Evap-Kool Aluminum

INDUSTRIAL MODULAR COOLING TOWERS

Call - 1-800-264-1AIR ◆ Visit - www.pioneerair.com ◆ E-mail -sales@pioneerair.com
Pioneer Air Systems, Inc. ◆ 210 Flatfork Road Wartburg, TN 37887 ◆ Fax - 346-3865

Evap-Kool Aluminum

MODULAR COOLING TOWERS

Evap-Kool Aluminum housing and PVC fill Cooling Tower(s) offers the most cooling value for your capital investment. Evaporative cooling allows you to reach near atmospheric web bulb temperature (usually 10-20 Deg. ^{0}F lower than ambient dry bulb temperature).

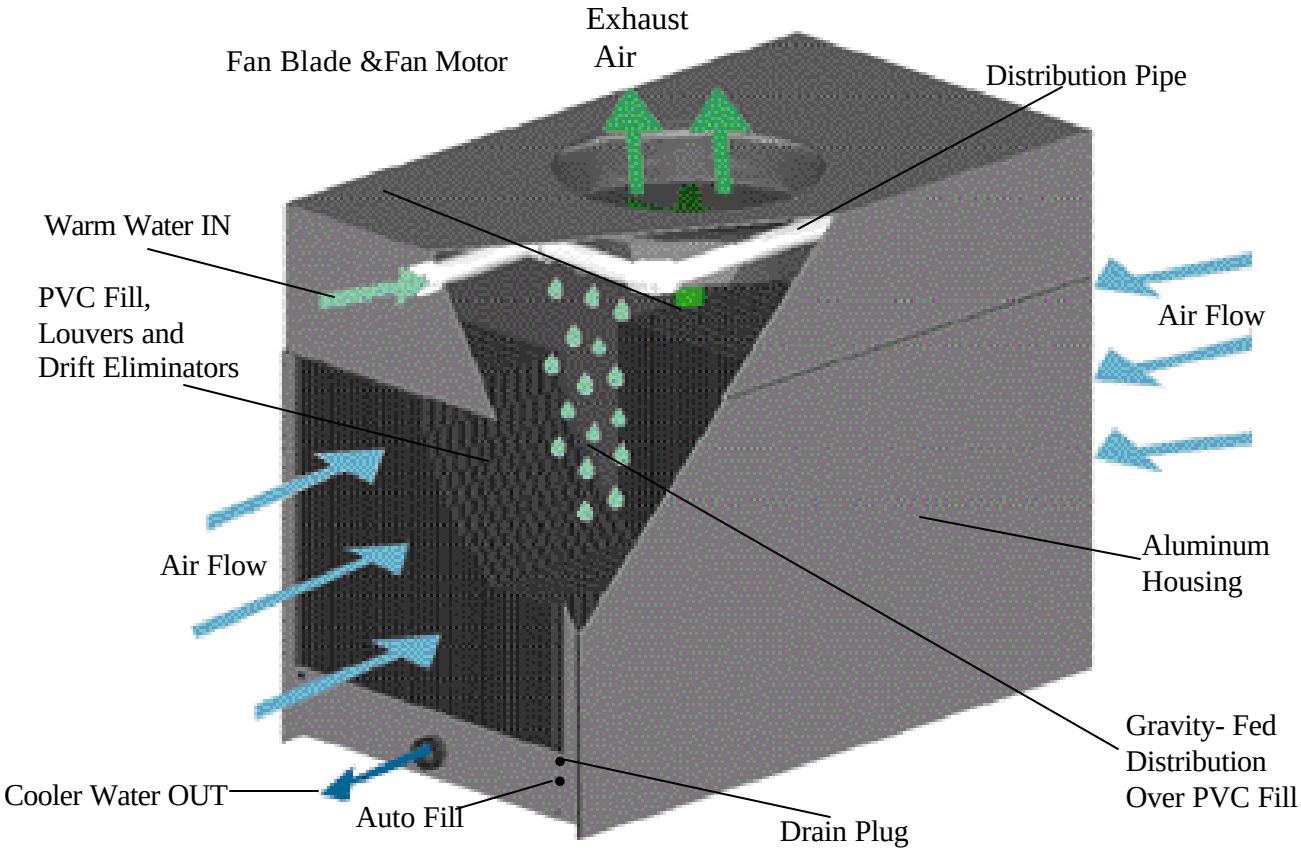


Figure 1.

