



Application Data

Expanded Combination Ratings

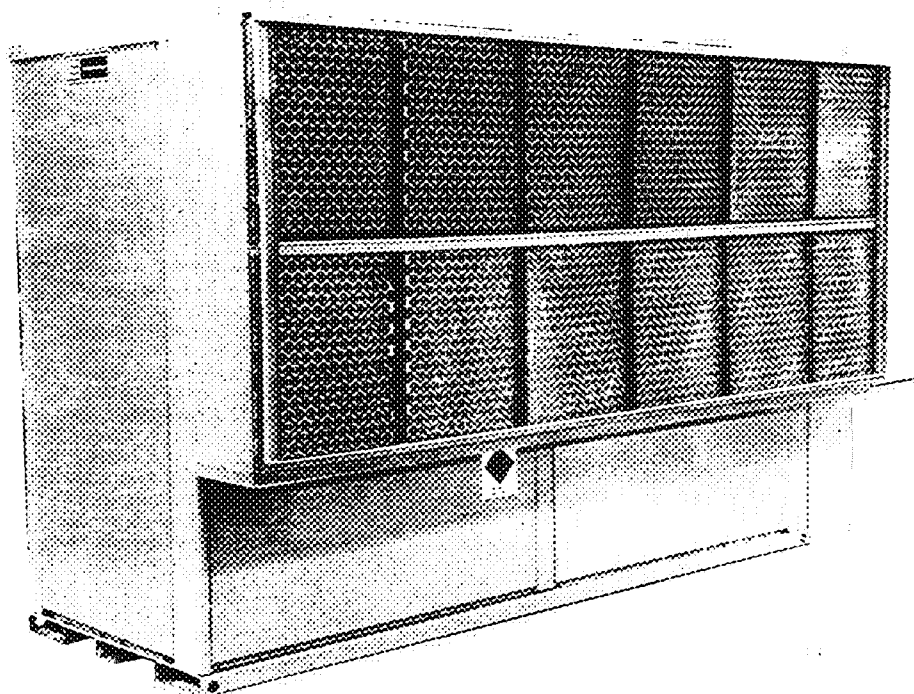
50BJ.BX

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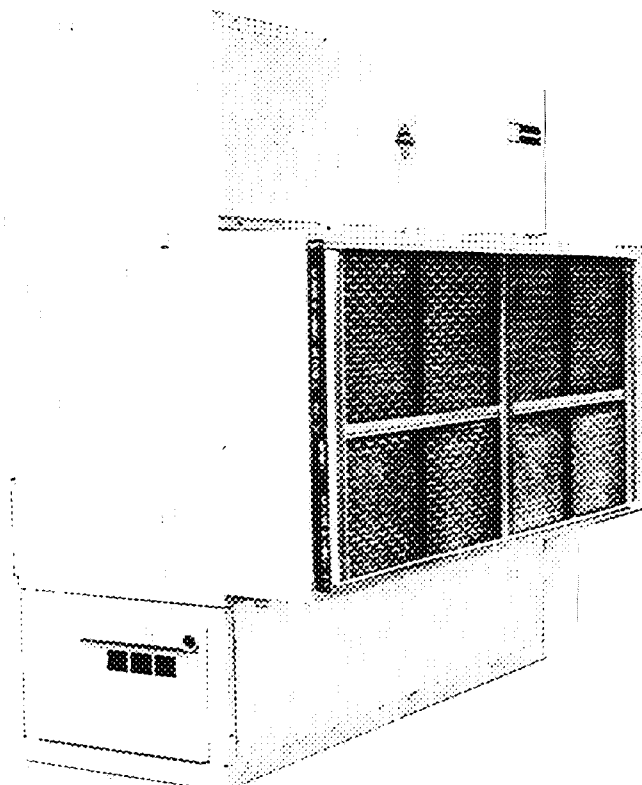
50BJ Modu-Vac Indoor Package Cooling Units with 50BX Hydronic Economizer

This booklet includes combination ratings for Model 50BJ016 through 064 when used with the 50BX Hydronic Economizer. Performance ratings are at 80 F dry-bulb, 67 F wet-bulb and 45 F entering water temperature



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GENERAL

The 50BJ Modu-Vac single-packaged indoor cooling unit is now available with a factory-installed accessory hydronic economizer. The economizer consists of a precooling coil and accessory controls. The economizer uses cooling tower water, that when cold enough, pre-cools the air before it re-enters the Modu-Vac unit. This enables mechanical refrigeration to shut down and thus save energy.

The Modu-Vac microprocessor acts as a VAV controller. Once connected to the microprocessor, the hydronic economizer becomes fully integrated. A fully-integrated economizer allows the simul-

taneous operation of both mechanical refrigeration and economizer to achieve maximum energy savings.

The 50BJ (Modu-Vac) water-cooled condenser-type units with hydronic economizer are vertical air conditioning units designed specifically for application with 35B Modubox® and 37A Moduline® variable volume air terminals. For air terminal information, refer to 35B and 37A publications. Refer to Fig. 1 and 2 for economizer component locations and dimensions. Refer to Table 1 for physical data on the 50BJ when used with the hydronic economizer accessory.

