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USERGUIDE

Central Chilling Systems Specifications

⚠ **WARNING - Reliance on this Manual Could Result in Severe Bodily Injury or Death!**

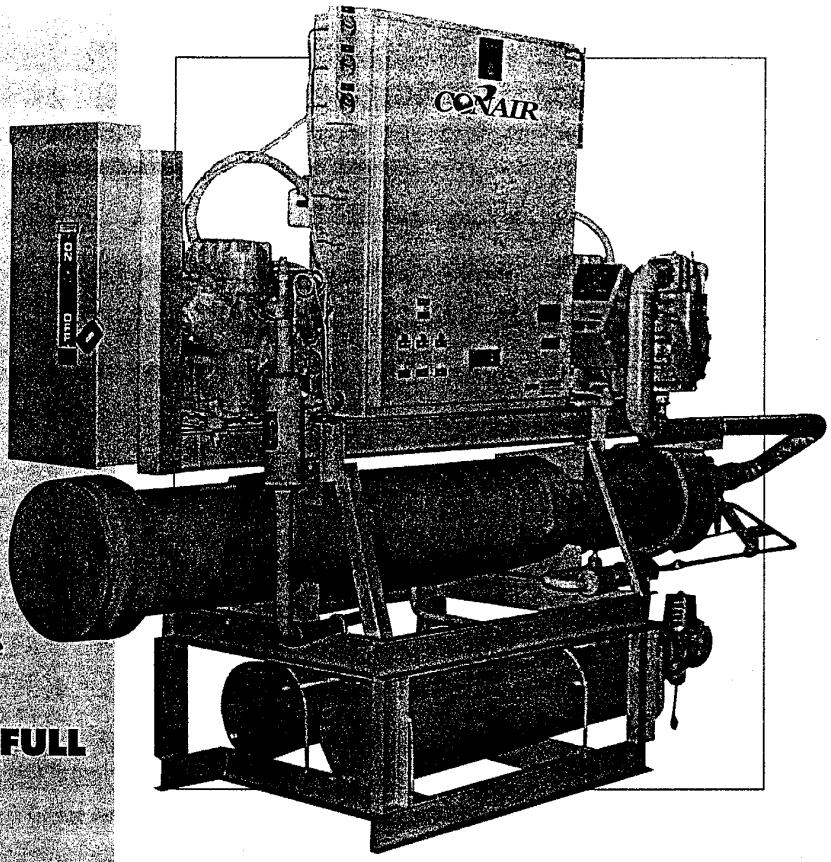
This manual is out-of-date and is provided only for its technical information, data and capacities. Portions of this manual detailing procedures or precautions in the operation, inspection, maintenance and repair of the product forming the subject matter of this manual may be inadequate, inaccurate, and/or incomplete and cannot be used, followed, or relied upon. Contact Conair at info@conairgroup.com or 1-800-654-6661 for more current information, warnings, and materials about more recent product manuals containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.

SERIES-34 CENTRAL CHILLERS

WATER COOLED

PREMIUM COPELAND DISCUS™ COMPRESSORS
More cooling per horsepower than conventional reciprocating compressors.

- **ELECTRICAL ENCLOSURES UL 508 CERTIFIED**
  Avoid costly field modifications.
- **ALL MODELS ETL LABELED**
  End-to-end and top-to-bottom. What building inspectors are looking for.
- **THREE-PHASE BRANCH FUSING**
  Standard on all dual (CD) and multiple (CM) compressor models.
- **GUARANTEED FOR ONE FULL YEAR AFTER SHIPMENT**
  Parts, labor and factory-charged R22 refrigerant included.



RUGGEDLY BUILT WITH TIME-PROVEN COMPONENTS

STANDARD FEATURES

- Prewired control transformers and standard single point three-phase electrical connections.
- Prepiped refrigeration components, including sight glasses, filter/dryers, expansion valves, liquid line solenoids and condenser water regulating valves.
- Oil pressure switches, high refrigerant pressure switches, low refrigerant pressure/freeze protection, flow switches (shipped loose), pumpdown switches and complete indicator/fault light packages.
- Time delay start circuits (CD and CM models) prevent unnecessary power surges.
- Easy-to-use electronic return water temperature control systems.

OPTIONS

- Cylinder unloading and/or hot gas bypass.
- Refrigerant and oil pressure gauges.
- Automatic compressor lead/lag timers (CD and CM models).
- Three-phase compressor fusing (CS models).
- Dual evaporators (CD models).
- Prewired unit disconnect switches.
- Extended compressor parts warranties.

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SELECTION GUIDE

MAXIMUM CHILLER CAPACITIES (TONS) AT VARIOUS LEAVING COOLANT TEMPERATURES WITH 85°F COOLING TOWER CONDENSER WATER SUPPLY
Capacities for 40°F operation are adjusted for 20% ethylene glycol by weight. All other capacities are for pure water. Consult factory for other conditions. One chiller ton equals 12,000 Btu/hr. Listed capacities may vary ±5% according to the compressor manufacturer's specifications. Deduct 0.2 ton per HP from listed capacities for all non-standby operating system pumps.

SINGLE COMPRESSOR MODELS

MODEL	34WOCS10	34WOCS15	34WOCS20	34WOCS25	34WOCS30	34WOCS35	34WOCS40	34WOCS50	34WOCS60
40°F	10.6	14.4	16.1	20.4	22.7	30.4	35.6	40.5	47.4
45°F	11.8	15.9	19.3	23.4	26.5	33.3	40.5	45.8	53.1
50°F	12.8	17.2	21.1	25.4	28.7	36.3	44.3	49.8	57.8
55°F	13.8	18.6	22.9	27.6	31.1	39.5	48.4	53.9	62.8
60°F	14.8	20.1	24.9	29.8	—	42.9	52.8	58.2	68.0

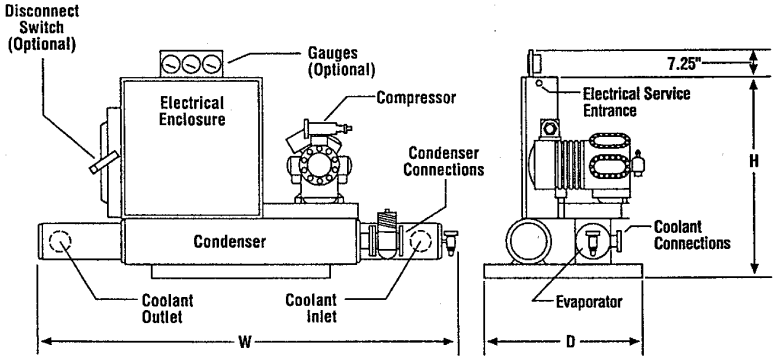
DUAL COMPRESSOR MODELS

MODEL	34WOCD20	34WOCD30	34WOCD40	34WOCD50	34WOCD60	34WOCD70	34WOCD80	34WOCD100	34WOCD120
40°F	21.2	29.1	32.1	40.4	46.5	59.9	71.0	80.6	94.0
45°F	24.5	32.5	37.4	45.4	52.9	64.7	79.4	89.7	105.9
50°F	26.5	35.4	40.9	49.5	57.6	70.6	86.7	97.1	115.0
55°F	28.6	38.4	44.5	53.7	62.5	76.6	94.3	104.9	124.7
60°F	30.9	41.5	48.4	58.1	67.6	—	102.6	113.1	—

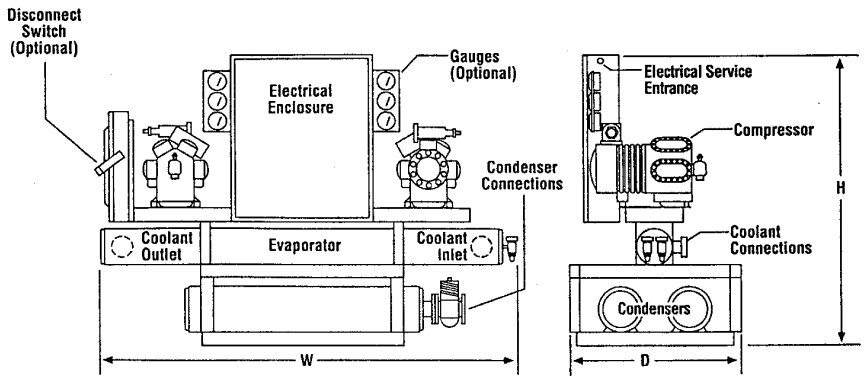
MULTIPLE COMPRESSOR MODELS

MODEL	34WOCM100	34WOCM110	34WOCM120	34WOCM130	34WOCM140
40°F	79.7	88.4	92.7	105.5	118.7
45°F	88.2	99.5	105.3	116.4	127.6
50°F	95.7	108.3	114.4	126.8	138.4
55°F	103.5	117.6	124.0	—	149.9
60°F	111.7	127.5	—	—	161.9

MODELS 34WOCS10 THROUGH 34WOCS60



MODELS 34WOCD20 THROUGH 34WOCD120 (SINGLE EVAPORATOR SHOWN)



ELECTRICAL SPECIFICATIONS

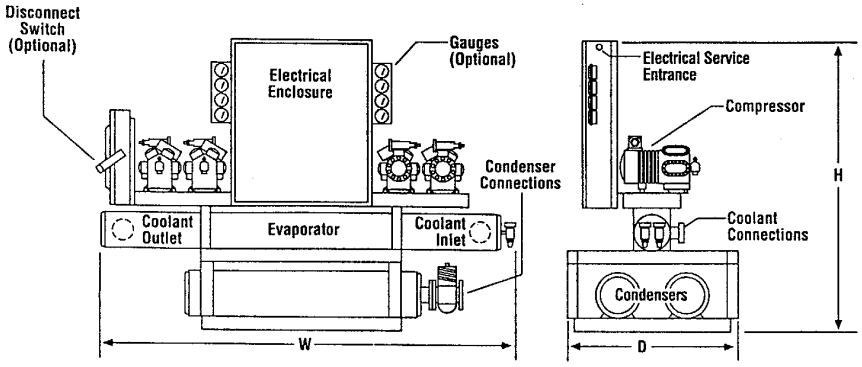
SINGLE COMPRESSOR MODELS

MODEL	34WOCS10	34WOCS15	34WOCS20	34WOCS25	34WOCS30	34WOCS35	34WOCS40	34WOCS50	34WOCS60
RATED LOAD / amps									
208V	41	56	62	76	86	114	155	164	203
230V	41	56	62	76	86	114	138	164	203
460V	20	29	32	39	44	58	70	83	103
FULL LOAD / amps Approximate running amps at full load based on operation at 50°F with 85°F condenser water. Do NOT use for electrical service and/or fusing.									
208V	33	46	48	62	76	99	118	145	175
230V	33	46	48	62	76	99	106	145	175
460V	17	24	25	32	39	51	54	73	88
MINIMUM CIRCUIT AMPACITY / amps Minimum circuit ampacity based on (largest load x 1.25) + 100% of all other loads. Use copper conductors only.									
208V	49	67	75	93	105	140	191	202	252
230V	49	67	75	93	105	140	170	202	252
460V	23	33	38	46	53	70	85	101	126
RECOMMENDED FUSE SIZE / amps									
208V	50	70	90	125	150	150	200	225	275
230V	50	70	90	125	150	150	200	225	275
460V	25	35	45	60	70	80	110	125	150

DUAL COMPRESSOR MODELS

MODEL	34WOCD20	34WOCD30	34WOCD40	34WOCD50	34WOCD60	34WOCD70	34WOCD80	34WOCD100	34WOCD120
RATED LOAD / amps									
208V	80	109	122	150	170	226	308	325	404
230V	80	109	122	150	170	226	274	325	404
460V	38	55	62	76	86	114	138	164	204
FULL LOAD / amps Approximate running amps at full load based on operation at 50°F with 85°F condenser water. Do NOT use for electrical service and/or fusing.									
208V	63	89	94	122	150	196	233	287	347
230V	63	89	94	122	150	196	210	287	347
460V	32	45	48	62	76	99	106	145	175
MINIMUM CIRCUIT AMPACITY / amps Minimum circuit ampacity based on (largest load x 1.25) + 100% of all other loads. Use copper conductors only.									
208V	88	121	135	167	189	253	343	364	453
230V	88	121	135	167	189	253	306	364	453
460V	41	60	68	83	95	126	153	182	227
RECOMMENDED FUSE SIZE / amps									
208V	90	125	150	200	225	275	350	400	500
230V	90	125	150	200	225	275	350	400	500
460V	45	70	75	100	110	130	175	200	250

MODELS 34WOCM100 THROUGH 34WOCM140



FLOW DATA

APPROXIMATE PRESSURE DROPS THROUGH EVAPORATORS AND FLOW RATES AT VARIOUS LEAVING COOLANT TEMPERATURES

SINGLE COMPRESSOR MODELS

MODEL	34WOCS10	34WOCS15	34WOCS20	34WOCS25	34WOCS30	34WOCS35	34WOCS40	34WOCS50	34WOCS60
EVAPORATOR COOLANT / gpm (psi) Coolant flows and pressure drops for 40°F operation are adjusted for 20% ethylene glycol by weight. All other data is for pure water. Flows are based on a 10°F ΔT across process.									
40°F	27 (5)	36 (6)	41 (3)	51 (4)	57 (5)	77 (4)	90 (5)	102 (6)	119 (3)
45°F	28 (4)	38 (6)	46 (3)	56 (4)	64 (6)	80 (3)	97 (5)	110 (5)	127 (3)
50°F	31 (5)	41 (7)	51 (3)	61 (5)	69 (6)	87 (4)	106 (6)	120 (6)	139 (3)
55°F	33 (6)	45 (8)	55 (4)	66 (6)	75 (7)	95 (5)	116 (7)	129 (7)	151 (4)
60°F	36 (7)	48 (9)	60 (5)	72 (7)	—	103 (6)	127 (7)	140 (8)	163 (5)
CONDENSER WATER / gpm Condenser flow rates are based on 85°F cooling tower water at 35 psi minimum and 3 gpm per ton. Do NOT reduce below values for 50°F operation.									
50°F	38	52	63	76	86	109	133	149	173
55°F	41	56	69	83	93	119	145	162	188
60°F	44	60	75	89	101	129	158	175	204

DUAL COMPRESSOR MODELS

MODEL	34WOCD20	34WOCD30	34WOCD40	34WOCD50	34WOCD60	34WOCD70	34WOCD80	34WOCD100	34WOCD120
EVAPORATOR COOLANT / gpm (psi) Coolant flows and pressure drops for 40°F operation are adjusted for 20% ethylene glycol by weight. All other data is for pure water. Pressure drops for CD models are for single evaporator units. Consult factory for dual evaporator data. Flows are based on a 10°F ΔT across process.									
40°F	53 (4)	73 (3)	81 (4)	102 (5)	117 (3)	151 (5)	179 (8)	203 (11)	237 (8)
45°F	59 (5)	78 (3)	90 (4)	109 (5)	127 (3)	155 (5)	191 (6)	215 (10)	254 (6)
50°F	64 (5)	85 (3)	98 (4)	119 (6)	138 (3)	169 (6)	208 (10)	233 (12)	276 (9)
55°F	69 (6)	92 (4)	107 (5)	129 (7)	150 (4)	184 (7)	226 (12)	252 (14)	299 (12)
60°F	74 (7)	100 (5)	116 (6)	139 (8)	162 (5)	—	246 (14)	271 (16)	—
CONDENSER WATER / gpm Condenser flow rates are based on 85°F cooling tower water at 35 psi minimum and 3 gpm per ton. Do NOT reduce below values for 50°F operation.									
50°F	80	106	123	149	173	212	260	291	345
55°F	86	115	134	161	188	230	283	315	374
60°F	93	125	145	174	203	249	308	339	405

MULTIPLE COMPRESSOR MODELS

MODEL	34WOCM100	34WOCM110	34WOCM120	34WOCM130	34WOCM140
EVAPORATOR COOLANT / gpm (psi) Coolant flows and pressure drops for 40°F operation are adjusted for 20% ethylene glycol by weight. All other data is for pure water. Flows are based on a 10°F ΔT across process.					
40°F	201 (11)	223 (7)	234 (8)	266 (9)	299 (7)
45°F	212 (10)	239 (7)	253 (8)	279 (9)	306 (6)
50°F	230 (12)	260 (8)	275 (9)	304 (11)	332 (7)
55°F	248 (14)	282 (10)	298 (11)	—	360 (8)
60°F	268 (16)	306 (12)	—	—	389 (9)
CONDENSER WATER / gpm Condenser flow rates are based on 85°F cooling tower water at 35 psi minimum and 3 gpm per ton. Do NOT reduce below values for 50°F operation.					
50°F	287	325	343	380	415
55°F	311	353	372	413	450
60°F	335	383	402	448	486

MECHANICAL SPECIFICATIONS

SINGLE COMPRESSOR MODELS

MODEL	34WOCS10	34WOCS15	34WOCS20	34WOCS25	34WOCS30	34WOCS35	34WOCS40	34WOCS50	34WOCS60
Number of Refrigeration Circuits	1	1	1	1	1	1	1	1	1
Compressors per Circuit / Qty-HP	1-10	1-15	1-20	1-25	1-30	1-35	1-40	1-50	1-60
DIMENSIONS / in									
W x D x H	87 x 35 x 45	104 x 35 x 47	86 x 35 x 47	86 x 35 x 47	86 x 35 x 47	134 x 35 x 55	134 x 35 x 55	134 x 35 x 55	108 x 35 x 57
Ship Weight / lb	1338	1416	1860	1902	1992	2394	2502	2682	2706
Oper. Weight / lb	1418	1514	1985	2026	2122	2640	2756	2946	3060
Coolant Connections / in-Type	2.0-FPT	2.5-FPT	2.5-FPT	2.5-FPT	2.5-FPT	4.0-FLG	4.0-FLG	4.0-FLG	4.0-FLG
Condenser Connections / in-Type	1.25-FPT	2.0-FPT	2.0-FPT	2.0-FPT	2.0-FPT	2.5-FPT	2.5-FPT	2.5-FPT	2.5-FPT

DUAL COMPRESSOR MODELS

MODEL	34WOCD20	34WOCD30	34WOCD40	34WOCD50	34WOCD60	34WOCD70	34WOCD80	34WOCD100	34WOCD120
Number of Refrigeration Circuits	2	2	2	2	2	2	2	2	2
Compressors per Circuit / Qty-HP	1-10	1-15	1-20	1-25	1-30	1-35	1-40	1-50	1-60
DIMENSIONS / in For single evaporator models. Consult factory for dual evaporator data (CD units only).									
W x D x H	91 x 35 x 67	103 x 35 x 72	108 x 35 x 72	108 x 35 x 82	112 x 35 x 82	121 x 35 x 84	132 x 35 x 84	132 x 40 x 84	121 x 40 x 86
Ship Weight / lb	2568	2472	2736	3024	3252	3582	3954	4332	4992
Oper. Weight / lb	2728	2821	3145	3420	3606	4024	4479	4887	5660
Coolant Connections / in-Type	2.5-FPT	4.0-FLG	4.0-FLG	4.0-FLG	4.0-FLG	4.0-FLG	5.0-FLG	5.0-FLG	5.0-FLG
Condenser Connections / in-Type	1.25-FPT	2.0-FPT	2.0-FPT	2.0-FPT	2.0-FPT	2.5-FPT	2.5-FPT	2.5-FPT	2.5-FPT

MULTIPLE COMPRESSOR MODELS

MODEL	34WOCM100	34WOCM110	34WOCM120	34WOCM130	34WOCM140
Number of Refrigeration Circuits	2	2	2	2	2
Compressors per Circuit / Qty-HP	2-25	1-25, 1-30	2-30	1-30, 1-35	2-35
DIMENSIONS / in					
W x D x H	144 x 35 x 87	140 x 35 x 87	140 x 42 x 87	140 x 42 x 87	154 x 42 x 87
Ship Weight / lb	4800	5520	5700	5760	6420
Oper. Weight / lb	5338	6173	6353	6425	7110
Coolant Connections / in-Type	5.0-FLG	5.0-FLG	5.0-FLG	5.0-FLG	6.0-FLG
Condenser Connections / in-Type	2.5-FPT	2.5-FPT	2.5-FPT	4.0-FPT	4.0-FPT

ELECTRICAL SPECIFICATIONS

JLTIPLE COMPRESSOR MODELS

MODEL	34WOCM100	34WOCM110	34WOCM120	34WOCM130	34WOCM140
RATED LOAD / amps					
208V	299	319	339	395	451
230V	299	319	339	395	451
460V	151	161	171	199	227
FULL LOAD / amps Approximate running amps at full load based on operation at 50°F with 85°F condenser water. Do NOT use for electrical service and/or fusing.					
208V	243	272	300	346	392
230V	243	272	300	346	392
460V	124	138	152	175	198
MINIMUM CIRCUIT AMPACITY / amps Minimum circuit ampacity based on (largest load x 1.25) + 100% of all other loads. Use copper conductors only. Chiller and voltage combinations indicated by (*) require two (2) identical three-phase power supplies.					
208V	315	337	357	224*	252*
230V	315	337	357	224*	252*
460V	157	169	179	210	238
RECOMMENDED FUSE SIZE / amps Chiller and voltage combinations indicated by (*) require two (2) identical three-phase power supplies.					
208V	350	350	400	250*	300*
230V	350	350	400	250*	300*
460V	175	175	200	225	300

CAPACITY MODULATION

SINGLE COMPRESSOR MODELS

MODEL	34WOCS10	34WOCS15	34WOCS20	34WOCS25	34WOCS30	34WOCS35	34WOCS40	34WOCS50	34WOCS60
STANDARD / %	100/0	100/0	100/50/0	100/50/0	100/50/0	100/66/0	100/66/0	100/75/0	100/75/0
MAXIMUM / %	100/66/0	100/66/0	—	—	—	100/66/33/0	100/66/33/0	100/75/50/0	100/75/50/0

DUAL COMPRESSOR MODELS

MODEL	340WOCD20	34WOCD30	34WOCD40	34WOCD50	34WOCD60	34WOCD70	34WOCD80	34WOCD100	34WOCD120
STANDARD / %	100/50/0	100/50/0	100/50/0	100/50/0	100/50/0	100/50/0	100/50/0	100/87/50/37/0	100/87/50/37/0
MAXIMUM / %	100/83/50/33/0	100/83/50/33/0	100/75/50/25/0	100/75/50/25/0	100/75/50/25/0	100/83/67/50/ 33/17/0	100/83/67/50/ 33/17/0	100/87/75/50/ 37/25/0	100/87/75/50/ 37/25/0

MULTIPLE COMPRESSOR MODELS

MODEL	34WOCM100	34WOCM110	34WOCM120	34WOCM130	34WOCM140
STANDARD / %	100/75/50/25/0	100/77/53/27/0	100/75/50/25/0	100/78/56/28/0	100/75/50/25/0
MAXIMUM / %	100/87/75/62/ 50/37/25/12/0	100/88/77/63/ 50/38/27/13/0	100/87/75/62/ 50/37/25/12/0	100/89/78/69/ 59/48/37/19/0	100/92/83/67/ 50/42/33/17/0

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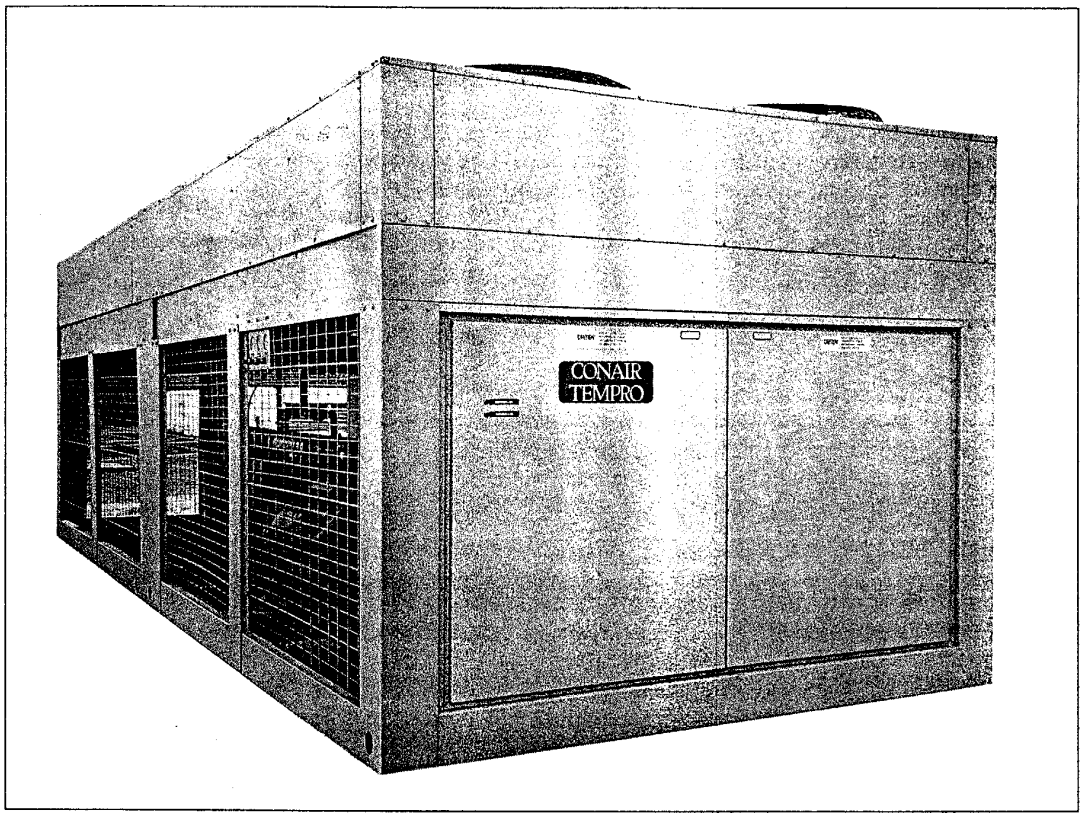
SERIES–30 AIR COOLED CENTRAL CHILLERS



- Automatic compressor cycling (dual and multiple compressor models) and cylinder unloading (single compressor models) provide energy savings.
- Premium Copeland discus compressors provide for more cooling capacity per horsepower than conventional reciprocating compressors.
- All necessary refrigeration components are prepiped, including sight glasses, filter/driers and thermostatic expansion valves.
- Evaporators are fully insulated and heat traced, including ambient thermostats.
- Units are charged with R22 refrigerant and tested under load prior to shipment.
- Easily removable access panels and hinged control panel doors are standard.
- Prewired controls include oil pressure switches, high and low refrigerant pressure switches and low coolant temperature freezestat protection.
- Fused control circuits are standard, as are low coolant flow switches (shipped loose).
- Condenser sections are constructed of seamless copper tubing with plate type aluminum fins.
- Direct drive condenser fans are equipped with permanently lubricated ball bearings, internal overload protectors and vinyl coated fan guards.
- Fan staging ambient head pressure controls are standard down to +20°F.
  Compressor and fan contactors and return coolant temperature control thermostats are standard on all units, and compressor fusing is included on all dual or multiple compressor units.
- Mounted compressor suction and discharge vibrasorbers prevent refrigeration line stressing and minimize refrigerant leaks.
- Low profile base rail configuration allows for uniform roof load distributions.
- All units are constructed of mill galvanized steel panels and formed structural steel members for rugged outdoor use.
- Automatic time delay compressor start circuits on dual or multiple compressor models prevent unnecessary electrical surges.

STANDARD OPTIONS:

- Prewired control circuit transformers.
- Automatic compressor lead/lag operation (dual or multiple compressor models only).
- Maximum step capacity modulation (see capacity control section).
- Low ambient operation down to –20°F.
- Control panel keylocks.
- Special epoxy or enamel finish paint.
- Gauge package (oil pressure, low refrigerant pressure and high refrigerant pressure).
- Compressor fusing (single compressor models).
- Prewired fused or non-fused unit disconnect switches.
- Split systems with remote condenser sections (refrigerant, interconnecting piping and wiring and labor not included).
- 4-year extended compressor parts warranties.

General Information

There are four (4) basic parameters which have an effect on the proper selection of an outdoor air cooled central chiller. They are (A) the cooling load in tons (1 refrigeration ton = 12,000 Btu/hr), (B) the required coolant temperature to be supplied from the chiller, (C) the ambient conditions to which the chiller will be subjected (both high and low) and (D) the amount of ethylene glycol antifreeze required to cope with both the operating and low ambient temperatures. We have assumed in this bulletin that the cooling load (tons) and the required coolant supply temperature (°F) have been predetermined. If not, contact your local Conair representative for help in this area. Also, all data in this bulletin assumes a maximum ambient condition of 95°F. Consult Conair Tempro for applications in higher ambient conditions.

■ STEP 1
Determine the proper amount of ethylene glycol

The correct percentage of ethylene glycol is determined by the required coolant temperature and the minimum wintertime ambient condition to which the chiller will be exposed. Select the proper antifreeze solution from the chart below:

ETHYLENE GLYCOL SELECTION CHART (% BY WEIGHT)

Supply Temp.	Minimum Ambient Temperature						
	−20°F	−10°F	0°F	10°F	20°F	30°F	40°F+
60°F	50%	40%	40%	30%	20%	10%	–
55°F	50%	40%	40%	30%	20%	10%	–
50°F	50%	40%	40%	30%	20%	10%	–
45°F	50%	40%	40%	30%	20%	10%	10%
40°F	50%	40%	40%	30%	20%	20%	20%

■ STEP 2
Select the proper chiller(s)

Use the selection guides on the following pages, as indicated on the right, to choose the proper chiller for the predetermined load and coolant supply temperature. Note that any combination of chillers may be selected to suite the application, as long as the total of the capacities is equal to or greater than the cooling load.

Glycol Percentage by Weight	Selection Guide
0%, 10%, 20%	A
30%, 40%	B
50%	C

■ STEP 3
Flow and chiller pressure drop corrections for glycol

Ethylene glycol has an effect on both system flow rate and the pressure drop through the chiller. As the percentage of glycol increases, so does the required flow rate, because the antifreeze decreases heat transfer. In addition, the pressure drop through the chiller increases with amount of glycol. The standard flow rates and chiller pressure drops for PURE WATER are indicated in the FLOW DATA section of this bulletin. Take the figures from this section and apply the multipliers shown below. This will allow for proper selection of system pumps.