Advantages

1. **C**ross flow &induced draft- higher efficiency
2. **C**orrosion resistant construction
3. **M**odular design to meet future needs
4. **G**ravity fed, accomdates low flow conditions
5. **F**actory assembled, suitable for shipment by regular truck
6. **F**actory manifolded for single point piping (For wider units, the manifold may be removed for shipment by regular truck)
7. **S**pacing (15”) between modules, for easy maintenance in systems with 3 or more modules

Standard Features

1. Housing- Aluminum
2. Fill : PVC
3. Fan Motor (s) : TEFC, Three Phase
4. Fan: Polypropylene, Direct drive Aluminum hub
5. Inlet/Outlet &Piping : PVC
6. Structural Support : Carbon Steel
7. Reinforcement : Coated Carbon Steel
8. NEMA 4 electrical control panel, wired and mounted, includes : starters, transformer,ON/OFF switch, power 'on' light
9. TEFC, NEMA frame motors
10. Gravity-fed water distribution- no moving parts
11. Auto fill float valve
12. Overflow port
13. Minimum drift loss-0.02% or less
14. Factory assembled15. Fan guard
16. Quiet operation - less than 76 dB
17. 230/3/60 or 460/3/60 volts
18. Non-corroding, non-rusting construction
19. Ten-year limited warranty

Available Options

1. Fan cycling for freeze protection
2. Basin heater(s)- NEMA 4 ,wired and mounted, includes heater 'on' light, adjustable thermostat and contactor(s); freeze protection to -10°F/-23°C
3. Nonstandard voltages
4. Duplex or Simplex pumping station
5. Kleen-Water filters
6. Water in/out temperature gauges
7. Water in/out pressure gauges
8. High temperature fill
9. High temperature warning light
10. Custom control panel

TEN -YEAR *limited* warranty

Ten-year prorated housing and PVC fill shell warranty is standard in Evap-Kool Aluminum Cooling Towers.

For one year from the date of purchase, Pioneer Air Systems, Inc. will replace or repair, or provide free of charge any part or parts found to be defective in material or workmanship. One -year mechanical parts only warranty applies to equipment outside the mainland USA, Canada and Mexico.

The customer shall contact the factory to obtain warranty service authorization prior to performing any service.

The company is not responsible for incidental, consequential, shipping , misuse or abuse of equipment and handling charges.

4,761,986
4,638,852
4,499,033
5,107,919
5,207,895

Why Treat Water...

As the water in the cooling tower evaporates, most solid contaminants in the water do not evaporate. The concentration of these contaminants accumulates rapidly and will undermine the cooling capacity of the system. In addition, airborne impurities and biological contaminants are introduced into the recirculating water.

To control potential contaminants, a water treatment program must be employed, In most cases, use of a Pioneer Kleen-Water and a simple bleed-off at the Pioneer filter may be adequate for control of scale and corrosion. However, biological contamination can be controlled only through the use of biocide, and such treatment should be initiated at system start-up and continued regularly thereafter.

For specific recommendations on water treatment, consult a local water treatment specialist.