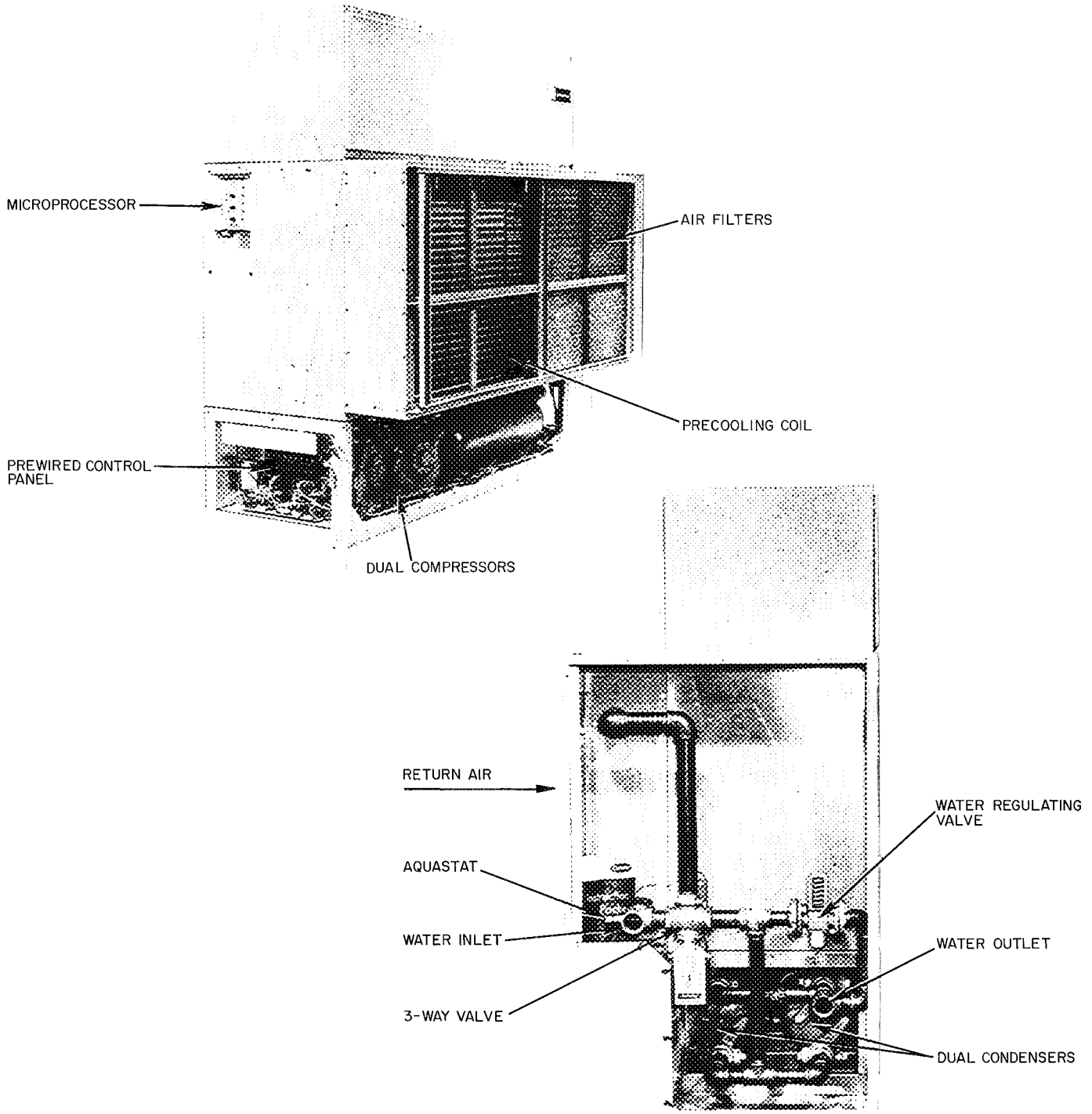


Fig. 1 — Economizer Component Locations

Table 1 — Unit Physical Data

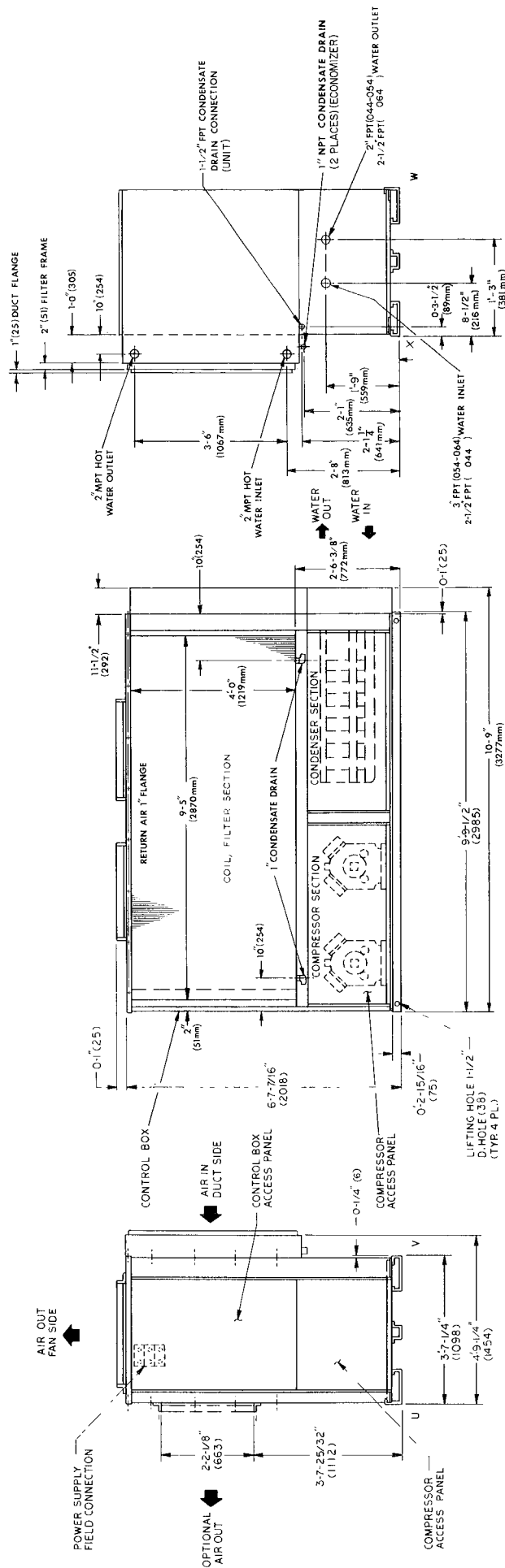
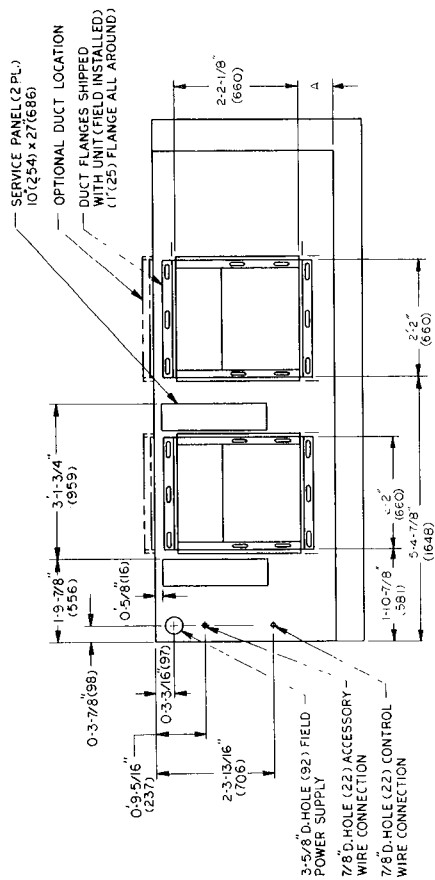
MODEL 50BJ WITH HYDRONIC ECONOMIZER	016	024	028	034	044	054	064
OPERATING WEIGHT (lbs)	1829	2409	3290	3400	4570	4798	4990
OPERATING CHARGE (lbs) (Note 1)				Refrigerant 22			
System 1	24	17	24	24	30	45	40
System 2	—	17	17	24	30	35	40
COMPRESSOR — TYPE 06				Serviceable Hermetic; 1750 Rpm			
System 1	DC337	DC724	DC337	DC337	E2150	E7265	E7175
System 2	—	DA724	DA724	DA337	EA150	EA150	EF175
Number of Unloading Cylinders	4	4	4	4	2	4	4
Number of Capacity Steps	3	6	6	6	4	6	6
HPS Setting (psig)	280	280	280	280	395	395	395
LPS Setting (psig)	27	27	27	27	27	27	27
CONDENSER							
Number Type	1 SC	2 SC	2 SC	2 SC	2 TT	2 TT	2 TT
Maximum Working Pressure (psig)	150	150	150	150	150	150	150
Connection Size (in)							
Water Inlet	(1) 2 FPT	(1) 2 FPT	2 FPT	2 FPT	2 FPT	2 FPT	2 FPT
Water Outlet	(1) 2 FPT	(1) 2 FPT	2 FPT	2 FPT	2 FPT	2 FPT	2 FPT
CONDENSATE CONNECTION				Size (in) Type			
Condensate Drain (Hydronic Economizer)	1 FPT	1 FPT	1 FPT	1 FPT	1 FPT	1 FPT	1 FPT
Condensate Drain (Unit 50BJ Only)	1 FPT	1 FPT	1 1/4 MPT	1 1/4 MPT	1 1/2 FPT	1 1/2 FPT	1 1/2 FPT
INDOOR FAN (Note 2)				Adjustable, Belt-Driven Centrifugal; 1750 Rpm Motor			
Number	2	2	2	2	2	2	2
Size (in)	15x11	15x11	18x18	18x18	20x10	20x18	20x18
Nominal Cfm	6,000	8,000	10,000	12,000	16,000	20,000	24,000
Maximum Allowable Rpm	1,200	1,200	1,100	1,100	1,200	1,200	1,200
Number of Belts Fan Pulley	1 9 0	2 9 0	2 12 4	2 11 0	2 18 7	2 18 7	1 18 7
PD (in) (Note 3)	1 3/16	1 3/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16
Fan Shaft Diameter (in)	1 3/16	1 3/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16
Horsepower							
Standard Frame Size	3 182T	5 184T	7 5 213T	7 5 213T	15 254T	20 264T	25 284T
Motor Pulley A Diameter	4 5-5 5	4 6-5 6	5 6	5 6	9 0	9 8	9 8
Motor Pulley B Diameter	—	—	6 5	6 5	10 3	10 9	10 9
Motor Efficiency (%)	79	84	84	84	85	87	89
Motor Shaft Diameter (in)	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Center To Center (standard and horizontal)	8 8-11 1	8 8-11 1	29 8-33 3	29 8-33 3	17 9-21 1	17 9-21 1	17 0-20 4
Center To Center (alternate top discharge)	—	—	—	—	18 4-22 0	18 4-22 0	17 6-21 5
Fan Speed Range (Rpm)							
Pulley A	875-1069	894-1089	925	925	840	915	922
Pulley B	—	—	1073	1073	961	1023	1032
Alternate Frame Size	5 184T	7 5 213T	10 215T	10 215T	20 264T	25 284T	30 286T
Motor Pulley A Diameter	—	—	—	—	10 9	10 9	10 9
Motor Pulley B Diameter	—	—	—	—	11 8	11 8	11 8
Fan Speed Range (Rpm)							
Pulley A	—	—	—	—	1023	1032	1029
Pulley B	—	—	—	—	1107	1117	1114
INDOOR COIL				Copper Tubes, Aluminum Plate Fins			
Number of Rows Fins/in	3 11 0	4 11 0	4 9 0	4 9 0	3 15	4 15	4 15
Total Face Area (sq ft)	16 3	17 4	21 9	26 2	37 5	37 5	37 5
PRECOOLING COIL							
Rows Fins/in	4 11	4 11	4 11	4 11	4 11	4 11	4 11
Total Face Area (sq ft)	15	15	23 3	23 3	35 8	35 8	35 8
RETURN AIR FILTERS				Factory Supplied — Throwaway			
Number Size (in)	4 20x16x2	4 20x16x2	4 20x25x2	4 20x25x2	2 25x16x2	2 25x16x2	2 25x16x2
	4 20x20x2	4 20x20x2	4 20x20x2	4 20x20x2	8 25x25x2	8 25x25x2	8 25x25x2

Cfm — Cubic Feet Per Minute
FPT — Female Pipe Thread
Hp — Horsepower
MPT — Male Pipe Thread
ODM — Outside Diameter Male
ODS — Outside Diameter Solder
PD — Pitch Diameter
PDR — Pitch Diameter Range
Rpm — Revolutions Per Minute
SC — Shell and Coil
TT — Tube-in-Tube

NOTES:

- Operating charge values are approximate
- Motors and drives other than those furnished with units 016-034 must be purchased locally. Installation may require field modification.
- Fan motor pulleys on 50BJ028,034,044,054,064 are fixed pitch type. The smaller of the 2 pulleys is factory installed.

UNIT	A (ft.-in.)
Standard Top Air Out	0-8 ³ / ₁₆ (208)
Optional Top Air Out	1-4 (406)



50BJ044, 054 AND 064

Fig. 2 — 50BJ Single-Package Cooling Unit with Hydronic Economizer (cont)

NOTES (Fig 2)

- 1 The approximate net weight of base unit including fan section and drive is

Unit 50BJ	Weight (lbs)
016	1829
024	2409
028	3290
034	3400
044	4570
054	4798
064	4990

- 2 For front electrical connections, interchange front and rear compressor section panels
- 3 Holes are provided in right end compressor section panel to accept pipe sizes as shown
- 4 On 016-034 units, allow 3-ft service clearance on left side and front of unit, and 2 ft on right side and back of unit. On 044-064 units, allow 4-ft service clearance on front and sides of unit, and 3-ft service clearance on back side of unit
- 5 Provide opening in unit panel for condensate connection to suit installation
- 6 Dimensions in () are millimeters unless otherwise specified
- 7 Provide condensate drainage for both cooling coils. Make certain to plug unused connections. Connect condensate drain to lowest drainage point

SELECTION PROCEDURE (With Example)

NOTE: Proper condenser water treatment and maintenance is recommended to assure reliable, economical performance. Condenser entering water temperatures should not drop below 45 F. Water flow should not exceed 3 gpm/ton nor drop below 1.5 gpm/ton.

I Determine Design Conditions

Given:

Total Cooling Capacity
(TC/Btuh) 750,000
Sensible Cooling Capacity
(SHC/Btuh) 615,000
Evaporator Air Quantity (cfm) 24,000
Entering Air Conditions (t_{edb}) 82
Entering Air Conditions (t_{ewb}) 67
Entering Condenser Water
Temperature (t_{ew}) 85
External Static Pressure (in. wg) 1.5

- A. Refer to the Gross Cooling Capacity tables on pages 8-11. Enter the top and left side of the Gross Cooling Capacity tables of the 50BJ unit with a capacity closest to the required capacity. Read down and across table to obtain the following data:

Unit Selection — 50BJ064 selected at 24,000 cfm of 82/67 entering air.

$$TC = 762,000$$

$$SHC = 625,624 \text{ (Corrected for 82 dry-bulb. See SHC Correction Table below.)}$$

SHC CORRECTION FACTOR

SHC is based on 80 F db temperature of air entering evaporator coil. Below 80 F db, subtract (corr factor x cfm) from SHC.

Above 80 F db, add (corr factor x cfm) to SHC.

BYPASS FACTOR (BF)	ENTERING AIR DRY-BULB TEMPERATURE (F)					
	79	78	77	76	75	Under 75
	81	82	83	84	85	Over 85
Correction Factor						
025	1 07	2 12	3 19	4 25	5 32	Use formula shown below
05	1 04	2 07	3 11	4 14	5 18	
.10	98	1 96	2 94	3 92	4 90	
.20	87	1 74	2 62	3 49	4 36	
.30	76	1 53	2 29	3 05	3 82	
.35	71	1 42	2 13	2 83	3 54	

Interpolation is permissible

$$\text{Correction Factor} = 1.10 \times (1 - BF) \times (db - 80)$$

$$\begin{aligned} \text{Compressor Power} &= 53.5 \text{ kW} \\ \text{Input Condenser.} & \\ (\text{tew}) &= 85 \text{ F} \\ (\text{gpm}) &= 180 \end{aligned}$$

Refer to Table 3 for total system (condensers, piping and 3-way valves) water side pressure drop. At 180 gpm, total pressure drop is 29 feet.