Glycol Solution by Weight	10%	20%	30%	40%	50%
Flow Multiplier	1.01	1.05	1.08	1.15	1.20
Pressure Drop Multiplier	1.06	1.13	1.19	1.28	1.37

SELECTION GUIDE (A)

Model Number	Maximum Chiller Capacities (tons) At Various Leaving Coolant Temperatures For Different Water/Glycol Mixtures By Weight And Operation In 95°F Ambient[1]											
	PURE WATER:			*10% ETHYLENE GLYCOL:*				*20% ETHYLENE GLYCOL:*				
	50°F	55°F	60°F	45°F	50°F	55°F	60°F	40°F	45°F	50°F	55°F	60°F
Single Compressor Models												
30AOCS20	18.1	19.5	20.9	16.5	17.9	19.3	20.7	15.0	16.4	17.8	19.1	20.5
30AOCS25	22.7	24.5	26.2	20.7	22.5	24.3	25.9	18.8	20.5	22.3	24.1	25.7
30AOCS30	26.7	28.9	31.1	24.3	26.4	28.6	30.8	21.8	24.1	26.2	28.4	30.5
30AOCS35	34.4	37.1	39.8	31.5	34.1	36.7	39.4	28.6	31.2	33.8	36.4	39.1
30AOCS40	39.4	42.3	45.1	36.1	39.0	41.9	44.6	33.0	35.8	38.7	41.5	44.3
Dual Compressor Models												
30AOCD20	24.4	26.3	28.2	22.3	24.2	26.0	27.9	20.1	22.1	23.9	25.8	27.7
30AOCD30	32.2	34.6	37.0	29.5	31.9	34.3	36.6	27.0	29.3	31.6	34.0	36.3
30AOCD40	34.4	37.0	39.6	31.5	34.1	36.6	39.2	28.7	31.2	33.8	36.3	38.9
30AOCD50	44.7	48.3	51.8	40.8	44.3	47.8	51.3	37.0	40.5	43.9	47.4	50.9
30AOCD60	53.6	58.2	62.8	48.6	53.1	57.6	62.2	43.7	48.2	52.6	57.2	61.7
30AOCD70	67.4	72.7	77.9	61.5	66.7	72.0	77.1	55.8	61.0	66.2	71.4	76.5
30AOCD80	77.5	83.2	88.8	71.1	76.7	82.4	87.9	64.9	70.5	76.1	81.7	87.2
Multiple Compressor Models												
30AOCM100	88.0	94.8	101.6	80.5	87.1	93.9	100.6	73.2	79.8	86.4	93.1	99.8
30AOCM110	98.4	106.4	114.4	89.5	97.4	105.3	113.3	80.8	88.8	96.6	104.5	112.3
30AOCM120	104.5	113.3	122.0	94.8	103.5	112.2	120.8	85.4	94.1	102.6	111.3	119.8
30AOCM130	117.0	126.2	135.4	106.7	115.8	124.9	134.0	96.7	105.9	114.9	123.9	133.0
30AOCM140	133.3	143.4	153.5	122.0	132.0	142.0	152.0	111.1	121.0	130.9	140.8	150.7
30AOCM150	143.0	153.5	163.9	131.3	141.6	152.0	162.3	119.9	130.2	140.4	150.7	160.9
30AOCM160	150.4	161.1	171.8	138.3	148.9	159.5	170.1	126.7	137.2	147.7	158.2	168.7

SELECTION GUIDE (B)

Model Number	Maximum Chiller Capacities (tons) At Various Leaving Coolant Temperatures For Different Water/Glycol Mixtures By Weight And Operation In 95°F Ambient[1]									
	30% ETHYLENE GLYCOL:					*40% ETHYLENE GLYCOL:*				
	40°F	45°F	50°F	55°F	60°F	40°F	45°F	50°F	55°F	60°F
Single Compressor Models										
30AOCS20	14.9	16.3	17.6	19.0	20.4	14.8	16.1	17.5	18.9	20.2
30AOCS25	18.6	20.4	22.1	23.9	25.5	18.5	20.2	21.9	23.7	25.3
30AOCS30	21.6	23.9	26.0	28.2	30.3	21.5	23.7	25.8	27.9	30.1
30AOCS35	28.4	31.0	33.5	36.2	38.8	28.1	30.7	33.3	35.9	38.5
30AOCS40	32.7	35.6	38.4	41.2	44.0	32.5	35.3	38.1	40.9	43.6
Dual Compressor Models										
30AOCD20	20.0	21.9	23.8	25.6	27.5	19.8	21.7	23.6	25.4	27.3
30AOCD30	26.8	29.1	31.4	33.7	36.1	26.6	28.8	31.1	33.5	35.8
30AOCD40	28.5	31.0	33.5	36.1	38.6	28.2	30.7	33.3	35.8	38.3
30AOCD50	36.8	40.2	43.6	47.1	50.5	36.5	39.8	43.2	46.7	50.1
30AOCD60	43.4	47.9	52.3	56.7	61.2	43.0	47.5	51.8	56.3	60.7
30AOCD70	55.4	60.5	65.7	70.9	75.9	54.9	60.1	65.2	70.3	75.3
30AOCD80	64.4	70.0	75.6	81.1	86.6	63.9	69.4	74.9	80.5	85.9
Multiple Compressor Models										
30AOCM100	72.6	79.3	85.8	92.4	99.1	72.0	78.6	85.1	91.7	98.2
30AOCM110	80.2	88.1	95.9	103.7	111.5	79.6	87.4	95.2	102.9	110.6
30AOCM120	84.8	93.4	101.9	110.5	118.9	84.1	92.6	101.1	109.6	118.0
30AOCM130	96.0	105.1	114.1	123.0	132.0	95.2	104.2	113.1	122.0	130.9
30AOCM140	110.3	120.1	130.0	139.8	149.7	109.4	119.1	128.9	138.7	148.4
30AOCM150	119.0	129.3	139.4	149.7	159.8	118.1	128.2	138.3	148.4	158.5
30AOCM160	125.8	136.2	146.6	157.1	167.5	124.7	135.1	145.4	155.8	166.1

[1] See ethylene glycol selection chart for proper antifreeze/water mix at design operating and ambient temperatures. Consult factory for other conditions. Deduct 0.2 ton per hp from listed capacities for all non-standby operating system pumps.

Model Number	Maximum Chiller Capacities (tons) At Various Leaving Coolant Temperatures For Different Water/Glycol Mixtures By Weight And Operation In 95°F Ambient[1] 50% ETHYLENE GLYCOL:				
	40°F	45°F	50°F	55°F	60°F
Single Compressor Models					
30AOCS20	14.7	16.0	17.4	18.7	20.1
30AOCS25	18.3	20.1	21.8	23.5	25.2
30AOCS30	21.3	23.5	25.6	27.7	29.9
30AOCS35	27.9	30.5	33.0	35.6	38.2
30AOCS40	32.2	35.0	37.8	40.6	43.3
Dual Compressor Models					
30AOCD20	19.7	21.6	23.4	25.2	27.1
30AOCD30	26.4	28.6	30.9	33.2	35.5
30AOCD40	28.0	30.5	33.0	35.5	38.0
30AOCD50	36.2	39.6	42.9	46.4	49.7
30AOCD60	42.7	47.1	51.5	55.9	60.3
30AOCD70	54.5	59.6	64.7	69.8	74.8
30AOCD80	63.5	68.9	74.4	79.9	85.2
Multiple Compressor Models					
30AOCM100	71.5	78.0	84.5	91.0	97.5
30AOCM110	79.0	86.8	94.5	102.1	109.8
30AOCM120	83.5	92.0	100.3	108.8	117.1
30AOCM130	94.6	103.5	112.3	121.2	130.0
30AOCM140	108.6	118.3	128.0	137.7	147.4
30AOCM150	117.2	127.3	137.3	147.4	157.3
30AOCM160	123.8	134.1	144.4	154.7	164.9

FLOW DATA

Model Number	Flow And Approximate Pressure Drop Through Chiller At Various Leaving Temperatures With Pure Water As Coolant[2]						Total Unit Condenser Air Flow (cfm)
	50°F		55°F		60°F		
	gpm	psi	gpm	psi	gpm	psi	
Single Compressor Models							
30AOCS20	43	3	47	3	50	4	13500
30AOCS25	54	4	59	5	63	6	15500
30AOCS30	64	6	69	7	75	8	19500
30AOCS35	83	4	89	4	96	5	24500
30AOCS40	95	5	102	6	108	6	23600
Dual Compressor Models							
30AOCD20	59	5	63	6	68	7	23850
30AOCD30	77	9	83	10	89	12	33500
30AOCD40	83	10	89	12	95	13	32900
30AOCD50	107	6	116	6	124	7	31000
30AOCD60	129	3	140	4	151	5	40800
30AOCD70	162	6	174	7	187	8	49000
30AOCD80	186	10	200	11	213	12	46000
Multiple Compressor Models							
30AOCM100	211	12	228	14	244	17	61600
30AOCM110	236	8	255	9	275	10	56800
30AOCM120	251	9	272	10	293	12	56800
30AOCM130	281	11	303	13	325	15	70400
30AOCM140	320	7	344	8	368	10	97200
30AOCM150	343	8	368	10	393	11	90000
30AOCM160	361	10	387	11	412	13	90000

1 ethylene glycol selection chart for proper antifreeze/water mix at design operating and ambient temperatures. Consult factory for other conditions. Deduct 0.2 ton per ...p from listed capacities for all non-standby operating system pumps.

2 Use figures for 50°F operation as a minimum recirculation rate through chillers, even when operating at lower temperatures. See glycol correction section to adjust flows and pressure drops for glycol solutions. Select chiller recirculation pumps for approximately three (3) times the pressure drop through the chiller (flows and pressures corrected for glycol).

MECHANICAL SPECIFICATIONS

Model Number	No. Of Refrig. Circuits	Compressors Per Circuit (qty-hp)	Condenser Fans (qty-hp)	Approximate Dimensions[1] LxWxH (in)	Approximate Weights[1] (lbs) Ship	Oper.	Coolant Connections (in-type)
Single Compressor Models							
30AOCS20	1	1-20	2-1	120 x 34 x 46	1723	1758	2.5-FPT
30AOCS25	1	1-25	2-1	143 x 34 x 53	2040	2080	2.5-FPT
30AOCS30	1	1-30	3-1	143 x 34 x 53	2195	2245	2.5-FPT
30AOCS35	1	1-35	3-1	180 x 44 x 53	2530	2590	4.0-FLG
30AOCS40	1	1-40	3-1	180 x 44 x 53	2930	3000	4.0-FLG
Dual Compressor Models							
30AOCD20	2	1-10	4-1/2	120 x 68 x 53	2900	2935	2.5-FPT
30AOCD30	2	1-15	4-1	143 x 68 x 63	3070	3120	3.0-FPT
30AOCD40	2	1-20	4-1	143 x 68 x 63	3140	3210	3.0-FPT
30AOCD50	2	1-25	4-1	143 x 68 x 63	3750	3830	4.0-FLG
30AOCD60	2	1-30	6-1	143 x 68 x 63	3925	4025	4.0-FLG
30AOCD70	2	1-35	6-1	180 x 88 x 63	5000	5130	4.0-FLG
30AOCD80	2	1-40	6-1	180 x 88 x 63	5360	5490	5.0-FLG
Multiple Compressor Models							
30AOCM100	2	2-25	8-1	180 x 88 x 63	6590	6750	5.0-FLG
30AOCM110	2	1-25,1-30	8-1	180 x 88 x 63	7135	7315	5.0-FLG
30AOCM120	2	2-30	8-1	180 x 88 x 63	7285	7485	5.0-FLG
30AOCM130	2	1-30,1-35	8-1	264 x 96 x 63	8185	8385	5.0-FLG
30AOCM140	2	2-35	12-1	264 x 96 x 63	8860	9130	6.0-FLG
30AOCM150	2	1-35,1-40	12-1	264 x 96 x 63	9430	9700	6.0-FLG
30AOCM160	2	2-40	12-1	264 x 96 x 63	9560	9830	6.0-FLG

ELECTRICAL SPECIFICATIONS

Model Number	Rated Load (amps) 208V	230V	460V	Full Load (amps)[2] 208V	230V	460V	MCA (amps)[3] 208V	230V	460V	Recommended Fuse Size (amps) 208V	230V	460V
Single Compressor Models												
30AOCS20	74	74	37	59	59	29	90	90	45	100	100	50
30AOCS25	88	88	44	73	73	37	108	108	54	110	110	60
30AOCS30	122	122	61	93	93	46	149	149	74	175	175	80
30AOCS35	128	128	64	117	117	58	156	156	78	175	175	90
30AOCS40	170	152	76	136	125	62	208	186	93	225	200	100
Dual Compressor Models												
30AOCD20	88	88	41	74	74	37	98	98	46	110	110	50
30AOCD30	128	128	63	111	111	56	141	141	70	150	150	75
30AOCD40	147	147	73	117	117	58	162	162	81	175	175	90
30AOCD50	175	175	88	145	145	73	194	194	97	200	200	100
30AOCD60	242	242	121	184	184	92	269	269	134	300	300	150
30AOCD70	255	255	127	231	231	116	283	283	141	300	300	150
30AOCD80	337	303	152	248	227	124	376	337	169	400	350	175
Multiple Compressor Models												
30AOCM100	350	350	177	290	290	145	369	369	187	400	400	200
30AOCM110	409	409	205	321	321	160	435	435	219	450	450	225
30AOCM120	467	467	233	350	350	175	493	493	247	500	500	250
30AOCM130	479	479	240	397	397	199	507	507	254	600	600	300
30AOCM140	510	510	255	463	463	231	538	538	269	600	600	300
30AOCM150	594	560	280	481	460	240	633	594	297	650	600	300
30AOCM160	677	609	304	498	457	248	716	643	321	700	650	350

1 Dimensions and weights are for one-piece, packaged chillers.
2 Approximate running amps at full load based on 50°F water and 95°F ambient. Consult factory for other conditions. Do NOT use for electrical service and/or fusing.
3 Minimum circuit ampacity based on (largest load x 1.25) + 100% of all other loads. Use copper conductors only.

CAPACITY CONTROL

Model Number	Standard Capacity Modulation (%)[1]	Optional Maximum-Step Capacity Modulation (%)
Single Compressor Models		
3[illegible]CS20	100/50/0	N/A
30AOCS25	100/50/0	N/A
30AOCS30	100/50/0	N/A
30AOCS35	100/66/0	100/66/33/0
30AOCS40	100/66/0	100/66/33/0
Dual Compressor Models		
30AOCD20	100/50/0	100/83/50/33/0
30AOCD30	100/50/0	100/83/50/33/0
30AOCD40	100/50/0	100/75/50/25/0
30AOCD50	100/50/0	100/75/50/25/0
30AOCD60	100/50/0	100/75/50/25/0
30AOCD70	100/50/0	100/83/67/50/33/17/0
30AOCD80	100/50/0	100/83/67/50/33/17/0
Multiple Compressor Models		
30AOCM100	100/75/50/25/0	100/87/75/62/50/37/25/12/0
30AOCM110	100/77/53/27/0	100/88/77/63/50/38/27/13/0
30AOCM120	100/75/50/25/0	100/87/75/62/50/37/25/12/0
30AOCM130	100/78/56/28/0	100/89/78/69/59/48/37/19/0
30AOCM140	100/75/50/25/0	100/92/83/67/50/42/33/17/0
30AOCM150	100/77/54/27/0	100/92/85/76/67/51/36/18/0
30AOCM160	100/75/50/25/0	100/92/83/67/50/42/33/17/0

[1] Single compressor models include one (1) step of cylinder unloading as standard. Dual and multiple compressor models utilize only compressor cycling as standard.

DIAGRAM: MODELS 30AOCS20 THROUGH 30AOCS40

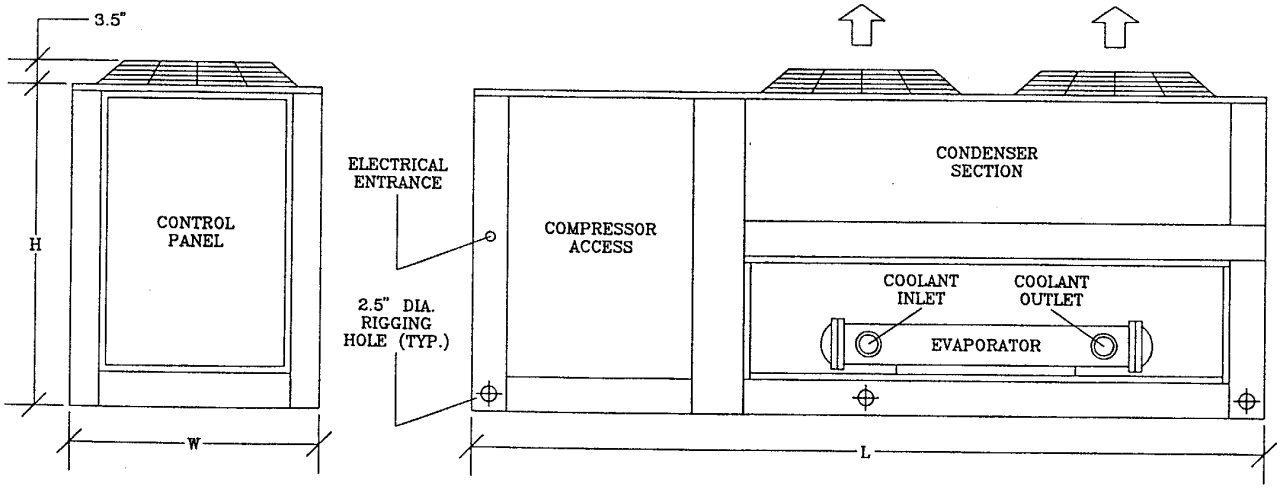


DIAGRAM: MODELS 30AOCD20 THROUGH 30AOCD80

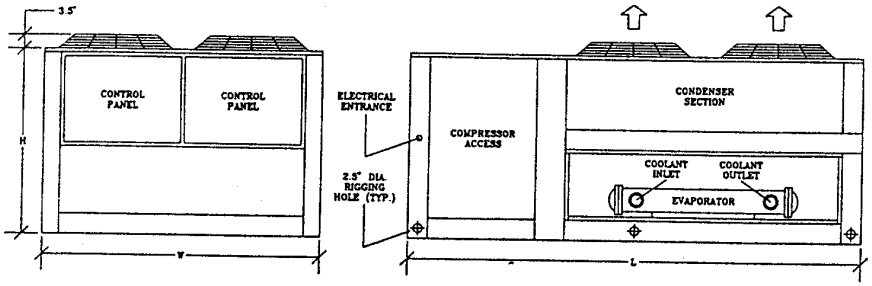
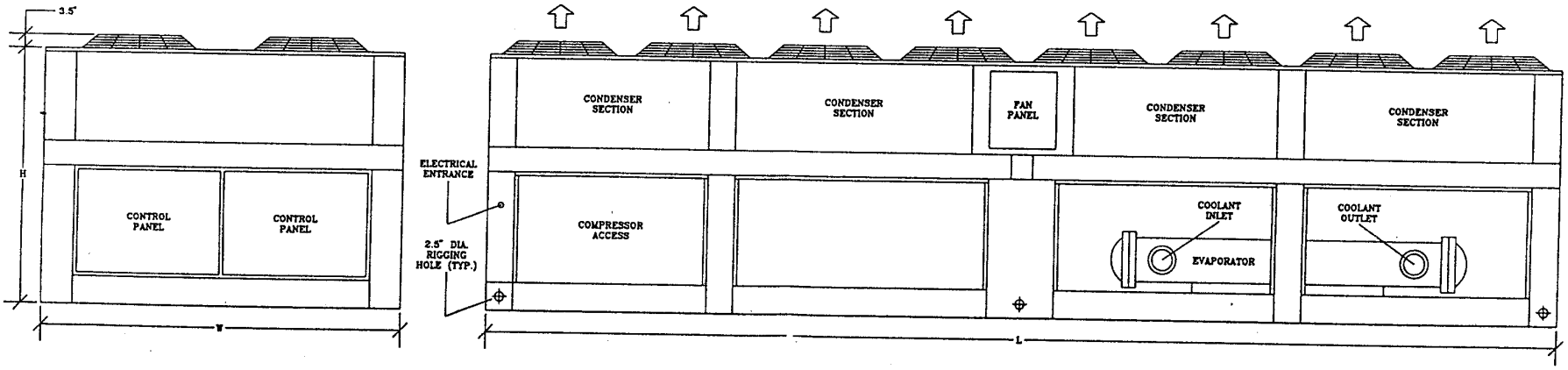
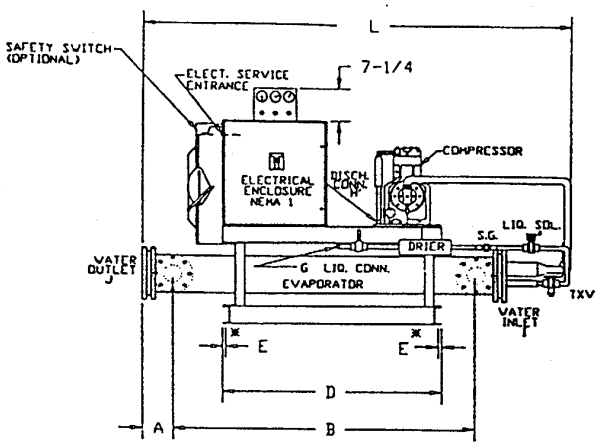


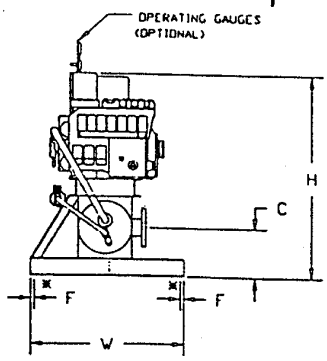
DIAGRAM: MODELS 30AOCM100 THROUGH 30AOCM160



DIMENSIONAL DATA

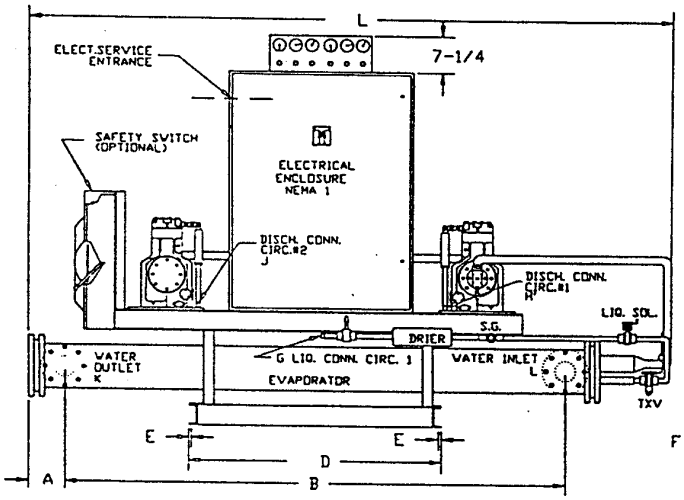
SPLIT SYSTEM INDOOR PART

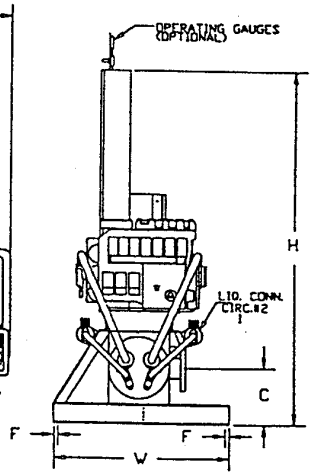




MODEL # 33AO–	MAX. OVERALL DIMENSIONS (in)			EVAP. WATER CONN. DIMENSIONS (in)			UNIT MOUNTING DIMENSIONS (in)			REF. CONN.		WATER CONN.		SHIPPING** WEIGHTS LBS.
	L	W	H	A	B	C	D	E	F	LIQ. G	DISCH. H'	INLET I	OUTLET J	
CS8	75 1/8	35	44 5/8	6 13/16	41 1/4	10 5/16	37 1/4	5/8	1	5/8	7/8	1 1/2" FPT	1 1/2" FPT	1110
CS10	87 1/16	35	44 5/8	7 1/8	52 9/16	10 5/16	37 1/4	5/8	1	5/8	1 1/8	2" FPT	2" FPT	1250
CS15	107 3/4	35	46 3/8	6 13/16	70 3/16	11 3/16	37 1/4	5/8	1	7/8	1 1/8	2 1/2" FPT	2 1/2" FPT	1350
CS20	86	35	46 5/8	6 3/32	51 13/16	11 5/16	37 1/4	5/8	1	7/8	1 3/8	2 1/2" FPT	2 1/2" FPT	1470
CS25	86	35	46 5/8	6 3/32	51 13/16	11 5/16	37 1/4	5/8	1	7/8	1 3/8	2 1/2" FPT	2 1/2" FPT	1495
CS30	86	35	46 5/8	6 3/32	51 13/16	11 5/16	37 1/4	5/8	1	7/8	1 3/8	2 1/2" FPT	2 1/2" FPT	1590
CS35	134	35	46 5/8	6 27/32	98 5/16	11 5/16	48 3/4	5/8	1	1 1/8	1 5/8	4" 150#	4" 150#	2160
CS40	134	35	46 5/8	6 27/32	98 5/16	11 5/16	48 3/4	5/8	1	1 1/8	1 5/8	4" 150#	4" 150#	2220

* 4 EA. – 5/8" DIA. MTG. HOLES (TYP.)
** Shipping weight applies only to the compressor/evaporator package

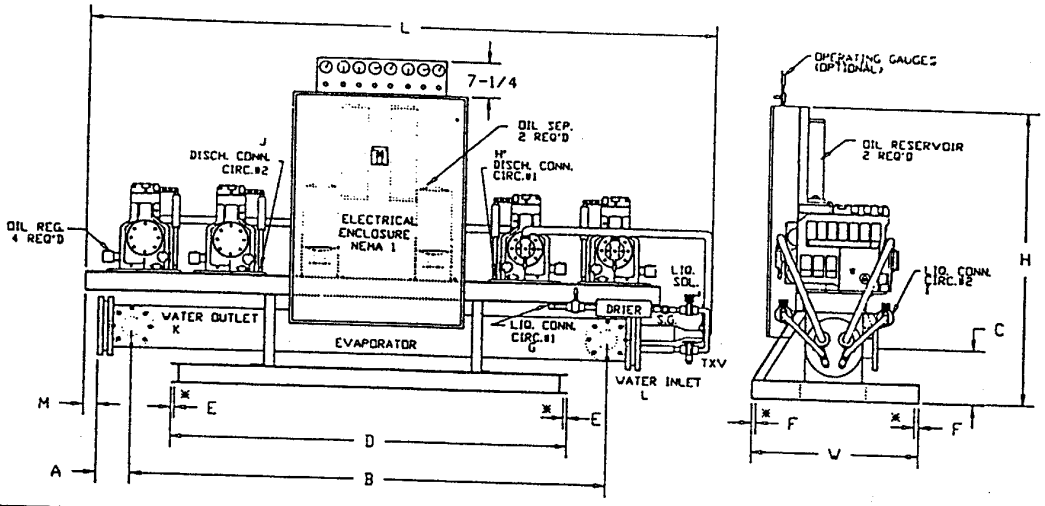




MODEL # 33AO–	MAX. OVERALL DIMENSIONS (in)			EVAP. WATER CONN. DIMENSIONS (in)			UNIT MOUNTING DIMENSIONS (in)			REF. CONN. (ODS)				WATER CONN.		** SHIPPING WEIGHTS LBS.
	L	W	H	A	B	C	D	E	F	LIQ. G #1	DISCH. H' #1	LIQ. I #2	DISCH. J #2	INLET K	OUTLET L	
CD10	87 1/16	35	52 5/8	7 1/8	52 9/16	10 5/16	37 1/4	5/8	1	1/2	5/8	1/2	5/8	2" FPT	2" FPT	1625
CD15	107 3/4	35	54 3/8	6 13/16	70 3/16	11 3/16	37 1/4	5/8	1	5/8	7/8	5/8	7/8	2 1/2" FPT	2 1/2" FPT	1695
CD20	86	35	54 5/8	6 3/32	51 13/16	11 5/16	37 1/4	5/8	1	5/8	7/8	5/8	7/8	2 1/2" FPT	2 1/2" FPT	2090
CD30	86	35	54 5/8	6 3/32	51 13/16	11 5/16	37 1/4	5/8	1	7/8	1 1/8	7/8	1 1/8	2 1/2" FPT	2 1/2" FPT	2185
CD40	94 1/8	35	54 5/8	6 3/32	51 13/16	11 5/16	37 1/4	5/8	1	7/8	1 1/8	7/8	1 1/8	2 1/2" FPT	2 1/2" FPT	2185
CD45	98	35	66 3/4	7 1/16	61 7/8	12 3/8	48 3/4	5/8	1	7/8	1 1/8	7/8	1 1/8	4" 150#	4" 150#	2910
CD50	98	35	66 3/4	7 1/16	61 7/8	12 3/8	48 3/4	5/8	1	7/8	1 1/8	7/8	1 1/8	4" 150#	4" 150#	2928
CD55	98	35	66 3/4	7 1/16	61 7/8	12 3/8	48 3/4	5/8	1	7/8	1 1/8	7/8	1 1/8	4" 150#	4" 150#	2995
CD60	108	35	66 7/8	6 7/16	74 5/8	12 7/16	48 3/4	5/8	1	7/8	1 1/8	7/8	1 1/8	4" 150#	4" 150#	2712
CD65	108	35	66 7/8	6 7/16	74 5/8	12 7/16	48 3/4	5/8	1	7/8	1 3/8	1 1/8	1 3/8	4" 150#	4" 150#	2736
CD70	120	35	66 7/8	6 7/16	86 5/8	12 5/16	48 3/4	5/8	1	1 1/8	1 3/8	1 1/8	1 3/8	4" 150#	4" 150#	2785
CD75	120	35	66 7/8	6 7/16	86 5/8	12 5/16	48 3/4	5/8	1	1 1/8	1 3/8	1 1/8	1 3/8	4" 150#	4" 150#	2860
CD80	132	35	66 7/8	7	97 1/2	12 5/16	48 3/4	5/8	1	1 1/8	1 3/8	1 1/8	1 3/8	5" 150#	5" 150#	3075

* 4 EA. – 5/8" DIA. MTG. HOLES (TYP.)
** Shipping weight applies only to the compressor/evaporator package

DIMENSIONAL DATA



MODEL # RBAO–	MAX. OVERALL DIMENSIONS (in)			EVAP. WATER CONN. DIMENSIONS (in)			UNIT MOUNTING DIMENSIONS (in)			REF. CONN: (ODS)				WATER CONN.			** SHIPPING WEIGHTS LBS.
										LIQ.	DISCH.	LIQ.	DISCH.	INLET	OUTLET		
	L	W	H	A	B	C	D	E	F	G #1	H' #1	I #2	J #2	K	L	M	
CM90	145	35	61	7	97½	12 7/16	90	5/8	1	1⅛	1⅝	1⅛	1⅜	5" 150#	5" 150#	6 7/16	4210
CM100	145	35	61	7	97½	12 7/16	90	5/8	1	1⅛	1⅝	1⅛	1⅝	5" 150#	5" 150#	6 7/16	4700
CM110	144	35	62	7 15/16	84⅛"	13 7/16	90	5/8	1	1⅛	1⅝	1⅛	1⅝	5" 150#	5" 150#	24⅛	5170
CM120	144	35	62	7 15/16	84⅛"	13 7/16	90	5/8	1	1⅜	1⅝	1⅜	1⅝	5" 150#	5" 150#	24⅛	5360
CM122	144	35	62	7 15/16	84⅛"	13 7/16	90	5/8	1	1⅜	1⅝	1⅜	1⅝	5" 150#	5" 150#	24⅛	5300
CM130	144	35	62	7 15/16	84⅛"	13 7/16	90	5/8	1	1⅜	1⅝	1⅜	1⅝	5" 150#	5" 150#	24⅛	5444
CM140	153	35	63	8 7/16	108⅛"	14 1/16	90	5/8	1	1⅜	2⅛	1⅜	2⅛	6" 150#	6" 150#	⅜	6010
CM150	153	35	63	8 7/16	108⅛"	14 1/16	90	5/8	1	1⅝	2⅛	1⅝	2⅛	6" 150#	6" 150#	⅜	6165
CM160	153	35	63	8 7/16	108⅛"	14 1/16	90	5/8	1	1⅝	2⅛	1⅝	2⅛	6" 150#	6" 150#	⅜	6330

* 4 EA. – 5/8" DIA. MTG. HOLES (TYP.)
** Shipping weight applies only to the compressor/evaporator package.