Evap-Kool Aluminum Modular Cooling Towers Data

Model	Capacity[1] Nom. Tons	Fan CFM	Fan HP x No.	In/Out	Dimensions-(in)/mm L		W		H		Weight Shpg Wet Lbs./kg		Pumping System[5] Selection(typical)
EKA040	40	13,800	3 x 1	3" NPT	86	2,188	51	1,295	70	1,778	1,800	818	SE/DE 00500
EKA050	50	16,590	5 x 1	3" NPT	86	2,188	51	1,295	70	1,778	1,900	864	SE/DE 00500
EKA060	60	21,100	7.5 x 1	3" NPT	86	2,188	51	1,295	70	1,778	2,000	909	SE/DE 00750
EKA080	80	26,600	10 x 1	4" FLG	96	2,442	51	1,295	88	2,235	2,500	1,136	SE/DE 10000
EKA100	100	33,180	3 x 2	4" FLG	96	2,442	106	2,692	70	1,778	4,000	1,818	SE/DE 15000
EKA120	120	42,200	7.5 x 2	4" FLG	96	2,442	106	2,692	70	1,778	4,200	1,909	SE/DE 20000
EKA160	160	53,200	10 x 2	6" FLG	108	2,743	96[2]	2,442	88	2,235	5,800	2,634	SE/DE 25000
EKA180	180	63,300	7.5 x 3	6" FLG	189	4,801	97	2,468	70	1,778	6,600	3,000	SE/DE 25000
EKA200	200	66,360	5 x 4	6" FLG	255	6,477	97	2,468	72	1,829	8,500	3,864	SE/DE 30000
EKA240	240	79,800	10 x 3	8" FLG	189	4,801	96[3]	2,442	90	2,286	8,800	4,000	SE/DE 40000
EKA300	300	105,500	7.5 x 5	8" FLG	321	6,477	100	2,540	72	1,829	11,000	5,000	SE/DE 50000
EKA320	320	106,400	10 x 4	8" FLG	255	8,153	96[3]	2,438	90	2,286	11,800	5,364	SE/DE 50000
EKA360	360	126,600	7.5 x 6	8" FLG	387	9,830	100	2,540	72	1,829	13,000	5,909	SE/DE 50000
EKA400	400	133,000	10 x 5	8" FLG	321	8,153	96[3]	2,438	90	2286	14,500	6,591	SE/DE 50000
EKA420	420	147,700	7.5 x 7	8" FLG	453	11,506	100	2,540	72	1829	15,500	7,045	SE/DE 60000
EKA480	480	159,600	10 x 6	10" FLG	387	9,830	96[4]	2,438	90	2,286	18,000	8,182	SE/DE 75000
EKA560	560	182,200	10 x 7	10" FLG	453	11,506	96[4]	2,438	90	2,286	20,000	9,091	SE/DE 10000

1. Based on 15,000 BTUH/Ton @ 95 °F Water In , 85 °F Water Out, 78°F Web Bulb and 3 GPM/Ton flow.
2. Width without Manifold, allow 12" for the manifold, shipped un-mounted.
3. Width without Manifold, allow 16" for the manifold, shipped un-mounted
4. Width without Manifold, allow 20" for the manifold, shipped un-mounted.
5. Select pumping system to suit application, some require higher flow and/or pressure.
6. Systems with 3 or more modules includes approximately 15" between modules for maintenance.
7. Standard voltages : 230-3-60 or 460-3-60, Nonstandard voltages avaible
8. The Evap- Kool Aluminum Cooling Tower(s) shall be oversized by 15-20%

For larger sizes, consult factory

Table 1.

