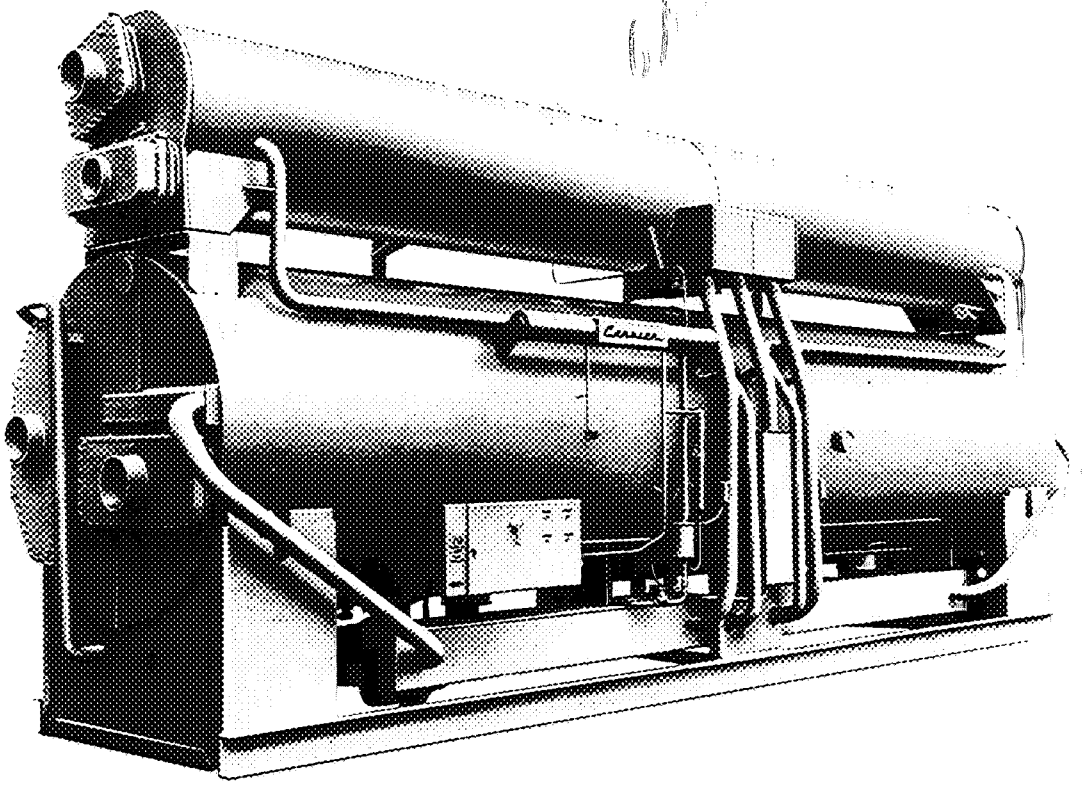
Carrier®

Hermetic Absorption Liquid Chillers

100 thru 1120 Tons

16JA



DESCRIPTION

Carrier 16JA Hermetic Absorption Liquid Chillers use low pressure steam, hot water, or other hot liquids to produce refrigeration for a variety of air conditioning systems or liquid cooling applications.

Twenty-one standard sizes are available providing a capacity range of 100 thru 1120 tons. Installation can be with single or multiple units capable of complete automatic control of system demands.

FEATURES

- **Motorless Hermetic Purge** automatically keeps the machine free of noncondensables, ensuring full refrigeration capacity when needed. This is accomplished without the use of an external vacuum pump or other accessory equipment when the machine is operating. The possibility of contaminating the solution with oil vapors is completely eliminated and there are no installation, maintenance, or change of oil requirements as in conventional motor-operated pumps.

- **Automatic Decrystallization** — Carrier's automatic decrystallization eliminates operator concern if minor crystallization should occur. If this does occur, the standard flow pattern is automatically restored and the machine will return to normal operation.

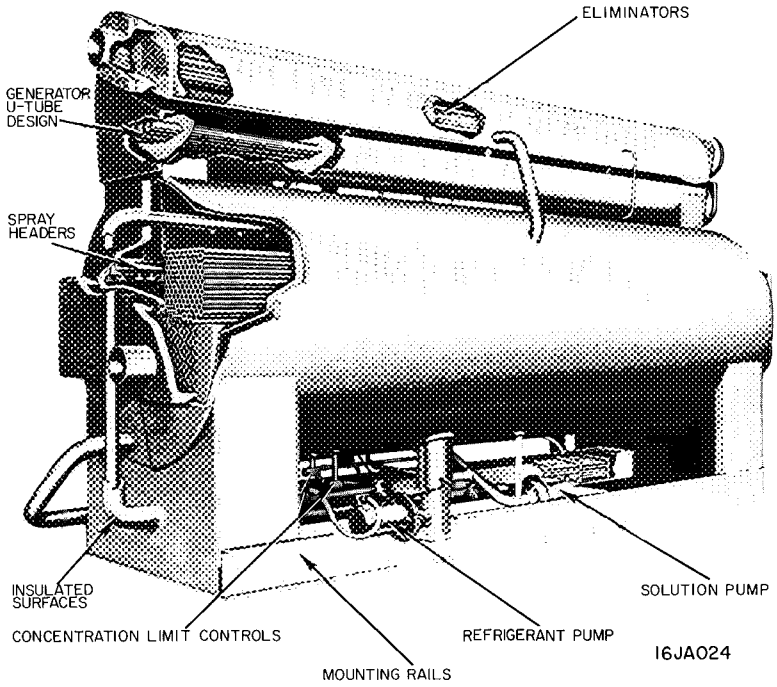
- **Hermetic Machine Design** — The 16JA is designed with only a few welded joints The entire assembly, including the purge unit, is subjected to the most rigorous leak testing in the industry by using the most modern and advanced techniques available to industry.

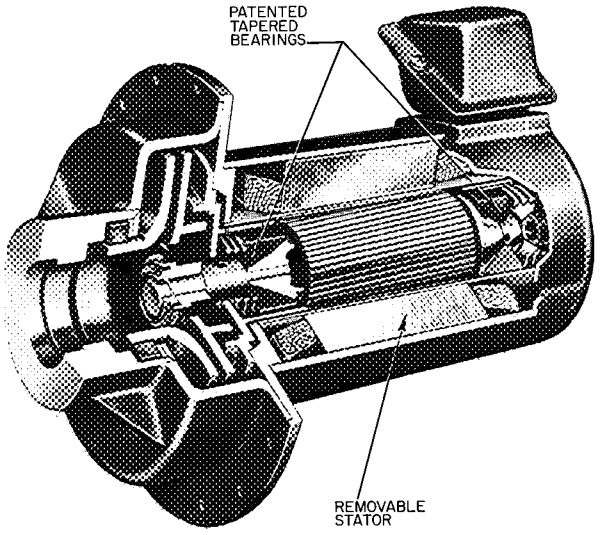
- **Ease of Installation** — Each machine is leak tested, sealed, then shipped from the factory under vacuum, ready for installation at the jobsite. Eleven small machine sizes are shipped completely assembled. Ten larger sizes are shipped in two sections for ease in rigging.

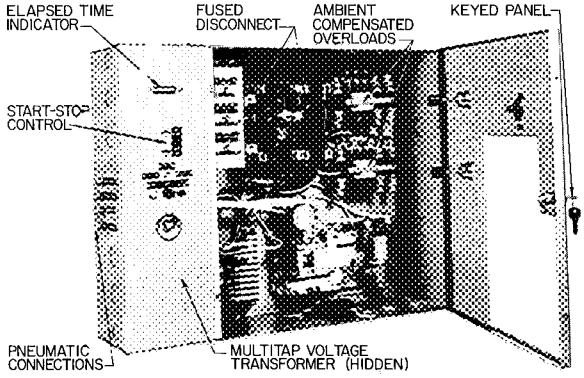
  Installation is merely a matter of positioning the machine, then making piping and electrical connections. These machines operate quietly without vibration, eliminating costly foundations.

FEATURES (cont)

- **U-Tube Design** – Generator U-tube design eliminates tube wear caused by differential expansion.
- **Spray Headers** – Low pressure drop design. Provide wetted tube surface for maximum heat transfer.
- **Insulated Surfaces** – Factory supplied on refrigerant pump and related cold piping.
- **Concentration Limit Controls** – Automatically prevents solution overconcentration and overdilution
- **Mounting Rails** – Rigid steel channels provide additional support for rigging and mounting
- **Pumps** – Only two pumps required; refrigerant pump and solution pump. See description below.







- **Hermetic Pumps** are completely self-contained, with no seals or barriers to wear out Bearings are lubricated by the fluid being pumped, eliminating external lube lines and connections City water connections are not required, yet the machine can always be started Pumps can be serviced without removing solution Stator can be removed without breaking vacuum. Pump-weld connections eliminate gasket leakage problems and ensure permanent alignment These advantages eliminate service maintenance normally required by conventional pumps

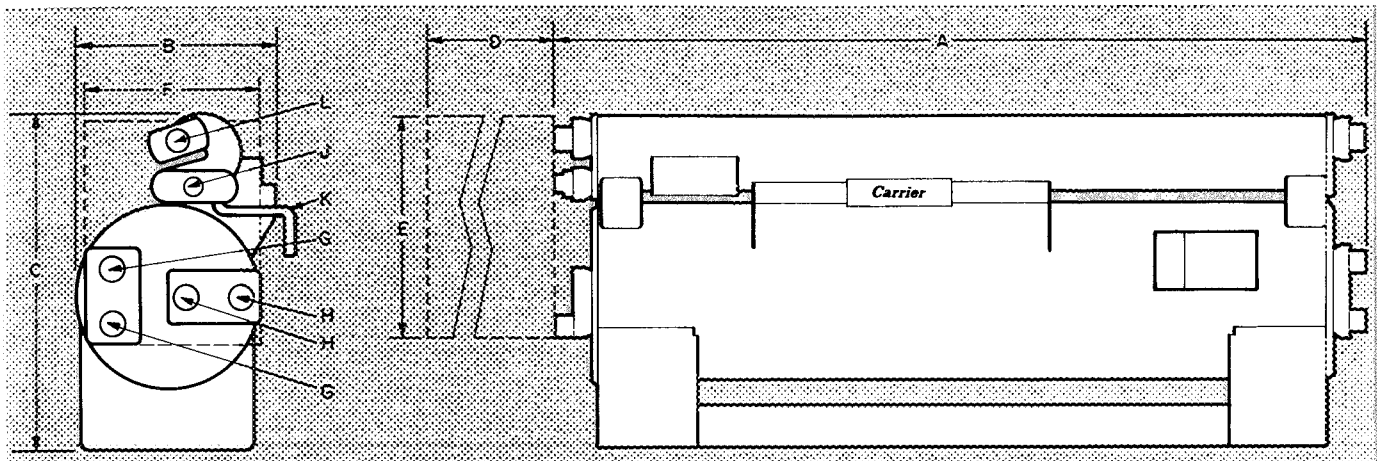
- **Control Center** contains necessary controls to operate machine.

Unique panel design provides positive advantages For example, an automatic START-STOP control, fused disconnects, ambient compensated overloads, automatic restart (in case of power failure), elapsed time indicator, multitap control voltage transformer, low-level refrigerant safety control and electrical knockouts (4-sides)

The safety latch and keyed panel provide safe serviceability to authorized personnel

Operating and safety controls are available for either electronic or pneumatic operation.