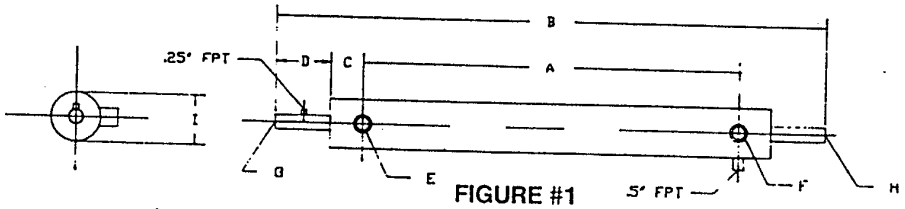


FIGURE #1

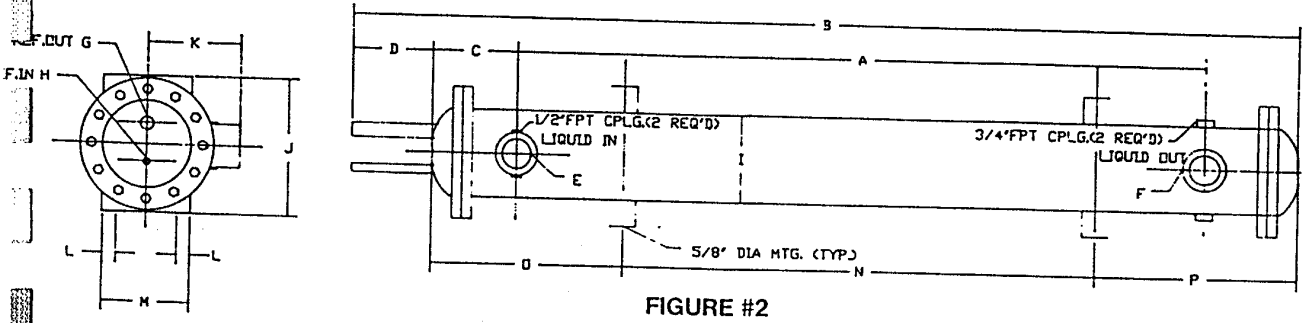


FIGURE #2

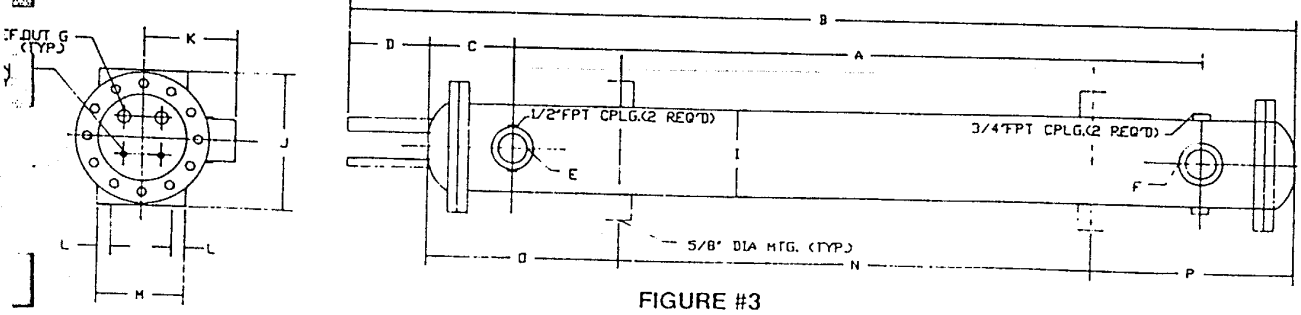


FIGURE #3

EVAPORATOR DIMENSIONAL TABLE

MODEL #	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	FIG	WT. #
32-266-01	25 5/8	42	2 1/2	4 3/16	1" FPT	1"FPT	1 1/8 IDS	5/8 IDS	3 3/4								1	70
32-310-03	41 1/4	60 1/8	6 1/16	8 11/16	1 1/2"FPT	1 1/2"FPT	1 5/8 IDS	7/8 IDS	6 5/8	12 5/8	5 9/16	1	10	36	8 11/16	9 7/16	2	275
32-275-01	52 9/16	72 9/16	6 3/8	6	2"FPT	2"FPT	1 5/8 IDS	7/8 IDS	6 5/8	12 5/8	5 9/16	1	10	36	14 21/32	14 21/32	2	305
32-275-02	52 9/16	72 9/16	6 3/8	6	2"FPT	2"FPT	1 1/8 IDS	5/8 IDS	6 5/8	12 5/8	5 9/16	1	10	36	14 21/32	14 21/32	3	305
32-275-11	70 3/16	89 3/4	6 13/16	2 1/16	2 1/2"FPT	2 1/2"FPT	2 1/8 IDS	7/8 IDS	6 5/8	14 3/8	5 9/16	3/4	6 3/4	36	23 7/8	23 7/8	2	350
32-275-12	70 3/16	89 3/4	6 13/16	2 1/16	2 1/2"FPT	2 1/2"FPT	1 1/8 IDS	7/8 IDS	6 5/8	14 3/8	5 9/16	3/4	6 3/4	36	23 7/8	23 7/8	3	350
32-276-01	51 13/16	71	6 3/32	7	2 1/2"FPT	2 1/2"FPT	2 1/8 IDS	1 1/8 IDS	8 5/8	14 5/8	8 5/16	1	12	36	14	14	2	600
32-277-02	51 13/16	71	6 3/32	7	2 1/2"FPT	2 1/2"FPT	1 5/8 IDS	7/8 IDS	8 5/8	14 5/8	8 5/16	1	12	36	14	14	3	600
32-278-01	98 5/16	119	6 7/8	7	4"-150#	4"-150#	3 1/8 IDS	1 1/8 IDS	8 5/8	14 5/8	9 1/4	1	12	47 1/2	32 1/4	32 1/4	2	800
32-278-02	61 7/8	83	7 1/16	7	4"-150#	4"-150#	2 1/8 IDS	1 1/8 IDS	10 3/4	16 3/4	10 1/4	1 1/4	14 1/4	47 1/2	14 1/4	14 1/4	3	500
32-357-01	74 5/8	93	6 7/16	5 1/2	4"-150#	4"-150#	2 5/8 IDS	1 3/8 IDS	10 3/4	16 7/8	11 5/8	1	14	47 1/2	20	20	3	700
32-358-01	86 5/8	105	6 7/16	5 1/2	4"-150#	4"-150#	2 5/8 IDS	1 3/8 IDS	10 3/4	16 7/8	11 5/8	1	14	47 1/2	26	26	3	720
32-359-01	97 1/2	117	7	5 1/2	5"-150#	5"-150#	2 5/8 IDS	1 3/8 IDS	10 3/4	16 7/8	11 5/8	1	14	47 1/2	32	32	3	850
32-369-01	84 1/8	105 1/2	7 15/16	5 1/2	5"-150#	5"-150#	2 5/8 IDS	1 5/8 IDS	12 3/4	18 7/8	12 5/8	2	16	47 1/2	26 1/4	26 1/4	3	1140
32-361-01	108 1/8	130 1/2	8 7/16	5 1/2	6"-150#	6"-150#	3 1/8 IDS	1 5/8 IDS	14	20 1/8	13 1/4	2	16	47 1/2	38 3/4	38 3/4	3	1540

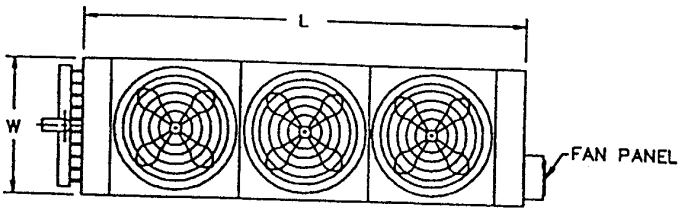
* Figures one and two apply to "CS" units (Single refrigerant circuit), and figure three applies to "CD" and "CM" units (Dual refrigerant circuits). All remote panels will be 16" tall × 14" wide × 6" deep.

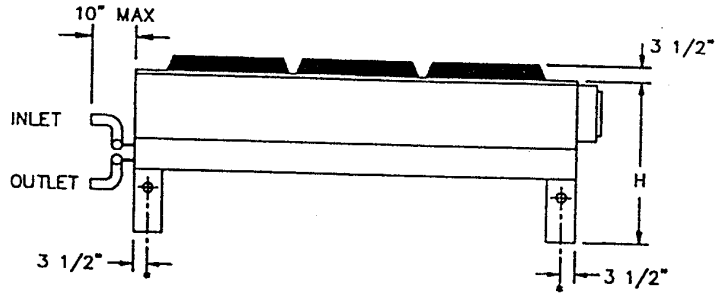
PHYSICAL DATA—Series 32 & 33 Components

MODEL AO—	CS5	CS8	CS10	CS15	CS20	CS25	CS30	CS35	CS40	CD10		CD15		CD20	
COMPRESSORS															
Refrig. crcts.	1	1	1	1	1	1	1	1	1	2		2		2	
Nom. H.P.	5	7½	10	15	20	25	30	35	40	5	5	7½	7½	10	10
Cyl.—QTY.	2	2	3	3	4	4	4	6	6	2	2	2	2	3	3
Refrig. Charge*—R22	8	13	16	24	32	41	49	57	65	8	8	12	12	16	16
Oil Charge	112	112	144	144	136	136	152	160	160	112	112	144	144	144	144
Suc. Connx.—O.D.S.	1⅛	1⅛	1⅜	1⅜	1⅝	1⅝	2⅛	2⅛	2⅛	1⅛	1⅛	1⅛	1⅛	1⅜	1⅜
DX COOLER															
Water Vol.—GAL.	3.8	4.3	5.4	7.0	8.2	8.2	8.2	17.1	17.1	5.4		7.0		8.2	
Max. Water Press.—PSIG	150	150	225	225	225	225	225	225	225	225		225		225	
Max. Refrig. Press.—PSIG	225	225	225	225	225	225	225	225	225	225		225		225	
SERIES 32—CONDENSING UNIT															
Outside Dims. (L x W x H)—In.	58x34 x46	87x34 x46	87x34 x46	120x34 x46	120x34 x46	143x34 x53	143x34 x53	180x44 x53	180x44 x53	87x68 x53		87x68 x53		120x68 x53	
Shipping Weight	912	1047	1090	1140	1418	1735	1890	2225	2627	2365		2500		2595	
Condenser Rows/Fins	3/14	2/14	4/14	2/14	3/14	3/14	4/14	3/14	4/14	2/14		2/14		2/14	
Coil Pumpdown**	14.3	18.7	23.8	27.9	41.8	53.9	70.9	83.6	101.5	13.9	13.9	13.9	13.9	27.6	27.6
Fans QTY/DIA	1/24	1/28	1/28	2/28	2/28	2/28	3/28	3/28	3/28	2/24		2/28		4/24	
Motor H.P.	½	1	1	1	1	1	1	1	1	½		1		½	
SERIES 33—CONDENSER***															
See Data 10AO—	10AO6	10AO8	10AO11	10AO14	10AO18	10AO21	10AO28	10AO35	10AO40	10AO15		10AO15		10AO20	

* Refrigerant charge does not include field piping.
** Based on 80% of coil volume at 90°F.
*** Refer to Air Cooled Condenser Catalog #10AO-189 for complete Series 33 condenser data.

Physical Data





NOTE
REFRIGERATION CONNECTIONS
ODS COPPER

⊕ 2 1/2" DIA.RIGGING HOLES
• 5/8" DIA. UNIT MOUNTING HOLES

		MODEL 10AO							
		4	6	8	11	14	18	21	28
Unit Dimensions	L	32"	32"	51"	51"	86 ½"	86 ½"	110	110
	W	34"	34"	34"	34"	34"	34"	34"	34"
	H	40"	40"	40"	40"	40"	40"	40"	40"
Coils	Rows	2	3	2	4	2	3	3	3
	FPI	14	14	14	14	14	14	14	14
	Pumpdown *	7.3	14	18.7	27.9	27.9	41.8	53.9	70.9
Single Circuit Connections	Inlet	5/8"	5/8"	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"
	Outlet	1/2"	5/8"	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"
Fans	Quantity	1	1	1	1	2	2	2	3
	Diameter	24"	24"	28"	28"	28"	28"	28"	28"
	CFM	5,500	4,410	7,800	6,300	14,400	15,400	14,500	19,500
Motor	HP	1/2	1/2	1	1	1	1	1	1
	RPM	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
Unit MCA **		2.8	2.8	5.8	5.8	10.4	10.4	10.4	15
Shipping Weight		315	345	395	455	590	640	760	875

* - Pump down capacity is based on 80% full of R-22. For R-134a, contact factory.
** - Amps shown at 230/60/3. For 460/60/3, multiply by .5.

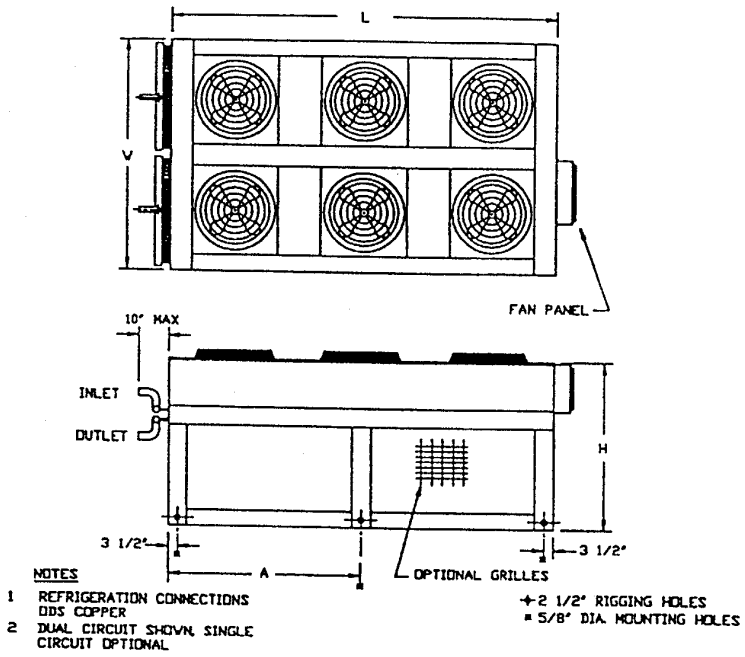
TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2	Col. 3	Col. 4	Winter,[b] °F Col. 5	Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat. ° ′	Long. ° ′	Elev. Feet	Design Dry-Bulb 99% 97.5%	Design Dry-Bulb and Mean Coincident Wet-Bulb 1% 2.5% 5%			Mean Daily Range	Design Wet-Bulb 1% 2.5% 5%			Winter Knots[d]	Summer Knots[d]	Median of Annual Extr. Max.	Min.
TEXAS															
Abilene AP	32 25	99 41	1784	15 20	101/71	99/71	97/71	22	75	74	74	N 12	SSE	103.6	10.4
Alice AP	27 44	98 02	180	31 34	100/78	98/77	95/77	20	82	81	79			104.9	24.8
Amarillo AP	35 14	101 42	3604	6 11	98/67	95/67	93/67	26	71	70	70	N 11	S	100.8	.9
Austin AP	30 18	97 42	597	24 28	100/74	98/74	97/74	22	78	77	77	N 11	S	101.6	19.7
Bay City	29 00	95 58	50	29 33	96/77	94/77	92/77	16	80	79	79				
Beaumont	29 57	94 01	16	27 31	95/79	93/78	91/78	19	81	80	80			99.7	23.5
Beeville	28 22	97 40	190	30 33	99/78	97/77	95/77	18	82	81	79	N 9	SSE	103.1	22.5
Big Spring AP (S)	32 18	101 27	2598	16 20	100/69	97/69	95/69	26	74	73	72			105.3	10.7
Brownsville AP (S)	25 54	97 26	19	35 39	94/77	93/77	92/77	18	80	79	79	NNW 13	SE	98.1	30.1
Brownwood	31 48	98 57	1386	18 22	101/73	99/73	96/73	22	77	76	75	N 9	S	105.3	13.0
Bryan AP	30 40	96 33	276	24 29	98/76	96/76	94/76	20	79	78	78				
Corpus Christi AP	27 46	97 30	41	31 35	95/78	94/78	92/78	19	80	80	79	N 12	SSE	97.0	27.2
Corsicana	32 05	96 28	425	20 25	100/75	98/75	96/75	21	79	78	77			104.2	15.2
Dallas AP	32 51	96 51	481	18 22	102/75	100/75	97/75	20	78	78	77	N 11	S		
Del Rio, Laughlin AFB	29 22	100 47	1081	26 31	100/73	98/73	97/73	24	79	77	76			103.8	23.0
Denton	33 12	97 06	630	17 22	101/74	99/74	97/74	22	78	77	76			104.5	11.8
Eagle Pass	28 52	100 32	884	27 32	101/73	99/73	98/73	24	78	78	77	NNW 9	ESE	107.7	22.1
El Paso AP (S)	31 48	106 24	3918	20 24	100/64	98/64	96/64	27	69	68	68	N 7	S	103.0	15.7
Fort Worth AP (S)	32 50	97 03	537	17 22	101/74	99/74	97/74	22	78	77	76	NW 11	S	103.2	13.5
Galveston AP	29 18	94 48	7	31 36	90/79	89/79	88/78	10	81	80	80	N 15	S	93.9	27.5
Greenville	33 04	96 03	535	17 22	101/74	99/74	97/74	21	78	77	76			103.6	11.7
Harlingen	26 14	97 39	35	35 39	96/77	94/77	93/77	19	80	79	79	NNW 10	SSE	102.3	29.3
Houston AP	29 58	95 21	96	27 32	96/77	94/77	92/77	18	80	79	79	NNW 11	S		
Houston Co	29 59	95 22	108	28 33	97/77	95/77	93/77	18	80	79	79			99.0	23.5
Huntsville	30 43	95 33	494	22 27	100/75	98/75	96/75	20	78	78	77			100.8	18.7
Killeen, Robert Gray AAF	31 05	97 41	850	20 25	99/73	97/73	95/73	22	77	76	75				
Lamesa	32 42	101 56	2965	13 17	99/69	96/69	94/69	26	73	72	71			105.5	8.9
Laredo AFB	27 32	99 27	512	32 36	102/73	101/73	99/74	23	78	78	77	N 8	SE		
Longview	32 28	94 44	330	19 24	99/76	97/76	95/76	20	80	79	78				
Lubbock AP	33 39	101 49	3254	10 15	98/69	96/69	94/69	26	73	72	71	NNE 10	SSE		
Lufkin AP	31 25	94 48	277	25 29	99/76	97/76	94/76	20	80	79	78	NNW 12	S		
Mcallen	26 12	98 13	122	35 39	97/77	95/77	94/77	21	80	79	79				
Midland AP (S)	31 57	102 11	2851	16 21	100/69	98/69	96/69	26	73	72	71	NE 9	SSE	103.6	10.8
Mineral Wells AP	32 47	98 04	930	17 22	101/74	99/74	97/74	22	78	77	76				
Palestine Co	31 47	95 38	600	23 27	100/76	98/76	96/76	20	79	79	78			101.2	16.3
Pampa	35 32	100 59	3250	7 12	99/67	96/67	94/67	26	71	70	70				
Pecos	31 25	103 30	2610	16 21	100/69	98/69	96/69	27	73	72	71				
Plainview	34 11	101 42	3370	8 13	98/68	96/68	94/68	26	72	71	70				
Port Arthur AP	29 57	94 01	16	27 31	95/79	93/78	91/78	19	81	80	80	N 9	S	102.7	3.1
San Angelo, Goodfellow AFB	31 26	100 24	1877	18 22	101/71	99/71	97/70	24	75	74	73	NNE 10	SSE	97.7	24.0
San Antonio AP (S)	29 32	98 28	788	25 30	99/72	97/73	96/73	19	77	76	76	N 8	SSE	101.3	21.1
Sherman, Perrin AFB	33 43	96 40	763	15 20	100/75	98/75	95/74	22	78	77	76	N 10	S	103.0	11.9
Snyder	32 43	100 55	2325	13 18	100/70	98/70	96/70	26	74	73	72				
Temple	31 06	97 21	700	22 27	100/74	99/74	97/74	22	78	77	77				
Tyler AP	32 21	95 16	530	19 24	99/76	97/76	95/76	21	80	79	78	NNE 23	S		
Vernon	34 10	99 18	1212	13 17	102/73	100/73	97/73	24	77	76	75				
Victoria AP	28 51	96 55	104	29 32	98/78	96/77	94/77	18	82	81	79			101.4	23.4
Waco AP	31 37	97 13	500	21 26	101/75	99/75	97/75	22	78	78	77				
Wichita Falls AP	33 58	98 29	994	14 18	103/73	101/73	98/73	24	77	76	75	NNW 12	S		
UTAH															
Cedar City AP	37 42	113 06	5617	− 2 5	93/60	91/60	89/59	32	65	63	62	SE 5	SW		
Logan	41 45	111 49	4785	− 3 2	93/62	91/61	88/60	33	65	64	63			95.5	− 7.8
Moab	38 36	109 36	3965	6 11	100/60	98/60	96/60	30	65	64	63				
Ogden AP	41 12	112 01	4455	1 5	93/63	91/61	88/61	33	66	65	64	S 6	SW	99.5	− 3.9
Price	39 37	110 50	5580	− 2 5	93/60	91/60	89/59	33	65	63	62				
Provo	40 13	111 43	4448	1 6	98/62	96/62	94/61	32	66	65	64	SE 5	SW		
Richfield	38 46	112 05	5270	− 2 5	93/60	91/60	89/59	34	65	63	62			98.1	− 10.5
St George Co	37 02	113 31	2900	14 21	103/65	101/65	99/64	33	70	68	67			109.3	11.1
Salt Lake City AP (S)	40 46	111 58	4220	3 8	97/62	95/62	92/61	32	66	65	64	SSE 6	N	99.4	− .1
Vernal AP	40 27	109 31	5280	− 5 0	91/61	89/60	86/59	32	64	63	62				
VERMONT															
Barre	44 12	72 31	600	− 16 − 11	84/71	81/69	78/68	23	73	71	70				
Burlington AP (S)	44 28	73 09	332	− 12 − 7	88/72	85/70	82/69	23	74	72	71	E 7	SSW	92.4	− 16.9
Rutland	43 36	72 58	620	− 13 − 8	87/72	84/70	81/69	23	74	72	71			92.5	− 17.5

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Concluded*)

Col. 1	Col. 2	Col. 3	Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat.	Long.	Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean	Coincident Wet-Bulb		Mean Daily	Design Wet-Bulb			Winter	Summer	Median of Annual Extr.	
	° ′	° ′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]		Max.	Min.
VIRGINIA																
Charlottesville	38 02	78 31	870	14	18	94/74	91/74	88/73	23	77	76	75	NE 7	SW	97.4	8.0
Danville AP	36 34	79 20	590	14	16	94/74	92/73	90/73	21	77	76	75			100.1	9.2
Fredericksburg	38 18	77 28	100	10	14	96/76	93/75	90/74	21	78	77	76				
Harrisonburg	38 27	78 54	1370	12	16	93/72	91/72	88/71	23	75	74	73				
Lynchburg AP	37 20	79 12	916	12	16	93/74	90/74	88/73	21	77	76	75	NE 7	SW	97.2	7.6
Norfolk AP	36 54	76 12	22	20	22	93/77	91/76	89/76	18	79	78	77	NW 10	SW	97.2	15.3
Petersburg	37 11	77 31	194	14	17	95/76	92/76	90/75	20	79	78	77				
Richmond AP	37 30	77 20	164	14	17	95/76	92/76	90/75	21	79	78	77	N 6	SW	97.9	9.6
Roanoke AP	37 19	79 58	1193	12	16	93/72	91/72	88/71	23	75	74	73	NW 9	SW		
Staunton	38 16	78 54	1201	12	16	93/72	91/72	88/71	23	75	74	73	NW 9	SW	95.9	2.5
Winchester	39 12	78 10	760	6	10	93/75	90/74	88/74	21	77	76	75			97.3	3.7
WASHINGTON																
Aberdeen	46 59	123 49	12	25	28	80/65	77/62	73/61	16	65	63	62	ESE 6	NNW	91.9	19.3
Bellingham AP	48 48	122 32	158	10	15	81/67	77/65	74/63	19	68	65	63	NNE 15	WSW	87.4	10.3
Bremerton	47 34	122 40	162	21	25	82/65	78/64	75/62	20	66	64	63	E 8	N		
Ellensburg AP	47 02	120 31	1735	2	6	94/65	91/64	87/62	34	66	65	63				
Everett, Paine AFB	47 55	122 17	596	21	25	80/65	76/64	73/62	20	67	64	63	ESE 6	NNW	84.9	15.2
Kennewick	46 13	119 08	392	5	11	99/68	96/67	92/66	30	70	68	67			103.4	2.0
Longview	46 10	122 56	12	19	24	88/68	85/67	81/65	30	69	67	66	ESE 9	NW	96.0	14.8
Moses Lake, Larson AFB	47 12	119 19	1185	1	7	97/66	94/65	90/63	32	67	66	64	N 8	SSW		
Olympia AP	46 58	122 54	215	16	22	87/66	83/65	79/64	32	67	66	64	NE 4	NE		
Port Angeles	48 07	123 26	99	24	27	72/62	69/61	67/60	18	64	62	61			83.5	19.4
Seattle-Boeing Field	47 32	122 18	23	21	26	84/68	81/66	77/65	24	69	67	65				
Seattle Co (S)	47 39	122 18	20	22	27	85/68	82/66	78/65	19	69	67	65	N 7	N	90.2	22.0
Seattle-Tacoma AP (S)	47 27	122 18	400	21	26	84/65	80/64	76/62	22	66	64	63	E 9	N	90.1	19.9
Spokane AP (S)	47 38	117 31	2357	− 6	2	93/64	90/63	87/62	28	65	64	62	NE 6	SW	98.8	−4.9
Tacoma,McChord AFB	47 15	122 30	100	19	24	86/66	82/65	79/63	22	68	66	64	S 5	NNE	89.4	18.8
Walla Walla AP	46 06	118 17	1206	0	7	97/67	94/66	90/65	27	69	67	66	W 5	W	103.0	3.8
Wenatchee	47 25	120 19	632	7	11	99/67	96/66	92/64	32	68	67	65			101.1	1.0
Yakima AP	46 34	120 32	1052	− 2	5	96/65	93/65	89/63	36	68	66	65	W 5	NW		
WEST VIRGINIA																
Beckley	37 47	81 07	2504	− 2	4	83/71	81/69	79/69	22	73	71	70	WNW 9	WNW		
Bluefield AP	37 18	81 13	2867	− 2	4	83/71	81/69	79/69	22	73	71	70				
Charleston AP	38 22	81 36	939	7	11	92/74	90/73	87/72	20	76	75	74	SW 8	SW	97.2	2.9
Clarksburg	39 16	80 21	977	6	10	92/74	90/73	87/72	21	76	75	74				
Elkins AP	38 53	79 51	1948	1	6	86/72	84/70	82/70	22	74	72	71	WNW 9	WNW	90.6	−7.3
Huntington Co	38 25	82 30	565	5	10	94/76	91/74	89/73	22	78	77	75	W 6	SW	97.1	2.1
Martinsburg AP	39 24	77 59	556	6	10	93/75	90/74	88/74	21	77	76	75	WNW 10	W	99.0	1.1
Morgantown AP	39 39	79 55	1240	4	8	90/74	87/73	85/73	22	76	75	74				
Parkersburg Co	39 16	81 34	615	7	11	93/75	90/74	88/73	21	77	76	75	WSW 7	WSW	95.9	.7
Wheeling	40 07	80 42	665	1	5	89/72	86/71	84/70	21	74	73	72	WSW 10	WSW	97.5	−.6
WISCONSIN																
Appleton	44 15	88 23	730	−14	− 9	89/74	86/72	83/71	23	76	74	72			94.6	−16.2
Ashland	46 34	90 58	650	−21	−16	85/70	82/68	79/66	23	72	70	68			94.1	−26.8
Beloit	42 30	89 02	780	− 7	− 3	92/75	90/75	88/74	24	78	77	75				
Eau Claire AP	44 52	91 29	888	−15	−11	92/75	89/73	86/71	23	77	75	73				
Fond Du Lac	43 48	88 27	760	−12	− 8	89/74	86/72	84/71	23	76	74	72			96.0	−17.7
Green Bay AP	44 29	88 08	682	−13	− 9	88/74	85/72	83/71	23	76	74	72	W 8	SW	94.3	−17.9
La Crosse AP	43 52	91 15	651	−13	− 9	91/75	88/73	85/72	22	77	75	74	NW 10	S	95.7	−21.3
Madison AP (S)	43 08	89 20	858	−11	− 7	91/74	88/73	85/71	22	77	75	73	NW 8	SW	93.6	−16.8
Manitowoc	44 06	87 41	660	−11	− 7	89/74	86/72	83/71	21	76	74	72			94.1	−13.7
Marinette	45 06	87 38	605	−15	−11	87/73	84/71	82/70	20	75	73	71			95.9	−15.8
Milwaukee AP	42 57	87 54	672	− 8	− 4	90/74	87/73	84/71	21	76	74	73	WNW 10	SSW		
Racine	42 43	87 51	730	− 6	− 2	91/75	88/73	85/72	21	77	75	74				
Sheboygan	43 45	87 43	648	−10	− 6	89/75	86/73	83/72	20	77	75	74			97.0	−12.4
Stevens Point	44 30	89 34	1079	−15	−11	92/75	89/73	86/71	23	77	75	73			95.3	−24.1
Waukesha	43 01	88 14	860	− 9	− 5	90/74	87/73	84/71	22	76	74	73			95.7	−14.3
Wausau AP	44 55	89 37	1196	−16	−12	91/74	88/72	85/70	23	76	74	72				
WYOMING																
Casper AP	42 55	106 28	5338	−11	− 5	92/58	90/57	87/57	31	63	61	60	NE 10	SW	97.3	−20.9
Cheyenne	41 09	104 49	6126	− 9	− 1	89/58	86/58	84/57	30	63	62	60	N 11	WNW	92.5	−15.9
Cody AP	44 33	109 04	4990	−19	−13	89/60	86/60	83/59	32	64	63	61			97.4	−21.9
Evanston	41 16	110 57	6780	− 9	− 3	86/55	84/55	82/54	32	59	58	57			89.2	−21.2
Lander AP (S)	42 49	108 44	5563	−16	−11	91/61	88/61	85/60	32	64	63	61	E 5	NW	94.9	−22.6
Laramie AP (S)	41 19	105 41	7266	−14	− 6	84/56	81/56	79/55	28	61	60	59				
Newcastle	43 51	104 13	4265	−17	−12	91/64	87/63	84/63	30	69	68	66			99.4	−19.0
Rawlins	41 48	107 12	6740	−12	− 4	86/57	83/57	81/56	40	62	61	60				
Rock Springs AP	41 36	109 04	6745	− 9	− 3	86/55	84/55	82/54	32	59	58	57	WSW 10	W		
Sheridan AP	44 46	106 58	3964	−14	− 8	94/62	91/62	88/61	32	66	65	63	NW 7	N	99.8	−23.6
Torrington	42 05	104 13	4098	−14	− 8	94/62	91/62	88/61	30	66	65	63			101.1	−20.7

Physical Data

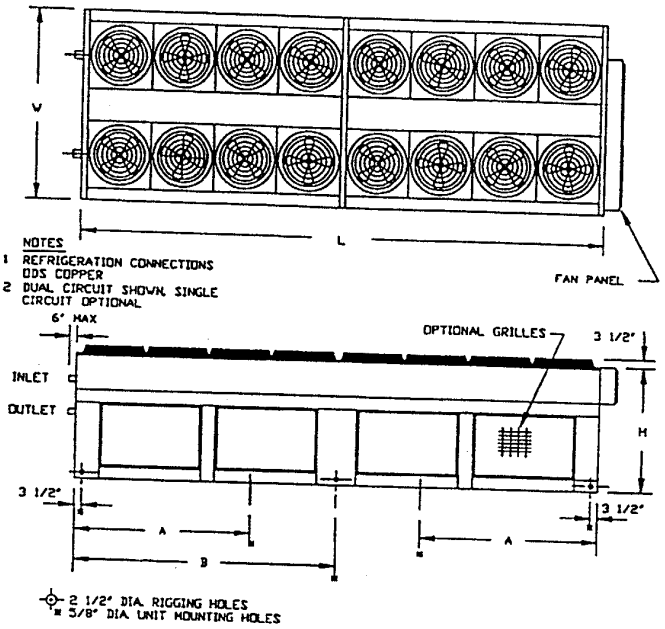


88 × 149 1/2

		MODEL 10AO									
		15	20	30	35	40	42	47	55	68	76
Unit Dimensions	L	51"	86½"	110"	86½"	86½"	110"	110"	110"	141½"	141½"
	W	68"	68"	68"	68"	68"	68"	68"	68"	68"	68"
	H	40"	53"	63"	53"	53"	53"	63"	63"	63"	63"
	A	N/A	N/A	55"	N/A	N/A	55"	55"	55"	72¼"	72¼"
Coils	Rows	2	2	2	3	4	3	4	4	3	4
	FPI	14	14	14	14	14	14	14	14	14	14
	Pumpdown *	37.4	55.8	71.1	83.6	101.5	106.4	141.8	141.8	179.2	238.8
Dual Circuit Connections	Inlet	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"	1 3/8"	1 3/8"
	Outlet	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"	1 3/8"	1 3/8"
Single Circuit Connections	Inlet	1 3/8"	1 3/8"	1 5/8"	1 5/8"	1 5/8"	1 5/8"	2 1/8"	2 1/8"	2 5/8"	2 5/8"
	Outlet	1 1/8"	1 1/8"	1 3/8"	1 3/8"	1 3/8"	1 3/8"	1 5/8"	1 5/8"	2 1/8"	2 1/8"
Fans	Quantity	2	4	4	4	4	4	4	6	6	6
	Diameter	24"	24"	28"	28"	28"	28"	28"	28"	28"	28"
	CFM	10,100	22,100	32,100	23,200	22,645	31,000	28,500	40,800	49,000	46,000
Motor	HP	1/2	1/2	1	1	1	1	1	1	1	1
	RPM	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
Unit MCA **		5	9.4	19.6	19.6	19.6	19.6	19.6	28.8	28.8	28.8
Shipping Weight		610	695	1,420	1,370	1,450	1,520	1,640	1,740	2,370	2,570

* - Pump down capacity is based on 80% full of R-22. For R-134a, contact factory.
** - Amps shown at 230/60/3. For 460/60/3, multiply by .5.