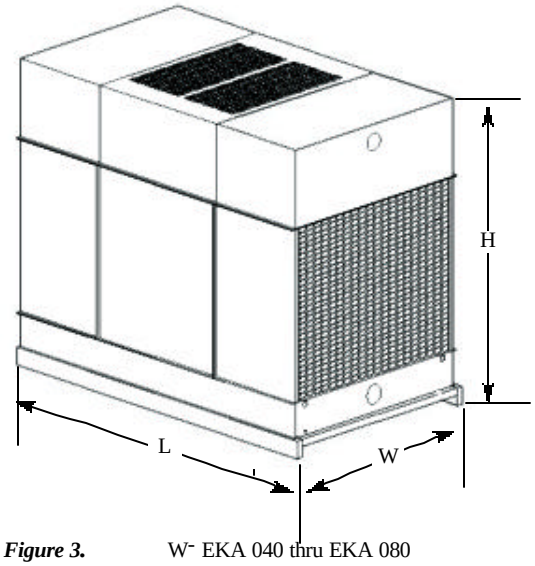


Figure 3. W- EKA 040 thru EKA 080

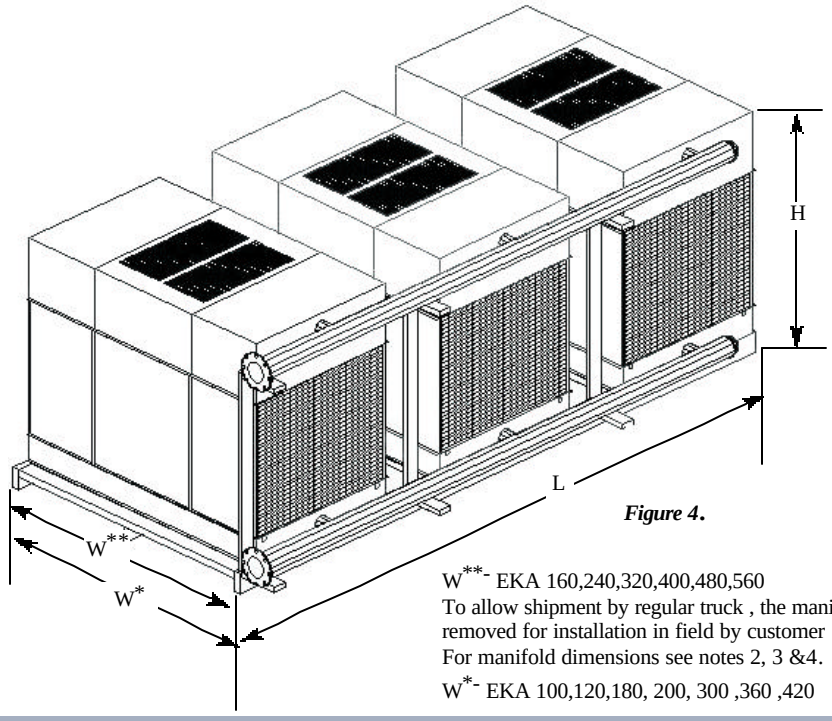


Figure 4.

W**- EKA 160,240,320,400,480,560
To allow shipment by regular truck , the manifold removed for installation in field by customer
For manifold dimensions see notes 2, 3 &4.

W*- EKA 100,120,180, 200, 300 ,360 ,420

Kleen Water Filter

Water will evaporate from your cooling tower, but solid contanimants will not. Kleen- Water Filter are 99.0% efficient at removing solids down to 50 micron. The resulting clean water will allow your Evap- Kool Aluminum module Cooling Tower to operate most efficiently while protecting your investment.

Kleen-Water Filter KW300 and larger include the Pioneer exclusive *Back Saver* feature to make element changes painless.

Kleen-Water Filters data

MODEL	PORT SIZE NPT-IN	MAX. PRESS. PSIG	MAX GPM	MAX TEMP. °F	DIMENSIONS INCHES A	B	C	D	APPROX. SHIPPING WT. (LBS)	TYPE
KW25	1	300	25	225	16 1/4	4 1/2	-	1 5/16	15	T
KW50	1 1/2	300	50	225	20 3/8	5 7/16	-	1 1/4	20	T
KW100	2 1/2	300	100	225	27 3/4	6 7/8	-	1 3/4	35	T
KW150	2 1/2	300	150	225	37 1/2	6 7/8	-	1 3/4	56	T
KW200	3	300	200	225	38 3/8	7 5/8	-	2 1/8	58	T
KW250	3	300	250	225	44 1/4	7 5/8	-	2 1/8	70	T
KW300	4 FLG.	225	300	225	72	21 3/4	57	15	450	F
KW450	6 FLG.	225	450	225	85	20 7/8	68	15	500	F

NOTES:
1. Filters come with initial element(s).
2. To order spare element, add 'E' before filter Model Number.
3. Larger sizes,built to specifications.