DIMENSIONS

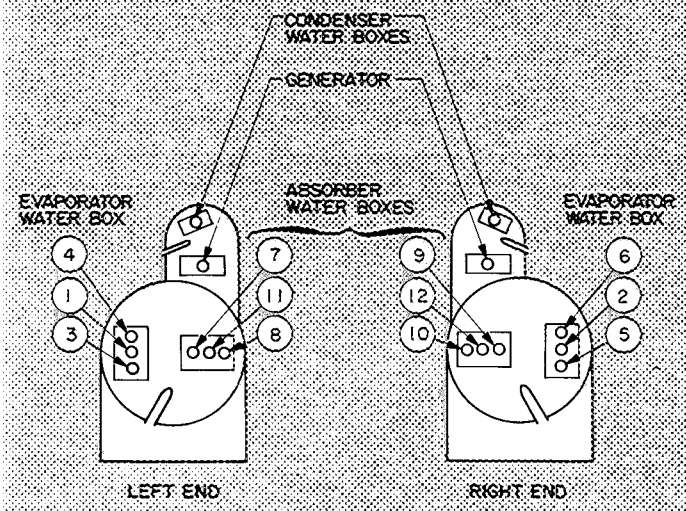


UNIT 16JA	CLEARANCE DIMENSIONS (ft–in.)						NOZZLE SIZES (in.)						
							Evap (G) Passes			Abs	Stm	Cnds	Cond
	A	B	C	D	E	F	1	2	3	H	J	K*	L
010,012,014	16–7½	2–10½	7– 3⅜	14–2	4– 8	2– 8	6	4	4	6	3	1¼	6
018,021	16–7½	3– 7	7–10¼	14–2	5– 1	3– 6	6	6	4	6	4	1¼	6
024,028	16–7½	4– 2½	8–10	14–2	5–10	4– 0	8	6	6	8	6	1½	8
032,036	16–7½	5– 2½	10– 1⅜	14–2	6–10	5– 0	8	8	6	8	6	2	8
043,047	16–7½	6– 1½	11– 6⅛	14–2	8– 6	5– 3	10	8	6	10	6	2	10
054,057	21–7¼	5– 2½	11–10	19–3	8– 7	5– 0	10	8	6	10	8	3	10
061,068	21–7¼	6– 1½	13– 2¼	19–3	9– 3	5–11	10	8	8	10	8	3	10
077,084	31–7⅛	5– 2½	11– 4	29–1	8– 5	5– 0	8	8	–	10	6	3	10
097,107	31–7⅛	6– 1½	12–10½	29–1	9– 5	6– 6	10	8	–	12	8	3	12
115,124	31–7⅛	6– 8	13– 9¾	29–1	9– 9	6– 0	10	8	–	12	8	3	12

Abs — Absorber
Cnds — Condensate
Cond — Condenser
Evap — Evaporator
Stm — Steam

*Location varies according to machine size.
NOTE: Minimum space for tube removal (Dimension D) may be located on either end.
Certified dimension drawings available on request.

NOZZLE ARRANGEMENTS



EVAPORATOR								
1-Pass			2-Pass			3-Pass		
In	Out	Arr	In	Out	Arr	In	Out	Arr
1	2	T	3	4	X	5	4	V
2	1	S	5	6	W	3	6	U

ABSORBER											
2-Pass									1-Pass		
Size 010-014			Size 024-028			Size 018-021, 032-068			Size 077-124		
In	Out	Arr	In	Out	Arr	In	Out	Arr	In	Out	Arr
7	8	Z	8	7	Z	7	8	Z	11	12	Q
10	9	Y	9	10	Y	9	10	Y	12	11	R

Arr — Arrangement

NOTES:
1. Absorber inlet on machine sizes 077 thru 124 must be located on opposite end from evaporator inlet.
2. All machines have a 1-pass condenser.
3. Generator water box on machine sizes 010 thru 068 is located on left end only.
4. Evaporator for machine sizes 077 thru 124 not available in 3-pass.

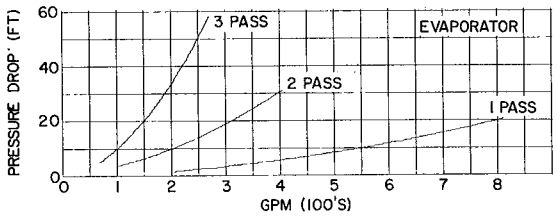
PERFORMANCE DATA
CAPACITY (tons)

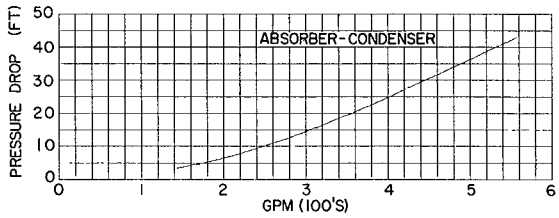
16JA010

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	101	103	105	107	110	113	116
	10	106	108	110	112	114	117	121
	12	111	113	114	116	117	121	125
	13	112	114	116	117	119	123	127
	14			117	119	121	124	128
85	8	86	88	91	93	95	99	103
	10	92	94	96	98	100	104	109
	12	96	98	100	102	105	109	113
	13	99	101	103	105	107	111	115
	14		103	105	107	109	113	116
90	8	70	72	74	76	78	83	88
	10	75	77	80	82	85	90	95
	12	81	83	86	88	90	95	99
	13	84	86	89	91	93	97	101
	14	87	89	91	93	95	99	103

Based on 300 gpm cond water, 2-pass evap, 10 F temp rise
Based on 360 gpm cond water, 2-pass evap, 10 F temp rise
Based on 420 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 100 **STEAM RATE (lb/ton-hr)** 18.0
WEIGHT (lb) . . . . . Operating 11,070; Rigging 8,830

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	8.4 4.2	29 14	30 15	1.0
Refrig	208-240/ 416-480	8.4 4.2	29 14	30 15	1.1

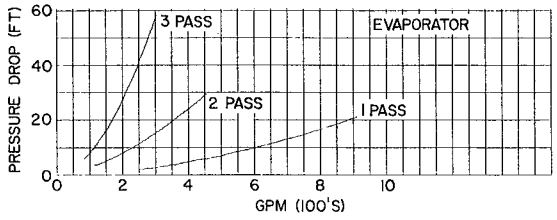
PERFORMANCE DATA
CAPACITY (tons)

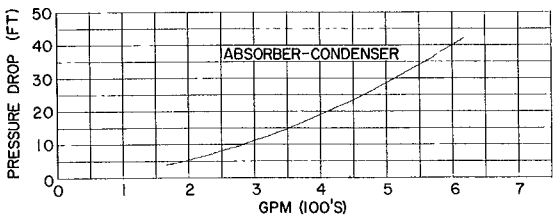
16JA012

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	117	119	121	124	127	131	135
	10	123	125	127	129	131	136	140
	12	128	130	131	133	136	140	145
	13		131	133	136	138	142	147
	14				138	140	144	149
85	8	100	102	105	108	111	115	119
	10	106	109	111	114	116	121	125
	12	111	114	116	119	121	126	130
	13	114	116	118	121	123	128	132
	14			121	123	125	130	135
90	8	80	83	85	88	90	96	102
	10	86	89	92	95	97	103	110
	12	93	96	99	101	104	110	114
	13	96	99	102	104	107	112	117
	14	100	103	105	107	110	115	119

Based on 348 gpm cond water, 2-pass evap, 10 F temp rise
Based on 418 gpm cond water, 2-pass evap, 10 F temp rise
Based on 485 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 116 **STEAM RATE (lb/ton-hr)** 18.0
WEIGHT (lb) . . . . . Operating 11,330; Rigging 9,030

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	8.4 4.2	29 14	30 15	1.0
Refrig	208-240/ 416-480	8.4 4.2	29 14	30 15	1.1

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower

*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

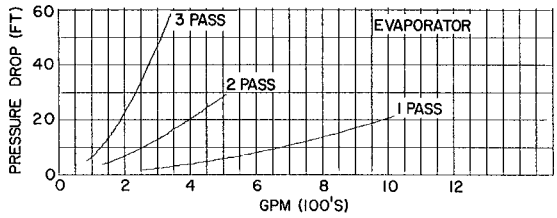
PERFORMANCE DATA
CAPACITY (tons)

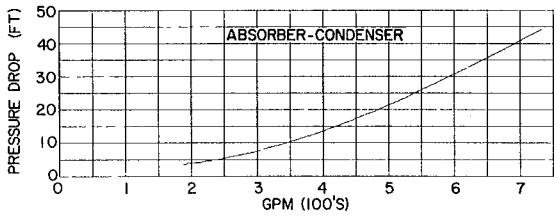
16JA014

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	133 / 152	136 / 154	138 / 157	141 / 160	144 / 163	148 / 167	153 / 171
	10	139 / 150	142 / 160	145 / 162	147 / 165	150 / 167	155 / 172	159 / 176
	12	145	148 / 157	150 / 159	152 / 162	155 / 172	159 / 178	164 / 183
	13	147	150	152 / 162	155 / 164	157 / 175	162 / 180	166 / 185
	14		152	154	157 / 167	159 / 169	164 / 182	168 / 187
85	8	114 / 131	116 / 134	119 / 137	123 / 140	126 / 143	131 / 148	136 / 152
	10	121 / 139	124 / 141	127 / 144	129 / 146	132 / 149	137 / 154	143 / 159
	12	127 / 137	130 / 140	132 / 148	135 / 151	138 / 154	143 / 159	148 / 165
	13	130	132	135 / 144	138 / 154	141 / 157	146 / 162	151 / 168
	14	132	135	138	141 / 149	143 / 159	148 / 165	153 / 170
90	8	91 / 105	94 / 108	97 / 112	100 / 116	103 / 120	110 / 127	116 / 134
	10	98 / 113	102 / 118	106 / 122	109 / 126	112 / 130	118 / 135	124 / 140
	12	107 / 124	110 / 127	114 / 130	116 / 132	119 / 135	125 / 140	131 / 145
	13	111 / 120	114 / 124	117 / 133	119 / 136	122 / 137	129 / 145	133 / 148
	14	115	117	120 / 129	122 / 132	125 / 139	132 / 147	136 / 151

Based on 396 gpm cond water, 2-pass evap, 10 F temp rise
Based on 475 gpm cond water, 2-pass evap, 10 F temp rise
Based on 554 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 132 **STEAM RATE (lb/ton-hr)** 18.0
WEIGHT (lb) . . . . . Operating 11,620, Rigging 9,240

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	8.4 / 4.2	29 / 14	30 / 15	1.1
Refrig	208-240/ 416-480	8.4 / 4.2	29 / 14	30 / 15	1.1

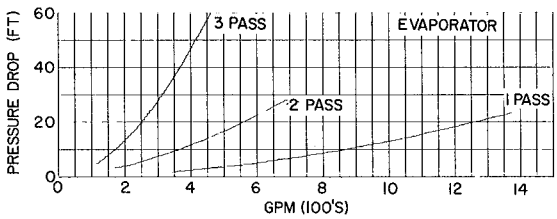
PERFORMANCE DATA
CAPACITY (tons)