Physical Data



		MODEL 10AO					
		84	92	112	136	150	162
Unit Dimensions	L	180"	180"	264"	264"	264"	264"
	W	88"	88"	96"	96"	96"	96"
	H	63"	63"	63"	63"	63"	63"
	A	60"	60"	88"	88"	88"	88"
	B	90"	90"	132"	132"	132"	132"
Coils	Rows	3	4	3	3	4	4
	FPI	14	14	14	14	14	14
	Pumpdown *	212.8	283.6	356.4	356.4	475.2	475.2
Dual Circuit Connections	Inlet	1 5/8"	1 5/8"	2 1/8"	2 1/8"	2 1/8"	2 1/8"
	Outlet	1 5/8"	1 5/8"	2 1/8"	2 1/8"	2 1/8"	2 1/8"
Single Circuit Connections	Inlet	2 5/8"	2 5/8"	3 1/8"	3 1/8"	3 1/8"	3 1/8"
	Outlet	2 1/8"	2 1/8"	2 5/8"	2 5/8"	2 5/8"	2 5/8"
Fans	Quantity	8	8	8	12	12	16
	Diameter	28"	28"	28"	28"	28"	28"
	CFM	62,000	57,000	70,400	97,200	90,000	105,000
Motor	HP	1	1	1	1	1	1
	RPM	1,140	1,140	1,140	1,140	1,140	1,140
Unit MCA **		38	38	38	56.4	56.4	74.8
Shipping Weight		2,640	2,880	3,900	4,190	4,560	4,960

* - Pump down capacity is based on 80% full of R-22. For R-134a, contact factory.
** - Amps shown at 230/60/3. For 460/60/3, multiply by .5.

FXT CAPACITY TABLES—SELECTIONS IN GPM

THERMAL PERFORMANCE CERTIFIED BY THE COOLING TOWER INSTITUTE (CTI) IN ACCORDANCE WITH CTI STANDARD STD-201

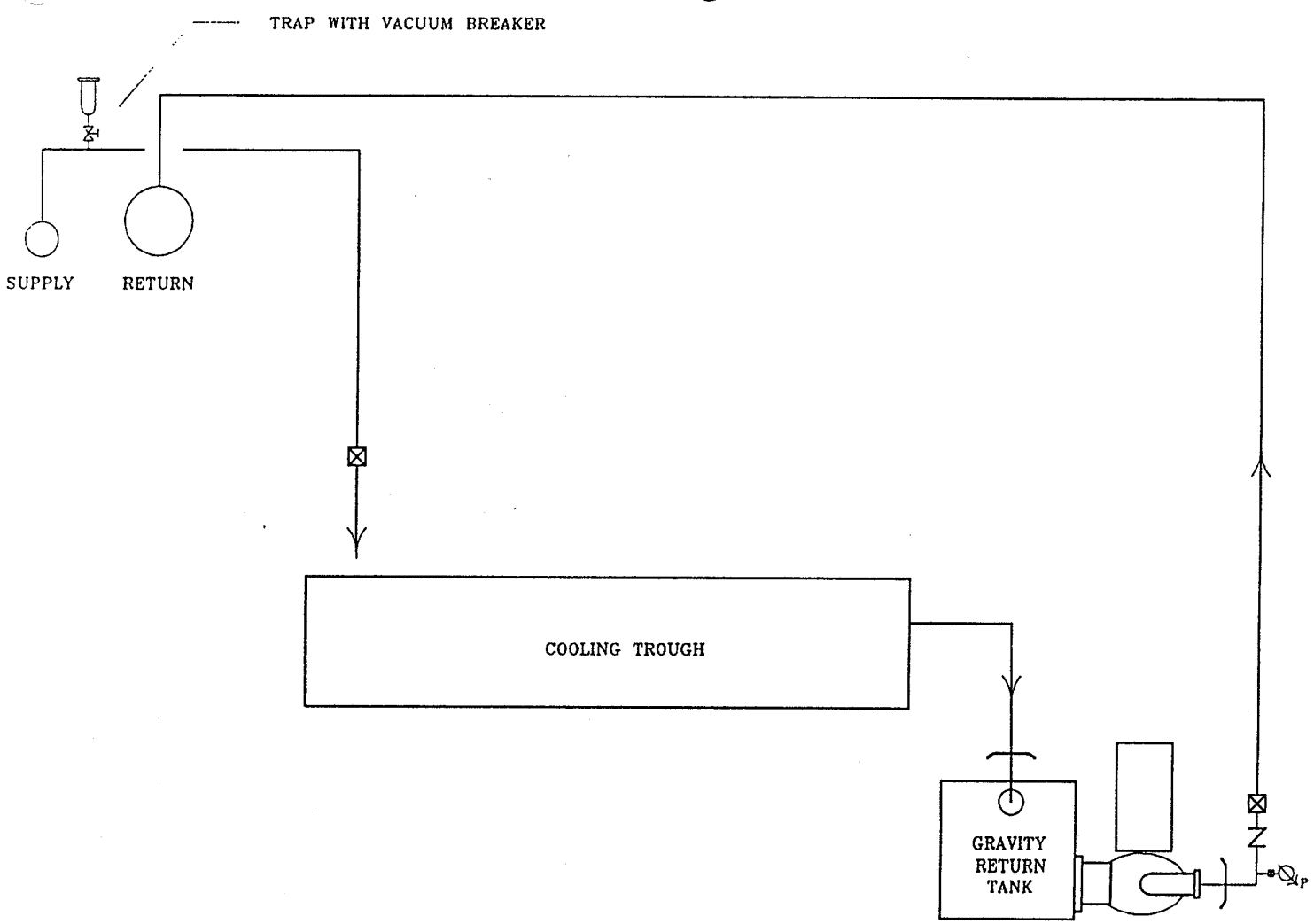
TABLE 1—SINGLE CELL SELECTIONS

MODEL NUMBER	SELECTION FACTOR																	
	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
FXT-6	H ‡	H	H	H	H	H	H	H	16.2	18.0	19.9	22.0	24.1	26.4	28.7	31.1	33.6	36.2
FXT-7.5	H	H	H	H	H	H	16.2	18.2	20.3	22.5	24.9	27.4	30.1	32.9	35.9	38.9	42.0	45.2
FXT-11	H	H	H	H	H	21.1	23.8	26.6	29.7	33.0	36.5	40.3	44.2	48.3	52.6	57.1	61.7	66.4
FXT-16	23.4	25.3	27.4	29.7	32.2	34.9	37.8	40.9	44.3	48.0	52.0	56.3	61.0	66.1	71.6	77.6	84.1	91.1
FXT-20	29.3	31.7	34.4	37.2	40.3	43.6	47.3	51.2	55.4	60.0	65.0	70.4	76.2	82.5	89.3	96.7	105.0	113
FXT-26	H	41.3	44.7	48.4	52.4	56.7	61.4	66.5	72.0	78.0	84.5	91.5	99.0	107	116	126	136	147
FXT-30	44.1	47.7	51.7	55.9	60.5	65.5	71.0	76.8	83.1	90.0	97.4	105	114	124	134	145	157	170
FXT-33	48.6	52.6	56.9	61.6	66.7	72.2	78.1	84.5	91.5	99.0	107	116	125	136	147	159	172	186
FXT-38	56.8	61.4	66.3	71.6	77.4	83.6	90.4	97.6	106	114	123	133	144	155	168	181	196	212
FXT-42	63.0	68.0	73.5	79.4	85.7	92.6	100	108	117	126	136.0	147	159	171	185	200	216	233
FXT-47	70.8	76.4	82.5	89.0	96.1	104	112	121	131	141	152.0	164	177	192	207	223	241	260
FXT-58	87.0	93.9	101	110	118	128	138	149	161	174	188.0	203	219	237	256	276	298	322
FXT-68	103	111	120	129	139	150	162	175	189	204	220.0	238	257	277	299	323	348	376
FXT-74	118	127	136	146	157	168	180	193	207	222	238.0	255	274	293	315	337	362	388
FXT-87	139	149	160	172	184	197	212	227	243	261	280.0	300	322	345	370	397	425	456
FXT-99	159	170	182	195	210	225	241	258	277	297	318.0	341	366	393	421	451	484	519
FXT-115	181	195	209	225	241	259	278	299	321	345	371.0	398	428	459	494	530	569	612
FXT-130	206	221	238	255	274	294	315	339	363	390	419.0	449	482	518	556	596	640	687
FXT-142	227	243	261	280	300	322	345	370	397	426	457.0	490	526	564	605	649	696	746
FXT-160	256	275	295	316	339	363	389	417	448	480	515.0	552	592	634	680	729	782	839
FXT-175	280	300	322	345	370	397	426	457	490	525	563.0	604	647	694	744	798	855	917
FXT-200	320	343	368	395	423	454	487	522	560	600	643.0	690	740	793	850	912	978	1048
FXT-216	356	380	407	435	465	496	531	567	606	648	693.0	740	791	846	904	966	1033	1104
FXT-250	420	448	477	509	543	579	618	659	703	750	800.0	853	910	971	1036	1105	1178 *	1155
FXT-268	454	484	516	550	586	624	665	708	755	804	857.0	913	972	1036	1104	1176 *	1155	1155

TABLE 2—DOUBLE CELL SELECTIONS

MODEL NUMBER	SELECTION FACTOR																	
	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
FXT-230	362	390	418	450	482	518	556	598	642	690	742	796	856	918	988	1060	1138	1224
FXT-260	412	442	476	510	548	588	630	678	726	780	838	898	964	1036	1112	1192	1280	1374
FXT-284	454	486	522	560	600	644	690	740	794	852	914	980	1052	1128	1210	1298	1392	1492
FXT-320	512	550	590	632	678	726	778	834	896	960	1030	1104	1184	1268	1360	1458	1564	1678
FXT-350	560	600	644	690	740	794	852	914	980	1050	1126	1208	1294	1388	1488	1596	1710	1834
FXT-400	640	686	736	790	846	908	974	1044	1120	1200	1286	1380	1480	1586	1700	1824	1956	2096
FXT-432	712	760	814	870	930	992	1062	1134	1212	1296	1386	1480	1582	1692	1808	1932	2066	2208
FXT-500	840	896	954	1018	1086	1158	1236	1318	1406	1500	1600	1706	1820	1942	2072	2210	2356 †	2310
FXT-536	908	968	1032	1100	1172	1248	1330	1416	1510	1608	1714	1826	1944	2072	2208	2352 †	2310	2310

* For interpolation purposes only. Do not exceed maximum GPM of 1155. † For interpolation purposes only. Do not exceed maximum GPM of 2310. ‡ Flow is below the minimum hydraulic limit.



