WATT	BHP
2000	951	790	.90	1037	963	1.09	1122	1136	1.29	1196	1307	1.49	1261	1494	1.7
2500	977	956	1.09	1069	1237	1.41	1146	1370	1.56	1217	1575	1.79	1284	1794	2.04
3000	1005	1140	1.29	1084	1364	1.55	1167	1615	1.84	1237	1735	2.09			
3500	1049	1451	1.65	1113	1607	1.83	1187	1861	2.12						
4000	1093	1763	2.00												

Information shown above dark line uses low static sheave set. Information shown below dark line uses minimum 2 H.P.

Shaded areas require field supplied pulleys. Do not operate blower motor above name plate amp at 208 volts.

CFM (Dry Coil)	10 TON - BLOWER PERFORMANCE DATA - EXTERNAL STATIC PRESSURE - W.G.											
	0.2			0.4			0.6			0.8		
	RPM	WATTS	BHP	RPM	WATTS	BHP	RPM	WATTS	BHP	RPM	WATTS	BHP
3000	702	530	.60	800	676	.77	893	850	.97	985	1057	1.20
3500	789	786	.89	874	963	1.09	956	1144	1.30	1033	1332	1.51
4000	878	1129	1.28	954	1315	1.50	1027	1511	1.72	1098	1700	1.93
4500	967	1553	1.77	1037	1751	1.99	1102	1949	2.22	1168	2177	2.48
5000	1062	2081	2.37	1124	2275	2.59	1184	2512	2.85	1243	2755	3.13

CFM (Dry Coil)	10 TON (CONT.) - BLOWER PERFORMANCE DATA - EXTERNAL STATIC PRESSURE - W.G.														
	1.0			1.2			1.4			1.6			1.8		
	RPM	WATT	BHP	RPM	WATT	BHP	RPM	WATT	BHP	RPM	WATT	BHP	RPM	WATT	BHP
3000	1086	1329	1.51	1173	1601	1.82	1246	1822	2.07	1311	2081	2.37	1385	2375	2.70
3500	1121	1613	1.83	1206	1879	2.14	1284	2182	2.48	1346	2453	2.79	1418	2774	3.16
4000	1163	1904	2.16	1237	2182	2.48	1321	2556	2.91	1382	2825	3.21			
4500	1231	2404	2.74	1290	2632	3.00									

Information shown above dark line uses minimum 2 H.P. Information shown below dark line uses minimum 3 H.P. (Oversize motor factory installed). **Shaded areas require field supplied pulleys. Do not operate blower motor above name plate amp at 208 volts.**

PULLEY TURNS OPEN		0	1	2	3	4	5
FAN	2 H.P. Standard Pulley	1084	1035	986	936	887	837
RPM	3 H.P. Oversize Pulley	265	1207	1149	1092	1034	977

7 1/2 TON			10 TON		
Motor H.P.	Alt. Pull Comb. Field Supplied	RPM Range	Motor H.P.	Alt. Pull Comb. Field Supplied	RPM Range
2	Mtr. Pulley 1VL3.4-1		2	Mtr. Pulley 1VP44 Mtr. Pulley 1VP60	689-936 1034-1281
2	Mtr. Pulley IVP6.0 Mtr. Pulley AK74		3	Mtr. Pulley IVP6.0	1209-1495

Replacement Parts List

ITEM	DESCRIPTION	7.5 TON	10 TON
Standard Motors (N2)			
1	Blower Motor, 2 HP 230-460V	1070644	1070644
2	Motor Pulley	1097300	2750710
3	Blower Pulley	2740850	2740850
4	Blower Belt	170927031	2100130
High Static Motors (N3)			
1	Blower Motor, 2 HP 230-460V	1070644	-
1	Blower Motor, 3 HP 230-460V	-	1070646
2	Motor Pulley, For 230-460V	1097300	2750710
3	Blower Pulley	2740836	2740836
4	Blower Belt	2100090	2100120
5	Blower Housing, 2ea Req	1068605	1068605
6	Blower Cut Off Plate	721020024	721020024
7	Blower Wheel, 2ea Req, 11.8 x 10.6	2120185	2120185
8	Tri Arm Bracket	1068606	1068606
9	Blower Bearing W/CLR, 3ea Req	2090911	2090911
10	Bearing Cushion, 3ea Req	2110273	2110273
11	Blower Shaft, 1" x 42"	2790955	2790955
12	Blower Shaft Key, 1/4 x 1-1/4, Woodruff	2344335	2344335
14	Evaporator Coil	1072097	1072098
15	Condensate Pan Assy	1081636	1081636
16	TXV Valve	1072574	1072124
17	Check Valve	1066912	1066912
20	Corner Post RH Rear	1081629	1081629
21	Corner Post LH Rear	1081628	1081628
22	Corner Post RH Front	1081627	1081627
23	Corner Post LH Front	1081626	1081626
24	Bottom Front Panel	1081639	1081639
25	Hanger Bracket, 4ea Req	700464700	700464700
26	Top Coil Panel	1081637	1081637
27	Top Blower Panel	1081641	1081641
28	Service Door (2 each req.)	1081634	1081634
29	Blower Partition Panel	1080846	1080846
30	Filter Rack Assy	1080726	1080726
31	Filter Rack Side	1081645	1081645
32	Air Filter, 3ea Req	2376400	2376400
33	Base Assy	1081654	1081654
34	Retainer, Filter	1069607	1069607
35	Distributor Assy.	1072569	1072592