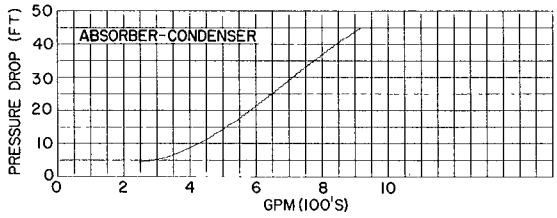
16JA018

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	175 / 199	178 / 204	182 / 208	186 / 213	191 / 217	197 / 224	202 / 228
	10	183 / 198	187 / 202	190 / 205	194 / 220	197 / 223	204 / 229	211 / 236
	12	192	194	197	200 / 215	204 / 218	211 / 235	217 / 242
	13		197	200	204	207 / 221	213 / 238	220 / 246
	14				207	211	215 / 229	224 / 249
85	8	150 / 172	154 / 176	157 / 180	162 / 185	166 / 190	172 / 197	179 / 204
	10	159 / 182	163 / 186	167 / 191	171 / 195	174 / 198	181 / 205	188 / 212
	12	167	171 / 184	174 / 188	178 / 192	182 / 206	188 / 211	195 / 216
	13	171	174	178	181 / 195	185 / 198	192 / 214	199 / 221
	14			181	184	188 / 201	195 / 217	202 / 225
90	8	120 / 138	124 / 142	127 / 146	131 / 151	135 / 156	144 / 167	153 / 176
	10	129 / 148	133 / 154	138 / 160	142 / 164	146 / 169	155 / 176	164 / 187
	12	139 / 151	144 / 156	148 / 170	152 / 174	155 / 178	164 / 187	172 / 193
	13	145	149 / 161	153 / 166	156 / 169	160 / 182	168 / 190	175 / 198
	14	150	154	158	161 / 174	164 / 177	172 / 193	179 / 199

Based on 522 gpm cond water, 2-pass evap, 10 F temp rise
Based on 626 gpm cond water, 2-pass evap, 10 F temp rise
Based on 730 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 174 **STEAM RATE (lb/ton-hr)** 18.0
WEIGHT (lb) . . . . . Operating 17,040; Rigging 13,685

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	8.4 / 4.2	29 / 14	30 / 15	1.3
Refrig	208-240/ 416-480	8.4 / 4.2	29 / 14	30 / 15	1.1

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

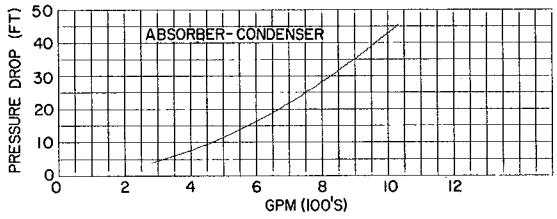
PERFORMANCE DATA
CAPACITY (tons)

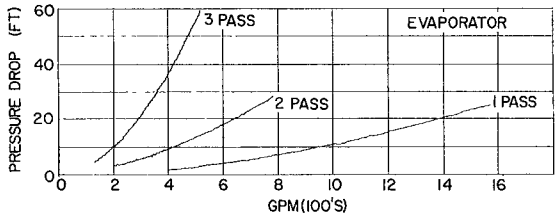
16JA021

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	198	203	208	213	217	226	233
	10	209 225	213 230	218	223	228	235	243
	12	218	223	228 243	232 246	235	243	250
	13		227	232	235 250	239 254	246	253
	14			235	239	243 258	249	256
85	8	170	175	180	185	190	199	207
	10	181	186	191	196	201	209	218
	12	191	196 212	201 216	206	210	218	225
	13	196	201	206	210 224	214	222	229
	14		205	210	214	218 231	225	233
90	8	136	140	145	151	157	167	177
	10	150	155	161	166	171	180	189
	12	163 177	168	173	177	181	190	199
	13	168	173 187	178 192	182	186	196	203
	14	173	178	183	186 200	190	201	207

Based on 603 gpm cond water, 2-pass evap, 10 F temp rise
Based on 724 gpm cond water, 2-pass evap, 10 F temp rise
Based on 845 gpm cond water, 2-pass evap, 10 F temp rise

ECWT – Entering Condensing Water **STM** – Steam





PHYSICAL DATA

CAPACITY (tons) . . 201 **STEAM RATE (lb/ton-hr)** 18 0
WEIGHT (lb) . . . . . Operating 17,450; Rigging 14,000

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	8 4 4.2	29 14	30 15	1 4
Refrig	208-240/ 416-480	8.4 4.2	29 14	30 15	1.1

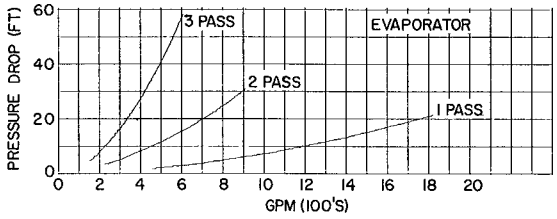
PERFORMANCE DATA
CAPACITY (tons)

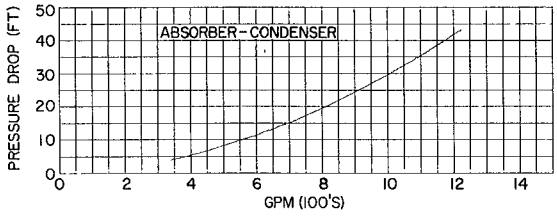
16JA024

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	232	237	243	249	254	264	270
	10	244 263	249 269	255	259	264	273	282
	12	255	259	263 281	268 285	273	282	291
	13		264	268	273 290	277 295	285	295
	14			273	277	282 300	288	299
85	8	199	204	210	216	222	231	240
	10	211	217	223	228	233	242	252
	12	223	228 246	233 250	238	243	252	261
	13	229	233	238	243 259	248	257	266
	14		238	242	247	252 267	261	270
90	8	159	164	169	174	180	193	205
	10	171	178	185	190	196	207	220
	12	186 202	192	198	203	208	220	230
	13	194	199 216	205 223	210 238	214	226	235
	14	200	206	212	216 232	220	231	239

Based on 699 gpm cond water, 2-pass evap, 10 F temp rise
Based on 839 gpm cond water, 2-pass evap, 10 F temp rise
Based on 979 gpm cond water, 2-pass evap, 10 F temp rise

ECWT – Entering Condensing Water **STM** – Steam





PHYSICAL DATA

CAPACITY (tons) . . 233 **STEAM RATE (lb/ton-hr)** 18.0
WEIGHT (lb) . . . . . Operating 19,090; Rigging 14,830

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	8 4 4 2	29 14	30 15	1 4
Refrig	208-240/ 416-480	8 4 4.2	29 14	30 15	1 1

FLA – Nameplate Full Load Amps
LRA – Nameplate Locked Rotor Amps
MFA – Max Fuse Amps
BHP – Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

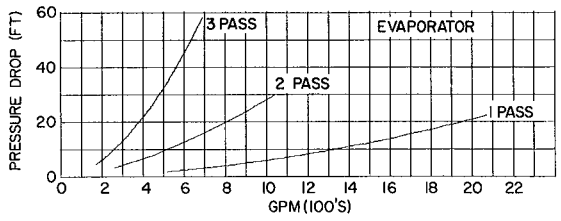
PERFORMANCE DATA
CAPACITY (tons)

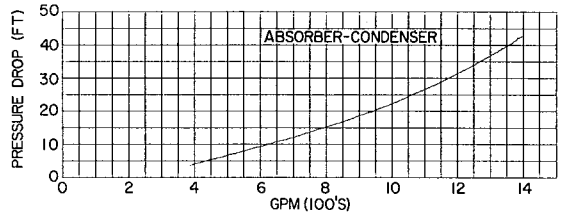
16JA028

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	267	274	280	287	293	303	313
	10	281 303	288 310	294	300	306	316	326
	12	294	300	306 327	312 331	316	326	336
	13		306	312	316 336	321 341	330	340
	14			316	321	326 347	335	344
85	8	229	236	242	249	256	267	278
	10	244	251	257	264	270	281	293
	12	258	264 284	270 290	276	282	292	302
	13	264	270	276	282 301	288	298	308
	14		276	282	288	293 311	303	313
90	8	183	189	195	203	211	224	238
	10	201	209	216	223	230	242	254
	12	219 237	225	232	237	243	255	267
	13	226	232 252	239 259	244	249	263	273
	14	233	239	245	250 269	255	270	278

Based on 810 gpm cond water, 2-pass evap, 10 F temp rise
Based on 972 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1134 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 270 **STEAM RATE (lb/ton-hr)** 18 0
WEIGHT (lb) . . . . . Operating 19,910; Rigging 15,300

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	8 4 4.2	29 14	30 15	1.6
Refrig	208-240/ 416-480	8.4 4.2	29 14	30 15	1.1

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

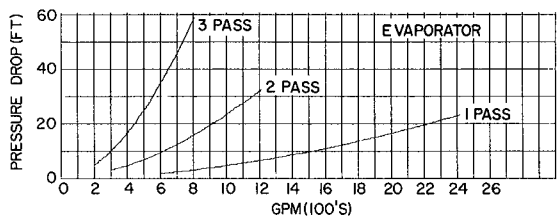
PERFORMANCE DATA
CAPACITY (tons)

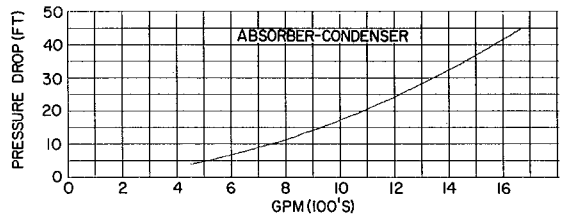
16JA032

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	311	318	326	333	341	353	362
	10	327 352	334 360	341	347	353	365	378
	12	342	347	353 376	359 382	365	378	389
	13		353	359	365 388	371 395	382	395
	14			365	371	378 401	386	401
85	8	267	274	282	289	297	309	321
	10	284	292	299	306	312	324	337
	12	300	306 330	312 335	319	326	338	349
	13	307	312	318	325 347	332	344	356
	14		319	324	331	337 358	349	362
90	8	213	220	226	234	241	259	274
	10	229	239	248	255	262	277	295
	12	250 270	257	265	272	279	295	308
	13	259	267 289	274 298	281	287	302	314
	14	268	276	283	289 311	295	309	320

Based on 936 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1123 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1310 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 312 **STEAM RATE (lb/ton-hr)** 18 0
WEIGHT (lb) . . . . . Operating 24,930; Rigging 19,540

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 0 8 0	70 35	30 15	3.0
Refrig	208-240/ 416-480	8.4 4.2	29 14	30 15	1.1

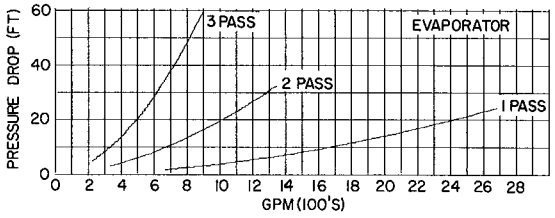
PERFORMANCE DATA
CAPACITY (tons)

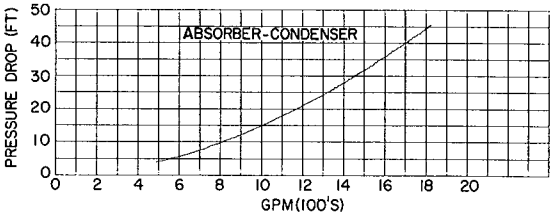
16JA036

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	345	353	361	370	378	392	405
	10	363 391	371	379	387	395	409	422
	12	379	388	396 421	402	409	422	434
	13	388	395	402	409 434	415	427	440
	14			408	415	422 448	432	445
85	8	296	304	313	322	330	346	359
	10	315	324	333	341	349	363	379
	12	333 359	341 366	349	357	365	378	391
	13	341	349	358 380	365	372	385	398
	14		357	365	371 394	378	391	405
90	8	236	244	251	262	273	290	307
	10	260	270	280	288	297	313	329
	12	283 306	291	300	307	314	330	345
	13	292 317	300 326	309 334	315	322	340	352
	14	301	309	317 340	324 345	330	349	359

Based on 1047 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1256 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1465 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 349 **STEAM RATE (lb/ton-hr)** 18 0
WEIGHT (lb) . . . . . Operating 25,530; Rigging 20,000