CONAIR
TEMPRO

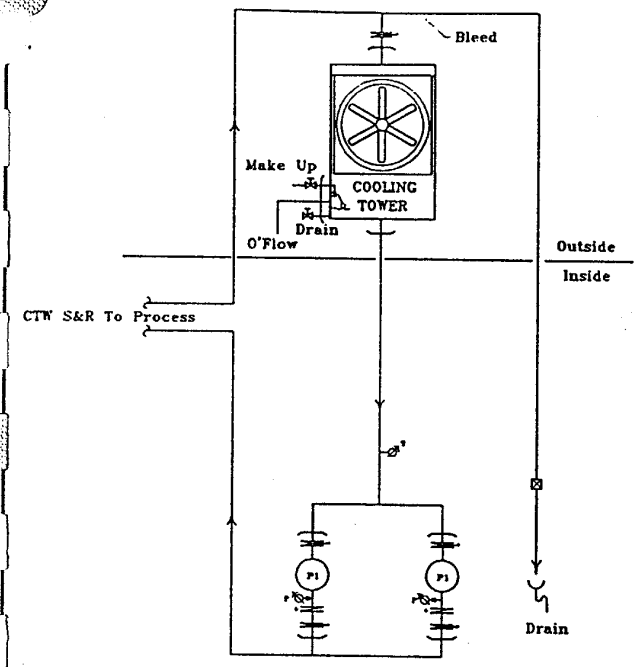
GRAVITY RETURN TANK

MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

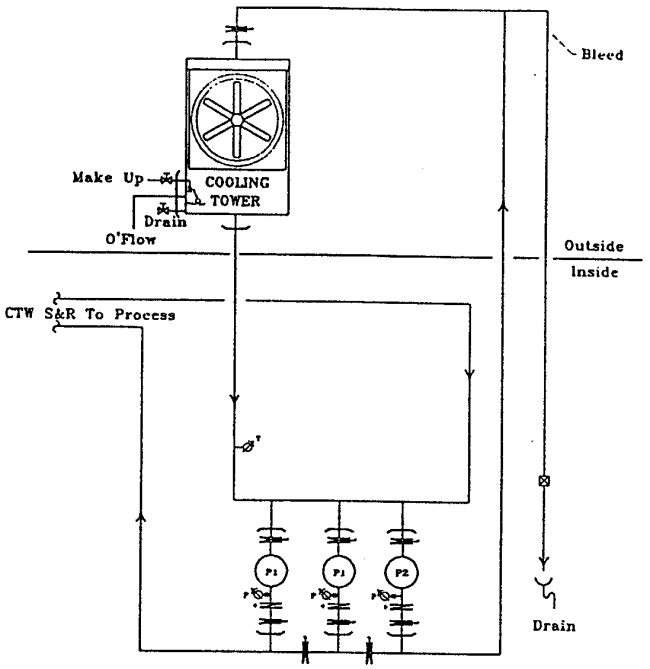
GRAV_RET

TOWER SYSTEM SELECTION GUIDELINES



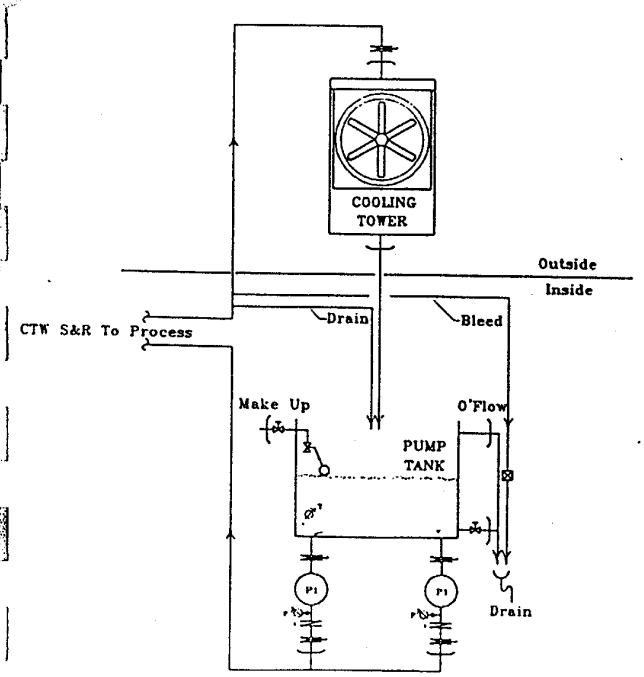
SINGLE PUMP LESS TANK

Non-freezing winter design
Standard flow to process



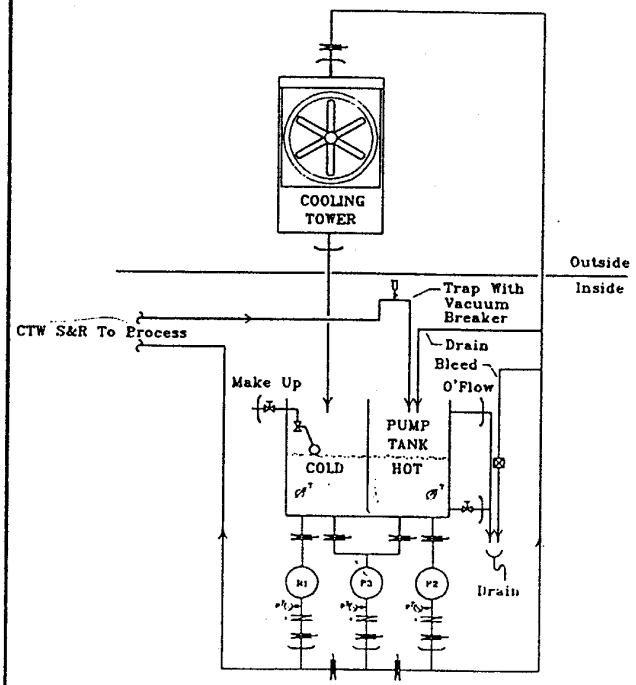
DUAL PUMP LESS TANK

Non-freezing winter design
High or low flow to process



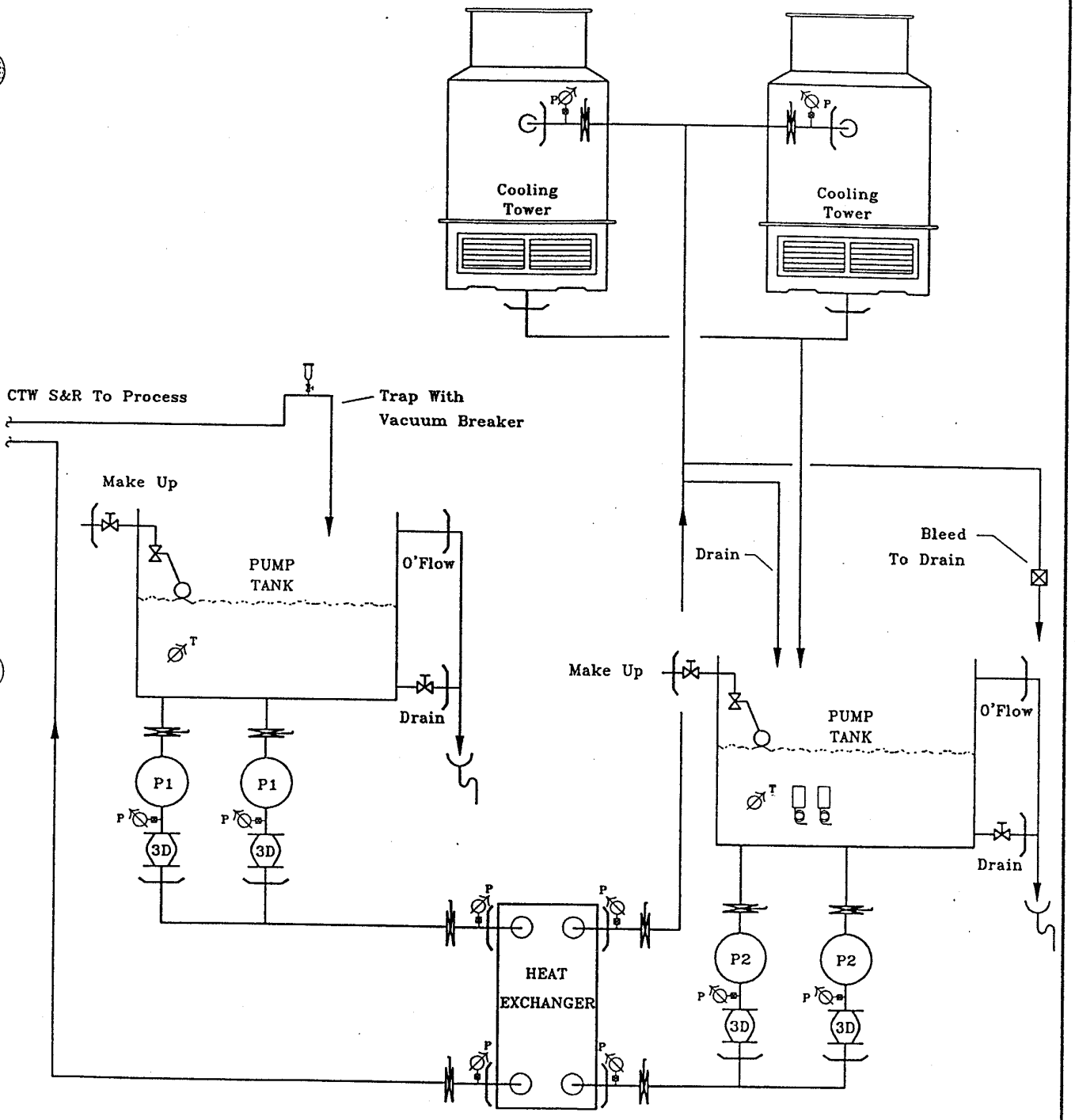
SINGLE PUMP WITH TANK

Freezing winter design
and
Normal flow to process



DUAL PUMP WITH TANK

Freezing winter design
or
High or low flow to process



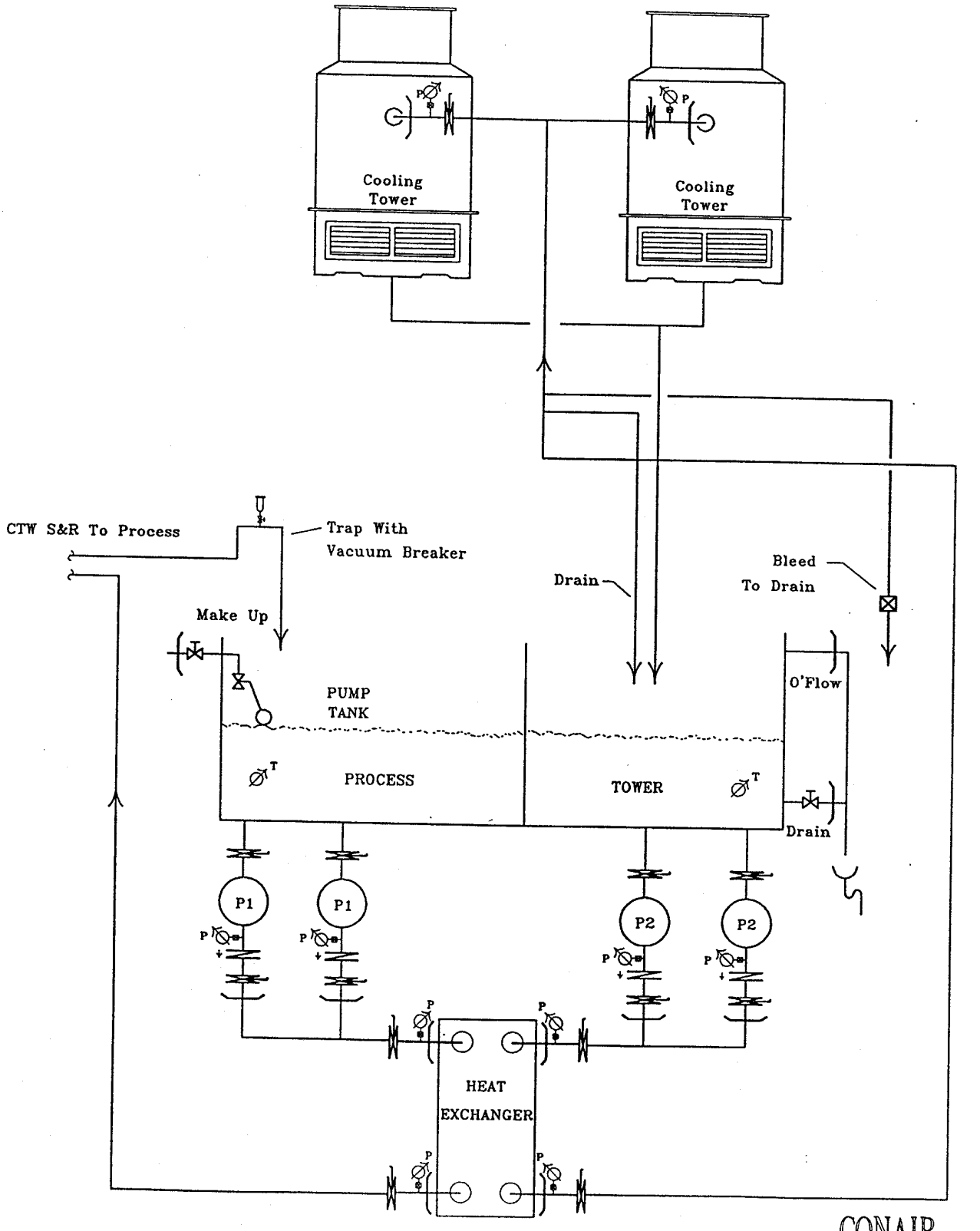
CONAIR TEMPRO

COOLING TOWER SYSTEM

⌣ MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

STWF1-01

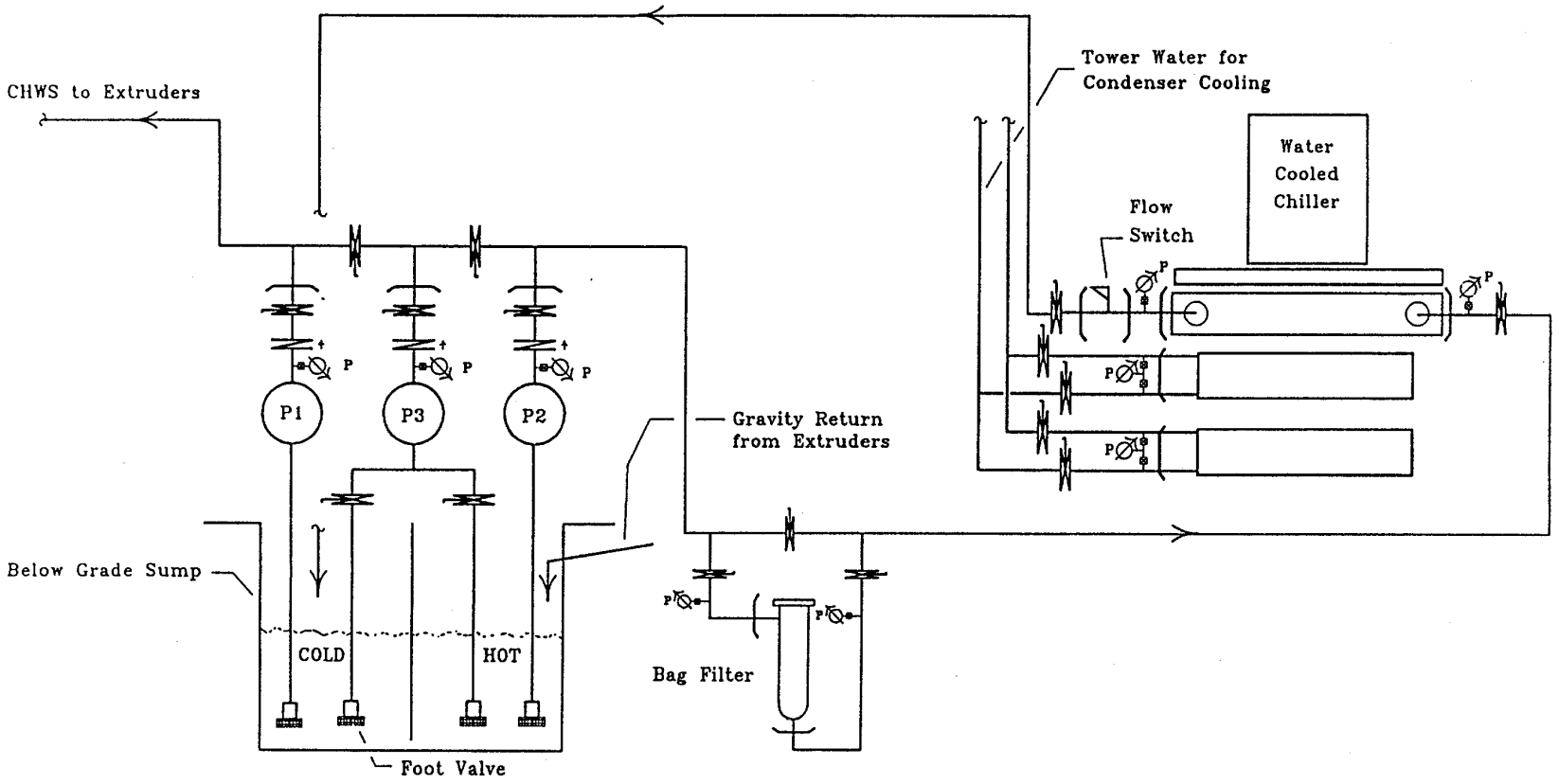


CONAIR TEMPRO

COOLING TOWER SYSTEM

MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

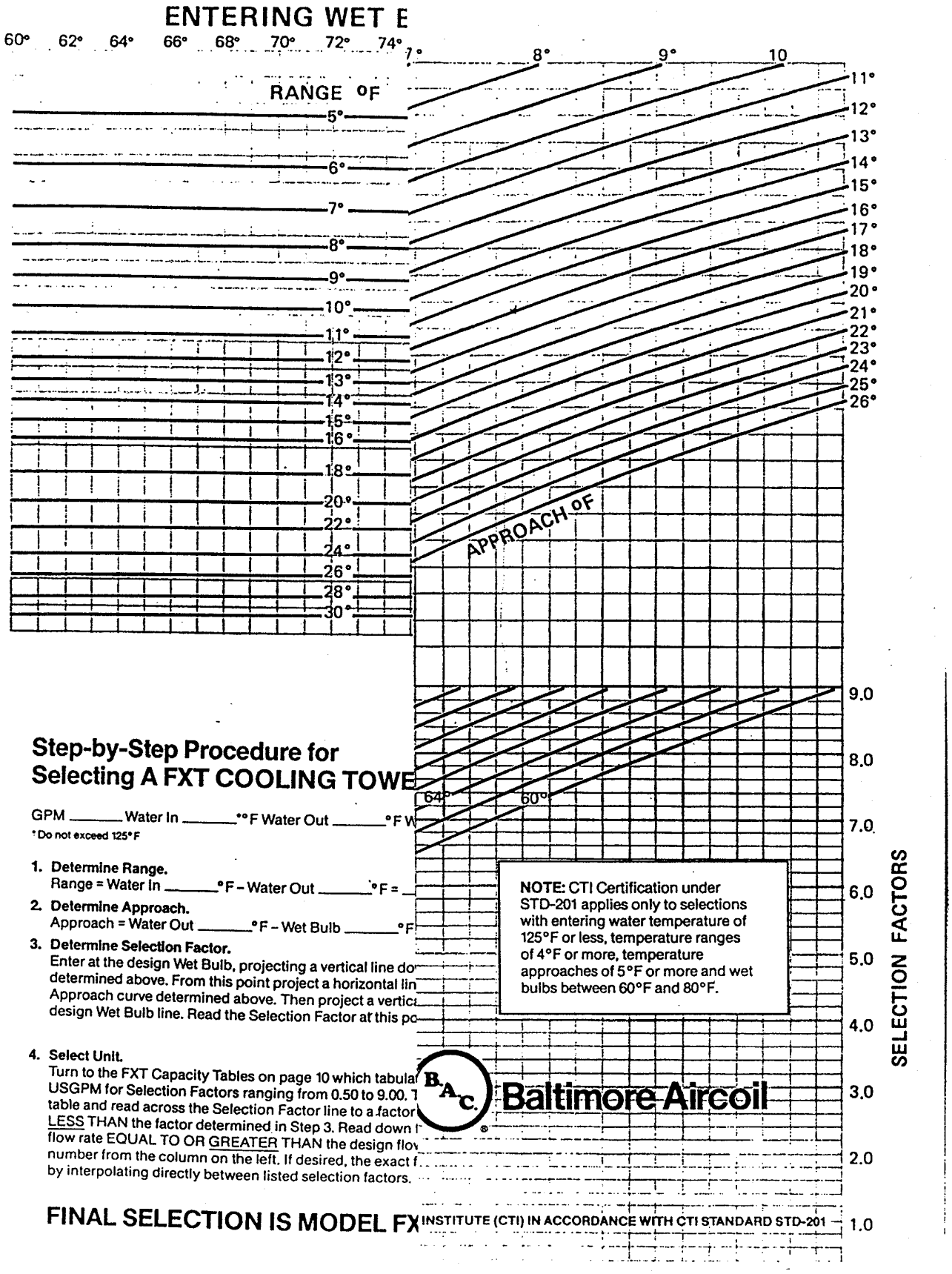


CONAIR
TEMPRO

DOUBLE COMPARTMENT SUMP
WATER COOLED CENTRAL CHILLER SYSTEM

⌣ MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION



Step-by-Step Procedure for Selecting A FXT COOLING TOWE

GPM _____ Water In _____°F Water Out _____°F W

*Do not exceed 125°F

1. **Determine Range.**
   Range = Water In _____°F – Water Out _____°F = _

2. **Determine Approach.**
   Approach = Water Out _____°F – Wet Bulb _____°F

3. **Determine Selection Factor.**
   Enter at the design Wet Bulb, projecting a vertical line do determined above. From this point project a horizontal lin Approach curve determined above. Then project a vertic design Wet Bulb line. Read the Selection Factor at this po

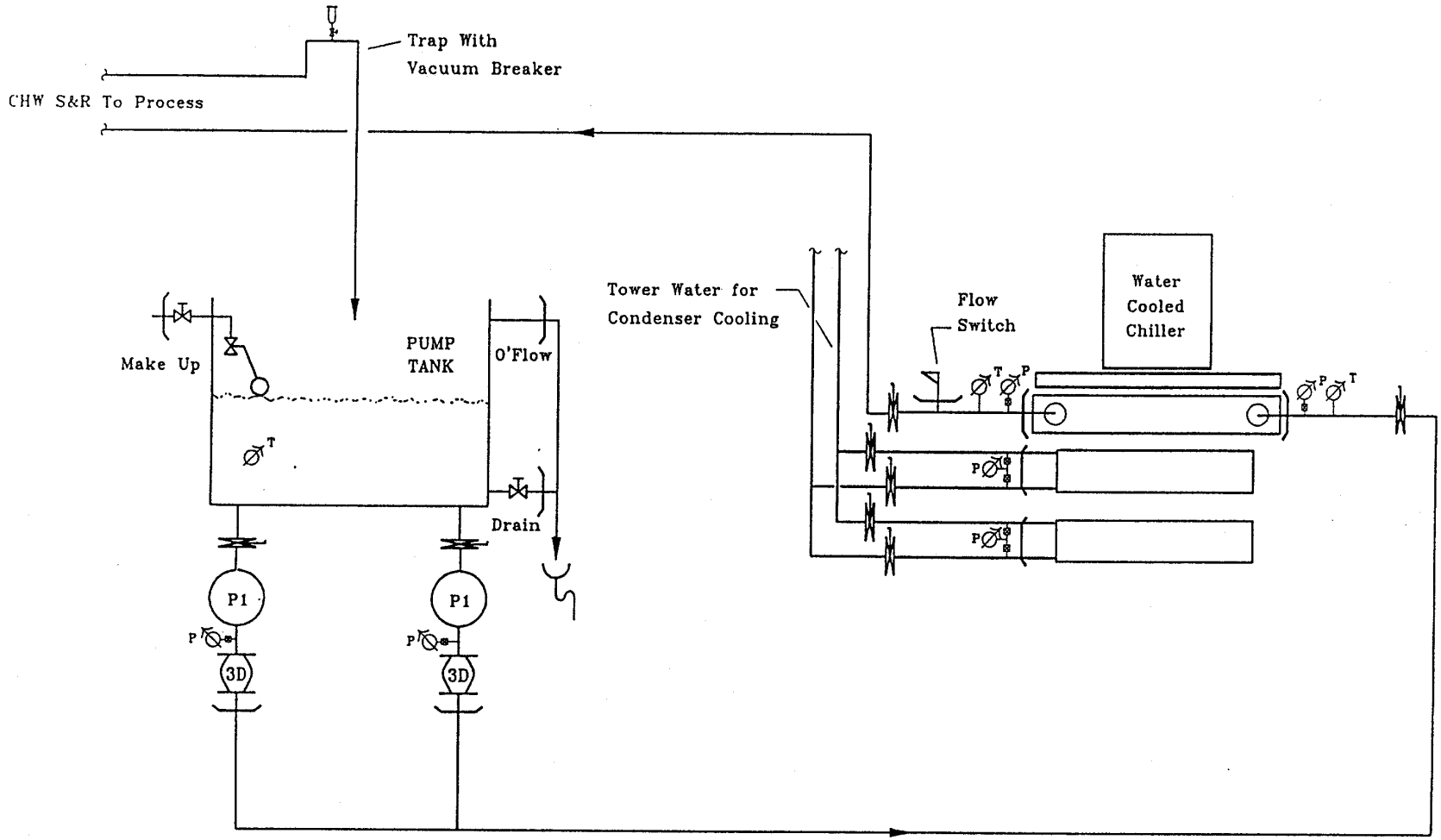
4. **Select Unit.**
   Turn to the FXT Capacity Tables on page 10 which tabula USGPM for Selection Factors ranging from 0.50 to 9.00. T table and read across the Selection Factor line to a factor LESS THAN the factor determined in Step 3. Read down t flow rate EQUAL TO OR GREATER THAN the design flo number from the column on the left. If desired, the exact f by interpolating directly between listed selection factors.

NOTE: CTI Certification under STD-201 applies only to selections with entering water temperature of 125°F or less, temperature ranges of 4°F or more, temperature approaches of 5°F or more and wet bulbs between 60°F and 80°F.

Baltimore Aircoil

FINAL SELECTION IS MODEL FX

INSTITUTE (CTI) IN ACCORDANCE WITH CTI STANDARD STD-201



CONAIR
TEMPRO

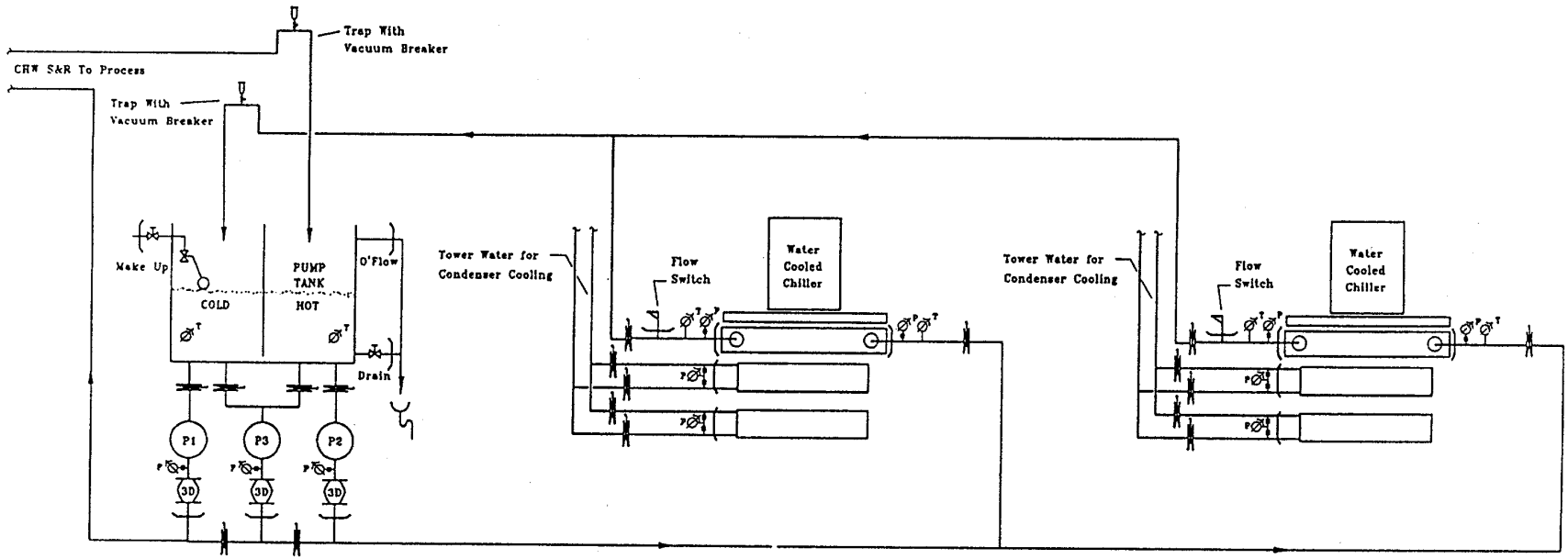
SINGLE COMPARTMENT

WATER COOLED CENTRAL CHILLER SYSTEM

⌣ MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

• SCHWIW



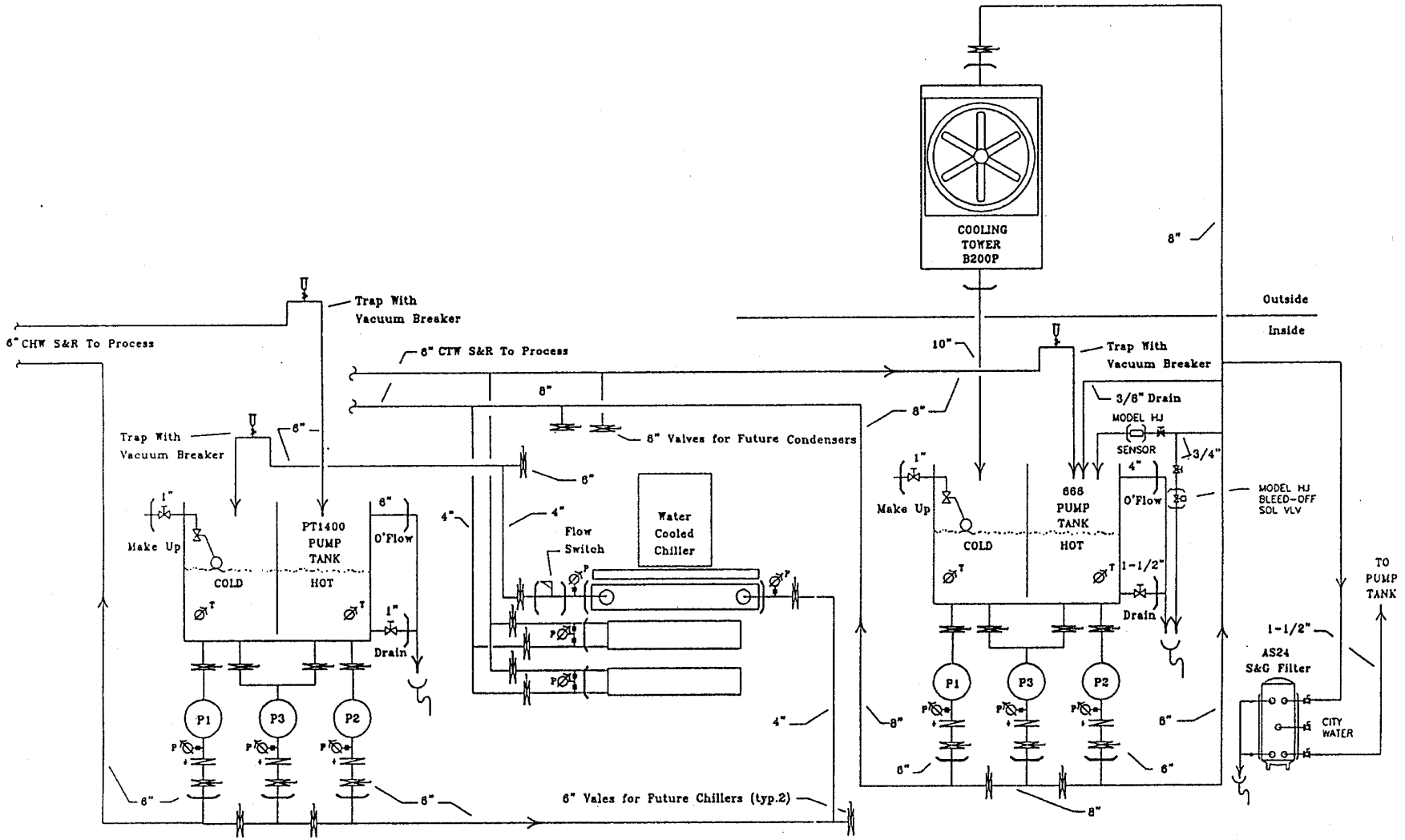
CONAIR
TEMPRO

DOUBLE COMPARTMENT
WATER COOLED CENTRAL CHILLER SYSTEM

MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

* SCHW2W1



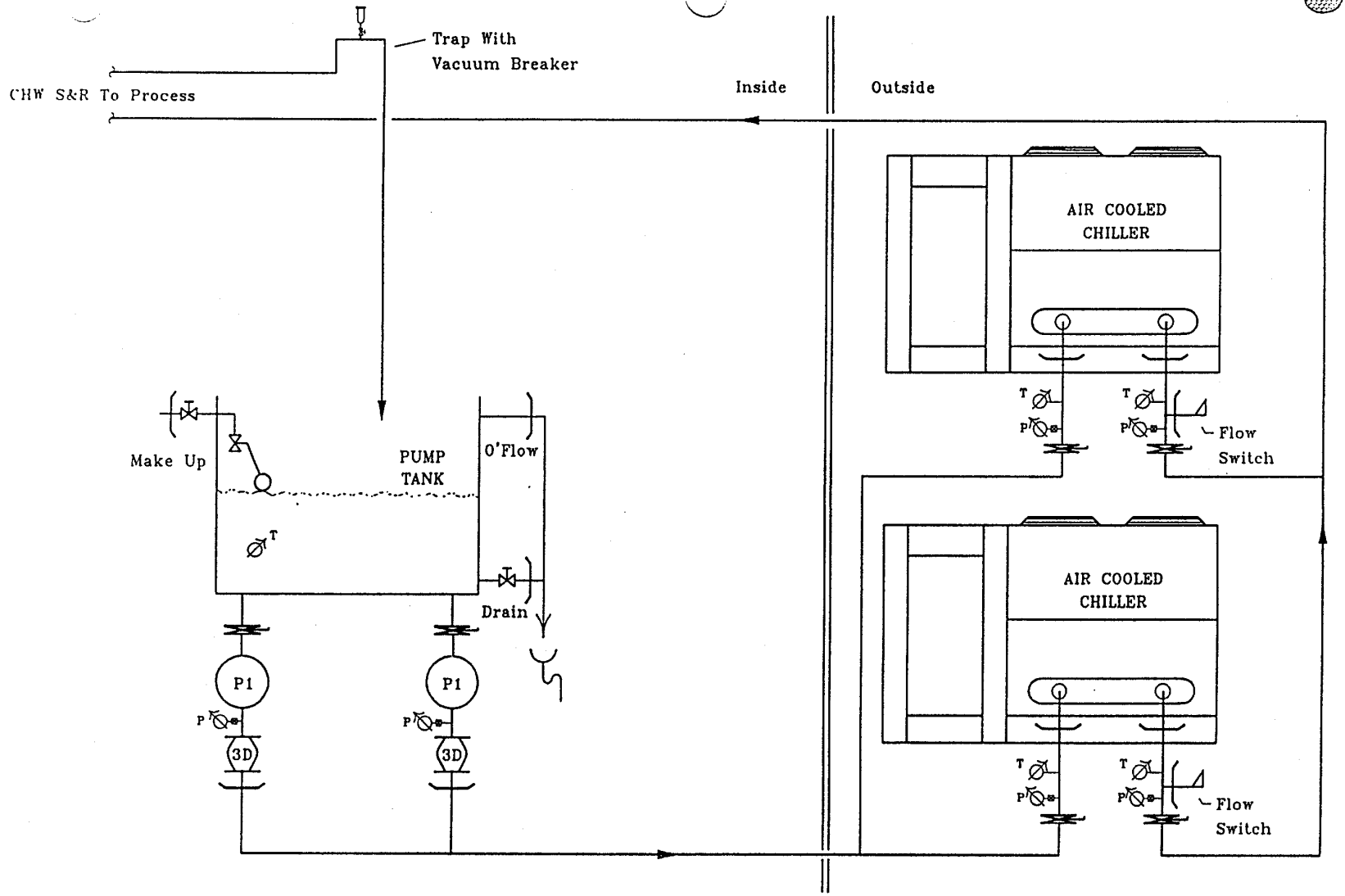
CONAIR
TEMPRO

WEATHERCHEM CORP.

MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

V6J001Z



CONAIR
TEMPRO

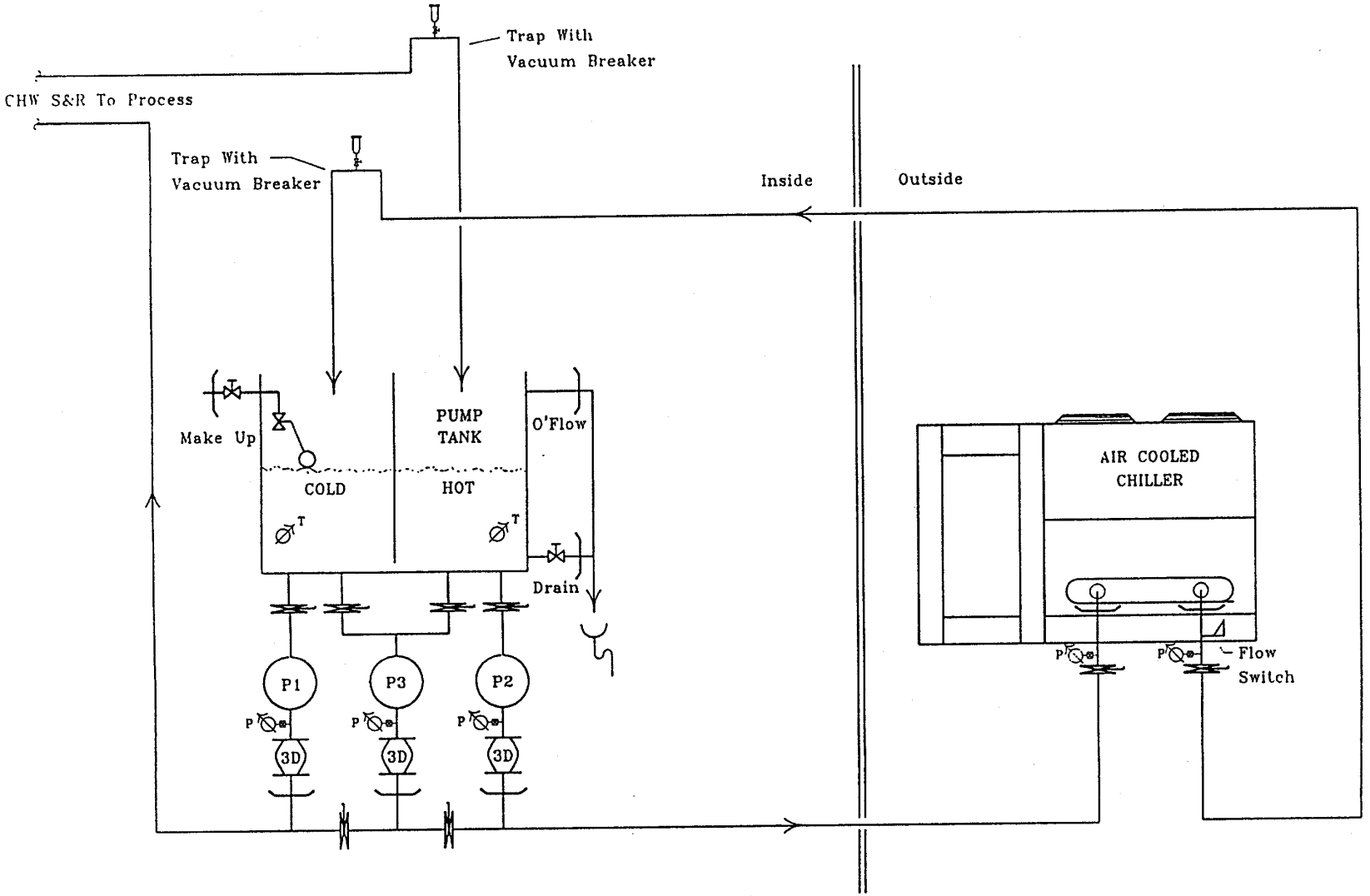
SINGLE COMPARTMENT

AIR COOLED CENTRAL CHILLER SYSTEM

⌣ MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

* SCHW1A01

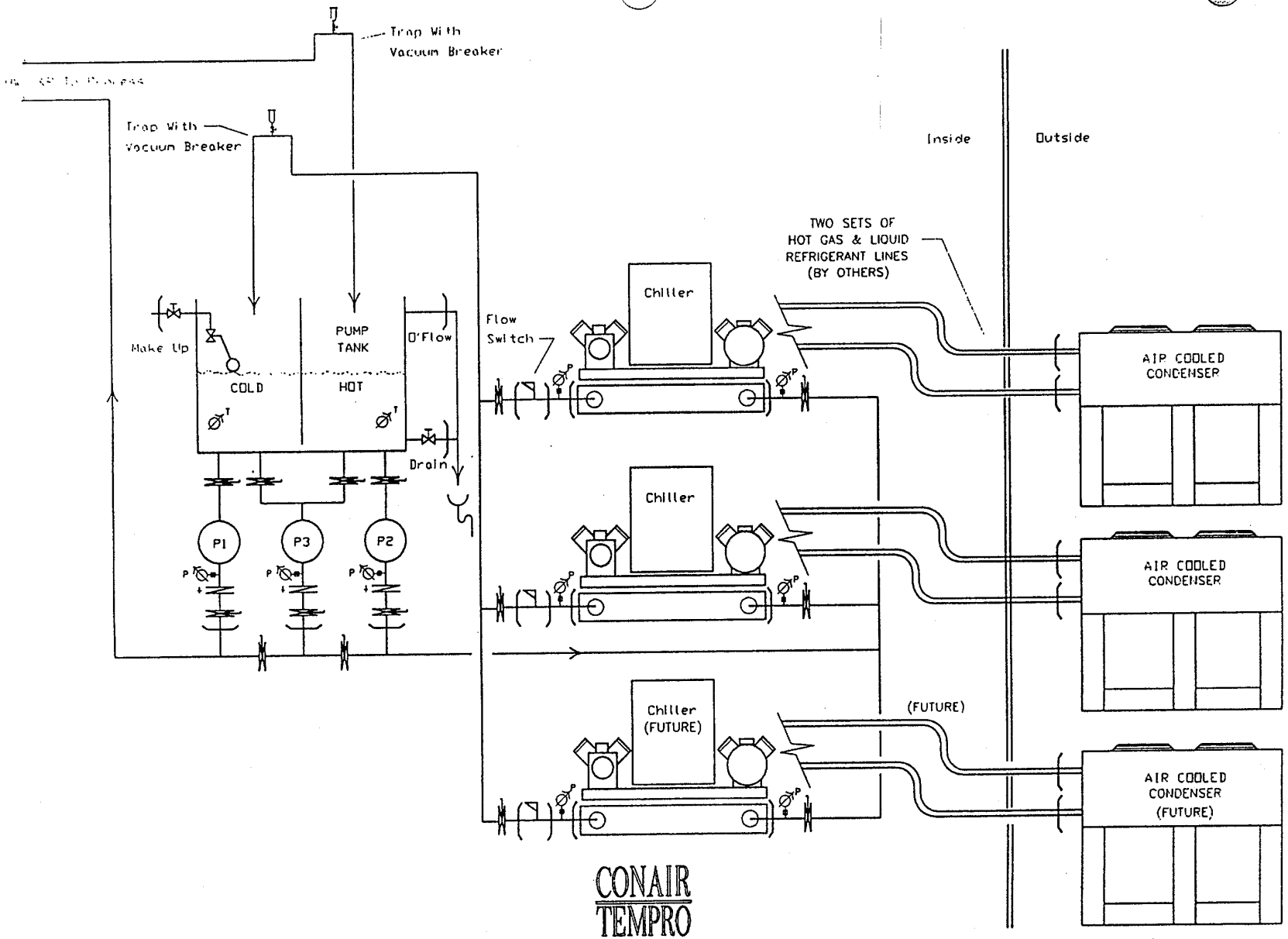


CONAIR
TEMPRO

DOUBLE COMPARTMENT
AIR COOLED CENTRAL CHILLER SYSTEM

⌣ MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION



CONAIR
TEMPRO

DOUBLE COMPARTMENT
AIR COOLED CENTRAL CHILLER SYSTEM

⌐ MARKS END OF FACTORY PIPING

NOT FOR CONSTRUCTION

SOME COOLING TOWER TERMS

Ambient Dry-Bulb Temperature -- External outdoor temperature as indicated by a standard thermometer.

Ambient Wet-Bulb Temperature -- The coldest temperature achievable by evaporation alone. Often measured by placing a moist wick on the bulb of a thermometer and circulating air over it.

Approach (to the Wet-Bulb) -- The difference in temperature between the water leaving the tower and the ambient wet-bulb. The smaller the approach the larger the tower to remove a given amount of heat.

Range -- The difference between the entering and leaving cooling tower water temperatures. The smaller the range the larger the tower to remove a given amount of heat. For a 10°F range (ΔT) a tower will cool 3 gpm per ton of capacity.

Standard Design (Rating) Conditions -- Conditions under which the cooling tower will produce its rated capacity. For packaged towers standard conditions are 95°F entering water temperature, 85°F leaving water temperature (10°F **Range**) at a 78°F **wet-bulb** temperature (7°F **Approach**). Towers will operate at other conditions but their rating (tonnage) must be adjusted.

Counterflow -- A tower design where the water flows down from the top of the tower and the air flows upward in the opposite direction.

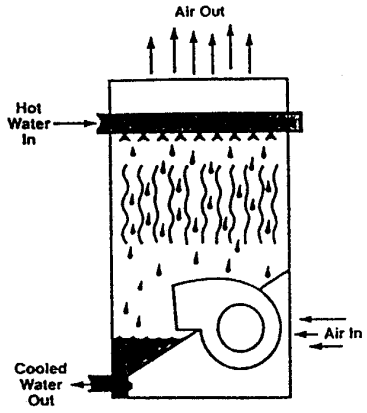
Crossflow -- A tower design where the water flows down from the top of the tower and the air flows across the water at right angles.

Forced Draft -- A tower design where air is forced (blown) through the tower. Air moving equipment is on the inlet side of the tower.

Induced Draft -- A tower design where air is drawn (sucked) through the tower. Air moving equipment is on the discharge side of the tower.