OPTIONS:
1. Flange Connections, where not standard.
2. Pressure Differential Lights/Contacts.
3. Multi-Filter Assemblies with By-Pass valving.

Table 2.

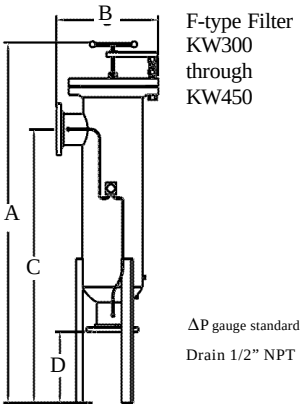


Figure 5.

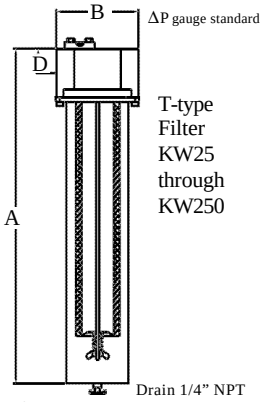


Figure 6.

Pumping System Specification

Simplex

- It shall include a pump, starter, NEMA 4 control panel , power-on light, on / off switch, and a water - out pressure gauge; prepiped, prewired and mounted on a heavy skid.
- Also include starter (s) for optional - fan cycling and sump heater.

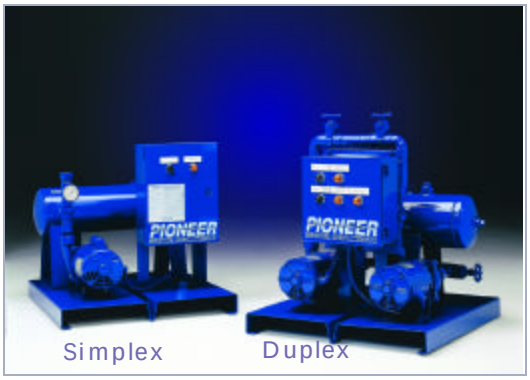
Duplex

- It shall include two pumps, two check valves (one for each pump), starters, NEMA 4 control panel ,power-on light, on / off switch, water -out pressure gauge and water - out temperature gauge.
- Each pump shall be piped with two isolation valves so that either of the pumps can be replaced without disturbing the other.
- All Components shall be prepipped, prewired and mounted on a heavy skid.
- Also include starter (s) for optional - fan cycling and sump heater.

Cooling Tower Specifications

- The cooling tower shall be Pioneer Evap- Kool Aluminum EKA_____, crossflow and induced draft designed for efficient, quiet and lasting service.
- The cooling tower shall include Aluminum housing and PVC fill. It shall use gravity-fed distribution flow for minimum noise and maximum efficiency and reliability.
- The cooling tower shall accommodate flow conditions from zero to full flow.
- The cooling tower shall be equipped with____direct drive, NEMA frame, TEFC fan motor(s) for maximum efficiency. The fan blades shall be of polypropylene or fiberglass-reinforced polypropylene, factory adjusted for quieter operation, longevity and maximum efficiency.
- The noise level shall be 76 dbA or less.
- The cooling air flow shall be vertical.
- The cooling tower shall include single point in, out, auto fill, drain and overflow connections.
- The cooling tower top shall be covered to prevent the fall of debris into the water.
- The cooling tower shall be factory assembled, manifolded(Under 100"), wired and tested for proper functioning.
- The cooling tower shall have _____modules. Each module shall be capable of functioning independently of the others for maximum reliability.
- The cooling tower shall include a factory-wired ,NEMA 4 control panel, starter, control transformer, on/off switch and power 'on' indicator. For safe operation, the cooling tower controls shall be integrated with the pumping system controls.
- Thermostatically-controlled fan cycling shall be included with the pumping system for energy savings as well as freeze protection.
- Systems with 3 or more modules shall include approximately 15" between modules for maintenance.
- The cooling tower housing and fill shall have a ten-year, prorated warranty.
- The cooling tower shall be supplied with a matching simplex/duplex pumping system model_____.