II Determine Required Fan Rpm and Bhp

- A. Refer to Table 4 and determine the static pressure drop across the precooling coil and filters (.85 in. wg). Add this value to the system external static pressure (1.5 in. wg). The total external static pressure now equals .85 + 1.5 = 2.35 in. wg, or approximately 2.4 in. wg. If optional heating coil is selected, refer to Table 5.
- B. Enter the Evaporator Fan Performance curve, pages 14-16, for the selected unit at the given air quantity (24,000 cfm) and external static pressure (2.35 in. wg). Find that for a 50BJ064 unit, the fan rpm is 1050 and the required bhp is 27.
- C. Refer to Physical Data, Table I, and check the factory-included indoor evaporator fan pulley speed ratings — 922 or 1032 rpm and nominal hp(25) for the selected unit size. The alternate 30-hp motor is required. Refer to Fan Pulley Selection (Table 6) for required alternate pulleys.

III Determine Precooling Coil and Capacity —

Refer to Table 2 and the Precooling Coil Capacity tables.

PERFORMANCE DATA

GROSS COOLING CAPACITIES — WATER-COOLED UNIT

1 50BJ016																
EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					3000/ 11			4500/ 15			6000/ 19			7500/ 22		
		Ft	Psi		Evap Air — Ewb Temp (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	13	1 6	0 7	TC	178	161	145	194	178	162	203	186	170	210	192	176
				SHC	84	99	113	94	116	138	105	123	161	114	148	176
				kW	14.0	13.7	13.3	14.6	14.2	13.8	14.8	14.4	14.0	14.9	14.6	14.2
	16	2 2	1 0	TC	181	165	147	198	181	165	207	190	173	214	197	180
				SHC	85	100	114	95	117	139	106	124	162	115	150	180
				kW	13.4	13.1	12.8	14.0	13.7	13.4	14.2	13.9	13.6	14.3	14.0	13.7
21	3 3	1 4	TC	187	168	151	201	184	167	210	193	176	217	201	183	
			SHC	87	102	116	96	118	141	107	125	163	117	151	182	
			kW	12.7	12.5	12.3	13.4	13.0	12.8	13.5	13.3	13.0	13.6	13.3	13.0	
75	16	2 2	1 0	TC	173	157	141	190	173	158	198	182	167	204	188	173
				SHC	82	97	111	92	114	136	103	121	159	113	146	173
				kW	14.7	14.4	13.9	15.2	14.9	14.4	15.4	15.1	14.6	15.6	15.2	14.8
	19	2 8	1 2	TC	178	161	145	194	178	162	203	186	170	210	192	176
				SHC	84	99	113	94	116	138	105	123	161	114	148	176
				kW	14.0	13.7	13.3	14.6	14.2	13.8	14.8	14.4	14.0	14.9	14.6	14.2
26	5 2	2 3	TC	181	165	147	198	181	165	207	190	173	214	197	180	
			SHC	85	100	114	95	117	139	106	124	162	115	150	180	
			kW	13.4	13.1	12.8	14.0	13.7	13.4	14.2	13.9	13.6	14.3	14.0	13.7	
85	20	3 0	1 3	TC	170	153	138	—	168	154	—	178	161	—	—	167
				SHC	81	96	110	—	113	134	—	129	157	—	—	167
				kW	15.3	15.0	14.5	—	15.6	15.1	—	15.9	15.4	—	—	15.6
	28	5 6	2 5	TC	173	157	141	190	173	158	198	182	167	204	188	173
				SHC	82	97	111	92	114	136	103	121	159	113	146	173
				kW	14.7	14.4	13.9	15.2	14.9	14.4	15.4	15.1	14.6	15.6	15.2	14.8
35	8 0	3 5	TC	178	161	145	194	178	162	203	186	170	210	192	176	
			SHC	84	99	113	94	116	138	105	123	161	114	148	176	
			kW	14.0	13.7	13.3	14.6	14.2	13.8	14.8	14.4	14.0	14.9	14.6	14.2	
45	12.5	5 4	TC	179	162	145	195	179	163	204	187	171	211	193	177	
			SHC	84	99	113	94	116	138	105	123	161	114	148	176	
			kW	13.9	13.6	13.2	14.5	14.1	13.7	14.7	14.3	13.9	14.8	14.5	14.1	
95	37	8 8	3 8	TC	170	153	138	—	168	154	—	178	161	—	—	167
				SHC	81	96	110	—	113	134	—	129	157	—	—	167
				kW	15.3	15.0	14.5	—	15.6	15.1	—	15.9	15.4	—	—	15.6
70	27.0	11.7	TC	173	157	141	190	173	158	198	182	167	204	188	173	
			SHC	82	97	111	92	114	136	103	121	159	113	146	173	
			kW	14.7	14.4	13.9	15.2	14.9	14.4	15.4	15.1	14.6	15.6	15.2	14.8	

2	50BJ024															
EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					4000/ 10			6000/ 15			8000/ 18			10,000/ 21		
		Ft	Psi		Evap Air — Ewb Temp (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	17	1 7	0 8	TC SHC kW	230	208	187	250	228	208	264	241	220	271	249	227
					110	129	149	125	153	181	136	153	211	150	195	227
					17.2	17.0	16.6	17.7	17.3	16.9	17.9	17.5	17.1	17.9	17.7	17.5
	19	1 9	0 9	TC SHC kW	235	213	191	254	233	212	270	247	225	277	254	233
					111	131	151	127	156	184	137	157	213	152	197	233
					16.4	16.2	15.9	16.8	16.6	16.3	17.3	16.7	16.5	17.0	16.8	16.7
23	2 9	1 3	TC SHC kW	240	218	196	260	238	217	276	253	231	284	260	239	
				114	133	153	130	158	186	141	159	216	154	199	239	
				15.4	15.3	15.2	16.1	15.9	15.7	16.3	16.0	15.8	16.3	16.1	16.0	
75	23	2 9	1 3	TC SHC kW	230	208	187	250	228	208	264	241	220	271	249	227
					110	129	149	125	153	181	136	153	211	150	195	227
					17.2	17.0	16.6	17.7	17.3	16.9	17.9	17.5	17.1	17.9	17.7	17.5
	27	4 1	1 8	TC SHC kW	235	213	191	254	233	212	270	247	225	277	254	233
					111	131	151	127	156	184	137	157	213	152	197	233
					16.4	16.2	15.9	16.8	16.6	16.3	17.0	16.7	16.5	17.0	16.8	16.7
40	7 0	3 2	TC SHC kW	240	218	196	260	238	217	276	253	231	284	260	239	
				114	133	153	130	158	186	141	159	216	154	199	239	
				15.4	15.3	15.2	16.1	15.9	15.7	16.3	16.0	15.8	16.3	16.1	16.0	
85	23	2 9	1 3	TC SHC kW	221	200	179	238	218	199	252	230	208	259	236	216
					106	126	145	120	148	177	132	150	205	147	191	216
					19.0	18.6	18.2	19.6	19.1	18.6	19.8	19.3	18.9	19.9	19.5	19.0
	31	5 2	2 3	TC SHC kW	226	204	183	244	223	204	258	236	214	266	243	222
					108	128	148	123	151	179	134	152	209	148	192	222
					18.2	17.8	17.4	18.5	18.1	17.7	19.8	19.3	18.9	18.9	18.5	18.1
38	6 6	3 0	TC SHC kW	230	208	187	250	228	208	264	241	220	271	249	227	
				110	129	149	125	153	181	136	153	211	150	195	227	
				17.2	17.0	16.6	17.7	17.3	16.9	17.9	17.5	17.1	17.9	17.7	17.5	
60	15 0	6 5	TC SHC kW	235	213	191	254	233	212	270	247	225	277	254	233	
				111	131	151	127	156	184	137	157	213	152	197	233	
				16.4	16.2	15.9	16.8	16.6	16.3	17.3	16.7	16.5	17.0	16.8	16.7	
95	38	6 6	3 0	TC SHC kW	221	200	179	238	218	199	252	230	208	259	236	216
					106	126	145	120	148	177	132	150	205	147	191	216
					19.0	18.6	18.2	19.6	19.1	18.6	19.8	19.3	18.9	19.9	19.5	19.0
	63	16 5	7 2	TC SHC kW	226	204	183	244	223	204	258	236	214	266	243	222
					108	128	148	123	151	179	134	152	209	148	192	222
					18.2	17.8	17.4	18.5	18.1	17.7	19.8	19.3	18.9	18.9	18.5	18.1

See page 11 for legend

GROSS COOLING CAPACITIES — WATER-COOLED UNIT (cont)

3 50BJ028

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
		5000/ 11			7500/ 15			10,000/ 18			12,500/ 21					
		Evap Air — Ewb Temp (F)														
		72	67		62	72	67	62	72	67	62	72	67	62		
65	27	2 6	1 1	TC	291	262	234	324	298	268	343	313	285	352	322	293
				SHC	139	164	186	159	199	231	178	224	265	192	250	293
				kW	21 4	21 0	20 7	22 4	21 9	21 6	22 7	22 2	21 8	22 8	22 4	21 9
	32	3 4	1 5	TC	298	269	241	329	304	272	345	319	290	358	328	298
75	32	3 4	1 5	SHC	142	166	189	161	200	233	180	225	271	195	252	298
				kW	20 3	20 0	19 7	21 4	21 0	20 7	21 7	21 2	20 9	21 9	21 5	21 0
				TC	286	256	229	318	290	262	335	306	278	344	315	287
	75	41	5 2	2 3	SHC	136	116	184	126	193	228	175	222	266	189	246
kW					22 5	22 0	21 6	23 5	22 8	22 4	23 9	23 2	22 7	24 2	23 4	22 8
TC					291	262	234	324	298	268	343	313	285	352	322	293
85		41	5 2	2 3	SHC	139	164	186	159	199	231	178	224	265	192	250
	kW				21 4	21 0	20 7	22 4	21 9	21 6	22 7	22 2	21 8	22 8	22 4	21 9
	TC				298	269	241	329	304	272	345	319	290	358	328	298
	85	58	9 5	4 1	SHC	142	166	189	161	200	233	180	225	271	195	252
kW					20 3	20 0	19 7	21 4	21 0	20 7	21 7	21 2	20 9	21 9	21 5	21 0
TC					272	244	217	—	274	247	—	252	265	—	—	277
85		31	3 2	1 4	SHC	131	155	178	—	179	213	—	202	250	—	—
	kW				24 7	24 0	23 4	—	25 0	24 2	—	25 5	24 8	—	—	24 9
	TC				278	250	224	310	283	254	338	309	280	338	309	280
	85	40	5 0	2 2	SHC	134	158	181	153	191	224	172	215	263	188	244
kW					23 7	23 1	22 4	24 5	23 9	23 3	24 9	24 2	23 7	25 1	24 5	23 8
TC					286	256	229	318	290	262	335	306	278	344	315	287
95		56	8 7	3 9	SHC	136	116	184	126	193	228	175	222	266	189	246
	kW				22 5	22 0	21 6	23 5	22 8	22 4	23 9	23 2	22 7	24 2	23 4	22 8
	TC				289	259	232	321	294	265	335	306	278	348	319	290
	95	75	14 6	6 4	SHC	138	140	185	143	196	230	177	223	268	191	248
kW					21 9	21 5	21 1	22 9	22 3	22 0	22 3	22 7	22 2	23 5	22 9	22 3
TC					272	244	217	—	274	247	—	252	265	—	—	277
95		55	8 7	3 8	SHC	131	155	178	—	179	213	—	202	250	—	—
	kW				24 7	24 0	23 4	—	25 0	24 2	—	25 5	24 8	—	—	24 9
	TC				278	250	224	310	283	254	338	309	280	338	309	280
	95	102	24 8	10 7	SHC	134	158	181	153	191	224	172	215	263	188	244
kW					23 7	23 1	22 4	24 5	23 9	23 3	24 9	24 2	23 7	25 1	24 5	23 8