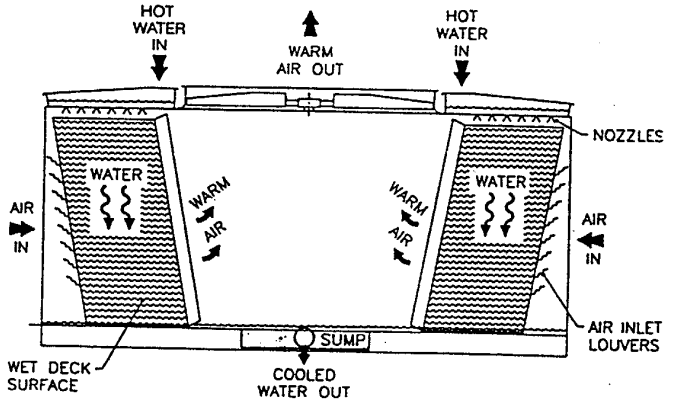
Tower Ton -- Defined as 125% of a refrigeration (chiller) ton so that one ton of tower could provide condenser cooling for one ton of water cooled chiller. The extra 25% is due to additional heat being picked up when the refrigerant goes through the compressor. Numerically equal to 15,000 BTUH.

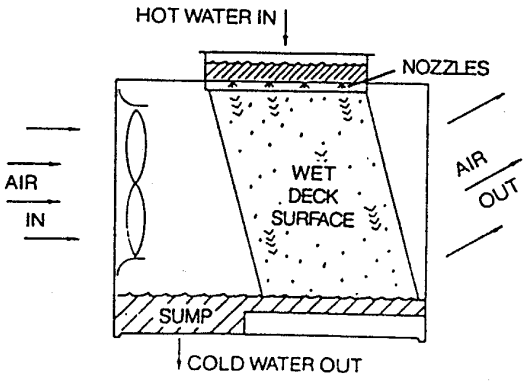
EXAMPLES OF COOLING TOWER DESIGNS



FORCED DRAFT COUNTER FLOW

INDUCED DRAFT CROSS FLOW





FORCED DRAFT CROSS FLOW

Make Up Water Requirements In Cooling Tower Systems

Evaporation accounts for the largest loss of water from a cooling tower system. To achieve one ton of cooling a tower will evaporate about 0.03 gallons of process water each minute. This evaporation rate is independent of the system flow for typical operating temperatures.

As this water evaporates it leaves behind any dissolved solids it may have been carrying. If allowed to go unchecked these solids will eventually precipitate out or scale the heat transfer surfaces. To aid in controlling dissolved solids a portion of the process water is discharged from the system and replaced by fresh make up water thus diluting the remaining process water. Bleed off or blowdown is a common name given to this discharge.

Determining the amount of bleed off required is heavily influenced by the quality of water used for make up. As the dissolved solids content of the make up water increases the need for higher bleed off rates will also increase. Cycles of concentration is used in establishing the bleed off rate and is the ratio of the process water concentration of dissolved solids to the make up water concentration. A chemical analysis by a water treatment professional is the recommended method for determining the optimum cycles of concentration for the cooling tower water.

Water is also lost from the cooling tower itself. This loss takes the form of liquid droplets which become entrained in the cooling tower air stream and are discharged with it. Known as windage the amount of water blown out of the tower is dependent on the tower's eliminators and the flow through the tower. Generally 0.2% of the tower flow rate may be used as an estimate for windage.

The table below may be used for estimating water usage for a typical system with a 10°F temperature drop through the tower. Flows are represented as a percentage of the flow through the cooling tower.

Cycles of Conc.	Evaporation	Windage	Bleed Off	Make Up
2	1.0%	0.2%	0.8%	2.0%
3	1.0%	0.2%	0.3%	1.5%

APPROXIMATE TIMES TO DRAIN PUMP TANKS *	
Pump Tank	Drain Time (min.)
PT200	23
PT450	42
PT1400	105
444	48
666	130
866	57
1077	95
1477	133

* This table is intended to be a guide in scheduling time for periodic maintenance of the pump tank. Actual times will vary with each installation.

ASHRAE 1989 FUNDAMENTALS WEATHER DATA

Column 3. Elevation: Fans and blowers are constant volume machines. Since air density decreases about 3.3% for every thousand feet of elevation they move less air at increased altitudes.

Column 5. Winter Desin Dry-bulb Temerature: Average number of hours in the months of December, January and February (2160 hours total) that the dry-bulb is at or below this temperature.
99%:22 hours 97.5%:54 hours

Column 6. Summer Desin Dry-bulb Temerature: Average number of hours in the months of June through September (2928 hours total) that the dry-bulb is at or above this temperature.
1%:30 hours 2.5%:74 hours 5%:147 hours

Column 7. Summer Desin Wet-bulb Temerature: Average number of hours in the months of June through September (2928 hours total) that the wet-bulb is at or above this temperature.
1%:30 hours 2.5%:74 hours 5%:147 hours

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES

				Winter,[b] °F		Summer,[c] °F							Prevailing Wind		Temp. °F	
Col. 1	Col. 2	Col. 3	Col. 4	Col. 5		Col. 6			Col. 7	Col. 8			Col. 9		Col. 10	
State and Station[a]	Lat.	Long.	Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean Coincident Wet-Bulb			Mean Daily	Design Wet-Bulb			Winter	Summer	Median of Annual Extr.	
	° ′	° ′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]		Max.	Min.
ALABAMA																
Alexander City	32 57	85 57	660	18	22	96/77	93/76	91/76	21	79	78	78				
Anniston AP	33 35	85 51	599	18	22	97/77	94/76	92/76	21	79	78	78	SW 5	SW	98.4	12.4
Auburn	32 36	85 30	652	18	22	96/77	93/76	91/76	21	79	78	78			99.8	14.6
Birmingham AP	33 34	86 45	620	17	21	96/74	94/75	92/74	21	78	77	76	NNW 8	WNW	98.5	12.9
Decatur	34 37	86 59	580	11	16	95/75	93/74	91/74	22	78	77	76				
Dothan AP	31 19	85 27	374	23	27	94/76	92/76	91/76	20	80	79	78				
Florence AP	34 48	87 40	581	17	21	97/74	94/74	92/74	22	78	77	76	NW 7	NW		
Gadsden	34 01	86 00	554	16	20	96/75	94/75	92/74	22	78	77	76	NNW 8	WNW		
Huntsville AP	34 42	86 35	606	11	16	95/75	93/74	91/74	23	78	77	76	N 9	SW		
Mobile AP	30 41	88 15	211	25	29	95/77	93/77	91/76	18	80	79	78	N 10	N		
Mobile Co	30 40	88 15	211	25	29	95/77	93/77	91/76	16	80	79	78			97.9	22.3
Montgomery AP	32 23	86 22	169	22	25	96/76	95/76	93/76	21	79	79	78	NW 7	W	98.9	18.2
Selma-Craig AFB	32 20	87 59	166	22	26	97/78	95/77	93/77	21	81	80	79	N 9	SW	100.1	17.6
Talladega	33 27	86 06	565	18	22	97/77	94/76	92/76	21	79	78	78			99.6	11.2
Tuscaloosa AP	33 13	87 37	169	20	23	98/75	96/76	94/76	22	79	78	77	N 5	WNW		
ALASKA																
Anchorage AP	61 10	150 01	114	−23	−18	71/59	68/58	66/56	15	60	59	57	SE 3	WNW		
Barrow (S)	71 18	156 47	31	−45	−41	57/53	53/50	49/47	12	54	50	47	SW 8	SE		
Fairbanks AP (S)	64 49	147 52	436	−51	−47	82/62	78/60	75/59	24	64	62	60	N 5	S		
Juneau AP	58 22	134 35	12	− 4	1	74/60	70/58	67/57	15	61	59	58	N 7	W		
Kodiak	57 45	152 29	73	10	13	69/58	65/56	62/55	10	60	58	56	WNW 14	NW		
Nome AP	64 30	165 26	13	−31	−27	66/57	62/55	59/54	10	58	56	55	N 4	W		
ARIZONA																
Douglas AP	31 27	109 36	4098	27	31	98/63	95/63	93/63	31	70	69	68			104.4	14.0
Flagstaff AP	35 08	111 40	7006	− 2	4	84/55	82/55	80/54	31	61	60	59	NE 5	SW	90.0	−11.6
Fort Huachuca AP (S)	31 35	110 20	4664	24	28	95/62	92/62	90/62	27	69	68	67	SW 5	W		
Kingman AP	35 12	114 01	3539	18	25	103/65	100/64	97/64	30	70	69	69				
Nogales	31 21	110 55	3800	28	32	99/64	96/64	94/64	31	71	70	69	SW 5	W		
Phoenix AP (S)	33 26	112 01	1112	31	34	109/71	107/71	105/71	27	76	75	75	E 4	W	112.8	26.7
Prescott AP	34 39	112 26	5010	4	9	96/61	94/60	92/60	30	66	65	64				
Tucson AP (S)	32 07	110 56	2558	28	32	104/66	102/66	100/66	26	72	71	71	SE 6	WNW	108.9	.3
Winslow AP	35 01	110 44	4895	5	10	97/61	95/60	93/60	32	66	65	64	SW 6	WSW	102.7	−.4
Yuma AP	32 39	114 37	213	36	39	111/72	109/72	107/71	27	79	78	77	NNE 6	WSW	114.8	30.8
ARKANSAS																
Blytheville AFB	35 57	89 57	264	10	15	96/78	94/77	91/76	21	81	80	78	N 8	SSW		
Camden	33 36	92 49	116	18	23	98/76	96/76	94/76	21	80	79	78				
El Dorado AP	33 13	92 49	277	18	23	98/76	96/76	94/76	21	80	79	78	S 6	SE	101.0	13.9
Fayetteville AP	36 00	94 10	1251	7	12	97/72	94/73	92/73	23	77	76	75	NE 9	SSW	99.4	−.3
Fort Smith AP	35 20	94 22	463	12	17	101/75	98/76	95/76	24	80	79	78	NW 8	SW	101.9	7.0
Hot Springs	34 29	93 06	535	17	23	101/77	97/77	94/77	22	80	79	78	N 8	SW	103.0	10.6
Jonesboro	35 50	90 42	345	10	15	96/78	94/77	91/76	21	81	80	78			101.7	7.3
Little Rock AP (S)	34 44	92 14	257	15	20	99/76	96/77	94/77	22	80	79	78	N 9	SSW	99.0	11.2
Pine Bluff AP	34 18	92 05	241	16	22	100/78	97/77	95/78	22	81	80	80	N 7	SW	102.2	13.1
Texarkana AP	33 27	93 59	389	18	23	98/76	96/77	93/76	21	80	79	78	WNW 9	SSW	104.8	14.0

[a] AP or AFB following the station name designates airport or Airforce base temperature observations. Co designates office locations within an urban area that are affected by the surrounding area. Undesignated stations are semirural and may be compared to airport data.

[b] Winter design data are based on the 3-month period, December through February.

[c] Summer design data are based on the 4-month period, June through September.

[d] Mean wind speeds occurring coincidentally with the 99.5% dry-bulb winter design temperature.

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2		Col. 3		Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat.		Long.		Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean Coincident Wet-Bulb			Mean Daily	Design Wet-Bulb			Winter	Summer	Median of Annual Extr.	
	°	′	°	′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]		Max.	Min.
CALIFORNIA																		
Bakersfield AP	35	25	119	03	475	30	32	104/70	101/69	98/68	32	73	71	70	ENE 5	WNW	109.8	25.3
Barstow AP	34	51	116	47	1927	26	29	106/68	104/68	102/67	37	73	71	70	WNW 7	W	110.4	17.4
Blythe AP	33	37	114	43	395	30	33	112/71	110/71	108/70	28	75	75	74			116.8	24.1
Burbank AP	34	12	118	21	775	37	39	95/68	91/68	88/67	25	71	70	69	NW 3	S		
Chico	39	48	121	51	238	28	30	103/69	101/68	98/67	36	71	70	68	NW 5	SSE	109.0	22.6
Concord	37	58	121	59	200	24	27	100/69	97/68	94/67	32	71	70	68	WNW 5	NW		
Covina	34	05	117	52	575	32	35	98/69	95/68	92/67	31	73	71	70				
Crescent City AP	41	46	124	12	40	31	33	68/60	65/59	63/58	18	62	60	59				
Downey	33	56	118	08	116	37	40	93/70	89/70	86/69	22	72	71	70				
El Cajon	32	49	116	58	367	42	44	83/69	80/69	78/68	30	71	70	68				
El Centro AP (S)	32	49	115	40	−43	35	38	112/74	110/74	108/74	34	81	80	78	W 6	SE		
Escondido	33	07	117	05	660	39	41	89/68	85/68	82/68	30	71	70	69				
Eureka/Arcata AP	40	59	124	06	218	31	33	68/60	65/59	63/58	11	62	60	59	E 5	NW	75.8	29.7
Fairfield-Travis AFB	38	16	121	56	62	29	32	99/68	95/67	91/66	34	70	68	67	N 5	WSW		
Fresno AP (S)	36	46	119	43	328	28	30	102/70	100/69	97/68	34	72	71	70	E 4	WNW	108.7	25.8
Hamilton AFB	38	04	122	30	3	30	32	89/68	84/66	80/65	28	72	69	67	N 4	SE		
Laguna Beach	33	33	117	47	35	41	43	83/68	80/68	77/67	18	70	69	68				
Livermore	37	42	121	57	545	24	27	100/69	97/68	93/67	24	71	70	68	WNW 4	NW		
Lompoc, Vandenberg AFB	34	43	120	34	368	35	38	75/61	70/61	67/60	20	63	61	60	ESE 5	NW		
Long Beach AP	33	49	118	09	30	41	43	83/68	80/68	77/67	22	70	69	68	NW 4	WNW		
Los Angeles AP (S)	33	56	118	24	97	41	43	83/68	80/68	77/67	15	70	69	68	E 4	WSW		
Los Angeles Co (S)	34	03	118	14	270	37	40	93/70	89/70	86/69	20	72	71	70	NW 4	NW	98.1	35.9
Merced-castle AFB	37	23	120	34	188	29	31	102/70	99/69	96/68	36	72	71	70	ESE 4	NW		
Modesto	37	39	121	00	91	28	30	101/69	98/68	95/67	36	71	70	69			105.8	26.2
Monterey	36	36	121	54	39	35	38	75/63	71/61	68/61	20	64	62	61	SE 4	NW		
Napa	38	13	122	17	56	30	32	100/69	96/68	92/67	30	71	69	68			103.1	25.8
Needles AP	34	46	114	37	913	30	33	112/71	110/71	108/70	27	75	75	74			116.4	26.7
Oakland AP	37	49	122	19	5	34	36	85/64	80/63	75/62	19	66	64	63	E 5	WNW	93.0	31.8
Oceanside	33	14	117	25	26	41	43	83/68	80/68	77/67	13	70	69	68				
Ontario	34	03	117	36	952	31	33	102/70	99/69	96/67	36	74	72	71	E 4	WSW		
Oxnard	34	12	119	11	49	34	36	83/66	80/64	77/63	19	70	68	67				
Palmdale AP	34	38	118	06	2542	18	22	103/65	101/65	98/64	35	69	67	66	SW 5	WSW		
Palm Springs	33	49	116	32	411	33	35	112/71	110/70	108/70	35	76	74	73				
Pasadena	34	09	118	09	864	32	35	98/69	95/68	92/67	29	73	71	70			102.8	30.4
Petaluma	38	14	122	38	16	26	29	94/68	90/66	87/65	31	72	70	68			102.0	24.2
Pomona Co	34	03	117	45	934	28	30	102/70	99/69	95/68	36	74	72	71	E 4	W	105.7	26.2
Redding AP	40	31	122	18	495	29	31	105/68	102/67	100/66	32	71	69	68			109.2	26.0
Redlands	34	03	117	11	1318	31	33	102/70	99/69	96/68	33	74	72	71			106.7	27.1
Richmond	37	56	122	21	55	34	36	85/64	80/63	75/62	17	66	64	63				
Riverside-March AFB (S)	33	54	117	15	1532	29	32	100/68	98/68	95/67	37	72	71	70	N 4	NW	107.6	26.6
Sacramento AP	38	31	121	30	17	30	32	101/70	98/70	94/69	36	72	71	70	NNW 6	SW	105.1	27.6
Salinas AP	36	40	121	36	75	30	32	74/61	70/60	67/59	24	62	61	59				
San Bernardino, Norton AFB	34	08	117	16	1125	31	33	102/70	99/69	96/68	38	74	72	71	E 3	W	109.3	25.3
San Diego AP	32	44	117	10	13	42	44	83/69	80/69	78/68	12	71	70	68	NE 3	WNW	91.2	37.4
San Fernando	34	17	118	28	965	37	39	95/68	91/68	88/67	38	71	70	69				
San Francisco AP	37	37	122	23	8	35	38	82/64	77/63	73/62	20	65	64	62	S 5	NW		
San Francisco Co	37	46	122	26	72	38	40	74/63	71/62	69/61	14	64	62	61	W 5	W	91.3	35.9
San Jose AP	37	22	121	56	56	34	36	85/66	81/65	77/64	26	68	67	65	SE 4	NNW	98.6	28.2
San Luis Obispo	35	20	120	43	250	33	35	92/69	88/70	84/69	26	73	71	70	E 4	W	99.8	29.3
Santa Ana AP	33	45	117	52	115	37	39	89/69	85/68	82/68	28	71	70	69	E 3	SW	101.0	29.9
Santa Barbara MAP	34	26	119	50	10	34	36	81/67	77/66	75/65	24	68	67	66	NE 3	SW	97.1	31.7
Santa Cruz	36	59	122	01	125	35	38	75/63	71/61	68/61	28	64	62	61			97.5	26.8
Santa Maria AP (S)	34	54	120	27	236	31	33	81/64	76/63	73/62	23	65	64	63	E 4	WNW		
Santa Monica Co	34	01	118	29	64	41	43	83/68	80/68	77/67	16	70	69	68				
Santa Paula	34	21	119	05	263	33	35	90/68	86/67	84/66	36	71	69	68				
Santa Rosa	38	31	122	49	125	27	29	99/68	95/67	91/66	34	70	68	67	N 5	SE	102.5	23.4
Stockton AP	37	54	121	15	22	28	30	100/69	97/68	94/67	37	71	70	68	WNW 4	NW	104.1	24.5
Ukiah	39	09	123	12	623	27	29	99/69	95/68	91/67	40	70	68	67			108.1	21.6
Visalia	36	20	119	18	325	28	30	102/70	100/69	97/68	38	72	71	70			108.4	25.1
Yreka	41	43	122	38	2625	13	17	95/65	92/64	89/63	38	67	65	64			102.8	7.1
Yuba City	39	08	121	36	80	29	31	104/68	101/67	99/66	36	71	69	68				
COLORADO																		
Alamosa AP	37	27	105	52	7537	−21	−16	84/57	82/57	80/57	35	62	61	60				
Boulder	40	00	105	16	5445	2	8	93/59	91/59	89/59	27	64	63	62			96.0	−8.4
Colorado Springs AP	38	49	104	43	6145	− 3	2	91/58	88/57	86/57	30	63	62	61	N 9	S	92.3	−12.1
Denver AP	39	45	104	52	5283	− 5	1	93/59	91/59	89/59	28	64	63	62	S 8	SE	96.8	−10.4
Durango	37	17	107	53	6550	− 1	4	89/59	87/59	85/59	30	64	63	62			92.4	−11.2
Fort Collins	40	35	105	05	4999	−10	− 4	93/59	91/59	89/59	28	64	63	62			95.2	−18.1
Grand Junction AP (S)	39	07	108	32	4843	2	7	96/59	94/59	92/59	29	64	63	62	ESE 5	WNW	99.9	− 3.4
Greeley	40	26	104	38	4648	−11	− 5	96/60	94/60	92/60	29	65	64	63				
Lajunta AP	38	03	103	30	4160	− 3	3	100/68	98/68	95/67	31	72	70	69	W 8	S		
Leadville	39	15	106	18	10155	− 8	− 4	84/52	81/51	78/50	30	56	55	54			79.7	−17.8
Pueblo AP	38	18	104	29	4641	− 7	0	97/61	95/61	92/61	31	67	66	65	W 5	SE	100.5	−12.2
Sterling	40	37	103	12	3939	− 7	− 2	95/62	93/62	90/62	30	67	66	65			100.3	−15.4
Trinidad AP	37	15	104	20	5740	− 2	3	93/61	91/61	89/61	32	66	65	64	W 7	WSW	96.8	−10.5

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2		Col. 3		Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9			Temp. °F Col. 10	
State and Station[a]	Lat.		Long.		Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean	Coincident	Wet-Bulb	Mean Daily	Design Wet-Bulb			Winter		Summer	Median of Annual Extr.	
	°	′	°	′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]			Max.	Min.
CONNECTICUT																			
Bridgeport AP	41	11	73	11	25	6	9	86/73	84/71	81/70	18	75	74	73	NNW	13	WSW		
Hartford, Brainard Field	41	44	72	39	19	3	7	91/74	88/73	85/72	22	77	75	74	N	5	SSW	95.7	−4.4
New Haven AP	41	19	73	55	6	3	7	88/75	84/73	82/72	17	76	75	74	NNE	7	SW	93.0	−.2
New London	41	21	72	06	59	5	9	88/73	85/72	83/71	16	76	75	74					
Norwalk	41	07	73	25	37	6	9	86/73	84/71	81/70	19	75	74	73					
Norwich	41	32	72	04	20	3	7	89/75	86/73	83/72	18	76	75	74					
Waterbury	41	35	73	04	843	−4	2	88/83	85/71	82/70	21	75	74	72	N	8	SW		
Windsor Locks, Bradley Fld	41	56	72	41	169	0	4	91/74	88/72	85/71	22	76	75	73	N	8	SW		
DELAWARE																			
Dover AFB	39	08	75	28	28	11	15	92/75	90/75	87/74	18	79	77	76	W	9	SW	97.0	7.0
Wilmington AP	39	40	75	36	74	10	14	92/74	89/74	87/73	20	77	76	75	WNW	9	WSW	95.4	4.9
DISTRICT OF COLUMBIA																			
Andrews AFB	38	5	76	5	279	10	14	92/75	90/74	87/73	18	78	76	75					
Washington, National AP	38	51	77	02	14	14	17	93/75	91/74	89/74	18	78	77	76	WNW	11	S	97.6	7.4
FLORIDA																			
Belle Glade	26	39	80	39	16	41	44	92/76	91/76	89/76	16	79	78	78				94.7	30.9
Cape Kennedy AP	28	29	80	34	16	35	38	90/78	88/78	87/78	15	80	79	79					
Daytona Beach AP	29	11	81	03	31	32	35	92/78	90/77	88/77	15	80	79	78	NW	8			
E Fort Lauderdale	26	04	80	09	10	42	46	92/78	91/78	90/78	15	80	79	79	NW	9	ESE		
Fort Myers AP	26	35	81	52	15	41	44	93/78	92/78	91/77	18	80	79	79	NNE	7	W	94.9	34.9
Fort Pierce	27	28	80	21	25	38	42	91/78	90/78	89/78	15	80	79	79				96.1	34.0
Gainesville AP (S)	29	41	82	16	152	28	31	95/77	93/77	92/77	18	80	79	78	W	6	W	97.8	23.3
Jacksonville AP	30	30	81	42	26	29	32	96/77	94/77	92/76	19	79	79	78	NW	7	SW	97.5	25.4
Key West AP	24	33	81	45	4	55	57	90/78	90/78	89/78	09	80	79	79	NNE	12	SE	92.0	51.5
Lakeland Co (S)	28	02	81	57	214	39	41	93/76	91/76	89/76	17	79	78	78	NNW	9	SSW		
Miami AP (S)	25	48	80	16	7	44	47	91/77	90/77	89/77	15	79	79	78	NNW	8	SE	92.5	39.0
Miami Beach Co	25	47	80	17	10	45	48	90/77	89/77	88/77	10	79	79	78					
Ocala	29	11	82	08	89	31	34	95/77	93/77	92/76	18	80	79	78				98.6	24.8
Orlando AP	28	33	81	23	100	35	38	94/76	93/76	91/76	17	79	78	78	NNW	9	SSW		
Panama City, Tyndall AFB	30	04	85	35	18	29	33	92/78	90/77	89/77	14	81	80	79	N	8	WSW		
Pensacola Co	30	25	87	13	56	25	29	94/77	93/77	91/77	14	80	79	79	NNE	7	SW	96.3	23.3
St. Augustine	29	58	81	20	10	31	35	92/78	89/78	87/78	16	80	79	79	NW	7	W	97.6	25.8
St. Petersburg	27	46	82	80	35	36	40	92/77	91/77	90/76	16	79	79	78	N	8	W	94.8	35.6
Sanford	28	46	81	17	89	35	38	94/76	93/76	91/76	17	79	78	78					
Sarasota	27	23	82	33	26	39	42	93/77	92/77	90/76	17	79	79	78					
Tallahassee AP (S)	30	23	84	22	55	27	30	94/77	92/76	90/76	19	79	78	78	NW	6	NW	97.6	20.9
Tampa AP (S)	27	58	82	32	19	36	40	92/77	91/77	90/76	17	79	79	78	N	8	W	95.0	31.5
West Palm Beach AP	26	41	80	06	15	41	45	92/78	91/78	90/78	16	80	79	79	NW	9	ESE		
GEORGIA																			
Albany, Turner AFB	31	36	84	05	223	25	29	97/77	95/76	93/76	20	80	79	78	N	7	W	100.6	19.9
Americus	32	03	84	14	456	21	25	97/77	94/76	92/75	20	79	78	77				100.4	16.5
Athens	33	57	83	19	802	18	22	94/74	92/74	90/74	21	78	77	76	NW	9	WNW	98.7	13.5
Atlanta AP (S)	33	39	84	26	1010	17	22	94/74	92/74	90/73	19	77	76	75	NW	11	NW	95.7	11.9
Augusta AP	33	22	81	58	145	20	23	97/77	95/76	93/76	19	80	79	78	W	4	WSW	99.0	17.5
Brunswick	31	15	81	29	25	29	32	92/78	89/78	87/78	18	80	79	79				99.3	24.7
Columbus, Lawson AFB	32	31	84	56	242	21	24	95/76	93/76	91/75	21	79	78	77	NW	8	W		
Dalton	34	34	84	57	720	17	22	94/76	93/76	91/76	22	79	78	77					
Dublin	32	20	82	54	215	21	25	96/77	93/76	91/75	20	79	78	77				101.0	16.7
Gainsville	34	11	83	41	50	24	27	96/77	93/77	91/77	20	80	79	78	WNW	7	SW	98.7	21.9
Griffin	33	13	84	16	981	18	22	93/76	90/75	88/74	21	78	77	76					
LaGrange	33	01	85	04	709	19	23	94/76	91/75	89/74	21	78	77	76				12	98
Macon AP	32	42	83	39	354	21	25	96/77	93/76	91/75	22	79	78	77	NW	8	WNW	17	100
Marietta, Dobbins AFB	33	55	84	31	1068	17	21	94/74	92/74	90/74	21	78	77	76	NNW	12	NW		
Savannah	32	08	81	12	50	24	27	96/77	93/77	91/77	20	80	79	78	WNW	7	SW	22	99
Valdosta-Moody AFB	30	58	83	12	233	28	31	96/77	94/77	92/76	20	80	79	78	WNW	6	W		
Waycross	31	15	82	24	148	26	29	96/77	94/77	91/76	20	80	79	78				100.0	19.5
HAWAII																			
Hilo AP (S)	19	43	155	05	36	61	62	84/73	83/72	82/72	15	75	74	74	SW	6	NE		
Honolulu AP	21	20	157	55	13	62	63	87/73	86/73	85/72	12	76	75	74	ENE	12	ENE		
Kaneohe Bay MCAS	21	27	157	46	18	65	66	85/75	84/74	83/74	12	76	76	75	NNE	9	NE		
Wahiawa	21	03	158	02	900	58	59	86/73	85/72	84/72	14	75	74	73	WNW	5	E		
IDAHO																			
Boise AP (S)	43	34	116	13	2838	3	10	96/65	94/64	91/64	31	68	66	65	SE	6	NW	103.2	.6
Burley	42	32	113	46	4156	−3	2	99/62	95/61	92/66	35	64	63	61				98.6	−8.3
Coeur D'Alene AP	47	46	116	49	2972	−8	−1	89/62	86/61	83/60	31	64	63	61				99.9	−4.5
Idaho Falls AP	43	31	112	04	4741	−11	−6	89/61	87/61	84/59	38	65	63	61	N	9	S	96.2	−16.0
Lewiston AP	46	23	117	01	1413	−1	6	96/65	93/64	90/63	32	67	66	64	W	3	WNW	105.9	2.7
Moscow	46	44	116	58	2660	−7	0	90/63	87/62	84/61	32	65	64	62				98.0	−5.9
Mountain Home AFB	43	02	115	54	2996	6	12	99/64	97/63	94/62	36	66	65	63	ESE	7	NW	103.2	−6.5
Pocatello AP	42	55	112	36	4454	−8	−1	94/61	91/60	89/59	35	64	63	61	NE	5	W	97.9	−11.4
Twin Falls AP (S)	42	29	114	29	4150	−3	2	99/62	95/61	92/60	34	64	63	61	SE	6	NW	100.9	−5.1