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 0 8.0	70 35	30 15	3.0
Refrig	208-240/ 416-480	8.4 4.2	29 14	30 15	1.1

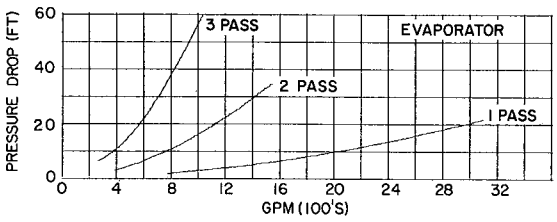
PERFORMANCE DATA
CAPACITY (tons)

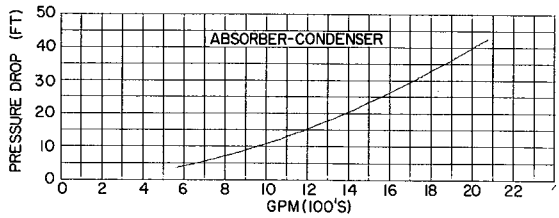
16JA041

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	393	402	412	421	431	450	461
	10	413 445	423 455	432	441	450	464	480
	12	432	440	449 477	457 485	464	480	495
	13		448	457	465 494	473 502	486	503
	14			464	472	480 510	491	510
85	8	337	347	356	366	376	393	409
	10	359	369	379	388	397	413	429
	12	379	388 417	397 425	406	415	430	445
	13	389	397	405 432	414 440	422	437	453
	14		405	413	421 447	429 455	445	460
90	8	269	278	286	296	307	330	349
	10	292	304	316	324	333	353	375
	12	318 344	327	337	346	355	375	391
	13	330	339 368	349 378	357	365	385	400
	14	341	351	360	368 394	375	393	407

Based on 1191 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1429 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1667 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 397 **STEAM RATE (lb/ton-hr)** 18 0
WEIGHT (lb) . . . . . Operating 31,520; Rigging 24,450

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 8	70 35	50 25	3 0
Refrig	208-240/ 416-480	16 8	70 35	50 25	1 4

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

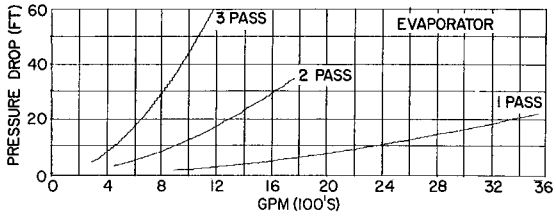
PERFORMANCE DATA
CAPACITY (tons)

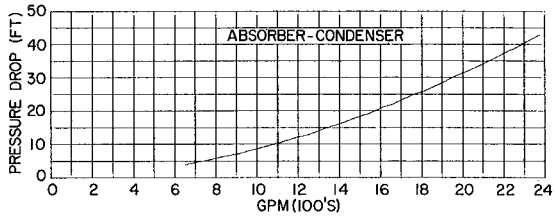
16JA047

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	451	462	473	484	495	511	528
	10	474 511	485	496	506	516	533	550
	12	496	506	516 549	525 558	533	550	566
	13		516	525	533 566	541 575	557	573
	14			532	541	550 584	564	580
85	8	387	398	409	420	431	450	469
	10	411	423	434	445	455	473	494
	12	435	445 479	455 488	465	475	493	510
	13	445	455	466 497	476 506	485	502	519
	14		465	475	484 514	493 524	510	528
90	8	309	319	328	342	356	378	400
	10	339	352	364	376	387	408	429
	12	369 399	380	391	400	409	430	450
	13	381 413	391 425	402 436	411	420	444	459
	14	393	403	413	422 452	430	455	468

Based on 1365 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1638 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1911 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 455 **STEAM RATE (lb/ton-hr)** 18.0
WEIGHT (lb) . . . . . Operating 32,550; Rigging 25,200

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 8	70 35	50 25	3 0
Refrig	208-240/ 416-480	16 8	70 35	50 25	1.4

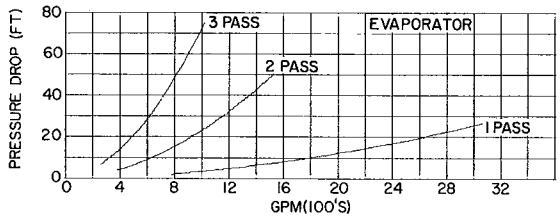
PERFORMANCE DATA
CAPACITY (tons)

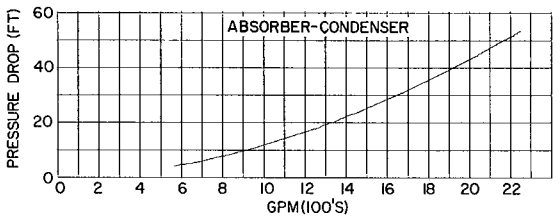
16JA054

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	484	495	505	516	527	549	572
	10	508	519	530	541	552	575	598
	12	531 572	542 584	553	564	576	598	622
	13	541	553 595	564 608	575	587	610	632
	14	552	563	574 618	586 628	597	621	640
85	8	422	433	443	453	464	485	507
	10	446	457	467	478	489	510	532
	12	469	479	490	501	512	534	556
	13	480 516	490 528	501	512	523	545	568
	14	490	501 539	512 551	523	534	556	578
90	8	360	371	381	391	401	421	442
	10	385	395	405	415	426	446	467
	12	408	418	428	438	449	470	491
	13	418 450	428	439	449	460	481	502
	14	428 461	439 472	449	460	470	492	513

Based on 1470 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1765 gpm cond water, 2-pass evap, 10 F temp rise
Based on 2060 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 490 **STEAM RATE (lb/tons-hr)** 18 3
WEIGHT (lb) . . . . . Operating 38,095; Rigging 22,400 (Abs-Evap)
6,800 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 8	70 35	50 25	4 0
Refrig	208-240/ 416-480	16 8	70 35	50 25	1 7

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

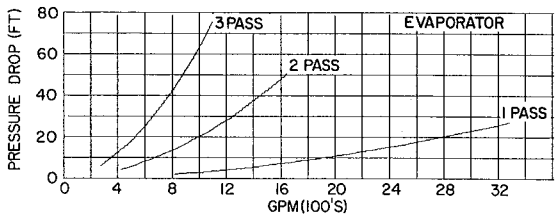
PERFORMANCE DATA
CAPACITY (tons)

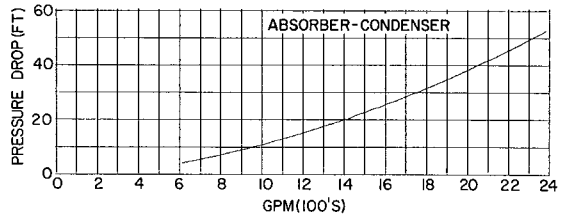
16JA057

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	515	526	538	550	561	585	609
	10	541	552	564	576	588	612	637
	12	565 609	577	589	601	613	638	663
	13	576 622	588 635	600	612	625	650	673
	14	587	599 647	612 659	624	636	661	682
85	8	449	460	471	482	494	517	540
	10	475	486	497	509	520	543	567
	12	499	510	522	533	545	569	593
	13	510 550	522	533	545	557	581	605
	14	521 562	533 575	545	556	568	592	616
90	8	382	394	405	416	427	448	470
	10	410	420	431	442	453	475	498
	12	433	444	455	466	477	500	523
	13	445	455	467	478	489	512	535
	14	456 491	467	478	489	500	523	547

Based on 1565 gpm cond water, 2-pass evap, 10 F temp rise
Based on 1880 gpm cond water, 2-pass evap, 10 F temp rise
Based on 2190 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 522 **STEAM RATE (lb/tons-hr)** 18 3
WEIGHT (lb) . . . . . Operating 39,240; Rigging 23,000 (Abs-Evap)
7,000 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 8	70 35	50 25	4 0
Refrig	208-240/ 416-480	16 8	70 35	50 25	1 7

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative.

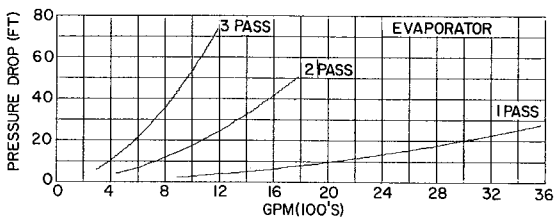
PERFORMANCE DATA
CAPACITY (tons)

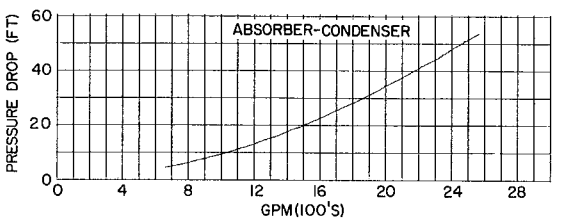
16JA061

ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	554	567	579	592	604	630	656
	10	582	595	607	620	633	659	686
	12	608	621	634	647	660	687	714
	13	620 669	633 683	647	660	673	700	724
	14	633	646 696	659 708	672	685	711	734
85	8	484	495	507	519	532	556	581
	10	511	523	535	548	560	585	611
	12	537	549	562	574	587	612	638
	13	549 592	562	574	587	600	625	652
	14	561 605	574 619	586	599	612	638	663
90	8	411	423	436	448	459	483	507
	10	441	452	464	476	487	511	536
	12	466	478	490	502	514	538	563
	13	479	490	502	514	526	551	576
	14	490 528	502	514	526	539	564	589

Based on 1685 gpm cond water, 2-pass evap, 10 F temp rise
Based on 2020 gpm cond water, 2-pass evap, 10 F temp rise
Based on 2360 gpm cond water, 2-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 562 **STEAM RATE (lb/tons-hr)** 18.3
WEIGHT (lb) . . . . . Operating 45,680; Rigging 26,350 (Abs-Evap)
8,750 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 8	70 35	50 25	4.0
Refrig	208-240/ 416-480	16 8	70 35	50 25	1 7

PERFORMANCE DATA 16JA068

CAPACITY (tons)

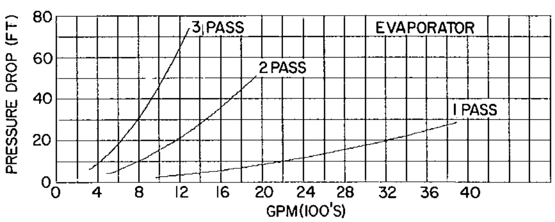
ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	610	624	637	651	665	694	722
		698	714	730	746	763	796	826
	10	641	655	669	683	697	726	755
		733	750	766	783	799	826	854
	12	669	683	698	712	727	756	786
		767	782	796	810	824	852	880
	13	683	697	712	726	741	770	798
		738	794	808	822	836	864	892
	14	696	711	725	740	754	784	809
		752	768	819	835	847	876	904
85	8	532	545	558	572	585	612	640
		608	624	638	654	670	702	734
	10	563	576	589	603	617	644	672
		643	659	675	691	707	738	765
	12	591	605	618	632	646	674	703
		676	692	705	722	737	764	791
	13	605	618	632	646	660	688	717
		692	706	722	735	749	778	807
	14	618	632	645	659	674	702	730
		667	730	734	747	763	788	815
90	8	452	465	479	493	505	531	558
		520	534	548	563	578	605	629
	10	485	498	511	523	536	563	590
		554	569	584	599	614	645	675
	12	513	526	539	552	566	593	620
		587	602	617	632	635	673	704
	13	527	540	553	566	580	607	634
		602	617	633	648	664	690	718
	14	540	553	566	580	593	620	648
		617	633	648	662	675	702	728