4 50BJ034

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					6000/ 11			9000/ 15			12,000/ 18			15,000/ 21		
		Ft	Psi		Evap Air — Ewb Temp (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	34	2 5	1 1	TC	352	316	282	394	360	325	414	380	346	424	394	359
				SHC	166	196	222	192	237	278	223	263	305	244	310	359
				kW	26 6	26 0	25 6	28 0	27 3	26 5	28 4	27 3	27 0	28 6	28 0	27 3
	41	3 4	1 5	TC	359	323	289	399	364	329	419	384	350	429	397	363
SHC				169	198	226	194	239	280	225	265	308	246	313	363	
kW				25 2	24 8	24 4	26 7	26 1	25 3	27 1	26 5	25 8	27 3	26 8	26 1	
75	40	3 2	1 4	TC	345	309	276	382	350	316	405	370	337	416	382	349
				SHC	163	192	218	187	233	274	220	260	302	242	308	349
				kW	27 8	27 2	26 6	29 4	28 5	27 6	29 9	29 1	28 2	30 1	29 4	28 5
	54	5 3	2 3	TC	352	316	282	394	360	325	414	380	346	424	394	359
SHC				166	196	222	192	237	278	223	263	305	244	310	359	
kW				26 6	26 0	25 6	28 0	27 3	26 5	28 4	27 3	27 0	28 6	28 0	27 3	
78	10 0	4 3	TC	359	323	289	399	364	329	419	384	350	429	397	363	
			SHC	169	198	226	194	239	280	225	265	308	246	313	363	
			kW	25 2	24 8	24 4	26 7	26 1	25 3	27 1	26 5	25 8	27 3	26 8	26 1	
85	40	3 2	1 4	TC	332	297	266	—	335	303	—	354	321	—	—	332
				SHC	158	187	213	—	227	268	—	260	316	—	—	332
				kW	30 6	29 6	28 6	—	31 1	30 1	—	31 6	30 7	—	—	31 0
	55	5 5	2 4	TC	338	303	271	376	342	310	395	360	326	407	376	340
SHC				161	190	216	185	230	270	212	253	295	240	306	340	
kW				29 4	28 4	27 6	30 6	29 8	28 8	31 1	30 2	29 4	31 4	30 6	29 7	
74	9 1	4 0	TC	345	309	276	382	350	316	405	370	337	416	382	349	
			SHC	163	192	218	187	233	274	220	260	302	242	308	349	
			kW	27 8	27 2	26 6	29 4	28 5	27 6	29 9	29 1	28 2	30 1	29 4	28 5	
90	12 7	5 5	TC	347	311	278	384	352	318	407	373	339	418	385	351	
			SHC	164	193	219	188	234	275	221	261	303	242	308	351	
			kW	27 6	27 0	26 4	29 1	28 2	27 4	29 5	28 9	27 9	29 8	29 1	28 2	
95	75	9 3	4 1	TC	332	297	266	—	335	303	—	354	321	—	—	332
				SHC	158	187	213	—	227	268	—	260	316	—	—	332
				kW	30 6	29 6	28 6	—	31 1	30 1	—	31 6	30 7	—	—	31 0

See page 11 for legend

GROSS COOLING CAPACITIES — WATER-COOLED UNIT (cont)

5 50BJ044

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					8000/ 04			12,000/ 06			16,000/ 09			20,000/ 11		
		Ft	Psi		72	67	62	72	67	62	72	67	62	72	67	62
65	60	3.5	1.5	TC SHC kW	513 244 33.2	470 289 31.8	— — —	557 277 34.6	513 343 33.2	472 407 31.9	581 306 35.4	528 333 34.0	498 467 32.7	595 333 35.8	552 434 34.5	520 514 33.4
	120	11.0	4.8	TC SHC kW	527 250 30.2	481 295 29.2	— — —	575 284 31.1	529 350 30.2	485 413 29.3	581 313 31.8	558 335 31.8	534 476 28.9	618 341 32.0	572 442 31.1	536 525 30.4
	160	18.0	7.8	TC SHC kW	530 251 29.4	484 296 28.5	— — —	579 286 30.2	532 351 29.4	488 415 28.6	581 318 30.7	558 400 29.9	537 477 28.1	624 343 31.0	576 444 30.2	539 527 29.5
75	60	3.5	1.5	TC SHC kW	495 236 35.7	453 281 34.1	— — —	537 269 37.3	494 335 35.6	454 397 34.2	559 298 35.7	516 332 36.5	486 457 35.1	574 325 38.6	532 426 37.1	501 500 35.9
	120	11.0	4.8	TC SHC kW	509 242 32.8	464 287 31.7	— — —	555 276 34.0	509 341 32.8	467 404 31.7	579 306 34.6	534 339 33.5	494 465 32.5	594 332 34.9	550 433 33.9	516 511 33.0
	160	18.0	7.8	TC SHC kW	512 243 32.1	467 288 31.0	— — —	559 278 33.1	513 343 32.1	470 405 31.1	584 307 33.6	538 331 32.6	498 467 31.7	600 334 34.0	555 435 33.0	520 514 32.2
85	60	3.5	1.5	TC SHC kW	476 228 38.1	436 273 36.4	397 316 34.7	515 261 39.8	474 326 38.0	436 388 36.4	559 291 40.7	516 334 39.0	486 445 37.4	550 317 41.2	509 416 39.5	482 482 38.3
	120	11.0	4.8	TC SHC kW	490 234 35.5	447 278 34.2	— — —	533 268 36.8	488 333 35.4	448 394 34.2	559 297 37.5	516 330 36.2	494 454 35.0	572 325 37.9	527 423 36.6	496 495 35.6
	160	18.0	7.8	TC SHC kW	493 235 34.8	450 280 33.5	— — —	537 269 36.0	492 334 34.7	451 396 33.6	561 299 36.8	516 332 36.4	478 455 35.4	576 326 37.0	531 425 35.8	499 498 34.9
95	60	3.5	1.5	TC SHC kW	457 220 40.5	417 264 38.5	379 307 36.7	494 253 42.3	453 317 40.3	416 378 38.5	513 282 43.2	473 354 41.3	440 432 39.7	526 309 43.8	485 406 41.9	462 462 40.8
	120	11.0	4.8	TC SHC kW	470 226 38.1	428 270 36.6	389 312 35.0	510 259 39.5	467 324 38.0	428 384 36.6	532 288 40.3	499 371 38.7	454 443 37.5	545 315 40.7	503 414 39.3	476 476 38.3
	160	18.0	7.8	TC SHC kW	473 227 37.5	431 271 36.0	391 313 34.6	514 261 38.8	471 325 37.4	431 386 36.0	536 290 39.4	493 373 38.1	457 443 36.9	550 317 39.9	507 415 38.5	479 479 37.6

6 50BJ054

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/ BF											
		10,000/ 02			15,000/ 04			20,000/ 05			25,000/ 07					
		Evap Air — Ewb Temp (F)														
Ft	Psi	72	67	62	72	67	62	72	67	62	72	67	62			
65	80	3.4	1.5	TC SHC kW	637 303 37.5	583 361 35.8	534 418 34.4	688 346 39.0	636 432 37.5	587 512 36.0	715 385 39.9	664 495 38.3	623 525 37.0	731 421 40.2	682 554 38.8	649 649 37.8
	150	10.0	4.3	TC SHC kW	649 309 34.5	594 367 33.4	543 423 32.2	705 353 35.6	650 438 34.5	599 520 33.5	735 392 36.2	680 502 35.1	635 603 34.2	755 429 36.6	699 561 35.4	663 661 34.7
	200	16.0	6.9	TC SHC kW	653 310 33.6	597 368 32.6	— — —	711 355 34.6	654 440 33.6	602 522 32.7	741 394 35.2	685 504 34.1	632 604 33.3	760 431 35.5	705 563 34.5	667 665 33.8
75	80	3.4	1.5	TC SHC kW	614 294 40.4	563 352 38.7	515 408 37.1	664 337 42.1	612 422 40.3	565 503 38.8	699 376 42.3	640 486 41.3	598 581 39.8	706 412 43.5	657 543 41.9	628 628 40.9
	150	10.0	4.3	TC SHC kW	628 300 37.7	574 357 36.3	524 413 35.0	681 343 38.9	627 428 37.6	577 510 36.4	708 382 39.5	656 492 38.3	612 590 37.3	726 419 39.9	674 550 38.7	641 641 38.0
	200	16.0	6.9	TC SHC kW	632 301 36.8	577 359 35.6	— — —	686 345 37.9	631 430 36.8	581 511 35.7	714 385 38.5	660 494 37.4	615 592 36.4	733 521 38.9	679 552 37.8	645 645 37.1
85	80	3.4	1.5	TC SHC kW	592 284 43.4	542 342 41.5	495 398 39.7	639 328 45.2	588 412 43.3	543 492 41.5	683 387 46.1	613 475 44.2	575 566 42.7	677 403 46.7	631 532 44.9	606 606 44.0
	150	10.0	4.3	TC SHC kW	605 290 40.8	553 347 39.3	504 402 37.8	655 334 42.2	602 418 40.7	555 498 39.3	682 373 43.0	629 481 41.5	588 575 40.3	697 409 43.4	647 539 42.0	618 618 41.2
	200	16.0	6.9	TC SHC kW	609 291 40.0	556 349 38.6	511 406 35.8	660 335 41.3	606 419 39.9	558 500 38.6	687 375 42.0	633 483 40.6	592 572 39.5	703 411 42.4	652 541 41.1	622 622 40.3
95	80	3.4	1.5	TC SHC kW	568 274 46.3	519 332 44.2	473 387 42.2	612 318 48.3	562 401 46.1	519 480 44.2	634 356 43.2	587 464 41.2	551 549 40.6	648 393 49.8	601 520 47.8	581 581 46.9
	150	10.0	4.3	TC SHC kW	581 280 44.0	530 337 42.2	482 392 40.5	628 323 45.5	576 407 43.8	531 482 42.2	653 363 45.3	601 470 41.6	564 559 43.4	668 399 46.8	619 527 45.2	595 595 44.4
	200	16.0	6.9	TC SHC kW	584 281 43.2	533 338 41.6	489 395 38.7	632 325 44.6	580 408 43.0	534 488 41.6	657 364 45.4	606 472 42.8	567 561 42.6	673 401 45.8	623 529 44.3	598 598 43.6

See page 11 for legend

GROSS COOLING CAPACITIES — WATER-COOLED UNIT (cont)