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2	Col. 3	Col. 4	Winter,[b] °F Col. 5	Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat. ° ′	Long. ° ′	Elev. Feet	Design Dry-Bulb 99%	97.5%	Design Dry-Bulb and Mean Coincident Wet-Bulb 1%	2.5%	5%	Mean Daily Range	Design Wet-Bulb 1%	2.5%	5%	Winter Knots[d]	Summer Knots[d]	Median of Annual Extr. Max.	Min.
ILLINOIS																
Aurora	41 45	88 20	744	−6	−1	93/76	91/76	88/75	20	79	78	76				
Belleville, Scott AFB	38 33	89 51	453	1	6	94/76	92/76	89/75	21	79	78	76	WNW 8	S	96.7	−13.0
Bloomington	40 29	88 57	876	−6	−2	92/75	90/74	88/73	21	78	76	75			98.4	−9.6
Carbondale	37 47	89 15	417	2	7	95/77	93/77	90/76	21	80	79	77			100.9	−.8
Champaign/Urbana	40 02	88 17	777	−3	2	95/75	92/74	90/73	21	78	77	75				
Chicago, Midway AP	41 47	87 45	607	−5	0	94/74	91/73	88/72	20	77	75	74	NW 11	SW		
Chicago, O'Hare AP	41 59	87 54	658	−8	−4	91/74	89/74	86/72	20	77	76	74	WNW 9	SW		
Chicago Co	41 53	87 38	590	−3	2	94/75	91/74	88/73	15	79	77	75			96.1	−8.3
Danville	40 12	87 36	695	−4	1	93/75	90/74	88/73	21	78	77	75	W 10	SSW	98.2	−8.4
Decatur	39 50	88 52	679	−3	2	94/75	91/74	88/73	21	78	77	75	NW 10	SW	99.0	−8.1
Dixon	41 50	89 29	696	−7	−2	93/75	90/74	88/73	23	78	77	75			97.5	−13.5
Elgin	42 02	88 16	758	−7	−2	91/75	88/74	86/73	21	78	77	75				
Freeport	42 18	89 37	780	−9	−4	91/74	89/73	87/72	24	77	76	74				
Galesburg	40 56	90 26	764	−7	−2	93/75	91/75	88/74	22	78	77	75	WNW 8	SW		
Greenville	38 53	89 24	563	−1	4	94/76	92/75	89/74	21	79	78	76				
Joliet	41 31	88 10	582	−5	0	93/75	90/74	88/73	20	78	77	75	NW 11	SW		
Kankakee	41 05	87 55	625	−4	1	93/75	90/74	88/73	21	78	77	75				
La Salle/Peru	41 19	89 06	520	−7	−2	93/75	91/75	88/74	22	78	77	75				
Macomb	40 28	90 40	702	−5	0	95/76	92/76	89/75	22	79	78	76				
Moline AP	41 27	90 31	582	−9	−4	93/75	91/75	88/74	23	78	77	75	WNW 8	SW	96.8	−12.7
Mt Vernon	38 19	88 52	479	0	5	95/76	92/75	89/74	21	79	78	76			100.5	−2.9
Peoria AP	40 40	89 41	652	−8	−4	91/75	89/74	87/73	22	78	76	75	WNW 8	SW	98.0	−10.9
Quincy AP	39 57	91 12	769	−2	3	96/76	93/76	90/76	22	80	78	77	NW 11	SSW	101.1	−6.7
Rantoul, Chanute AFB	40 18	88 08	753	−4	1	94/75	91/74	89/73	21	78	77	75	W 10	SSW		
Rockford	42 21	89 03	741	−9	−4	91/74	89/73	87/72	24	77	76	74			97.4	−13.8
Springfield AP	39 50	89 40	588	−3	2	94/75	92/74	89/74	21	79	77	76	NW 10	SW	98.1	−7.2
Waukegan	42 21	87 53	700	−6	−3	92/76	89/74	87/73	21	78	76	75			96.5	−10.6
INDIANA																
Anderson	40 06	85 37	919	0	6	95/76	92/75	89/74	22	79	78	76	W 9	SW	95.1	−6.0
Bedford	38 51	86 30	670	0	5	95/76	92/75	89/74	22	79	78	76			97.5	−4.4
Bloomington	39 08	86 37	847	0	5	95/76	92/75	89/74	22	79	78	76	W 9	SW	97.8	−4.6
Columbus, Bakalar AFB	39 16	85 54	651	3	7	95/76	92/75	90/74	22	79	78	76	W 9	SW	98.3	−6.4
Crawfordsville	40 03	86 54	679	−2	3	94/75	91/74	88/73	22	79	77	76			98.4	−7.6
Evansville AP	38 03	87 32	381	4	9	95/76	93/75	91/75	22	79	78	77	NW 9	SW	98.2	.2
Fort Wayne AP	41 00	85 12	791	−4	1	92/73	89/72	87/72	24	77	75	74	WSW 10	SW		
Goshen AP	41 32	85 48	827	−3	1	91/73	89/73	86/72	23	77	75	74			96.8	−10.5
Hobart	41 32	87 15	600	−4	2	91/73	88/73	85/72	21	77	75	74			98.5	−8.5
Huntington	40 53	85 30	802	−4	1	92/73	89/72	87/72	23	77	75	74			96.9	−8.1
Indianapolis AP	39 44	86 17	792	−2	2	92/74	90/74	87/73	22	78	76	75	WNW 10	SW	96	−7
Jeffersonville	38 17	85 45	455	5	10	95/74	93/74	90/74	23	79	77	76			98	2
Kokomo	40 25	86 03	855	−4	0	91/74	90/73	88/73	22	77	75	74			98.2	−7.5
Lafayette	40 2	86 5	600	−3	3	94/74	91/73	88/73	22	78	76	75				
La Porte	41 36	86 43	810	−3	3	93/74	90/74	87/73	22	78	76	75			98.1	−10.5
Marion	40 29	85 41	859	−4	0	91/74	90/73	88/73	23	77	75	74			97.0	−8.6
Muncie	40 11	85 21	957	−3	2	92/74	90/73	87/73	22	76	76	75				
Peru, Grissom AFB	40 39	86 09	813	−6	−1	90/74	88/73	86/73	22	77	75	74	W 10	SW		
Richmond AP	39 46	84 50	1141	−2	2	92/74	90/74	87/73	22	78	76	75			94.8	−8.5
Shelbyville	39 31	85 47	750	−1	3	93/74	91/74	88/73	22	78	76	75			97.7	−6.0
South Bend AP	41 42	86 19	773	−3	1	91/73	89/73	86/72	22	77	75	74	SW 11	SSW	96.2	−9.2
Terre Haute AP	39 27	87 18	585	−2	4	95/75	92/74	89/73	22	79	77	76	NNW 7	SSW	98.3	−4.9
Valparaiso	41 31	87 02	801	−3	3	93/74	90/74	87/73	22	78	76	75			95.5	−11.0
Vincennes	38 41	87 32	420	1	6	95/75	92/74	90/73	22	79	77	76			100.3	−2.8
IOWA																
Ames (S)	42 02	93 48	1099	−11	−6	93/75	90/74	87/73	23	78	76	75			97.4	−17.8
Burlington AP	40 47	91 07	692	−7	−3	94/74	91/75	88/73	22	78	77	75	NW 9	SSW	98.6	−11.0
Cedar Rapids AP	41 53	91 42	863	−10	−5	91/76	88/75	86/74	23	78	77	75	NW 9	S	97.7	−15.6
Clinton	41 50	90 13	595	−8	−3	92/75	90/75	87/74	23	78	77	75			97.5	−13.8
Council Bluffs	41 20	95 49	1210	−8	−3	94/76	91/75	88/74	22	78	77	75				
Des Moines AP	41 32	93 39	938	−10	−5	94/75	91/74	88/73	23	78	77	75	NW 11	S	98.2	−14.2
Dubuque	42 24	90 42	1056	−12	−7	90/74	88/73	86/72	22	77	75	74	N 10	SSW	95.2	−15.0
Fort Dodge	42 33	94 11	1162	−12	−7	91/74	88/74	86/72	23	77	75	74	NW 11	S	98.5	−19.1
Iowa City	41 38	91 33	661	−11	−6	92/76	89/76	87/74	22	80	78	76	NW 9	SSW	97.4	−15.2
Keokuk	40 24	91 24	574	−5	0	95/75	92/75	89/74	22	79	77	76			98.4	−8.8
Marshalltown	42 04	92 56	898	−12	−7	92/76	90/75	88/74	23	78	77	75			98.5	−13.4
Mason City AP	43 09	93 20	1213	−15	−11	90/74	88/74	85/72	24	77	75	74	NW 11	S	96.5	−21.7
Newton	41 41	93 02	936	−10	−5	94/75	91/74	88/73	23	78	77	75			98.2	−14.7
Ottumwa AP	41 06	92 27	840	−8	−4	94/75	91/74	88/73	22	78	77	75			99.1	−12.0
Sioux City AP	42 24	96 23	1095	−11	−7	95/74	92/74	89/73	24	78	77	75	NNW 9	S	99.9	−17.7
Waterloo	42 33	92 24	868	−15	−10	91/76	89/75	86/74	23	78	77	75	NW 9	S	97.7	−19.8

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2		Col. 3		Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat.		Long.		Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean	Coincident Wet-Bulb		Mean Daily	Design Wet-Bulb			Winter	Summer	Median of Annual Extr.	
	°	′	°	′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]		Max.	Min.
KANSAS																		
Atchison	39	34	95	07	945	− 2	2	96/77	93/76	91/76	23	81	79	77			100.5	− 8.8
Chanute AP	37	40	95	29	981	3	7	100/74	97/74	94/74	23	78	77	76	NNW 11	SSW	102.8	− 2.8
Dodge City AP (S)	37	46	99	58	2582	0	5	100/69	97/69	95/69	25	74	73	71	N 12	SSW	102.9	− 7.0
El Dorado	37	49	96	50	1282	3	7	101/72	98/73	96/73	24	77	76	75			103.5	− 5.0
Emporia	38	20	96	12	1210	1	5	100/74	97/74	94/73	25	78	77	76			102.4	− 6.4
Garden City AP	37	56	100	44	2880	− 1	4	99/69	96/69	94/69	28	74	73	71				
Goodland AP	39	22	101	42	3654	− 5	0	99/66	96/65	93/66	31	71	70	68	WSW 10	S	103.2	− 10.4
Great Bend	38	21	98	52	1889	0	4	101/73	98/73	95/73	28	78	76	75				
Hutchinson AP	38	04	97	52	1542	4	8	102/72	99/72	97/72	28	77	75	74	N 14	S	105.3	− 6.1
Liberal	37	03	100	58	2870	2	7	99/68	96/68	94/68	28	73	72	71			105.8	− 3.8
Manhattan, Ft Riley (S)	39	03	96	46	1065	− 1	3	99/75	95/75	92/74	24	78	77	76	NNE 8	S	104.5	− 8.6
Parsons	37	20	95	31	899	5	9	100/74	97/74	94/74	23	79	77	76	NNW 11	SSW		
Russell AP	38	52	98	49	1866	0	4	101/73	98/73	95/73	29	78	76	75				
Salina	38	48	97	39	1272	0	5	103/74	100/74	97/73	26	78	77	75	N 8	SSW		
Topeka AP	39	04	95	38	877	0	4	99/75	96/75	93/74	24	79	78	76	NNW 10	S	101.8	− 6.4
Wichita AP	37	39	97	25	1321	3	7	101/72	98/73	96/73	23	77	76	75	NNW 12	SSW	102.5	− 2.8
KENTUCKY																		
Ashland	38	33	82	44	546	5	10	94/76	91/74	89/73	22	78	77	75	W 6	SW	97.4	.8
Bowling Green AP	35	58	86	28	535	4	10	94/77	92/75	89/74	21	79	77	76			99.9	1.2
Corbin AP	36	57	84	06	1174	4	9	94/73	92/73	89/72	23	77	76	75				
Covington AP	39	03	84	40	869	1	6	92/73	90/72	88/72	22	77	75	74	W 9	SW		
Hopkinsville, Ft Campbell	36	40	87	29	571	4	10	94/77	92/75	89/74	21	79	77	76	N 6	W	100.1	− .4
Lexington AP (S)	38	02	84	36	966	3	8	93/73	91/73	88/72	22	77	76	75	WNW 9	SW	95.3	− .5
Louisville AP	38	11	85	44	477	5	10	95/74	93/74	90/74	23	79	77	76	NW 8	SW	97.4	1.2
Madisonville	37	19	87	29	439	5	10	96/76	93/75	90/75	22	79	78	77				
Owensboro	37	45	87	10	407	5	10	97/76	94/75	91/75	23	79	78	77	NW 9	SW	98.0	− .2
Paducah AP	37	04	88	46	413	7	12	98/76	95/75	92/75	20	79	78	77				
LOUISIANA																		
Alexandria AP	31	24	92	18	92	23	27	95/77	94/77	92/77	20	80	79	78	N 7	S	100.1	− 5.7
Baton Rouge AP	30	32	91	09	64	25	29	95/77	93/77	92/77	19	80	80	79	ENE 8	W	98.0	21.4
Bogalusa	30	47	89	52	103	24	28	95/77	93/77	92/77	19	80	80	79			99.3	20.2
Houma	29	31	90	40	13	31	35	95/78	93/78	92/77	15	81	80	79			97.2	22.5
Lafayette AP	30	12	92	00	42	26	30	95/78	94/78	92/78	18	81	80	79	N 8	SW	98.2	22.6
Lake Charles AP (S)	30	07	93	13	9	27	31	95/77	93/77	92/77	17	80	79	79	N 9	SSW	99.2	20.5
Minden	32	36	93	18	250	20	25	99/77	96/76	94/76	20	79	79	78			101.7	− 4.9
Monroe AP	32	31	92	02	79	20	25	99/77	96/76	94/76	20	79	79	78	N 9	S	101.1	− 5.9
Natchitoches	31	46	93	05	130	22	26	97/77	95/77	93/77	20	80	79	78				
New Orleans AP	29	59	90	15	4	29	33	93/78	92/78	90/77	16	81	80	79	NNE 9	SSW	96.3	27.7
Shreveport AP (S)	32	28	93	49	254	20	25	99/77	96/76	94/76	20	79	79	78	N 9	S		
MAINE																		
Augusta AP	44	19	69	48	353	− 7	− 3	88/73	85/70	82/68	22	74	72	70	NNE 10	WNW		
Bangor, Dow AFB	44	48	68	50	192	− 11	− 6	86/70	83/68	80/67	22	73	71	69	WNW 7	S		
Caribou AP (S)	46	52	68	01	624	− 18	− 13	84/69	81/67	78/66	21	71	69	67	WSW 10	SW		
Lewiston	44	02	70	15	200	− 7	− 2	88/73	85/70	82/68	22	74	72	70			94.0	− 13.7
Millinocket AP	45	39	68	42	413	− 13	− 9	87/69	83/68	80/66	22	72	70	68	WNW 11	WNW	92.4	− 23.0
Portland (S)	43	39	70	19	43	− 6	− 1	87/72	84/71	81/69	22	74	72	70	W 7	S	93.5	− 9.9
Waterville	44	32	69	40	302	− 8	− 4	87/72	84/69	81/68	22	74	72	70				
MARYLAND																		
Baltimore AP	39	11	76	40	148	10	13	94/75	91/75	89/74	21	78	77	76	W 9	WSW		
Baltimore Co	39	20	76	25	20	14	17	92/77	89/76	87/75	17	80	78	76	WNW 9	S	97.9	7.2
Cumberland	39	37	78	46	790	6	10	92/75	89/74	87/74	22	77	76	75	WNW 10	W		
Frederick AP	39	27	77	25	313	8	12	94/76	91/75	88/74	22	78	77	76	N 9	WNW		
Hagerstown	39	42	77	44	704	8	12	94/75	91/74	89/74	22	77	76	75	WNW 10	W		
Salisbury (S)	38	20	75	30	59	12	16	93/75	91/75	88/74	18	79	77	76			96.8	7.4
MASSACHUSETTS																		
Boston AP (S)	42	22	71	02	15	6	9	91/73	88/71	85/70	16	75	74	72	WNW 16	SW	95.7	− 1.2
Clinton	42	24	71	41	398	− 2	2	90/72	87/71	84/69	17	75	73	72			91.7	− 8.5
Fall River	41	43	71	08	190	5	9	87/72	84/71	81/69	18	74	73	72	NW 10	SW	92.1	− 1.0
Framingham	42	17	71	25	170	3	6	89/72	86/71	83/69	17	74	73	71			96.0	− 7.7
Gloucester	42	35	70	41	10	2	5	89/73	86/71	83/70	15	75	74	72				
Greenfield	42	3	72	4	205	− 7	− 2	88/72	85/71	82/69	23	74	73	71				
Lawrence	42	42	71	10	57	− 6	0	90/73	87/72	84/70	22	76	74	73	NW 8	WSW	95.2	− 9.0
Lowell	42	39	71	19	90	− 4	1	91/73	88/72	85/70	21	76	74	73			95.1	− 8.5
New Bedford	41	41	70	58	79	5	9	85/72	82/71	80/69	19	74	73	72	NW 10	SW	91.4	2.2
Pittsfield AP	42	26	73	18	1194	− 8	− 3	87/71	84/70	81/68	23	73	72	70	NW 12	SW		
Springfield, Westover AFB	42	12	72	32	245	− 5	0	90/72	87/71	84/69	19	75	73	72	N 8	SSW	95.7	− 4.7
Taunton	41	54	71	04	20	5	9	89/73	86/72	83/70	18	75	74	73			92.9	− 9.8
Worcester AP	42	16	71	52	986	0	4	87/71	84/70	81/68	18	73	72	70	W 14	W		

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2	Col. 3	Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat.	Long.	Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean Coincident Wet-Bulb			Mean Daily	Design Wet-Bulb			Winter	Summer	Median of Annual Extr.	
	° ′	° ′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]		Max.	Min.
MICHIGAN																
Adrian	41 55	84 01	754	− 1	3	91/73	88/72	85/71	23	76	75	73			97.2	− 7.0
Alpena AP	45 04	83 26	610	− 11	− 6	89/70	85/70	83/69	27	73	72	70	W 5	SW	93.9	− 14.8
Battle Creek AP	42 19	85 15	941	1	5	92/74	88/72	85/70	23	76	74	73	SW 8	SW		
Benton Harbor AP	42 08	86 26	643	1	5	91/72	88/72	85/70	20	75	74	72	SSW 8	WSW		
Detroit	42 25	83 01	619	3	6	91/73	88/72	86/71	20	76	74	73	W 11	SW	95.1	− 2.6
Escanaba	45 44	87 05	607	− 11	− 7	87/70	83/69	80/68	17	73	71	69			88.8	− 16.1
Flint AP	42 58	83 44	771	− 4	1	90/73	87/72	85/71	25	76	74	72	SW 8	SW	95.3	− 9.9
Grand Rapids AP	42 53	85 31	784	1	5	91/72	88/72	85/70	24	75	74	72	WNW 8	WSW	95.4	− 5.6
Holland	42 42	86 06	678	2		88/72	86/71	83/70	22	75	73	72			94.1	− 6.8
Jackson AP	42 16	84 28	1020	1	5	92/74	88/72	85/70	23	76	74	73			96.5	− 7.8
Kalamazoo	42 17	85 36	955	1	5	92/74	88/72	85/70	23	76	74	73			95.9	− 6.7
Lansing AP	42 47	84 36	873	− 3	1	90/73	87/72	84/70	24	75	74	72	SW 12	W	94.6	− 11.0
Marquette Co	46 34	87 24	735	− 12	− 8	84/70	81/69	77/66	18	72	70	68			94.5	− 11.8
Mt Pleasant	43 35	84 46	796	0	4	91/73	87/72	84/71	24	76	74	72			95.4	− 11.1
Muskegon AP	43 10	86 14	625	2	6	86/72	84/70	82/70	21	75	73	72	E 8	SW		
Pontiac	42 40	83 25	981	0	4	90/73	87/72	85/71	21	76	74	73			95.0	− 6.8
Port Huron	42 59	82 25	586	0	4	90/73	87/72	83/71	21	76	74	73	W 8	S		
Saginaw AP	43 32	84 05	667	0	4	91/73	87/72	84/71	23	76	74	72	WSW 7	SW	96.1	− 7.6
Sault Ste. Marie AP (S)	46 28	84 22	721	− 12	− 8	84/70	81/69	77/66	23	72	70	68	E 7	SW	89.8	− 21.0
Traverse City AP	44 45	85 35	624	− 3	1	89/72	86/71	83/69	22	75	73	71	SSW 9	SW	95.4	− 10.7
Ypsilanti	42 14	83 32	716	1	5	92/72	89/71	86/70	22	75	74	72	SW 10	SW		
MINNESOTA																
Albert Lea	43 39	93 21	1220	− 17	− 12	90/74	87/72	84/71	24	77	75	73				
Alexandria AP	45 52	95 23	1430	− 22	− 16	91/72	88/72	85/70	24	76	74	72			95.1	− 28.0
Bemidji AP	47 31	94 56	1389	− 31	− 26	88/69	85/69	81/67	24	73	71	69	N 8	S	94.5	− 36.9
Brainerd	46 24	94 08	1227	− 20	− 16	90/73	87/71	84/69	24	75	73	71				
Duluth AP	46 50	92 11	1428	− 21	− 16	85/70	82/68	79/66	22	72	70	68	WNW 12	WSW	90.9	− 27.4
Fairbault	44 18	93 16	940	17	− 12	91/74	88/72	85/71	24	77	75	73			95.8	− 24.3
Fergus Falls	46 16	96 04	1210	− 21	− 17	91/72	88/72	85/70	24	76	74	72			96.9	− 27.8
International Falls AP	48 34	93 23	1179	− 29	− 25	85/68	83/68	80/66	26	71	70	68	N 9	S	93.4	− 36.5
Mankato	44 09	93 59	1004	− 17	− 12	91/72	88/72	85/70	24	77	75	73				
Minneapolis/St. Paul AP	44 53	93 13	834	− 16	− 12	92/75	89/73	86/71	22	77	75	73	NW 8	S	96.5	− 22.0
Rochester AP	43 55	92 30	1297	− 17	− 12	90/74	87/72	84/71	24	77	75	73	NW 9	SSW		
St. Cloud AP (S)	45 35	94 11	1043	− 15	− 11	91/74	88/72	85/70	24	76	74	72				
Virginia	47 30	92 33	1435	− 25	− 21	85/69	83/68	80/66	23	71	70	68			92.6	− 33.0
Willmar	45 07	95 05	1128	− 15	− 11	91/74	88/72	85/71	24	76	74	72			96.8	− 24.3
Winona	44 03	91 38	652	− 14	− 10	91/75	88/73	85/72	24	77	75	74				
MISSISSIPPI																
Biloxi, Keesler AFB	30 25	88 55	26	28	31	94/79	92/79	90/78	16	82	81	80	N 8	S	23	98
Clarksdale	34 12	90 34	178	14	19	96/77	94/77	92/76	21	80	79	78			100.9	13.2
Columbus AFB	33 39	88 27	219	15	20	95/77	93/77	91/76	22	80	79	78	N 7	W	101.6	12.7
Greenville AFB	33 29	90 59	138	15	20	95/77	93/77	91/76	21	80	79	78			99.5	14.9
Greenwood	33 30	90 05	148	15	20	95/77	93/77	91/76	21	80	79	78			100.6	15.3
Hattiesburg	31 16	89 15	148	24	27	96/78	94/77	92/77	21	81	80	79			99.9	18.2
Jackson AP	32 19	90 05	310	21	25	97/76	95/76	93/76	21	79	78	78	NNW 6	NW	99.8	16.0
Laurel	31 40	89 10	236	24	27	96/78	94/77	92/77	21	81	80	79			99.7	17.8
Mccomb AP	31 15	90 28	469	21	26	96/77	94/76	92/76	18	80	79	78				
Meridian AP	32 20	88 45	290	19	23	97/77	95/76	93/76	22	80	79	78	N 6	WSW	98.3	15.7
Natchez	31 33	91 23	195	23	27	96/78	94/78	92/77	21	81	80	79			98.4	18.4
Tupelo	34 16	88 46	361	14	19	96/77	94/77	92/76	22	80	79	78			100.7	11.8
Vicksburg Co	32 24	90 47	262	22	26	97/78	95/78	93/77	21	81	80	79			96.9	18.0
MISSOURI																
Cape Girardeau	37 14	89 35	351	8	13	98/76	95/75	92/75	21	79	78	77				
Columbia AP (S)	38 58	92 22	778	− 1	4	97/74	94/74	91/73	22	78	77	76	WNW 9	WSW	99.5	− 6.2
Farmington AP	37 46	90 24	928	3	8	96/76	93/75	90/74	22	78	77	75			99.9	− 2.1
Hannibal	39 42	91 21	489	− 2	3	96/76	93/76	90/76	22	80	78	77	NNW 11	SSW	98.4	− 7.6
Jefferson City	38 34	92 11	640	2	7	98/75	95/74	92/74	23	78	77	76			101.2	− 6.1
Joplin AP	37 09	94 30	980	6	10	100/73	97/73	94/73	24	78	77	76	NNW 12	SSW		
Kansas City AP	39 07	94 35	791	2	6	99/75	96/74	93/74	20	78	77	76	NW 9	S	100.2	− 4.3
Kirksville AP	40 06	92 33	964	− 5	0	96/74	93/74	90/73	24	78	77	76			98.3	− 10.8
Mexico	39 11	91 54	775	− 1	4	97/74	94/74	91/73	22	78	77	76			101.2	− 8.0
Moberly	39 24	92 26	850	− 2	3	97/74	94/74	91/73	23	78	77	76				
Poplar Bluff	36 46	90 25	380	11	16	98/78	95/76	92/76	22	81	79	78				
Rolla	37 59	91 43	1204	3	9	94/77	91/75	89/74	22	78	77	76			99.4	− 3.1
St. Joseph AP	39 46	94 55	825	− 3	2	96/77	93/76	91/76	23	81	79	77	NNW 9	S	100.6	− 8.0
St. Louis AP	38 45	90 23	535	2	6	97/75	94/75	91/74	21	78	77	76	NW 9	WSW		
St. Louis Co	38 39	90 38	462	3	8	98/75	94/75	91/74	18	78	77	76	NW 6	S	99.1	− 2.7
Sikeston	36 53	89 36	325	9	15	98/77	95/76	92/75	21	80	78	77				
Sedalia, Whiteman AFB	38 43	93 33	869	− 1	4	95/76	92/76	90/75	22	79	78	76	NNW 7	SSW	100.0	− 5.1
Sikeston	36 53	89 36	325	9	15	98/77	95/76	92/75	21	80	78	77				
Springfield AP	37 14	93 23	1268	3	9	96/73	93/74	91/74	23	78	77	75	NNW 10	S	97.2	− 2.4

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2		Col. 3		Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9			Temp. °F Col. 10	
State and Station[a]	Lat.		Long.		Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean	Coincident	Wet-Bulb	Mean Daily	Design Wet-Bulb			Winter		Summer	Median of Annual Extr.	
	°	′	°	′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]			Max.	Min.
MONTANA																			
Billings AP	45	48	108	32	3567	−15	−10	94/64	91/64	88/63	31	67	66	64	NE	9	SW	100.5	−19.1
Bozeman	45	47	111	09	4448	−20	−14	90/61	87/60	84/59	32	63	62	60				92.2	−23.2
Butte AP	45	57	112	30	5553	−24	−17	86/58	83/56	80/56	35	60	58	57	S	5	NW	91.8	−26.3
Cut Bank AP	48	37	112	22	3838	−25	−20	88/61	85/61	82/60	35	64	62	61				94.7	−30.9
Glasgow AP (S)	48	25	106	32	2760	−22	−18	92/64	89/63	85/62	29	68	66	64	E	8	S		
Glendive	47	08	104	48	2476	−18	−13	95/66	92/64	89/62	29	69	67	65				103.3	−29.8
Great Falls AP (S)	47	29	111	22	3662	−21	−15	91/60	88/60	85/59	28	64	62	60	SW	7	WSW	98.0	−25.1
Havre	48	34	109	40	2492	−18	−11	94/65	90/64	87/63	33	68	66	65				99.7	−31.3
Helena AP	46	36	112	00	3828	−21	−16	91/60	88/60	85/59	32	64	62	61	N	12	WNW	95.6	−23.7
Kalispell AP	48	18	114	16	2974	−14	−7	91/62	87/61	84/60	34	65	63	62				94.4	−16.8
Lewiston AP	47	04	109	27	4122	−22	−16	90/62	87/61	83/60	30	65	63	62	NW	9	NW	96.2	−27.7
Livingstown AP	45	42	110	26	4618	−20	−14	90/61	87/60	84/59	32	63	62	60				97.2	−21.2
Miles City AP	46	26	105	52	2634	−20	−15	98/66	95/66	92/65	30	70	68	67	NW	7	SE	103.6	−27.7
Missoula AP	46	55	114	05	3190	−13	−6	92/62	88/61	85/60	36	65	63	62	ESE	7	NW	98.6	−13.9
NEBRASKA																			
Beatrice	40	16	96	45	1235	−5	−2	99/75	95/74	92/74	24	78	77	76				103.1	−11.3
Chadron AP	42	50	103	05	3313	−8	−3	97/66	94/65	91/65	30	71	69	68					
Columbus	41	28	97	20	1450	−6	−2	98/74	95/73	92/73	25	77	76	75					
Fremont	41	26	96	29	1200	−6	−2	98/75	95/74	92/74	22	78	77	76					
Grand Island AP	40	59	98	19	1860	−8	−3	97/72	94/71	91/71	28	75	74	73	NNW	10	S	103.3	−14.2
Hastings	40	36	98	26	1954	−7	−3	97/72	94/71	91/71	27	75	74	73	NNW	10	S	103.5	−10.7
Kearney	40	44	99	01	2132	−9	−4	96/71	93/70	90/70	28	74	73	72				102.9	−13.7
Lincoln Co (S)	40	51	96	45	1180	−5	−2	99/75	95/74	92/74	24	78	77	76	N	8	S	102.0	−12.4
McCook	40	12	100	38	2768	−6	−2	98/69	95/69	91/69	28	74	72	71					
Norfolk	41	59	97	26	1551	−8	−4	97/74	93/74	90/73	30	78	77	75				102.0	−20.0
North Platte AP (S)	41	08	100	41	2779	−8	−4	97/69	94/69	90/69	28	74	72	71	NW	9	SSE	100.8	−15.8
Omaha AP	41	18	95	54	977	−8	−3	94/76	91/75	88/74	22	78	77	75	NW	8	S	100.2	−13.2
Scottsbluff AP	41	52	103	36	3958	−8	−3	95/65	92/65	90/64	31	70	68	67	NW	9	SE	101.6	−18.9
Sidney AP	41	13	103	06	4399	−8	−3	95/65	92/65	90/64	31	70	68	67					
NEVADA																			
Carson City	39	10	119	46	4675	4	9	94/60	91/59	89/58	42	63	61	60	SSW	3	WNW	99.2	−5.0
Elko AP	40	50	115	47	5050	−8	−2	94/59	92/59	90/58	42	63	62	60	E	4	SW		
Ely AP (S)	39	17	114	51	6253	−10	−4	89/57	87/56	85/55	39	60	59	58	S	9	SSW		
Las Vegas AP (S)	36	05	115	10	2178	25	28	108/66	106/65	104/65	30	71	70	69	ENE	7	SW		
Lovelock AP	40	04	118	33	3903	8	12	98/63	96/63	93/62	42	66	65	64				103.0	−1.0
Reno AP (S)	39	30	119	47	4404	5	10	95/61	92/60	90/59	45	64	62	61	SSW	3	WNW		
Reno Co	39	30	119	47	4408	6	11	96/61	93/60	91/59	45	64	62	61				98.9	.2
Tonopah AP	38	04	117	05	5426	5	10	94/60	92/59	90/58	40	64	62	61	N	8	S		
Winnemucca AP	40	54	117	48	4301	−1	3	96/60	94/60	92/60	42	64	62	61	SE	10	W	100.1	−8.1
NEW HAMPSHIRE																			
Berlin	44	03	71	01	1110	−14	−9	87/71	84/69	81/68	22	73	71	70				93.2	−24.7
Claremont	43	02	72	02	420	−9	−4	89/72	86/70	83/69	24	74	73	71					
Concord AP	43	12	71	30	342	−8	−3	90/72	87/70	84/69	26	74	73	71	NW	7	SW	94.8	−16.0
Keene	42	55	72	17	490	−12	−7	90/72	87/70	83/69	24	74	73	71				94.6	−18.9
Laconia	43	03	71	03	505	−10	−5	89/72	86/70	83/69	25	74	73	71					
Manchester, Grenier AFB	42	56	71	26	233	−8	−3	91/72	88/71	85/70	24	75	74	72	N	11	SW	93.7	−12.6
Portsmouth, Pease AFB	43	04	70	49	101	−2	2	89/73	85/71	83/70	22	75	74	72	W	8	W		
NEW JERSEY																			
Atlantic City Co	39	23	74	26	11	10	13	92/74	89/74	86/72	18	78	77	75	NW	11	WSW	93.0	7.5
Long Branch	40	19	74	01	15	10	13	93/74	90/73	87/72	18	78	77	75				95.9	4.3
Newark AP	40	42	74	10	7	10	14	94/74	91/73	88/72	20	77	76	75	WNW	11	WSW		
New Brunswick	40	29	74	26	125	6	10	92/74	89/73	86/72	19	77	76	75					
Paterson	40	54	74	09	100	6	10	94/74	91/73	88/72	21	77	76	75					
Phillipsburg	40	41	75	11	180	1	6	92/73	89/72	86/71	21	76	75	74				97.4	−.7
Trenton Co	40	13	74	46	56	11	14	91/75	88/74	85/73	19	78	76	75	W	9	SW	96.2	4.2
Vineland	39	29	75	00	112	8	11	91/75	89/74	86/73	19	78	76	75					
NEW MEXICO																			
Alamagordo, Holloman AFB	32	51	106	06	4093	14	19	98/64	96/64	94/64	30	69	68	67					
Albuquerque AP (S)	35	03	106	37	5311	12	16	96/61	94/61	92/61	27	66	65	64	N	7	W	98.1	5.1
Artesia	32	46	104	23	3320	13	19	103/67	100/67	97/67	30	72	71	70				105.5	3.7
Carlsbad AP	32	20	104	16	3293	13	19	103/67	100/67	97/67	28	72	71	70	N	6	SSE		
Clovis AP	34	23	103	19	4294	8	13	95/65	93/65	91/65	28	69	68	67				102.0	2.5
Farmington AP	36	44	108	14	5503	1	6	95/63	93/62	91/61	30	67	65	64	ENE	5	SW		
Gallup	35	31	108	47	6465	0	5	90/59	89/58	86/58	32	64	62	61					
Grants	35	10	107	54	6524	−1	4	89/59	88/58	85/57	32	64	62	61					
Hobbs AP	32	45	103	13	3690	13	18	101/66	99/66	97/66	29	71	70	69					
Las Cruces	32	18	106	55	4544	15	20	99/64	96/64	94/64	30	69	68	67	SE	5	SE		
Los Alamos	35	52	106	19	7410	5	9	89/60	87/60	85/60	32	62	61	60				89.8	−2.3
Raton AP	36	45	104	30	6373	−4	1	91/60	89/60	87/60	34	65	64	63					