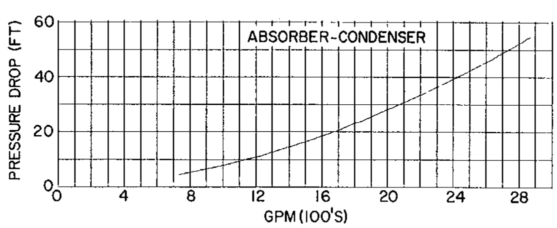
Based on 1855 gpm cond water, 2-pass evap, 10 F temp rise

Based on 2225 gpm cond water, 2-pass evap, 10 F temp rise

Based on 2595 gpm cond water, 2-pass evap, 10 F temp rise (shaded)

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 618 **STEAM RATE (lb/tons-hr)** 18 3

WEIGHT (lb) . . . . . Operating 46,890; Rigging 27,000 (Abs-Evap) 9,000 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 8	70 35	50 25	4.0
Refrig	208-240/ 416-480	16 8	70 35	50 25	1 7

PERFORMANCE DATA 16JA077

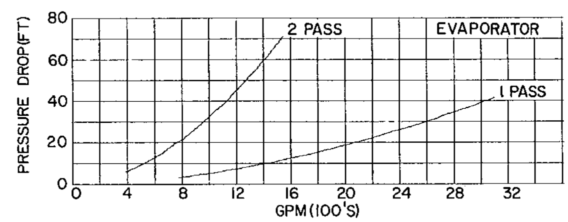
CAPACITY (tons)

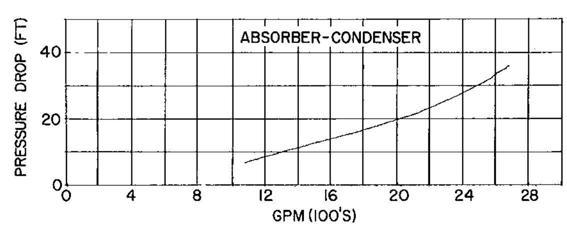
ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	690	707	725	743	761	795	830
		749	768	786	804	822	853	883
	10	729	747	765	782	799	830	859
		789	807	822	837	852	883	914
	12	765	782	799	814	828	857	886
		819	834	849	865	880	911	942
	13	781	797	811	826	840	869	899
			847	862	878	893	924	955
	14	795	809	823	838	852	881	911
				875	890	906	937	968
85	8	593	609	626	642	659	694	730
		642	660	678	697	716	755	786
	10	631	647	664	682	699	735	768
		684	703	722	741	758	787	817
	12	666	684	701	719	737	767	795
		724	740	756	771	785	815	845
	13	683	701	719	736	751	779	808
		739	754	769	784	799	828	858
	14	700	718	734	749	764	792	820
			767	782	796	811	841	871
90	8	500	514	530	545	561	592	625
		539	556	573	589	607	642	679
	10	536	551	567	583	599	632	666
		579	596	614	631	649	686	718
	12	570	586	602	618	635	669	702
		617	635	653	671	688	718	749
	13	586	603	619	636	653	686	715
		635	653	672	687	702	732	763
	14	602	619	636	653	670	699	728
		653	670	685	700	716	746	776

Based on 2105 gpm cond water, 1-pass evap, 10 F temp rise

Based on 2525 gpm cond water, 1-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 701 **STEAM RATE (lb/tons-hr)** 18.5

WEIGHT (lb) . . . . . Operating 57,535; Rigging 33,200 (Abs-Evap) 10,700 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 8	70 35	50 25	3 5
Refrig	208-240/ 416-480	16 8	70 35	50 25	1.7

FLA — Nameplate Full Load Amps

LRA — Nameplate Locked Rotor Amps

MFA — Max Fuse Amps

BHP — Brake Horsepower

*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

PERFORMANCE DATA
CAPACITY (tons)

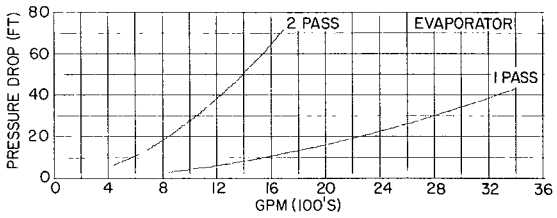
16JA084

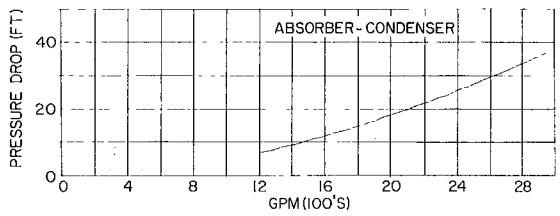
ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	764 / 830	783 / 850	803 / 870	823 / 891	842 / 909	880 / 942	917 / 976
	10	807 / 874	827 / 892	846 / 908	865 / 925	884 / 924	917 / 975	949 / 1009
	12	847 / 905	865 / 922	883 / 939	899 / 955	914 / 972	946 / 1006	978 / 1041
	13	865	881 / 936	896 / 953	912 / 970	928 / 987	960 / 1021	992 / 1055
	14	878	894	910 / 967	925 / 984	941 / 1001	974 / 1035	1006 / 1070
85	8	656 / 711	674 / 731	692 / 752	711 / 772	730 / 793	768 / 836	808 / 869
	10	698 / 758	717 / 779	735 / 800	755 / 820	774 / 837	814 / 870	848 / 902
	12	738 / 801	757 / 819	776 / 836	796 / 852	815 / 868	847 / 901	878 / 933
	13	757 / 817	776 / 834	796 / 850	814 / 866	830 / 882	861 / 915	892 / 948
	14	776	795 / 848	811 / 864	828 / 880	843 / 897	874 / 929	905 / 963
90	8	553 / 597	569 / 616	586 / 634	603 / 653	620 / 672	656 / 712	692 / 753
	10	593 / 642	610 / 661	627 / 680	645 / 700	663 / 720	700 / 761	737 / 794
	12	631 / 684	649 / 703	667 / 723	685 / 744	703 / 760	741 / 794	775 / 828
	13	649 / 704	667 / 724	685 / 743	704 / 759	723 / 776	758 / 810	790 / 843
	14	667 / 724	685 / 741	704 / 758	723 / 774	741 / 791	773 / 825	805 / 857

[ ] Based on 2330 gpm cond water, 1-pass evap, 10 F temp rise

[ ] Based on 2800 gpm cond water, 1-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 776 **STEAM RATE (lb/tons-hr)** 18.5
WEIGHT (lb) . . . . . Operating 59,055; Rigging 34,000 (Abs-Evap)
11,000 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/416-480	16 / 8	70 / 35	50 / 25	3.5
Refrig	208-240/416-480	16 / 8	70 / 35	50 / 25	17

PERFORMANCE DATA
CAPACITY (tons)

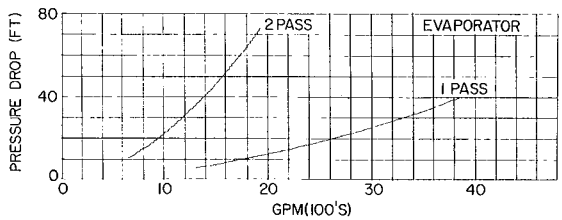
16JA097

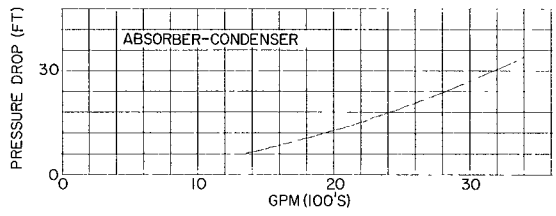
ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	869 / 944	891 / 968	913 / 991	936 / 1013	959 / 1035	1002 / 1073	1045 / 1111
	10	918 / 995	941 / 1016	964 / 1035	985 / 1054	1006 / 1073	1045 / 1111	1081 / 1150
	12	964 / 1031	985 / 1050	1006 / 1069	1024 / 1088	1042 / 1108	1078 / 1146	1115 / 1185
	13	984	1003 / 1066	1021 / 1086	1039 / 1105	1058 / 1124	1094 / 1163	1131 / 1202
	14	1000	1018	1036 / 1101	1055 / 1121	1073 / 1140	1109 / 1179	1146 / 1219
85	8	747 / 809	767 / 831	788 / 854	809 / 878	830 / 902	874 / 951	919 / 989
	10	794 / 861	815 / 885	837 / 909	858 / 933	881 / 953	926 / 991	967 / 1028
	12	839 / 911	861 / 932	883 / 951	906 / 970	928 / 989	965 / 1026	1000 / 1063
	13	861 / 929	883 / 949	905 / 968	926 / 987	945 / 1005	981 / 1043	1016 / 1080
	14	882	904 / 965	924 / 984	942 / 1002	961 / 1021	996 / 1059	1032 / 1097
90	8	629 / 679	648 / 700	667 / 721	686 / 742	706 / 764	746 / 809	788 / 856
	10	675 / 729	694 / 751	714 / 773	734 / 795	754 / 818	796 / 864	839 / 904
	12	718 / 777	738 / 799	758 / 822	779 / 845	800 / 865	843 / 903	883 / 942
	13	739 / 800	759 / 823	780 / 845	801 / 864	822 / 883	864 / 921	900 / 960
	14	759 / 823	780 / 843	801 / 862	822 / 881	844 / 900	880 / 939	916 / 977

[ ] Based on 2650 gpm cond water, 1-pass evap, 10 F temp rise

[ ] Based on 3180 gpm cond water, 1-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 883 **STEAM RATE (lb/tons-hr)** 18.5
WEIGHT (lb) . . . . . Operating 72,375; Rigging 39,950 (Abs-Evap)
16,600 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/416-480	16 / 8	70 / 35	50 / 25	4.0
Refrig	208-240/416-480	16 / 8	70 / 35	50 / 25	17

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

PERFORMANCE DATA
CAPACITY (tons)

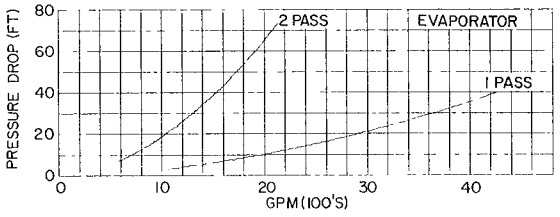
16JA107

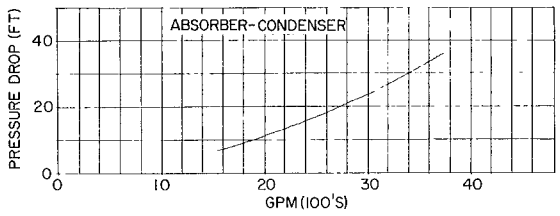
ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	962 / 1045	987 / 1071	1011 / 1097	1037 / 1122	1062 / 1147	1109 / 1189	1157 / 1231
	10	1017 / 1101	1042 / 1125	1067 / 1146	1090 / 1167	1114 / 1188	1158 / 1231	1198 / 1274
	12	1067 / 1142	1091 / 1163	1114 / 1184	1134 / 1205	1154 / 1227	1194 / 1270	1235 / 1313
	13	1090	1111 / 1181	1131 / 1202	1151 / 1224	1171 / 1245	1212 / 1288	1253 / 1332
	14	1108	1128	1148 / 1220	1168 / 1241	1188 / 1263	1229 / 1306	1270 / 1350
85	8	827 / 896	850 / 921	873 / 946	896 / 973	919 / 999	968 / 1053	1018 / 1096
	10	880 / 954	903 / 980	927 / 1007	951 / 1034	975 / 1056	1025 / 1097	1071 / 1138
	12	929 / 1010	954 / 1032	978 / 1054	1003 / 1075	1028 / 1095	1069 / 1136	1108 / 1178
	13	953 / 1030	978 / 1052	1003 / 1072	1026 / 1093	1047 / 1113	1087 / 1155	1126 / 1197
	14	977	1002 / 1069	1024 / 1090	1044 / 1110	1064 / 1131	1103 / 1173	1143 / 1215
90	8	697 / 752	718 / 775	739 / 799	760 / 822	782 / 847	826 / 896	872 / 948
	10	747 / 808	769 / 832	791 / 856	813 / 881	835 / 906	882 / 958	929 / 1001
	12	795 / 861	817 / 886	840 / 911	863 / 936	886 / 959	934 / 1001	978 / 1044
	13	818 / 886	841 / 912	864 / 937	887 / 957	911 / 978	957 / 1021	997 / 1064
	14	841 / 911	864 / 935	887 / 955	911 / 976	935 / 997	975 / 1040	1015 / 1082