Pumping Systems



Simplex

Includes a pump, starter, NEMA 4 control panel, power-on light, on/off switch, and a water-out pressure gauge; prepiped, prewired and mounted on a heavy skid.

Also includes starter(s) optional fan cycling and sump heater for Cooling Tower.

Duplex... greater reliability

Includes two pumps, two check valves (one for each pump), starters, NEMA 4 control panel, power-on light, on/off switch, water-out pressure gauge and water-out temperature gauge. Additionally, each pump is piped with two isolation valves. Either of the pumps can be replaced without disturbing the other. All components are prepipped, prewired and mounted on a heavy skid.

Also includes starter(s) optional fan cycling and sump heater for Cooling Tower.

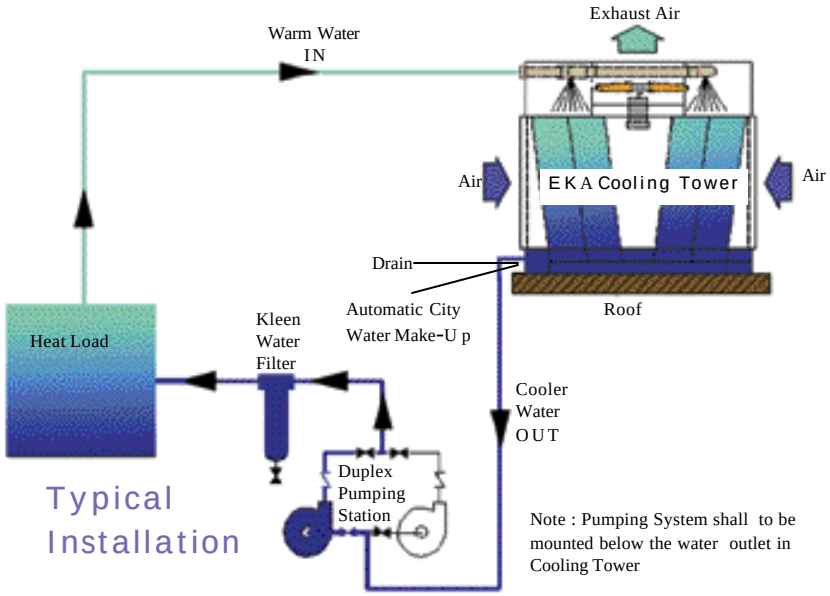


Figure 7.