7 50BJ064																
EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
		16,000/ 04			20,000/ 05			22,000/ 06			24,000/ 07					
		Evap Air — Ewb Temp (F)														
		Ft	Psi		72	67	62	72	67	62	72	67	62	72	67	62
65	90	3.4	1.5	TC	816	752	692	846	782	725	856	793	737	866	804	749
				SHC	401	492	581	423	544	650	443	569	683	463	594	711
				kW	50.6	48.1	45.8	51.7	49.2	47.1	52.3	49.6	47.5	52.5	50.1	48.0
	180	10.8	4.7	TC	843	775	711	877	809	746	888	821	760	899	832	774
				SHC	412	503	591	444	556	662	459	571	684	474	605	725
				kW	46.0	44.1	42.3	46.9	45.0	43.3	47.1	45.2	43.6	47.4	45.7	44.0
240	18.0	7.8	TC	850	781	716	884	815	751	895	827	765	908	839	779	
			SHC	415	505	593	447	558	664	463	583	696	478	608	728	
			kW	44.8	43.0	41.4	45.6	43.9	42.3	46.8	44.2	42.6	46.2	44.5	43.0	
75	90	3.4	1.5	TC	785	722	664	813	750	695	823	761	706	832	771	720
				SHC	389	479	567	421	531	636	436	556	669	451	580	694
				kW	54.5	51.7	49.3	55.6	52.9	50.6	56.0	53.3	51.1	56.5	53.8	51.6
	180	10.8	4.7	TC	811	745	683	843	776	716	854	787	729	864	798	742
				SHC	399	489	576	432	542	646	447	567	677	462	591	708
				kW	50.0	47.9	45.9	51.0	48.9	47.0	51.3	49.2	47.4	51.7	49.6	47.8
240	18.0	7.8	TC	818	750	687	850	782	721	861	794	735	872	804	748	
			SHC	402	492	579	434	544	649	450	569	680	465	594	711	
			kW	48.8	46.9	45.0	49.7	47.8	46.0	50.0	48.3	46.4	50.4	48.4	46.8	
85	90	3.4	1.5	TC	751	691	636	779	718	665	789	727	677	796	736	689
				SHC	375	466	553	408	517	620	433	541	648	437	565	675
				kW	58.2	55.4	52.8	59.6	56.6	54.2	60.0	57.0	54.7	60.4	57.5	55.3
	180	10.8	4.7	TC	777	713	653	806	742	685	817	752	698	827	762	711
				SHC	386	476	562	418	528	631	434	553	660	449	577	689
				kW	54.1	51.8	49.6	55.1	52.8	50.8	55.4	53.1	51.2	55.8	53.5	51.7
240	18.0	7.8	TC	784	718	658	813	747	690	824	758	703	834	768	716	
			SHC	388	478	564	421	530	633	436	555	663	451	579	692	
			kW	53.0	50.8	48.7	53.9	51.7	49.8	54.2	52.0	50.2	54.6	52.4	50.7	
95	90	3.4	1.5	TC	719	659	606	743	684	635	751	683	627	759	701	659
				SHC	363	453	538	395	504	603	410	528	629	425	552	654
				kW	62.2	59.0	56.3	63.4	60.3	57.7	63.8	60.7	58.3	64.3	61.2	59.0
	180	10.8	4.7	TC	742	680	623	769	707	653	779	717	666	788	726	678
				SHC	372	461	547	405	513	614	420	538	642	435	562	669
				kW	58.2	55.6	53.3	59.2	56.7	54.5	59.6	57.1	55.0	60.0	57.5	55.5
240	18.0	7.8	TC	748	685	627	775	712	658	785	722	671	794	731	683	
			SHC	375	463	549	407	515	616	422	540	644	437	564	672	
			kW	57.1	54.7	52.5	58.1	55.7	53.7	58.4	56.0	54.1	58.8	56.4	54.6	

LEGEND

BF — Bypass Factor
 Cfm — Cubic Feet Per Minute
 EWT — Condenser Entering Water Temperature
 Ft — Feet
 GPM — Condenser Gallons Per Minute
 kW — Compressor Motor Power Input (Kilowatts)
 Psi — Pounds Per Square Inch
 SHC — Sensible Heat Capacity (1000 Btuh)
 TC — Gross Total Capacity (1000 Btuh)

Table 2 — Hydronic Economizer Part Numbering System

UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
50BJ016/024 — Coil Only	5	0	B	X	—	9	0	0	—	—	—	0	0	1	—	—
50BJ016/024 — Coil Only/With Hot Water Coil	5	0	B	X	—	9	0	0	—	—	—	0	1	1	—	—
50BJ028/034 — Coil Only	5	0	B	X	—	9	0	0	—	—	—	0	3	1	—	—
50BJ028/034 — Coil Only/With Hot Water Coil	5	0	B	X	—	9	0	0	—	—	—	0	4	1	—	—
50BJ044,054,064 — Coil Only	5	0	B	X	—	9	0	0	—	—	—	0	6	1	—	—
50BJ044,054,064 — Coil Only/Without Water Coil	5	0	B	X	—	9	0	0	—	—	—	0	7	1	—	—
50BJ016 — Valves and Piping	5	0	B	X	—	9	0	0	—	—	—	0	9	1	—	—
50BJ024 — Valves and Piping	5	0	B	X	—	9	0	0	—	—	—	1	0	1	—	—
50BJ028 — Valves and Piping	5	0	B	X	—	9	0	0	—	—	—	1	1	1	—	—
50BJ034 — Valves and Piping	5	0	B	X	—	9	0	0	—	—	—	1	2	1	—	—
50BJ044 — Valves and Piping	5	0	B	X	—	9	0	0	—	—	—	1	3	1	—	—
50BJ054 — Valves and Piping	5	0	B	X	—	9	0	0	—	—	—	1	4	1	—	—
50BJ064 — Valves and Piping	5	0	B	X	—	9	0	0	—	—	—	1	5	1	—	—

Coil Only — Consists of precooling coil, casing and filter track. Does not contain piping or valve cabinet.
Valves and Piping — Includes valves, switch, piping, wiring, coil only (above), valve cabinet and complete factory installation.

PRECOOLING COIL CAPACITIES

8 50BJ016		Evap Air — Cfm							
EWT (F)	GPM	3000		4500		6000		7500	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC
45	22	110	90	143	118	170	140	190	155
	45	116	95	158	129	192	158	220	181
55	22	68	64	90	84	106	100	120	112
	45	73	68	99	93	121	100	139	130
65	22	39	39	51	51	61	61	68	68
	45	41	41	56	56	68	68	79	79
75	22	13	13	18	18	20	20	23	23
	45	14	14	20	20	23	23	26	26

9 50BJ024		Evap Air — Cfm							
EWT (F)	GPM	4000		6000		8000		10,000	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC
45	30	146	119	191	157	226	186	262	215
	60	157	130	213	174	260	214	303	248
55	30	93	87	122	115	146	137	164	159
	60	98	92	134	126	163	153	190	178
65	30	53	53	69	69	83	83	93	93
	60	55	55	76	76	92	92	107	107
75	30	18	18	24	24	28	28	32	32
	60	19	19	25	25	31	31	36	36

10 50BJ028		Evap Air — Cfm							
EWT (F)	GPM	5000		7500		10,000		12,500	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC
45	38	182	149	239	196	283	232	316	259
	75	194	159	264	216	321	263	369	302
55	38	114	107	150	146	177	166	198	186
	75	122	114	165	155	201	189	231	217
65	38	65	65	85	85	101	101	113	113
	75	69	69	94	94	114	114	131	131
75	38	22	22	29	29	34	34	38	38
	75	23	23	32	32	39	39	44	44

11 50BJ034		Evap Air — Cfm							
EWT (F)	GPM	6000		9000		12,000		15,000	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC
45	44	214	175	276	226	325	266	366	300
	90	229	188	306	251	372	305	431	353
55	44	134	126	173	162	204	191	229	215
	90	143	135	192	180	233	219	270	253
65	44	76	76	98	98	116	116	131	131
	90	81	81	109	109	133	133	154	154
75	44	26	26	33	33	39	39	44	44
	90	27	27	37	37	45	45	52	52

12 50BJ044		Evap Air — Cfm							
EWT (F)	GPM	8000		12,000		16,000		20,000	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC
45	60	296	242	389	319	464	380	524	429
	120	313	257	426	349	521	427	605	496
55	60	185	174	243	229	291	273	328	308
	120	196	184	267	251	326	306	378	356
65	60	105	105	138	138	165	165	186	186
	120	111	111	152	152	185	185	215	215
75	60	35	35	47	47	56	56	63	63
	120	37	37	51	51	63	63	73	73

13 50BJ054		Evap Air — Cfm							
EWT (F)	GPM	10,000		15,000		20,000		25,000	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC
45	75	338	277	434	356	506	414	561	460
	150	367	300	490	402	588	482	669	549
55	75	212	199	272	256	317	298	352	331
	150	229	215	307	288	368	346	420	394
65	75	120	120	155	155	181	181	200	200
	150	130	130	175	175	210	210	239	239
75	75	41	41	53	53	61	61	68	68
	150	44	44	59	59	71	71	81	81

14 50BJ064		Evap Air — Cfm							
EWT (F)	GPM	16,000		20,000		22,000		24,000	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC
45	90	467	383	551	435	557	457	581	476
	180	521	427	603	495	642	527	674	553
55	90	293	275	333	313	350	328	364	342
	180	326	306	378	355	403	378	423	397
65	90	167	167	190	190	199	199	207	207
	180	185	185	215	215	229	229	241	241
75	90	53	53	64	64	67	67	70	70
	180	63	63	73	73	78	78	81	81

TC — Total Capacity (MBH)
SHC — Sensible Capacity (MBH)
EWT — Entering Water Temperature

NOTE Precooling coil ratings are based on 80 F dry-bulb and 67 F wet-bulb entering air temperature

**Table 3 — Design System Water-Side
Pressure Drop (ft wg)**

50BJ	GPM/TON			
	1 5	2 0	2 5	3 0
016	6 5	9 5	14 0	19 0
024	8 0	12 5	18 5	26 0
028	8 0	12 5	19 0	26 0
034	8 5	14 0	21 0	28 5
044	11 0	18 5	27 5	37 0
054	14 0	23 0	35 0	50 5
064	8 5	14 0	21 0	29 0

NOTES

- 1 Design system refers to condensers, piping and 3-way valves
- 2 Unit sizes 50BJ016-054 have 2-in 3-way valves Unit size 50BJ064 has 3-in 3-way valve
- 3 Interpolation is permissible Do not extrapolate

**Table 5 — Accessory Hot Water
Heating Coil Capacities**

UNIT 50BJ	CFM	GPM	PRESSURE DROP		TC	LAT
			Air (in wg)	Water (ft)		
016	6,000	30	12	1 5	296	105
024	8,000	33	16	1 7	332	98
028	10,000	47	13	2 4	468	103
034	12,000	51	16	2 9	508	99
044	16,000	66	15	4 4	660	98
054	20,000	74	19	5 3	742	94
064	24,000	81	23	6 2	808	91

CFM — Cubic Feet Per Minute

GPM — Gallons Per Minute

LAT — Leaving Air Temperature (F)

TC — Total Capacity (MBH)

NOTE Ratings are based on 200F entering water temperature, 180F leaving water temperature and 60F entering air temperature