Based on 2935 gpm cond water, 1-pass evap, 10 F temp rise

Based on 3520 gpm cond water, 1-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 978 **STEAM RATE (lb/tons-hr)** 18 5
WEIGHT (lb) . . . . . Operating 74,785, Rigging 41,000 (Abs-Evap)
17,000 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 / 8	70 / 35	50 / 25	4 0
Refrig	208-240/ 416-480	16 / 8	70 / 35	50 / 25	1 7

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

For ratings not listed, contact your Carrier representative

PERFORMANCE DATA
CAPACITY (tons)

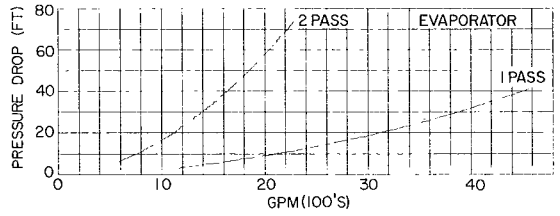
16JA115

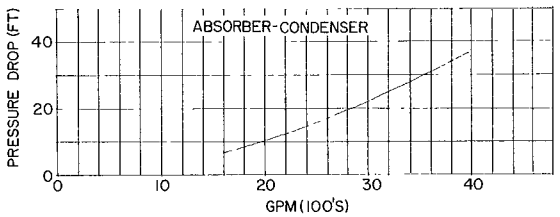
ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	1027 / 1116	1053 / 1144	1080 / 1171	1107 / 1198	1134 / 1225	1184 / 1270	1236 / 1316
	10	1086 / 1176	1113 / 1202	1139 / 1225	1164 / 1247	1190 / 1270	1237 / 1315	1280 / 1361
	12	1139 / 1220	1165 / 1243	1190 / 1265	1212 / 1288	1233 / 1311	1276 / 1357	1320 / 1403
	13	1163	1188 / 1262	1209 / 1285	1230 / 1308	1252 / 1331	1295 / 1377	1339 / 1423
	14	1184	1205	1227 / 1304	1248 / 1326	1270 / 1349	1313 / 1396	1357 / 1442
85	8	883 / 956	907 / 983	932 / 1010	956 / 1038	982 / 1067	1033 / 1125	1087 / 1171
	10	939 / 1018	964 / 1046	989 / 1075	1015 / 1104	1041 / 1129	1095 / 1173	1145 / 1217
	12	992 / 1078	1018 / 1103	1044 / 1126	1071 / 1148	1098 / 1170	1143 / 1214	1184 / 1259
	13	1018 / 1101	1044 / 1124	1071 / 1146	1097 / 1168	1119 / 1190	1161 / 1234	1203 / 1279
	14	1043	1069 / 1143	1094 / 1165	1116 / 1187	1137 / 1209	1179 / 1253	1221 / 1298
90	8	744 / 803	766 / 828	789 / 853	812 / 878	835 / 904	882 / 957	931 / 1012
	10	798 / 862	821 / 888	844 / 914	868 / 940	892 / 967	941 / 1022	992 / 1070
	12	849 / 919	872 / 945	897 / 972	921 / 999	946 / 1025	997 / 1070	1045 / 1116
	13	873 / 946	897 / 973	922 / 1001	947 / 1023	972 / 1046	1023 / 1091	1066 / 1137
	14	897 / 973	922 / 999	947 / 1021	972 / 1043	998 / 1066	1042 / 1112	1085 / 1156

Based on 3135 gpm cond water, 1-pass evap, 10 F temp rise

Based on 3760 gpm cond water, 1-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 1044 **STEAM RATE (lb/tons-hr)** . . .18 5
WEIGHT (lb) . . . . Operating 84,840; Rigging 46,200 (Abs-Evap)
20,700 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 / 8	70 / 35	50 / 25	4 0
Refrig	208-240/ 416-480	16 / 8	70 / 35	50 / 25	1 7

PERFORMANCE DATA
CAPACITY (tons)

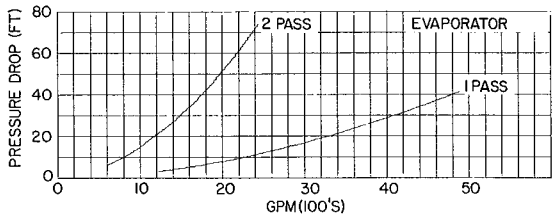
16JA124

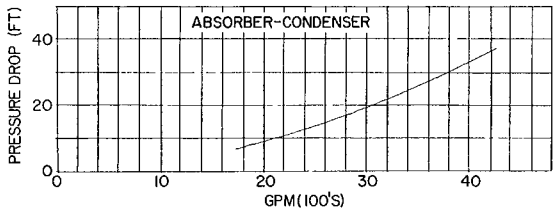
ECWT (F)	STM (psig)	LEAVING CHILLED WATER TEMP (F) 42	43	44	45	46	48	50
80	8	1101 / 1197	1129 / 1227	1158 / 1255	1187 / 1284	1216 / 1312	1270 / 1360	1324 / 1408
	10	1164 / 1261	1193 / 1287	1221 / 1311	1248 / 1335	1276 / 1359	1324 / 1408	1370 / 1457
	12	1222 / 1306	1249 / 1331	1275 / 1355	1297 / 1379	1320 / 1404	1366 / 1453	1413 / 1502
	13	1248	1271 / 1351	1294 / 1376	1317 / 1400	1340 / 1424	1386 / 1474	1433 / 1524
	14	1267	1290	1313 / 1396	1336 / 1420	1359 / 1445	1406 / 1494	1453 / 1544
85	8	946 / 1025	972 / 1054	999 / 1083	1025 / 1113	1052 / 1144	1108 / 1206	1165 / 1254
	10	1007 / 1092	1034 / 1122	1061 / 1153	1088 / 1183	1117 / 1208	1174 / 1255	1225 / 1302
	12	1064 / 1156	1092 / 1181	1120 / 1206	1148 / 1229	1176 / 1253	1223 / 1300	1268 / 1347
	13	1092 / 1178	1120 / 1203	1148 / 1227	1174 / 1250	1198 / 1274	1243 / 1321	1288 / 1369
	14	1118	1147 / 1223	1171 / 1247	1195 / 1270	1218 / 1294	1262 / 1342	1307 / 1390
90	8	798 / 861	821 / 887	845 / 914	870 / 941	895 / 969	946 / 1026	998 / 1085
	10	855 / 925	880 / 952	905 / 980	930 / 1008	956 / 1037	1009 / 1096	1064 / 1146
	12	910 / 985	935 / 1014	961 / 1043	988 / 1072	1014 / 1097	1069 / 1145	1119 / 1194
	13	936 / 1015	962 / 1043	988 / 1071	1015 / 1095	1042 / 1119	1094 / 1168	1141 / 1217
	14	962 / 1043	988 / 1069	1015 / 1093	1042 / 1117	1070 / 1141	1115 / 1190	1161 / 1238

Based on 3360 gpm cond water, 1-pass evap, 10 F temp rise

Based on 4030 gpm cond water, 1-pass evap, 10 F temp rise

ECWT — Entering Condensing Water **STM** — Steam





PHYSICAL DATA

CAPACITY (tons) . . 1120 **STEAM RATE (lb/tons-hr)** 18 5
WEIGHT (lb) . . . . . Operating 86,380; Rigging 47,000 (Abs-Evap)
21,000 (Gen-Cond)

ELECTRICAL DATA

PUMP	VOLTS*	FLA	LRA	MFA	BHP
Sol	208-240/ 416-480	16 / 8	70 / 35	50 / 25	4 0
Refrig	208-240/ 416-480	16 / 8	70 / 35	50 / 25	1 7

FLA — Nameplate Full Load Amps
LRA — Nameplate Locked Rotor Amps
MFA — Max Fuse Amps
BHP — Brake Horsepower
*3-Phase, 60-Hertz

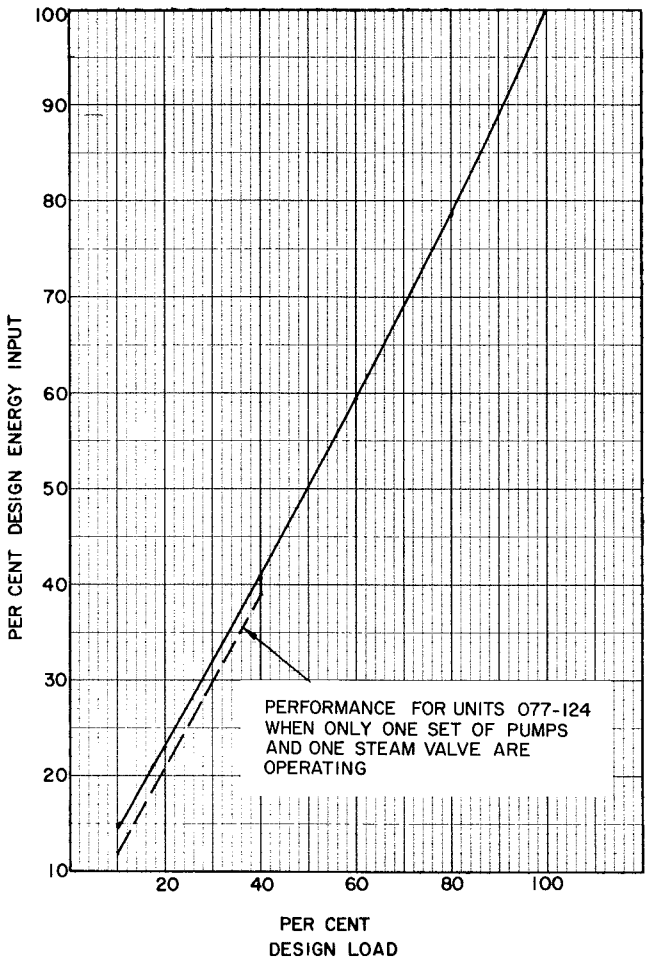
For ratings not listed, contact your Carrier representative