Simplex and Duplex pumping system data

MODEL		DIMENSIONS SIMPLEX (SE) WIDTH x DEPTH x HEIGHT		DUPLEX (DE) WIDTH x DEPTH x HEIGHT		EXPANS. TANK		WATER IN/OUT	APPROX. SHPG. WT. SIMPLEX		DUPLEX		APP. CAPACITY	
SE-/ DE-	HP 1 EACH	IN	MM	IN	MM	GAL	LIT	NPT IN	LBS	KGS	LBS	KGS	GPM	PSIG
500	5	40 x 37 x 54	1016 x 940 x 1372	40 x 42 x 54	1016 x 1067 x 1372	80	303	2½	990	450	1,990	905	200	25
750	7½	40 x 37 x 54	1016 x 940 x 1372	40 x 42 x 54	1016 x 1067 x 1372	80	303	3	1,100	500	2,220	1,009	250	30
1000	10	60 x 37 x 54	1524 x 940 x 1372	60 x 48 x 54	1524 x 1219 x 1372	120	455	4 FLG	1,250	568	2,450	1,114	325	35
1500	15	60 x 37 x 54	1524 x 940 x 1372	60 x 48 x 54	1524 x 1219 x 1372	120	455	4 FLG.	1,400	636	2,800	1,273	430	40
2000	20	60 x 37 x 54	1524 x 940 x 1372	60 x 48 x 54	1524 x 1219 x 1372	120	455	6 FLG.	1,600	727	3,200	1,455	500	50
2500	25	72 x 37 x 90	1828 x 940 x 2286	72 x 48 x 90	1828 x 1219 x 2286	240	910	6 FLG.	1,800	818	3,600	1,636	600	50
3000	30	72 x 37 x 90	1828 x 940 x 2286	72 x 48 x 90	1828 x 1219 x 2286	240	910	6 FLG.	2,000	909	3,950	1,795	700	50
4000	40	72 x 37 x 90	1828 x 940 x 2286	72 x 48 x 90	1828 x 1219 x 2286	240	910	6 FLG.	2,300	1,045	4,550	2,068	925	50
5000	50	72 x 37 x 90	1828 x 940 x 2286	72 x 48 x 90	1828 x 1219 x 2286	240	910	8 FLG.	2,600	1,182	5,200	2,364	1,300	50
6000	60	72 x 48 x 90	1828 x 1219 x 2286	72 x 60 x 90	1828 x 1524 x 2286	240	910	8 FLG.	2,900	1,318	5,800	2,636	1,500	50
7500	75	72 x 48 x 90	1828 x 1219 x 2286	72 x 60x 90	1828 x 1524 x 2286	240	910	10 FLG.	3,250	1,477	6,500	2,955	1,600	55
10000	100	72 x 48 x 90	1828 x 1219 x 2286	72 x 60 x 90	1828 x 1524 x 2286	240	910	10 FLG.	3,750	1,705	7,500	3,409	1,800	60

NOTES:
•Standard voltages: 230-3-60 or 460-3-60 , nonstandard voltages available.
•The Evap-Kool Aluminum Cooling Tower(s) shall be oversized by 15- 25%

Table 3.

Selecting the proper Evap-Kool Aluminum Cooling Tower

Cooling Range = water temperature in (warm) - water temperature out (cool)
Approach Temperature = water temperature out - design wet bulb temperature

1. Locate maximum wet bulb temperature for your area (Table 4).
2. Determine cooling range and approach temperature
3. Determine cooling tower selection factor based on your wet bulb temperature. Interpolate as necessary. (Tables 6 through 9)
4. Using selection factor from step 3 and your desired rate of flow in GPM, determine proper Evap-Kool Aluminum Cooling Tower selection from Table 5. For safe sizing, oversize by 15–25%

Example: size a cooling tower for 110 GPM flow, 75°F wet bulb temperature, 90°F inlet and 82°F outlet temperature.

1. Wet bulb temperature = 75°F
2. Cooling range = 90 - 82 = 8°F;
   Approach temperature = 82 - 75 = 7°F
3. Selection factor = 5.3 (Table 8)
4. From Table 5 **Model EKA040** can handle 120 GPM at 5.0 selection factor or 136 GPM at 5.5 selection factor. At 5.3, it will handle approximately 130 GPM.

Wet Bulb Temperatures (°F approximate)

For more precise information, consult your local weather service

UNITED STATES
Alabama....78
Arizona
- Flagstaff....65
- Yuma....78

Arkansas....78
California
- Fresno....74
- Los Angeles....70
- San Francisco....65

Colorado....64
Connecticut....75
Delaware....78
Dist. of Columbia....78
Florida
- Apalachicola....76
- Miami....79

Georgia....78
Idaho....65
Illinois
- Danville....79
- Peoria....76

Indiana
- Evansville....78
- Fort Wayne....75

Iowa....78
Kansas....78
Kentucky....78
Louisiana....80
Maine....73
Maryland....78
Massachusetts....75
Michigan....75
Minnesota....75
Mississippi....79
Montana
- Butte....64
- Havre....70