**Table 4 — Economizer Air-Side
Pressure Drop (in. wg)**

50BJ	CFM	PRESSURE DROP
016	4,500	20
	6,000	30
	7,500	44
024	6,000	30
	8,000	50
	10,000	72
028	7,500	18
	10,000	35
	12,500	55
034	9,000	28
	12,000	50
	15,000	75
044	12,000	21
	16,000	41
	20,000	63
054	15,000	36
	20,000	63
	25,000	90
064	20,000	63
	22,000	74
	24,000	85

NOTE Fan performance is based on wet coil, clean filters and deducted casing losses Refer to Physical Data table for average efficiencies

$$kW = \frac{Bhp \times 746}{\text{Efficiency}}$$

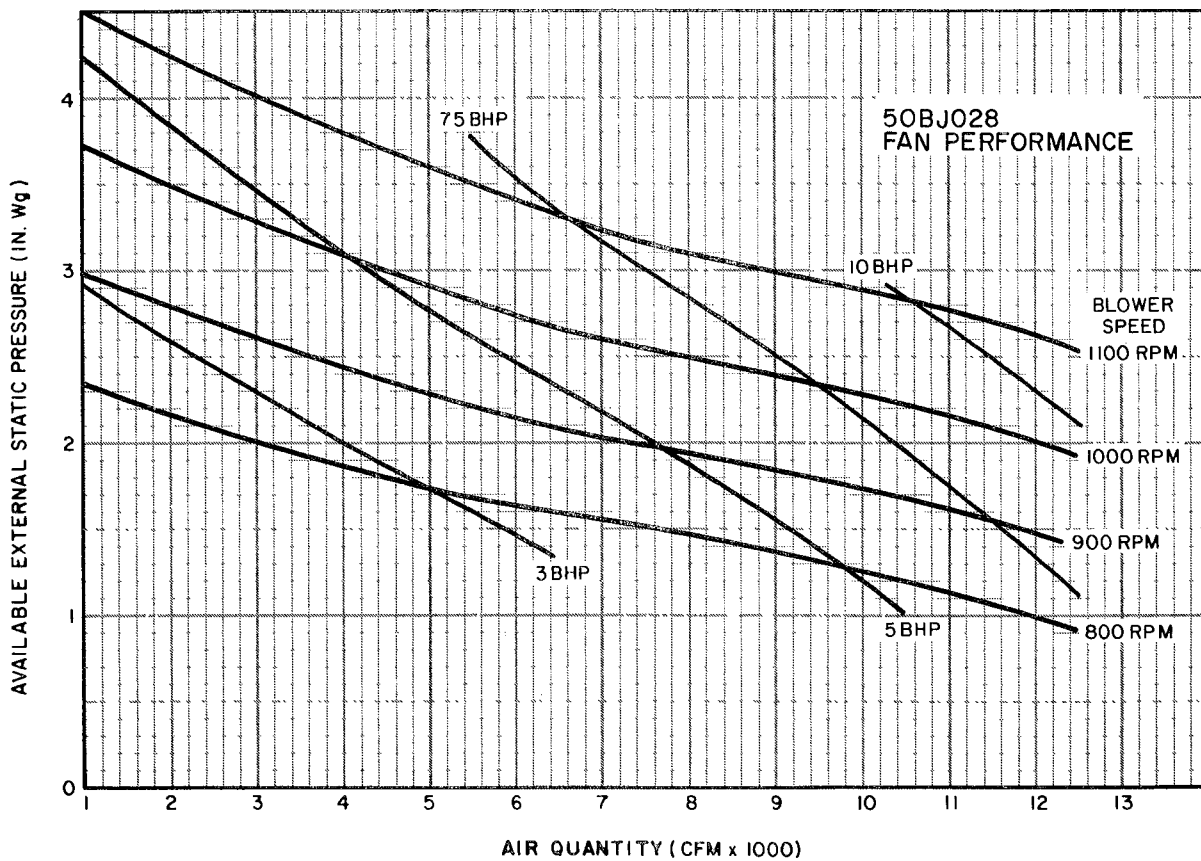
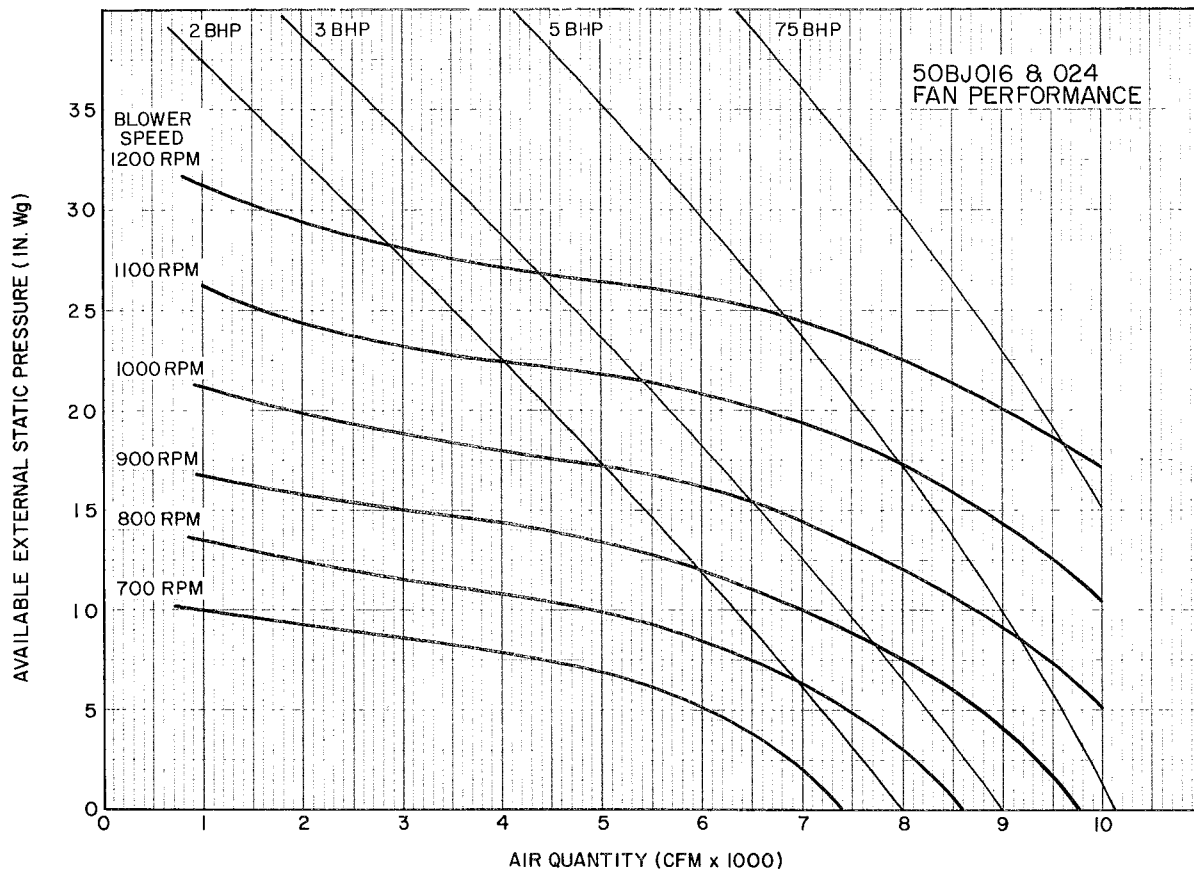


Fig. 3 — Fan Performance Curves

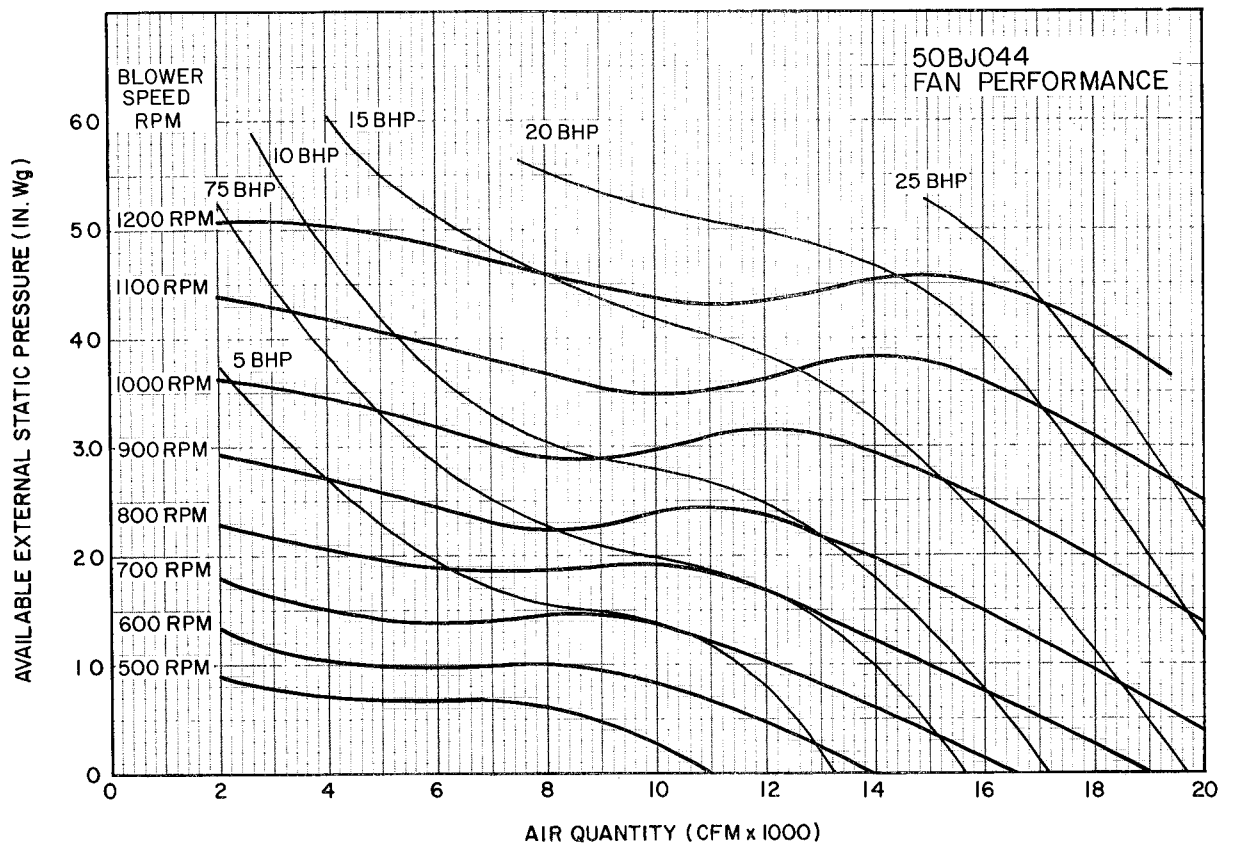
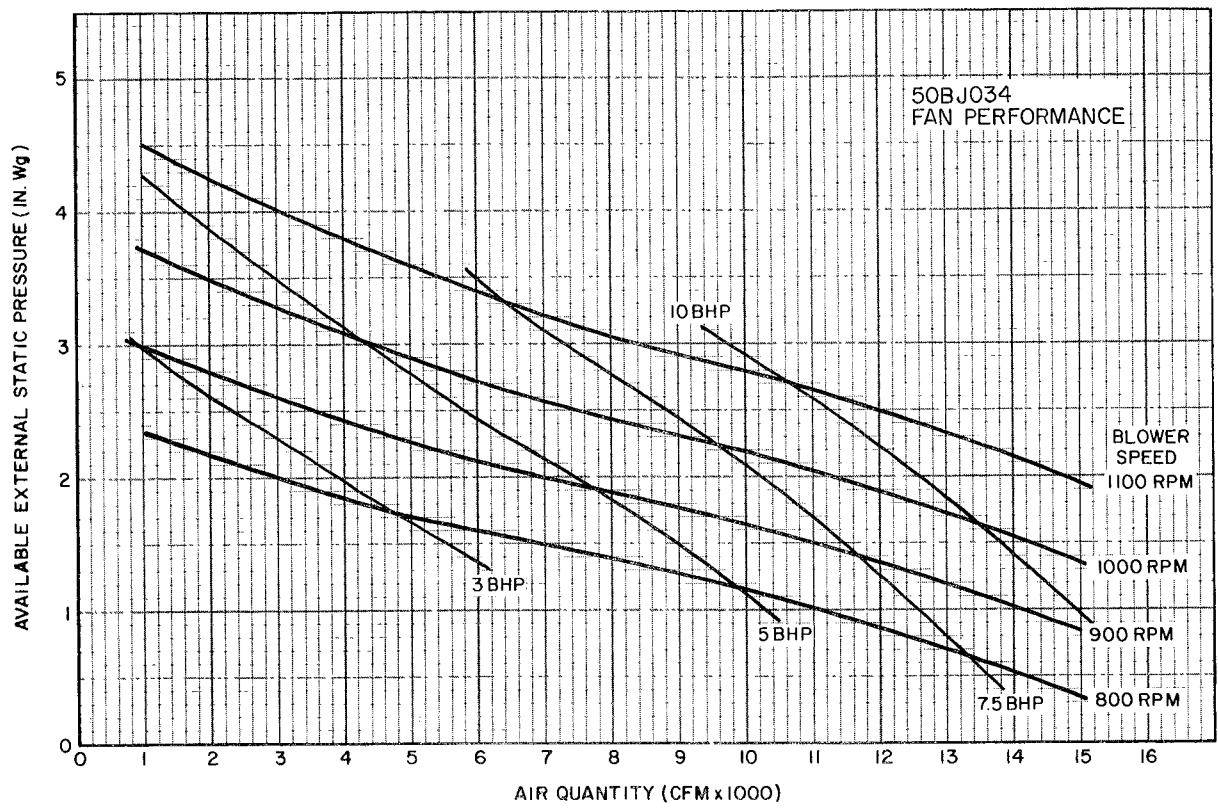