PERFORMANCE DATA

STEAM CONTROL VALVE SELECTION

		VALVE STEAM CAPACITY RANGE (lb/hr)							
INLET PRESS. (psig)		14	13	12	11	10	20	20	20
OUTLET PRESS. (psig)		12	11	10	9	8	14	12	10
Valve Size	2½A	1510 / 1880	1475 / 1845	1450 / 1815	1420 / 1775	1395 / 1740	2790 / 3240	3170 / 3640	3470 / 3980
	3B	1880 / 2550	1845 / 2510	1815 / 2460	1775 / 2420	1740 / 2370	3240 / 4410	3640 / 4950	3980 / 5430
	3A	2550 / 2900	2510 / 2860	2460 / 2800	2420 / 2750	2370 / 2690	4410 / 5020	4950 / 5640	5430 / 6170
	4B	2900 / 3630	2860 / 3570	2800 / 3500	2750 / 3440	2690 / 3360	5020 / 6270	5640 / 7050	6170 / 7720
	4A	3630 / 4460	3570 / 4380	3500 / 4300	3440 / 4220	3360 / 4150	6270 / 7700	7050 / 8650	7720 / 9480
	5B	4460 / 6510	4380 / 6400	4300 / 6280	4220 / 6160	4150 / 6040	7700 / 11250	8650 / 12620	9480 / 13800
	5A	6510 / 7960	6400 / 7820	6280 / 7680	6160 / 7540	6040 / 7380	11250 / 13750	12620 / 15400	13800 / 16900
	6A	7960 / 9760	7820 / 9600	7680 / 9430	7540 / 9240	7380 / 9050	13750 / 16900	15400 / 18950	16900 / 20750
	5C	9760 / 16820	9600 / 16450	9430 / 16100	9240 / 15650	9050 / 15250	16900 / 26050	18950 / 26600	20750 / 26600

PARTIAL LOAD PERFORMANCE



CONTROLS

CONTROL SEQUENCE*

1 Place START-STOP switch in "Start" position This will energize all pumps

2 When pumps start, the holding relays and steam control valve are energized If holding relays should be de-energized temporarily due to power failure, the machine will restart automatically when power is resumed, as long as the START-STOP switch is in the "Start" position

3 Refrigerant high-level and low-level switches control the reclaim valve. Reclaim valve opens on high level to prevent over-concentration, and closes on low level to prevent emptying the evaporator section during dilution cycle

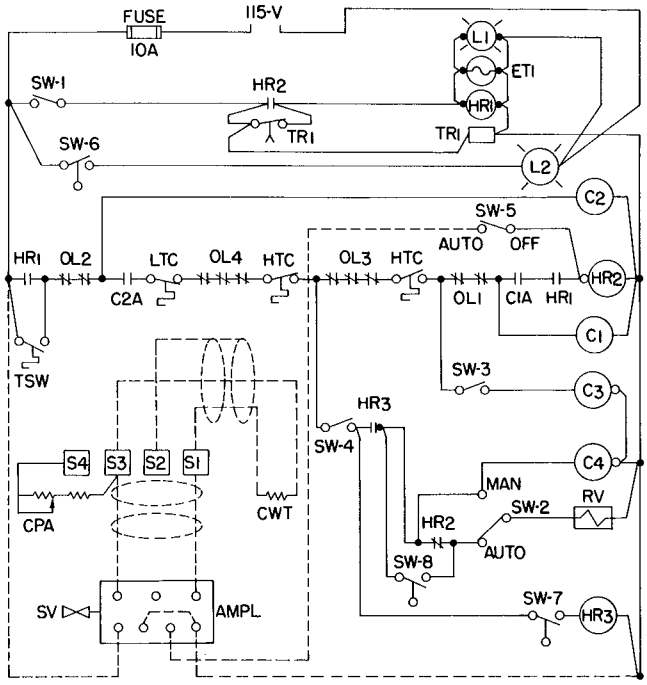
4 Dilution cycle starts when holding relay (HR_1) is de-energized, opening reclaim valve Cycle is complete when thermal dilution switch opens

LEGEND

AMPL	– Amplifier	**OL**	– Overload
C_1	– Cond Pump Starter	**RV**	– Reclaim Valve
C_2	– Chilled Wtr Pump Starter	**SV**	– Cap. Control Valve
C_3	– Solution Pump Starter	**SW_1**	– Start-Stop Switch
C_4	– Refrig Pump Starter	**SW_2**	– Reclaim Switch
CPA	– Control Point Adjuster	**SW_3**	– Solution Pump Switch
CWT	– Chilled Water Thermostat	**SW_4**	– Refrig Pump Switch
ETI	– Elapsed Time Indicator	**SW_5**	– Cap Control Switch
HR	– Holding Relay	**SW_6**	– Purge Level Switch
HTC	– High Temp Cutout	**SW_7**	– Refrig Low Level Switch
L_1	– Run Light	**SW_8**	– Refrig High Level Switch
L_2	– Purge Light	**TR**	– Timer Relay
LTC	– Low Temp Cutout	**TSW**	– Thermal Dilution Switch

*For general guidance only Wiring diagrams are available from Carrier field office

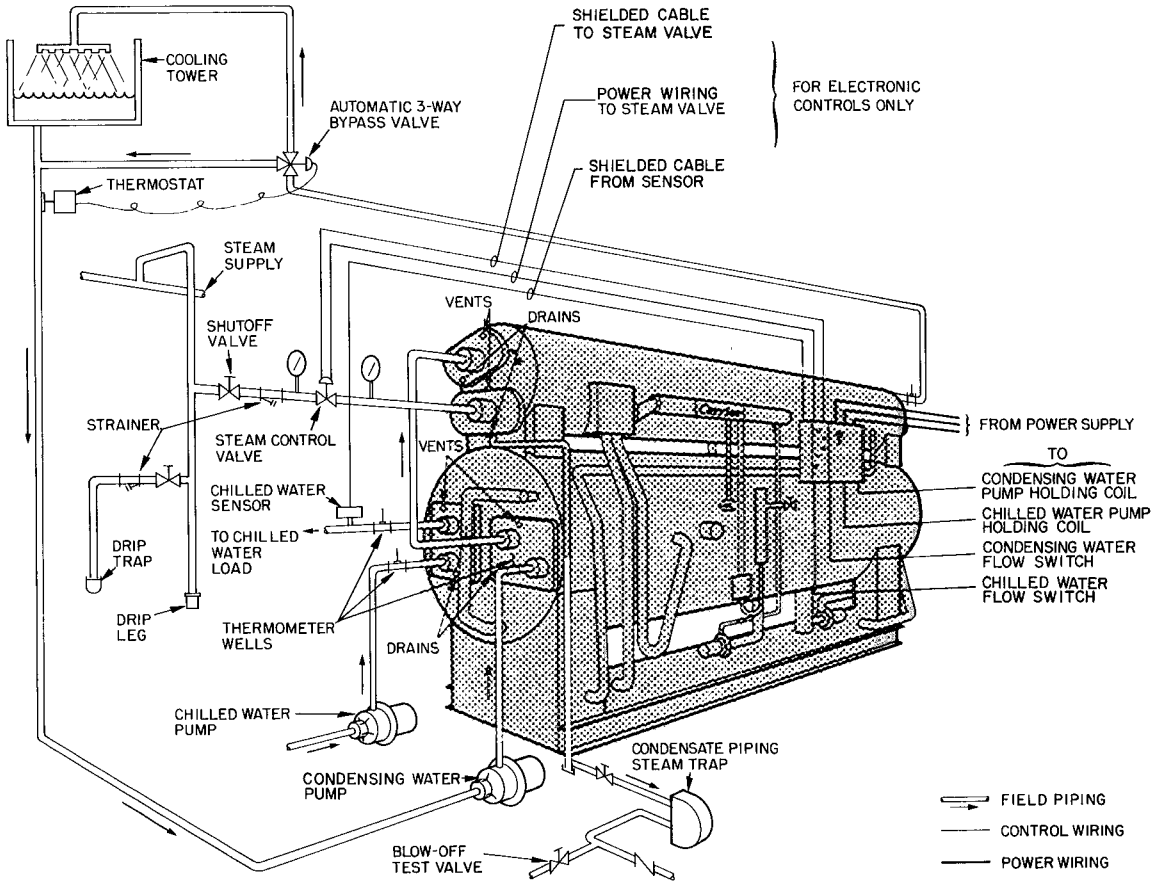
TYPICAL WIRING*



NOTES:

1. Three dual-element fuses are furnished for machine sizes 010 thru 068. Six dual-element fuses are furnished for machine sizes 077 thru 124.
2. Multitap control transformer supplies 115-v, single-phase secondary power to the control panel using a 190 v thru 600 v primary power source.
3. Pump motors are hermetic, designed to operate at ±10 percent of rated voltage Pump motors with electrical characteristics other than shown are available on special order

TYPICAL PIPING AND WIRING



SELECTION PROCEDURE

SELECTION SERVICE

The following procedures can be used for job conditions within the scope of the listed ratings and adjustment factors A fast, accurate computer selection is also available for all operating conditions including extrapolations beyond listed ratings. Computer selections are available thru your local Carrier representative

SELECTION NOTES

1. Tabulated ratings shown are based on 0005 fouling in the absorber-condenser. For 001 fouling, increase the condensing water temperature by 2 5 F
2. Rating tables are based on standard evaporator passes listed for each machine size, 10 F chilled water temperature rise and 0005 evaporator fouling Approximate ratings for other than standard conditions may be calculated by using correction factors given in the Pass-Rise Adjustment table and Base Steam Rate Adjustment table.
3. Selections falling between listed ratings values can be made by interpolation

SELECTION EXAMPLES

I Selection made from the ratings tables

EXAMPLE:

Capacity required	475 tons
Chilled water required	1140 gpm
Entering chilled water	55 F
Leaving chilled water	45 F
Steam pressure available (entering the machine)	12 psig
(Note: Allow 2 psig min pressure drop thru the valve)	
Entering condensing water	85 F
Absorber-condenser fouling	.0005
Evaporator fouling	0005

Refer to and compare ratings tables Tables indicate that at design (example) conditions, a 16JA047 machine has a capacity of 520 tons (heavy shaded value) with 1911 gpm condensing water, a 2-pass evaporator and 10 F chilled water temperature rise. The machine also has a capacity of 465 tons (unshaded value) with 1365 gpm condensing water, a 2-pass evaporator and 10 F chilled water temperature rise. By interpolation, a capacity of 475 tons requires 1464 gpm condensing water

II Selection for .001 absorber-condenser fouling

EXAMPLE: Same as section I except use .001 absorber-condenser fouling Add 2 5 F to entering condensing water temperature (per Selection Note 1) For example, use 87 5 F entering condensing water temperature Interpolation between 85 F and 90 F results in a capacity of 489 tons (heavy shaded values) with 1911 gpm condensing water, or a capacity of 433 tons with 1365 gpm condensing water. By interpolation between 489 tons and 433 tons, a capacity of 475 tons requires 1774 gpm condensing water

III Selection for non-standard evaporator pass and other than 10 F chilled water temperature rise

EXAMPLE: Same as section I except use 1900 gpm chilled water entering at 51 F.

Refer to, and compare ratings tables. Select a 16JA047 machine (as in step 1) Enter the evaporator pressure drop curve (below ratings) at 1900 gpm and select a 1-pass evaporator.

Refer to Evaporator Pass-Rise Adjustment table (below). A 6 F chilled water temperature rise (51 F — 45 F) and a 1-pass evaporator requires an adjustment of -2 F. The ratings table indicates that at 43 F (45 F — 2 F) adjusted leaving chilled water, the machine has a capacity of 479 tons (lightly shaded value) with 1683 gpm condensing water, or a capacity of 445 tons (unshaded value) with 1365 gpm condensing water By interpolation, a capacity of 475 tons requires 1606 gpm condensing water

IV How to determine steam rate and steam consumption

The base steam rate is given in the physical data (below ratings). For examples shown above, a 16JA047 machine has a base steam rate of 18 0 lb/ton-hr. Adjust the base steam rate for *adjusted* entering condensing water and leaving chilled water temperatures Enter the Base Steam Rate Adjustment Factor table (located below) at the adjusted values, and read the adjustment factor. Calculate the adjusted steam rate and steam consumption

EXAMPLE: For machine selection in section II, enter the table at 45 F leaving chilled water, 87.5 F entering condensing water and obtain 1 01 adjustment factor.