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2		Col. 3		Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat.		Long.		Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean Coincident Wet-Bulb			Mean Daily	Design Wet-Bulb			Winter	Summer	Median of Annual Extr.	
	°	′	°	′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]		Max.	Min.
Roswell, Walker AFB	33	18	104	32	3676	13	18	100/66	98/66	96/66	33	71	70	69	N 6	SSE	103.0	2.7
Santa Fe Co	35	37	106	05	6307	6	10	90/61	88/61	86/61	28	63	62	61			90.1	−1.2
Silver City AP	32	38	108	10	5442	5	10	95/61	94/60	91/60	30	66	64	63				
Socorro AP	34	03	106	53	4624	13	17	97/62	95/62	93/62	30	67	66	65				
Tucumcari AP	35	11	103	36	4039	8	13	99/66	97/66	95/65	28	70	69	68	NE 8	SW	102.7	1.1
NEW YORK																		
Albany AP (S)	42	45	73	48	275	−6	−1	91/73	88/72	85/70	23	75	74	72	WNW 8	S		
Albany Co	42	39	73	45	19	−4	1	91/73	88/72	85/70	20	75	74	72			95.2	−11.4
Auburn	42	54	76	32	715	−3	2	90/73	87/71	84/70	22	75	73	72			92.4	−9.5
Batavia	43	00	78	11	922	1	5	90/72	87/71	84/70	22	75	73	72			92.2	−7.5
Binghamton AP	42	13	75	59	1590	−2	1	86/71	83/69	81/68	20	73	72	70	WSW 10	WSW	92.9	−9.3
Buffalo AP	42	56	78	44	705	2	6	88/71	85/70	83/69	21	74	73	72	W 10	SW	90.0	−3.2
Cortland	42	36	76	11	1129	−5	0	88/71	85/71	82/70	23	74	73	71			93.8	−11.2
Dunkirk	42	29	79	16	692	4	9	88/73	85/72	83/71	18	75	74	72	SSW 10	WSW		
Elmira AP	42	10	76	54	955	−4	1	89/71	86/71	83/70	24	74	73	71			96.2	−6.7
Geneva (S)	42	45	76	54	613	−3	2	90/73	87/71	84/70	22	75	73	72			96.1	−6.5
Glens Falls	43	20	73	37	328	−11	−5	88/72	85/71	82/69	23	74	73	71	NNW 6	S		
Gloversville	43	02	74	21	760	−8	−2	89/72	86/71	83/69	23	75	74	72			93.2	−14.6
Hornell	42	21	77	42	1325	−4	0	88/71	85/70	82/69	24	74	73	72				
Ithaca (S)	42	27	76	29	928	−5	0	88/71	85/71	82/70	24	74	73	71	W 6	SW		
Jamestown	42	07	79	14	1390	−1	3	88/70	86/70	83/69	20	74	72	71	WSW 9	WSW		
Kingston	41	56	74	00	279	−3	2	91/73	88/72	85/70	22	76	74	73				
Lockport	43	09	79	15	638	4	7	89/74	86/72	84/71	21	76	74	73	N 9	SW	92.2	−4.8
Massena AP	44	56	74	51	207	−13	−8	86/70	83/69	80/68	20	73	72	70				
Newburgh, Stewart AFB	41	30	74	06	471	−1	4	90/73	88/72	85/70	21	76	74	73	W 10	W		
NYC-Central Park (S)	40	47	73	58	157	11	15	92/74	89/73	87/72	17	76	75	74			94.9	3.8
NYC-Kennedy AP	40	39	3	47	13	12	15	90/73	87/72	84/71	16	76	75	74	WNW 4	SSW		
NYC-La Guardia AP	40	46	73	54	11	11	15	92/74	89/73	87/72	16	76	75	74	WNW 15	SW		
Niagara Falls AP	43	06	79	57	590	4	7	89/74	86/72	84/71	20	76	74	73	W 9	SW		
Olean	42	14	78	22	2119	−2	2	87/71	84/71	81/70	23	74	73	71				
Oneonta	42	31	75	04	1775	−7	−4	86/71	83/69	80/68	24	73	72	70				
Oswego Co	43	28	76	33	300	1	7	86/73	83/71	80/70	20	75	73	72	E 7	WSW	91.3	−7.4
Plattsburg AFB	44	39	73	28	235	−13	−8	86/70	83/69	80/68	22	73	72	70	NW 6	SE		
Poughkeepsie	41	38	73	55	165	0	6	92/74	89/74	86/72	21	77	75	74	NNE 6	SSW	98.1	−5.6
Rochester AP	43	07	77	40	547	1	5	91/73	88/71	85/70	22	75	73	72	WSW 11	WSW		
Rome, Griffiss AFB	43	14	75	25	514	−11	−5	88/71	85/70	83/69	22	75	73	71	NW 5	W		
Schenectady (S)	42	51	73	57	377	−4	1	90/73	87/72	84/70	22	75	74	72	WNW 8	S		
Suffolk County AFB	40	51	72	38	67	7	10	86/72	83/71	80/70	16	76	74	73	NW 9	SW		
Syracuse AP	43	07	76	07	410	−3	2	90/73	87/71	84/70	20	75	73	72	N 7	WNW	93.	−10.0
Utica	43	09	75	23	714	−12	−6	88/73	85/71	82/70	22	75	73	71	NW 12	W		
Watertown	43	59	76	01	325	−11	−6	86/73	83/71	81/70	20	75	73	72	E 7	WSW	91.7	−19.6
NORTH CAROLINA																		
Asheville AP	35	26	82	32	2140	10	14	89/73	87/72	85/71	21	75	74	72	NNW 12	NNW	91.9	5.8
Charlotte AP	35	13	80	56	736	18	22	95/74	93/74	91/74	20	77	76	76	NNW 6	SW	97.8	12.6
Durham	35	52	78	47	434	16	20	94/75	92/75	90/75	20	78	77	76			98.9	9.6
Elizabeth City AP	36	16	76	11	12	12	19	93/78	91/77	89/76	18	80	78	78	NW 8	SW		
Fayetteville, Pope AFB	35	10	79	01	218	17	20	95/76	92/76	90/75	20	79	78	77	N 6	SSW	99.1	13.1
Goldsboro, Seymour-Johnson	35	20	77	58	109	18	21	94/77	91/76	89/75	18	79	78	77	N 8	SW	99.8	13.0
Greensboro AP (S)	36	05	79	57	897	14	18	93/74	91/73	89/73	21	77	76	75	NE 7	SW	97.7	9.7
Greenville	35	37	77	25	75	18	21	93/77	91/76	89/75	19	79	78	77				
Henderson	36	22	78	25	480	12	15	95/77	92/76	90/76	20	79	78	77				
Hickory	35	45	81	23	1187	14	18	92/73	90/72	88/72	21	75	74	73			96.5	9.6
Jacksonville	34	50	77	37	95	20	24	92/78	90/78	88/77	18	80	79	78				
Lumberton	34	37	79	04	129	18	21	95/76	92/76	90/75	20	79	78	77				
New Bern AP	35	05	77	03	20	20	24	92/78	90/78	88/77	18	80	79	78			98.2	15.1
Raleigh/Durham AP (S)	35	52	78	47	434	16	20	94/75	92/75	90/75	20	78	77	76	N 7	SW	97.7	12.2
Rocky Mount	35	58	77	48	121	18	21	94/77	91/76	89/75	19	79	78	77				
Wilmington AP	34	16	77	55	28	23	26	93/79	91/78	89/77	18	81	80	79	N 8	SW	96.9	18.2
Winston-Salem AP	36	08	80	13	969	16	20	94/74	91/73	89/73	20	76	75	74	NW 8	WSW		
NORTH DAKOTA																		
Bismarck AP (S)	46	46	100	45	1647	−23	−19	95/68	91/68	88/67	27	73	71	70	WNW 7	S	100.3	−31.5
Devils Lake	48	07	98	54	1450	−25	−21	91/69	88/68	85/66	25	73	71	69			97.5	−30.4
Dickinson AP	46	48	102	48	2585	−21	−17	94/68	90/66	87/65	25	71	69	68	WNW 12	SSE	101.0	−31.3
Fargo AP	46	54	96	48	896	−22	−18	92/73	89/71	85/69	25	76	74	72	SSE 11	S	97.3	−29.7
Grand Forks AP	47	57	97	24	911	−26	−22	91/70	87/70	84/68	25	74	72	70	N 8	S	97.6	−29.0
Jamestown AP	46	55	98	41	1492	−22	−18	94/70	90/69	87/68	26	74	74	71			101.3	−27.9
Minot AP	48	25	101	21	1668	−24	−20	92/68	89/67	86/65	25	72	70	68	WSW 10	S		
Williston	48	09	103	35	1876	−25	−21	91/68	88/67	85/65	25	72	70	68			99.7	−32.9

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2	Col. 3	Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat. ° ′	Long. ° ′	Elev. Feet	Design Dry-Bulb 99%	97.5%	Design Dry-Bulb and Mean 1%	Coincident Wet-Bulb 2.5%	5%	Mean Daily Range	Design Wet-Bulb 1%	2.5%	5%	Winter	Summer	Median of Annual Extr. Max.	Min.
													Knots[d]			
OHIO																
Akron-Canton AP	40 55	81 26	1208	1	6	89/72	86/71	84/70	21	75	73	72	SW 9	SW	94.4	−4.6
Ashtabula	41 51	80 48	690	4	9	88/73	85/72	83/71	18	75	74	72				
Athens	39 20	82 06	700	0	6	95/75	92/74	90/73	22	78	76	74				
Bowling Green	41 23	83 38	675	−2	2	92/73	89/73	86/71	23	76	75	73				
Cambridge	40 04	81 35	807	1	7	93/75	90/74	87/73	23	78	76	75			96.7	−7.3
Chillicothe	39 21	83 00	640	0	6	95/75	92/74	90/73	22	78	76	74				
Cincinnati Co	39 09	84 31	758	1	6	92/73	90/72	88/72	21	77	75	74	W 8	WSW	98.2	−2.1
Cleveland AP (S)	41 24	81 51	777	1	5	91/73	88/72	86/71	22	76	74	73	W 9	SW	97.2	−.2
Columbus AP (S)	40 00	82 53	812	0	5	92/73	90/73	87/72	24	77	75	74	SW 12	N	94.7	−3.1
Dayton AP	39 54	84 13	1002	−1	4	91/73	89/72	86/71	20	76	75	73	W 8	SSW	96.0	−3.4
Defiance	41 17	84 23	700	−1	4	94/74	91/73	88/72	24	77	76	74	WNW 11	SW	96.6	−4.5
Findlay AP	41 01	83 40	804	2	3	92/74	90/73	87/72	24	77	76	74				
Fremont	41 20	83 07	600	−3	1	90/73	88/73	85/71	24	76	75	73			97.4	−7.4
Hamilton	39 24	84 35	650	0	5	92/73	90/72	87/71	22	76	75	73				
Lancaster	39 44	82 38	860	0	5	93/74	91/73	88/72	23	77	75	74			98.2	−2.8
Lima	40 42	84 02	975	−1	4	94/74	91/73	88/72	24	77	76	74	WNW 11	SW	96.0	−6.5
Mansfield AP	40 49	82 31	1295	0	5	90/73	87/72	85/72	22	76	74	73	W 8	SW	93.8	−10.7
Marion	40 36	83 10	920	0	5	93/74	91/73	88/72	23	77	76	74				
Middletown	39 31	84 25	635	0	5	92/73	90/72	87/71	22	76	75	73				
Newark	40 01	82 28	880	−1	5	94/73	92/73	89/72	23	77	75	74	W 8	SSW	95.8	−6.8
Norwalk	41 16	82 37	670	−3	1	90/73	88/73	85/71	22	76	75	73			97.3	−8.3
Portsmouth	38 45	82 55	540	5	10	95/76	92/74	89/73	22	78	77	75	W 8	SW	97.9	1.0
Sandusky Co	41 27	82 43	606	1	6	93/73	91/72	88/71	21	76	74	73			96.7	−1.9
Springfield	39 50	83 50	1052	−1	3	91/74	89/73	87/72	21	77	76	74	W 7	W		
Steubenville	40 23	80 38	992	1	5	89/72	86/71	84/70	22	74	73	72				
Toledo AP	41 36	83 48	669	−3	1	90/73	88/73	85/71	25	76	75	73	WSW 8	SW	95.4	−5.2
Warren	41 20	80 51	928	0	5	89/71	87/71	85/70	23	74	73	71				
Wooster	40 47	81 55	1020	1	6	89/72	86/71	84/70	22	75	73	72			94.0	−7.7
Youngstown AP	41 16	80 40	1178	−1	4	88/71	86/71	84/70	23	74	73	71	SW 10	SW		
Zanesville AP	39 57	81 54	900	1	7	93/75	90/74	87/73	23	78	76	75	W 6	WSW		
OKLAHOMA																
Ada	34 47	96 41	1015	10	14	100/74	97/74	95/74	23	77	76	75				
Altus AFB	34 39	99 16	1378	11	16	102/73	100/73	98/73	25	77	76	75	N 10	S		
Ardmore	34 18	97 01	771	13	17	100/74	98/74	95/74	23	77	77	76				
Bartlesville	36 45	96 00	715	6	10	101/73	98/74	95/74	23	77	77	76				
Chickasha	35 03	97 55	1085	10	14	101/74	98/74	95/74	24	78	77	76				
Enid, Vance AFB	36 21	97 55	1307	9	13	103/74	100/74	97/74	24	79	77	76				
Lawton AP	34 34	98 25	1096	12	16	101/74	99/74	96/74	24	78	77	76				
McAlester	34 50	95 55	776	14	19	99/74	96/74	93/74	23	77	76	75	N 10	S		
Muskogee AP	35 40	95 22	610	10	15	101/74	98/75	95/75	23	79	78	77				
Norman	35 15	97 29	1181	9	13	99/74	96/74	94/74	24	77	76	75	N 10	S		
Oklahoma City AP (S)	35 24	97 36	1285	9	13	100/74	97/74	95/73	23	78	77	76	N 14	SSW		
Ponca City	36 44	97 06	997	5	9	100/74	97/74	94/74	24	77	76	76				
Seminole	35 14	96 40	865	11	15	99/74	96/74	94/73	23	77	76	75				
Stillwater (S)	36 10	97 05	984	8	13	100/74	96/74	93/74	24	77	76	75	N 12	SSW	103.7	1.6
Tulsa AP	36 12	95 54	650	8	13	101/74	98/75	95/75	22	79	78	77	N 11	SSW		
Woodward	36 36	99 31	2165	6	10	100/73	97/73	94/73	26	78	76	75			107.1	−1.3
OREGON																
Albany	44 38	123 07	230	18	22	92/67	89/66	86/65	31	69	67	66				
Astoria AP (S)	46 09	123 53	8	25	29	75/65	71/62	68/61	16	65	63	62	ESE 7	NNW	97.5	16.6
Baker AP	44 50	117 49	3372	−1	6	92/63	89/61	86/60	30	65	63	61				
Bend	44 04	121 19	3595	−3	4	90/62	87/60	84/59	33	64	62	60			97.5	−6.8
Corvallis (S)	44 30	123 17	246	18	22	92/67	89/66	86/65	31	69	67	66			96.4	−5.8
Eugene AP	44 07	123 13	359	17	22	92/67	89/66	86/65	31	69	67	66	N 6	N	98.5	17.1
Grants Pass	42 26	123 19	925	20	24	99/69	96/68	93/67	33	71	69	68	N 7	N		
Klamath Falls AP	42 09	121 44	4092	4	9	90/61	87/60	84/59	36	63	61	60	N 5	N	103.6	16.4
Medford AP (S)	42 22	122 52	1298	19	23	98/68	94/67	91/66	35	70	68	67	N 4	W	96.3	.9
Pendleton AP	45 41	118 51	1482	−2	5	97/65	93/64	90/62	29	66	65	63	S 4	WMW	103.8	15.0
Portland AP	45 36	122 36	21	17	23	89/68	85/67	81/65	23	69	67	66	NNW 6	WNW		
Portland Co	45 32	122 40	75	18	24	90/68	86/67	82/65	21	69	67	66	ESE 12	NW	96.6	18.3
Roseburg AP	43 14	123 22	525	18	23	93/67	90/66	87/65	30	69	67	66			97.6	20.5
Salem AP	44 55	123 01	196	18	23	92/68	88/66	84/65	31	69	68	66				
The Dalles	45 36	121 12	100	13	19	93/69	89/68	85/66	28	70	68	67	N 6	N	99.6	19.5
															98.9	15.9
															105.1	7.9

TABLE 1 CLIMATIC CONDITIONS FOR THE UNITED STATES (*Continued*)

Col. 1	Col. 2	Col. 3	Col. 4	Winter,[b] °F Col. 5		Summer,[c] °F Col. 6			Col. 7	Col. 8			Prevailing Wind Col. 9		Temp. °F Col. 10	
State and Station[a]	Lat.	Long.	Elev.	Design Dry-Bulb		Design Dry-Bulb and Mean Coincident Wet-Bulb			Mean Daily	Design Wet-Bulb			Winter	Summer	Median of Annual Extr.	
	° ′	° ′	Feet	99%	97.5%	1%	2.5%	5%	Range	1%	2.5%	5%	Knots[d]		Max.	Min.
PENNSYLVANIA																
Allentown AP	40 39	75 26	387	4	9	92/73	88/72	86/72	22	76	75	73	W 11	SW		
Altoona Co	40 18	78 19	1504	0	5	90/72	87/71	84/70	23	74	73	72	WNW 11	WSW	93.7	−5.2
Butler	40 52	79 54	1100	1	6	90/73	87/72	85/71	22	75	74	73				
Chambersburg	39 56	77 38	640	4	8	93/75	90/74	87/73	23	77	76	75			97.4	−.3
Erie AP	42 05	80 11	731	4	9	88/73	85/72	83/71	18	75	74	72	SSW 0	WSW	91.3	−2.2
Harrisburg AP	40 12	76 46	308	7	11	94/75	91/74	88/73	21	77	76	75	NW 11	WSW	96.5	3.7
Johnstown	40 19	78 50	2284	−3	2	86/70	83/70	80/68	23	72	71	70	WNW 8	WSW	96.4	−1.8
Lancaster	40 07	76 18	403	4	8	93/75	90/74	87/73	22	77	76	75	NW 11	WSW		
Meadville	41 38	80 10	1065	0	4	88/71	85/70	83/69	21	73	72	71			93.2	−8.5
New Castle	41 01	80 22	825	2	7	91/73	88/72	86/71	23	75	74	73	WSW 10	WSW	94.7	−6.4
Philadelphia AP	39 53	75 15	5	10	14	93/75	90/74	87/72	21	77	76	75	WNW 10	WSW	96.4	5.9
Pittsburgh AP	40 30	80 13	1137	1	5	89/72	86/71	84/70	22	74	73	72	WSW 10	WSW		
Pittsburgh Co	40 27	80 00	1017	3	7	91/72	88/71	86/70	19	74	73	72			94.6	−1.1
Reading Co	40 20	75 38	266	9	13	92/73	89/72	86/72	19	76	75	73	W 11	SW	97.0	3.6
Scranton/Wilkes-Barre	41 20	75 44	930	1	5	90/72	87/71	84/70	19	74	73	72	SW 8	WSW	94.8	−2.2
State College (S)	40 48	77 52	1175	3	7	90/72	87/71	84/70	23	74	73	72	NNW 8	WSW	93.2	−3.6
Sunbury	40 53	76 46	446	2	7	92/73	89/72	86/70	22	75	74	73				
Uniontown	39 55	79 43	956	5	9	91/74	88/73	85/72	22	76	75	74			93.9	−2.5
Warren	41 51	79 08	1280	−2	4	89/71	86/71	83/70	24	74	73	72			93.3	−10.7
West Chester	39 58	75 38	450	9	13	92/75	89/74	86/72	20	77	76	75				
Williamsport AP	41 15	76 55	524	2	7	92/73	89/72	86/70	23	75	74	73	W 9	WSW	95.5	−4.6
York	39 55	76 45	390	8	12	94/75	91/74	88/73	22	77	76	75			97.0	−2.4
RHODE ISLAND																
Newport (S)	41 30	71 20	10	5	9	88/73	85/72	82/70	16	76	75	73	WNW 10	SW		
Providence AP	41 44	71 26	51	5	9	89/73	86/72	83/70	19	75	74	73	WNW 11	SW	94.6	−.5
SOUTH CAROLINA																
Anderson	34 30	82 43	774	19	23	94/74	92/74	90/74	21	77	76	75			99.5	13.3
Charleston AFB (S)	32 54	80 02	45	24	27	93/78	91/78	89/77	18	81	80	79	NNE 8	SW		
Charleston Co	32 54	79 58	3	25	28	94/78	92/78	90/77	13	81	80	79			97.8	21.4
Columbia AP	33 57	81 07	213	20	24	97/76	95/75	93/75	22	79	78	77	W 6	SW	100.6	16.2
Florence AP	34 11	79 43	147	22	25	94/77	92/77	90/76	21	80	79	78	N 7	SW	99.5	16.5
Georgetown	33 23	79 17	14	23	26	92/79	90/78	88/77	18	81	80	79	N 7	SSW	98.2	19.1
Greenville AP	34 54	82 13	957	18	22	93/74	91/74	89/74	21	77	76	75	NW 8	SW	97.3	12.6
Greenwood	34 10	82 07	620	18	22	95/75	93/74	91/74	21	78	77	76			99.5	14.1
Orangeburg	33 30	80 52	260	20	24	97/76	95/75	93/75	20	79	78	77			101.2	18.0
Rock Hill	34 59	80 58	470	19	23	96/75	94/74	92/74	20	78	77	76				
Spartanburg AP	34 58	82 00	823	18	22	93/74	91/74	89/74	20	77	76	75			99.5	13.9
Sumter, Shaw AFB	33 54	80 22	169	22	25	95/77	92/76	90/75	21	79	78	77	NNE 6	W	100.0	15.4
SOUTH DAKOTA																
Aberdeen AP	45 27	98 26	1296	−19	−15	94/73	91/72	88/70	27	77	75	73	NNW 8	S	102.3	−28.1
Brookings	44 18	96 48	1637	−17	−13	95/73	92/72	89/71	25	77	75	73			97.8	−26.5
Huron AP	44 23	98 13	1281	−18	−14	96/73	93/72	90/71	28	77	75	73	NNW 8	S	101.5	−25.8
Mitchell	43 41	98 01	1346	−15	−10	96/72	93/71	90/70	28	76	75	73			103.0	−22.7
Pierre AP	44 23	100 17	1742	−15	−10	99/71	95/71	92/69	29	75	74	72	NW 11	SSE	105.7	−20.6
Rapid City AP (S)	44 03	103 04	3162	−11	−7	95/66	92/65	89/65	28	71	69	67	NNW 10	SSE	100.9	−19.0
Sioux Falls AP	43 34	96 44	1418	−15	−11	94/73	91/72	88/71	24	76	75	73	NW 8	S		
Watertown AP	44 55	97 09	1738	−19	−15	94/73	91/72	88/71	26	76	75	73			97.8	−26.5
Yankton	42 55	97 23	1302	−13	−7	94/73	91/72	88/71	25	77	76	74			100.8	−19.1
TENNESSEE																
Athens	35 26	84 35	940	13	18	95/74	92/73	90/73	22	77	76	75				
Bristol-Tri City AP	36 29	82 24	1507	9	14	91/72	89/72	87/71	22	75	75	73	WNW 6	SW		
Chattanooga AP	35 02	85 12	665	13	18	96/75	93/74	91/74	22	78	77	76	NNW 8	WSW	97.2	9.8
Clarksville	36 33	87 22	382	6	12	95/76	93/74	90/74	21	78	77	76			99.8	3.7
Columbia	35 38	87 02	690	10	15	97/75	94/74	91/74	21	78	77	76				
Dyersburg	36 01	89 24	344	10	15	96/78	94/77	91/76	21	81	80	78				
Greenville	36 04	82 50	1319	11	16	92/73	90/72	88/72	22	76	75	74			95.6	.8
Jackson AP	35 36	88 55	423	11	16	98/76	95/75	92/75	21	79	78	77			99.2	6.6
Knoxville AP	35 49	83 59	980	13	19	94/74	92/73	90/73	21	77	76	75	NE 8	W	96.0	7.0
Memphis AP	35 03	90 00	258	13	18	98/77	95/76	93/76	21	80	79	78	N 10	SW	97.9	10.4
Murfreesboro	34 55	86 28	600	9	14	97/75	94/74	91/74	22	78	77	76			97.7	4.5
Nashville AP (S)	36 07	86 41	590	9	14	97/75	94/74	91/74	21	78	77	76	NW 8	WSW		
Tullahoma	35 23	86 05	1067	8	13	96/74	93/73	91/73	22	77	76	75	NW 9	WSW	96.7	3.7

STANDARD CENTRAL SYSTEM PUMP SELECTIONS AND RATINGS

EFFECTIVE: MAY 1, 1997 SUPERSEDES: DECEMBER 18, 1996

PROCESS PUMPS

PUMP MODEL NUMBER	MOTOR SIZE (HP)	IMPELLER SIZE (IN)	MOTOR SPEED (RPM)	MAX. FLOW RATING (GPM)	PRESSURE @ MAX. FLOW (PSI)	DISCHARGE TRIM SIZE (IN)	MAX. TOWER TONS (3.3 GPM / TON)	MAX. TOWER TONS (3.0 GPM / TON)	MAX. CHILLER TONS (2.4 GPM / TON)	MAX. CHILLER TONS (4.8 GPM / TON)
							10% BYPASS FILTRATION	*FULL FLOW OR NO FILTRATION*	*STANDARD FLOW (10°F Δ T)*	*DOUBLE FLOW (5°F Δ T)*
16	2	5.25	3500	55	43	1.5 NPT x 2	17	18	23	11
50	3	5.5	3500	60	51	1.5 NPT x 2	18	20	25	13
50	5	6.0	3500	90	49	1.5 NPT x 2.5	27	30	38	19
52	7.5	6.0	3500	165	56	2 NPT x 3	50	55	69	34
52	10	6.5	3500	200	59	2 NPT x 4	61	67	83	42
54F	15	6.5	3500	275	66	2.5 FLG x 4	83	92	115	57
55F	20	6.5	3500	400	61	3 FLG x 6	121	133	167	83
56F	20	6.0	3500	500	51	3 FLG x 6	152	167	208	104
56F	25	6.25	3500	525	59	3 FLG x 6	159	175	219	109
57	30	6.375	3500	800	51	3 FLG x 6	242	267	333	167
57	40	6.75	3500	825	60	3 FLG x 6	250	275	344	172
63	50	7.5	3500	850	65	4 FLG x 6	258	283	354	177
63	60	8.0	3500	900	68	4 FLG x 6	273	300	375	188

RECIRCULATION PUMPS

							10% BYPASS FILTRATION	*FULL FLOW OR NO FILTRATION*	*STANDARD FLOW (10°F Δ T)*	*DOUBLE FLOW (5°F Δ T)*
16	1.5	4.75	3500	50	32	1.5 NPT x 2	15	17	21	10
16	2	4.75	3500	80	24	1.5 NPT x 2.5	24	27	33	17
16	3	5.25	3500	90	32	1.5 NPT x 2.5	27	30	38	19
18	5	5.25	3500	190	27	2 NPT x 4	58	63	79	40
15	7.5	5.125	3500	250	28	3 NPT x 4	76	83	104	52
15	10	5.375	3500	300	26	3 NPT x 4	91	100	125	63
56F	10	5.0	3500	400	26	3 FLG x 6	121	133	167	83
56F	15	5.5	3500	500	35	3 FLG x 6	152	167	208	104
57	20	5.5	3500	700	30	3 FLG x 6	212	233	292	146
57	25	6.0	3500	850	33	3 FLG x 6	258	283	354	177
96	30	10.0	1750	1375	29	5 FLG x 8	417	458	573	286

NOTE: DISCHARGE TRIM SIZES IN SHADED BOXES ARE DIFFERENT THAN PREVIOUS "STANDARDS".
NOTE: DOUBLE FLOW RECIRCULATION THROUGH CHILLER(S) MAY REQUIRE SPECIAL EVAPORATORS.
NOTE: RATINGS SHOWN IN BOLD BOARDERS WILL BE USED FOR "STANDARD" PACKAGES IN LITERATURE.

We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

How to Contact Customer Service

To contact Customer Service personnel, call:

From outside the United States, call: 814-437-6861

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

Before You Call ...

If you do have a problem, please complete the following checklist before calling Conair:

- ❒ Make sure you have all model, serial and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- ❒ Make sure power is supplied to the equipment.
- ❒ Make sure that all connectors and wires within and between loading control and related components have been installed correctly.
- ❒ Check the troubleshooting guide of this manual for a solution.
- ❒ Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- ❒ Check that the equipment has been operated as described in this manual.
- ❒ Check accompanying schematic drawings for information on special considerations.

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Departments for a nominal fee.

EQUIPMENT GUARANTEE

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

PERFORMANCE WARRANTY

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

WARRANTY LIMITATIONS

Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.