Fig. 3 — Fan Performance Curves (cont)

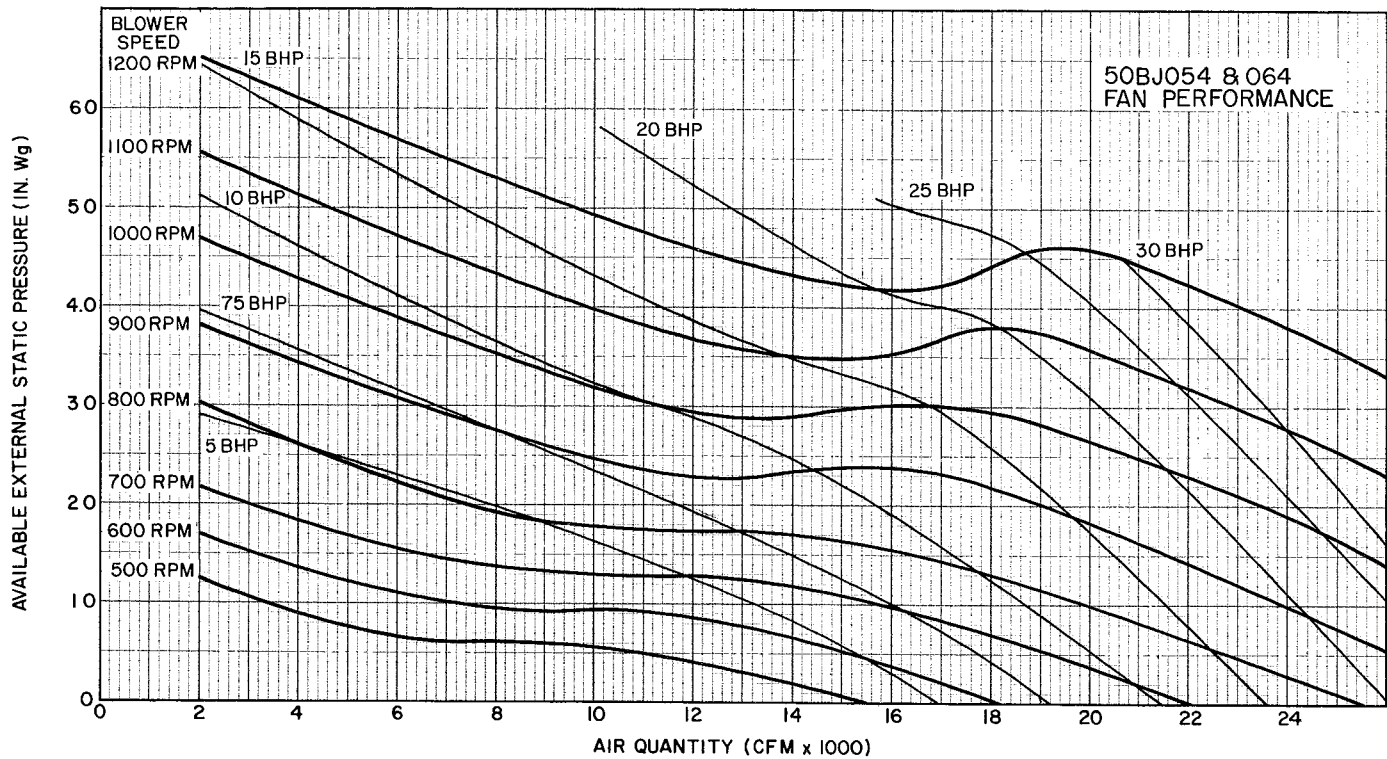


Fig. 3 — Fan Performance Curves (cont)

Table 6 — Fan Pulley Selection (50BJ044-064)

FAN RPM	MOTOR PULLEY DIAMETER (in.)	FAN PULLEY DIAMETER (in.)	5V BELT SIZE (2 Required) (Belt Length in)
600	8.0	23.6	90
650	7.1	18.7	80
700	7.5	18.7	80
738	8.0	18.7	85
789	8.5	18.7	90
845	9.0	18.7	85
865	9.25	18.7	85
915	9.75	18.7	85
963	10.3	18.7	85
1000	8.0	14.0	75
1028	10.9	18.7	85
1054	11.3	18.7	90
1100	11.8	18.7	90
1166	12.5	18.7	90
1200	9.0	13.2	71

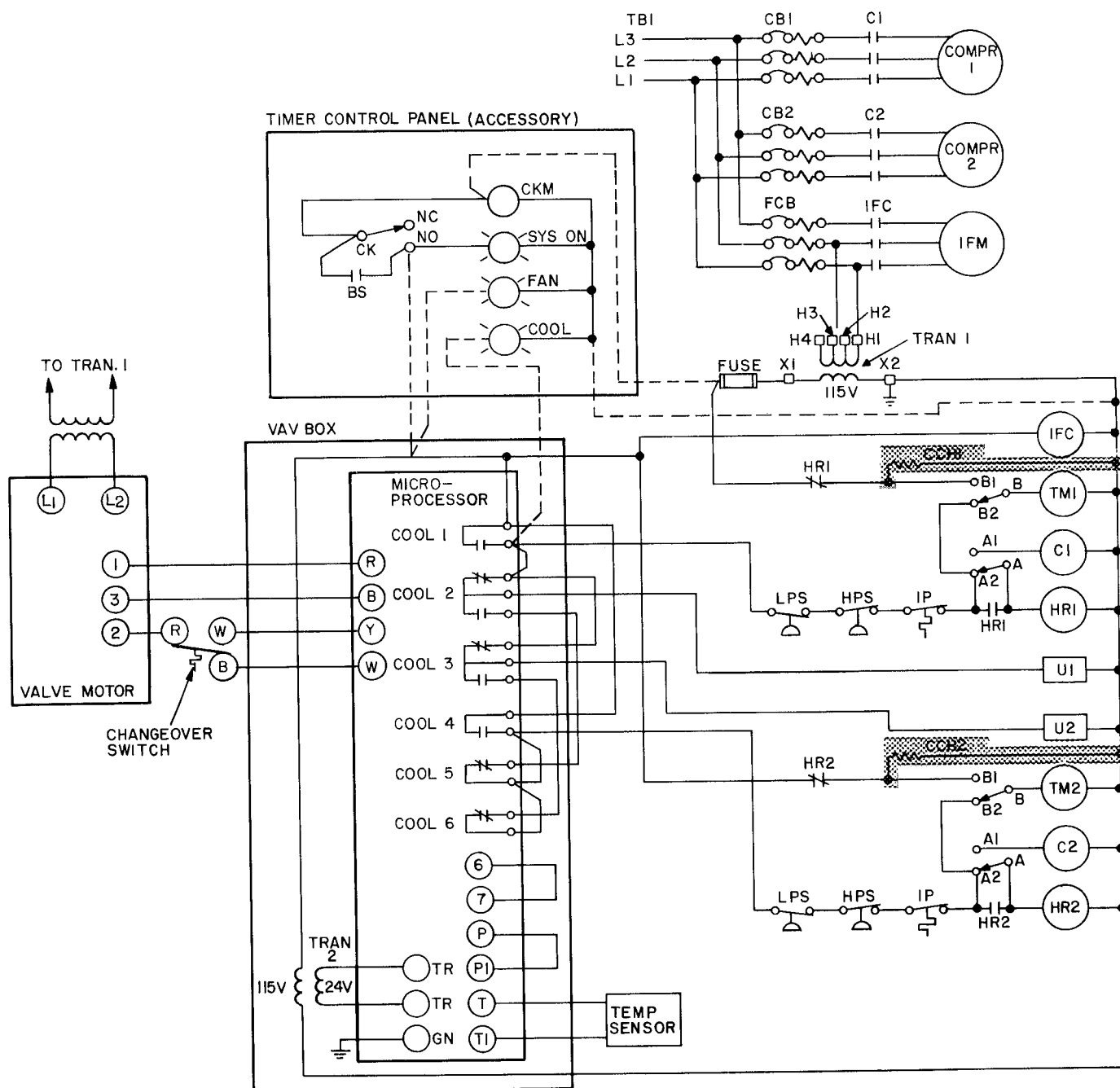
Shaded values indicate standard or optional pulley combinations available as shown in Physical Data table. All other combinations are field supplied.