Adjusted steam rate = 18 0 x 1 01 = 18.2 lb/ton-hr
Steam consumption = 18 2 x 475 tons = 8650 lb/hr

V How to calculate condensing water temperature rise

EXAMPLE: Use the example in section IV.

$$\text{Cond water temp rise} = \frac{\text{design tons [24 + (1.9 x adj stm rate)]}}{\text{cond water flow (gpm)}}$$

$$= \frac{475\,[24 + (1.9 \times 18.2)]}{1774} = 16\ \text{F}$$

VI How to size the steam control valve

Refer to Steam Control Valve Selection chart.

NOTE· Highest valve inlet steam pressure is 20 psig. If available steam pressure exceeds this value, use a pressure reducing valve

Enter vertical column with valve inlet and outlet steam pressures Read down to the block containing a range which can satisfy the required steam consumption Read left to select the valve.

EXAMPLE: With 14 psig valve inlet steam pressure, 12 psig valve outlet steam pressure and 8450 lb/hr steam consumption, a 6A size valve is selected.

EVAPORATOR PASS-RISE TEMP ADJUSTMENT

SIZES 16JA010 THRU 068		
NO. OF PASSES	TEMP RISE (F)	TEMP ADJ (F)
1	4	-1.5
1	5	-2 0
1	6	-2 0
1	8	-2 5
1	10	-3.0
2	4-15	0
3	10	+1 0
3	12	+1 0
3	14	+1 5
3	15	+1 5

SIZES 16JA077 THRU 124		
NO. OF PASSES	TEMP RISE (F)	TEMP ADJ (F)
1	4-15	0
2	8	+1 5
2	10	+2.0
2	12	+2 0
2	14	+2 0
2	15	+2 0

BASE STEAM RATE ADJUSTMENT FACTOR

ADJUSTED ENT COND WATER TEMP (F)	ADJUSTED LEAVING CHILLED WATER TEMP (F)						
	42	43	44	45	46	48	50
80	0 99	0.98	0.98	0 97	0.96	0.95	0 94
85	1.02	1.01	1.00	0 99	0.98	0.97	0 96
87.5	1.03	1 02	1 01	1.01	1.00	0 98	0.97
90	1.04	1.04	1.03	1.02	1.01	1.00	0.98

VII How to select a machine for hot water operation instead of steam

A. Determine equivalent steam pressure.

Refer to Hot Water Generator Equivalent Steam Pressure curve. Use entering and leaving hot water temperatures to determine an equivalent steam pressure.

EXAMPLE: A machine with 275 F inlet hot water temperature and 229 F leaving hot water temperature has an equivalent steam pressure of 12 psig.

B. Using the equivalent steam pressure, select a unit by using the procedures given in sections I thru V.

C. Determine hot water gpm.

EXAMPLE: Use the 16JA047 machine selected in section IV

$$\text{Hot water gpm} = \frac{2 \times \text{stm rate} \times \text{capacity (tons)}}{\text{hot water temp drop (F)}}$$

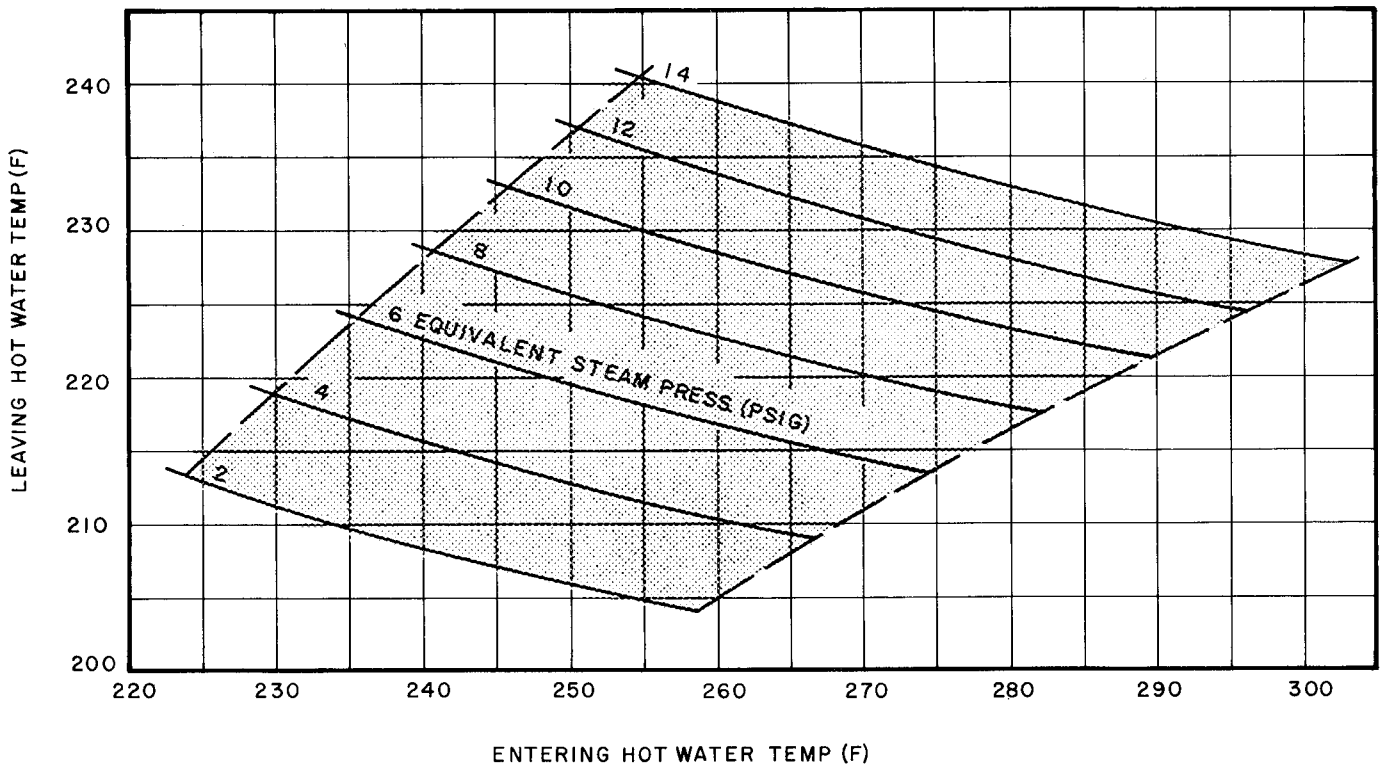
$$= \frac{2 \times 18.2 \times 475}{275 - 229} = 375 \text{ gpm}$$

D. Determine generator pressure drop.

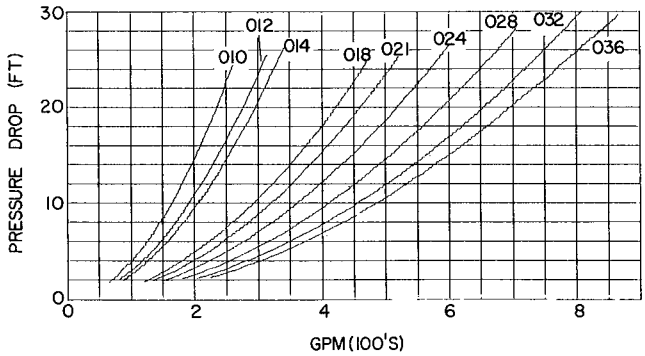
Refer to Generator Hot Water Flow vs Pressure Drop curves

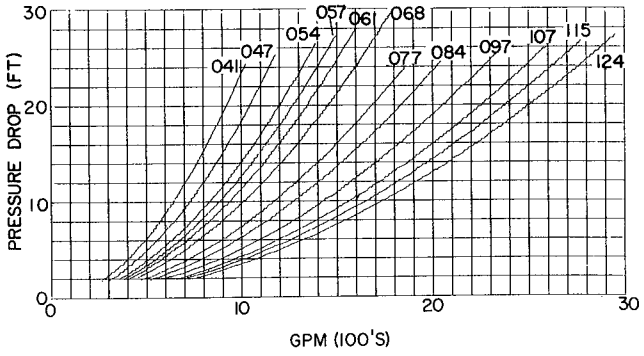
EXAMPLE: A 16JA047 machine using 368 gpm has a pressure drop of 3 ft.

HOT WATER GENERATOR – EQUIVALENT STEAM PRESSURE



GENERATOR HOT WATER FLOW vs PRESSURE DROP





GUIDE SPECIFICATIONS

1. Furnish and install ____ absorption liquid chilling package(s) suitable for chilling ____ gpm of water from ____ F to ____ F when supplied with ____ gpm of condensing water at ____ F. Evaporator pressure drop shall not exceed ____ ft Absorber-condenser pressure drop shall not exceed ____ ft

2 A. Steam at ____ psig, dry and saturated, shall be supplied to the control valve. Maximum steam consumption shall not exceed ____ lb per hour for each unit

   B. Hot water at ____ F and ____ psig shall be supplied to the generator inlet at the rate of ____ gpm. Hot water generator pressure drop shall not exceed ____ ft. Design working pressure is ____ psig.

3 Selection of each unit shall allow for waterside fouling factors of ____ in the evaporator tubes and ____ in the absorber-condenser tubes

4 Each solution and refrigerant pump shall be of the self-contained hermetic type (no pump seals) Lubrication and cooling of the solution pump shall be accomplished by lithium bromide solution The refrigerant pump shall be lubricated and cooled by refrigerant. Pump motors shall be operated on 208-240 or 416-480 volts plus or minus 10 percent three-phase, 60-Hertz power Motor stators shall be replaceable without breaking machine vacuum or draining solution (Auxiliary city water piping for cooling and lubrication not acceptable)

5 Each unit shall be furnished with an automatic capacity control system capable of governing operation at all loads Capacity control shall be accomplished by a steam valve or hot water valve in proportion to load

6 Each unit shall be supplied with a control center which shall include a multitap control voltage transformer, machine pump starters, ambient compensated three-phase overload protection, fused disconnect, key locked control panel door, and necessary safeties

7 An automatic control shall be provided to prevent solidification during abnormal operating conditions; initiate and complete a dilution cycle on machine shutdown; provide protection from loss of steam pressure (The dilution cycle shall not be controlled from a timer, but rather from a thermostat sensing solution temperature.)

8 A continuous automatic hermetic purge system shall be supplied with each unit. The purge system shall provide a continuous purging action at all times when the main unit is in operation and shall be so arranged that stored noncondensables do not diffuse into the unit when it is inoperative. Purge shall not require electrical power for operation. All purge controls shall be self-contained and the purge system shall not require electrical power or control air connections for its operation.

9. The absorption liquid chilling package shall consist of an absorber-evaporator assembly, a generator-condenser assembly, a solution heat exchanger, interconnecting piping, supports, and other parts as previously described. Initial charge of lithium bromide absorbent shall be included Evaporator, absorber, and condenser circuits shall be designed for a working pressure of 150 psig The steam generator shall be designed for a working pressure of 50 psig (hot water generator design working pressure 250 psig) Each is to be tested at 1½ times the design working pressure.

10. Generator tube bundles shall be of U-tube design secured at one end only to eliminate thermal and mechanical stresses.

11 Provide factory insulation on all cold surfaces Chilled water headers to be field insulated after piping has been completed. Apply final paint coating to each unit as specified elsewhere.

12 No condenser bypass piping is required

13. Operation and maintenance instructions shall be furnished by the manufacturer and illustrated in bound form.

CARRIER AIR CONDITIONING COMPANY • SYRACUSE, NEW YORK

Tab 15 Form 16JA-4P Supersedes 16JA-3P; 16JA-1XR Printed in U.S.A. 11-69 Code MA Catalog No. 521-604