TYPICAL UNIT PIPING AND WIRING

Refer to Fig. 4 for typical wiring schematic — Unit 50BJ with hydronic economizer. Refer to Fig. 5 for combined typical piping and wiring schematic. Wiring and piping shown are general points-of-connection guides only and are not intended for or to include all details for specific in-

stallation. All wiring must comply with applicable local and national codes. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual, Part 3 for details.

For more specific piping and wiring information, refer to 50BJ base unit Installation Instructions and Wiring Diagrams publications.



044-064 UNITS ONLY

Fig. 4 — Typical Wiring Schematic — Unit 50BJ with Hydronic Economizer

Table 7 — Electrical Data

UNIT 50BJ	V/PH/HZ	VOLTAGE RANGE		COMP #1		COMP #2		INDOOR FAN MOTOR		POWER SUPPLY	
		Min	Max	RLA	LRA	RLA	LRA	Hp	FLA	MCA*	MOCP†
016	208/230/3/60	187	254	50 0	191	—	—	3	9 2	71 7	110
	460/3/60	414	508	22 1	86	—	—	3	4 6	32 2	50
	575/3/60	518	632	17 9	69	—	—	3	3 7	26 2	40
024	208/230/3/60	187	254	36 0	137	36 0	137	5	13 2	94 2	125
	460/3/60	414	508	16 0	62	16 0	62	5	6 6	42 6	50
	575/3/60	518	632	12 9	50	12 9	50	5	5 6	35 1	45
028	208/230/3/60	187	254	49 3	191	35 7	137	7½	22 0	120 0	150
	460/3/60	414	508	22 2	86	16 0	62	7½	11 0	54 8	70
	575/3/60	518	632	18 0	69	13 0	50	7½	8 7	44 2	60
034	208/230/3/60	187	254	49 3	191	49 3	191	7½	22 0	132 9	175
	460/3/60	414	508	22 2	86	22 2	86	7½	11 0	61 0	80
	575/3/60	518	632	18 0	69	18 0	69	7½	8 7	49 2	60
044	208/230/3/60	187	254	57 9	283	57 9	283	15	46 2	178 5	225
	460/3/60	414	508	26 5	142	26 5	142	15	21 0	82 7	100
	575/3/60	518	632	22 2	98	22 2	98	15	15 4	64 7	80
054	208/230/3/60	187	254	80 8	446	60 0	283	20	59 4	222 4	300
	460/3/60	414	508	35 8	223	26 5	142	20	27 0	100 3	125
	575/3/60	518	632	30 0	164	22 2	98	20	20 0	81 5	110
064	208/230/3/60	187	254	91 5	446	91 5	446	25	74 8	282 7	350
	460/3/60	414	508	42 6	253	42 6	253	25	34 0	131 9	150
	575/3/60	518	632	32 2	164	32 2	164	25	25 6	100 1	125

FLA — Full Load Amps

Hp — Nominal Horsepower

LRA — Locked Rotor Amps

MCA — Minimum Circuit Amps

MOCP — Maximum Overcurrent Protection Device (Amps)

RLA — Rated Load Amps

*Minimum circuit amps (MCA) for wire sizing complies with NEC Section 430-24

†In compliance with NEC requirements for multimotor and combination load equipment (Reference NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse only

NOTES

1 Compressor circuit breakers are current sensitive and temperature compensated to ensure compressor cutoff if current draw becomes excessive. Breakers must be manually reset

- 2 Discharge gas thermal protection or internal protection with automatic reset de-energizes the control circuit if extreme compressor motor temperature should occur from excessive gas temperature or motor overloading
- 3 Low- and high-pressure switches automatically shut off compressor(s) if refrigerant pressure exceeds switch settings. This action protects against loss of charge
- 4 Indoor fan motor circuit breaker protects against motor overload. Breaker requires manual reset
- 5 The 50BJ units are ETL listed at 208/230 and 460 v and CSA certified at 575 volts
- 6 Phase imbalance shall not exceed 2%
- 7 Wire sizing amps are a sum of 125% of the FLA for largest motor plus 100% of the FLA for all other motors in the unit
- 8 Maximum instantaneous current flow during starting is the sum of the LRA for last compressor to start plus the FLA for all other compressors in the unit

ETL LISTED



NOTICE: This product has been safety tested by ETL Testing Laboratories, Inc. The test procedure is in strict conformance with prevailing and applicable ANSI*/UL† standard as listed above.

Further information regarding the test procedures and compliance to existing industry standards may be obtained directly from ETL Testing Laboratories, Inc.

ETL Testing Laboratories, Inc.

Industrial Park

Cortland, New York 13045

Telephone (607) 753-6711 TWX 510-2520792

*ANSI — American National Standards Institute

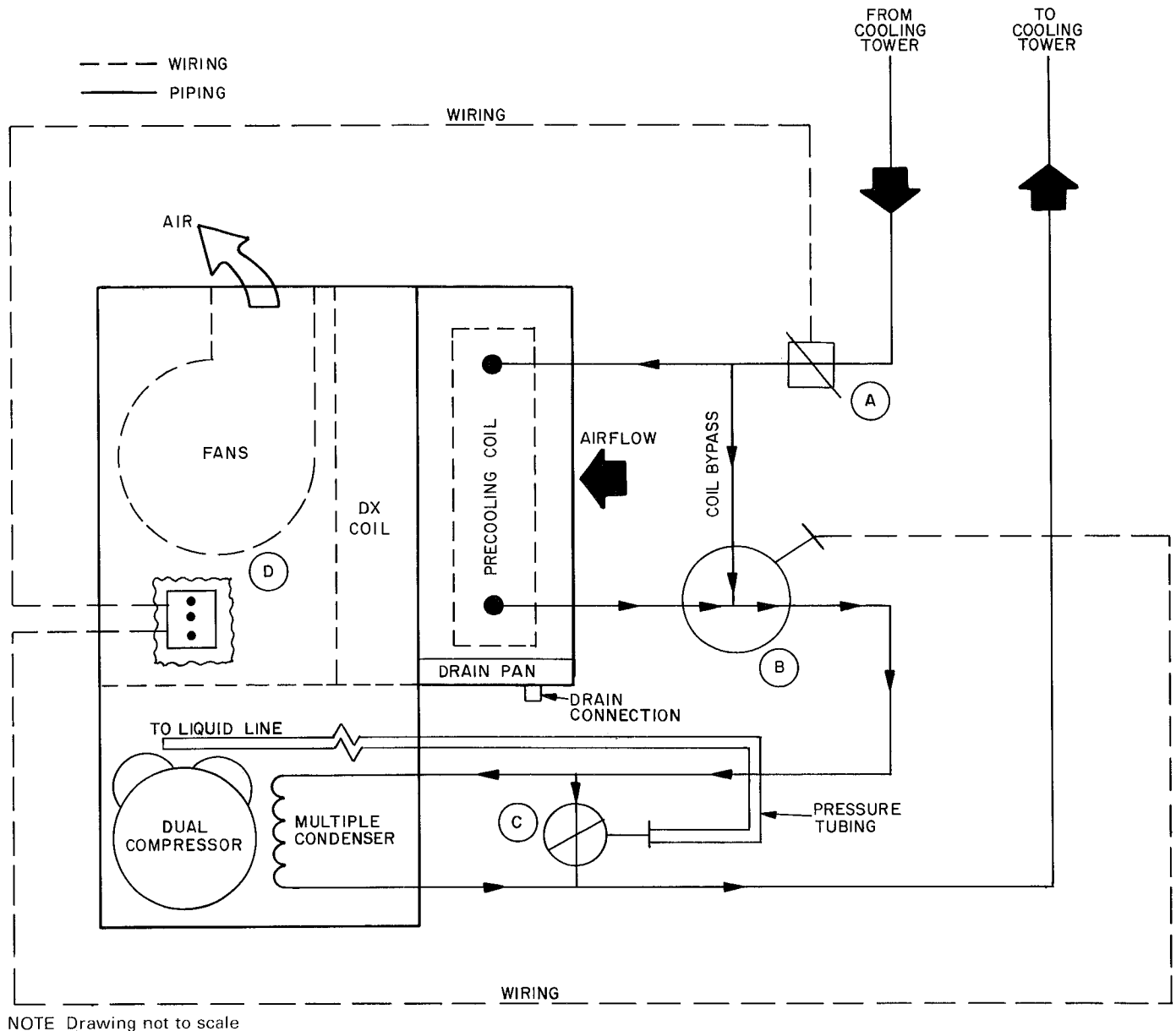
†UL — Underwriters Laboratory, Inc

OPERATING SEQUENCE

All Hydronic Economizer Units (Refer to Fig. 5.) — The Aquastat (A) is preset for a desired changeover water temperature of approximately 45 - 75 F. The microprocessor (D) is also preset for a desired leaving air temperature from the base unit (e.g. 55 F dry-bulb).

When the condenser water temperature is less than or equal to the preset changeover temperature — The changeover Aquastat (A) signals the micro-

processor (D) that economizer cooling is now possible. The microprocessor then signals the 3-way valve (B) to change position and allow flow through the precooling coil. This coil precools the air before it reaches the DX cooling coil. If additional cooling capacity is then needed, the microprocessor stages on compressor steps to maintain the desired leaving air temperature. The 2-way valve (C) will automatically maintain unit head pressure if needed. The unit is now in the integrated economizer mode.



LEGEND

- (A) Changeover Aquastat — Senses Changeover
- (B) 3-Way Valve — Energizes Precooling Coil
- (C) 2-Way Valve — Maintains Head Pressure
- (D) Microprocessor — Logic Controller

Fig. 5 — Typical Piping and Wiring Schematic

When the condenser water temperature rises above the preset changeover temperature — The 3-way valve (B) moves to its bypass position. The cooling tower water bypasses the precooling coil and is used only for the condensers. Normal mechanical cooling will result. Refer to 50BJ base unit Installation Instructions publication for mechanical cooling operating sequence information.

Table 8 — Loading Sequence

MODEL 50BJ	STAGE					
	1	2	3	4	5	6
016	33%	67%	100%	—	—	—
024	17%	34%	50%	67%	84%	100%
028	17%	34%	50%	67%	84%	100%
034	17%	34%	50%	67%	84%	100%
044	25%	50%	75%	100%	—	—
054	19%	38%	57%	63%	84%	100%
064	17%	34%	50%	67%	84%	100%

GUIDE SPECIFICATIONS

Hydronic Economizer

ECONOMIZER COIL shall have aluminum fins mechanically bonded to seamless 1/2-in. copper tubing. Coil shall be 4 rows with 11 fins per inch.

DUAL CONDENSATE DRAINS shall be provided in addition to the base unit condensate drain.

FILTERS AND HIGH-VELOCITY FILTER SECTION shall be provided. Filter section shall contain a one-in. duct flange.

CONTROLS shall consist of a 3-way valve, reverse acting 2-way valve plus an aquastat. Base unit microprocessor shall control modulation of 3-way valve.

ECONOMIZER PIPING SECTION shall be entirely enclosed in a sheet metal cabinet.

FACTORY INSTALLATION shall be provided on all components, piping, wiring plus optional heating coil.