Missouri
- Kansas City....76
- St. Joseph....79

Nebraska....78
Nevada
- Las Vegas....75
- Reno....65

New Hampshire....73
New Jersey
- Trenton....78
- Neward....75

New Mexico
- Santa Fe....65
- Albuquerque....70

New York....75
North Carolina....78
North Dakota....75
Ohio
- Akron....75
- Cincinnati....87

Oklahoma....78
Oregon
- Baker....66
- Medford....70

Pennsylvania
- Harrisburg....75
- Philadelphia....78

Rhode Island....75
South Carolina
- Charleston....78
- Columbia....75

Tennessee
- Knoxville....75
- Memphis....78

Texas
Amarillo....72
- Dallas....78
- Houston....80

Utah....66
Vermont....73
Virginia
- Lynchburg....75
- Richmond....78

Washington....65
West Virginia....75
Wisconsin....75
Wyoming....65

CANADA
Alberta
- Calgary....66
- Edmonton....68
- Medicine Hat....65

British Columbia
- Penticton....70
- Prince Rupert....62

Manitoba
- Churchill....65
- Winnepeg....71

New Brunswick
- Campbellton....75
- Saint John....70

British Columbia
- Penticton....70
- Prince Rupert....62

Manitoba
- Churchill....65
- Winnepeg....71

New Brunswick
- Campbellton....75
- Saint John....70

Newfoundland....70
Northwest Terrirories 62
Novia Scotia
- Halifax....75
- Yarmouth....67

Ontario
- Fort William....70
- Toronto....75

Prince Edward Island 70
Quebec....75
Saskatchewan....72
Yukon Territory....62

MEXICO
Guadalajara....68
Merida....80
Mexico City....61
Monterrey....79
Vera Cruz....83

Table 4.

Cooling Tower Capacities in GPM

Cooling Tower Selection Factors(from Table 6 thru 8)

Model	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5
EKA040	52	60	64	72	84	92	108	120	136	152	175	196	220
EKA050	65	75	80	90	105	115	135	150	170	190	220	74	275
EKA060	78	90	96	108	126	138	162	180	204	228	264	295	330
EKA080	104	120	128	144	168	184	216	240	272	304	350	392	440
EKA100	130	150	160	180	210	230	270	300	340	380	440	492	550
EKA120	156	180	192	216	252	276	324	360	408	456	528	590	660
EKA160	198	240	256	288	336	368	432	480	510	608	660	738	880
EKA180	234	270	288	324	378	418	486	540	612	684	792	886	990
EKA200	264	300	320	360	420	460	540	600	680	760	880	984	1100
EKA240	312	360	384	432	504	552	648	720	816	912	1056	1181	1320
EKA300	390	450	480	540	630	690	810	900	1020	1140	1320	1476	1650
EKA320	416	480	512	576	672	736	864	960	1088	1216	1400	1568	1760
EKA360	468	540	576	648	756	828	972	1080	1224	1368	1575	1764	1980
EKA400	520	600	640	720	840	920	1080	1200	1360	1520	1750	1960	2200
EKA420	546	630	672	756	882	966	1134	1260	1428	1596	1848	2066	2310
EKA480	624	720	768	864	1008	1104	1296	1440	1632	1824	2100	2352	2640
EKA560	728	840	896	1008	1176	1288	1512	1680	1904	2128	2450	2744	3080

Table 5.

Conversions

1 GPM = 3.79 LPM
1 PSI = 2.31 ft. of water
°F = 32 + 1.8 x °C
1 HP = 746 watts
= 2547 BTUH
= 33,000 ft. lbs./min
= 10.68 k. calories/min.
1 lb. = 0.4536 KG
1 cu. ft. = 7.48 U.S. gals =
0.0283 cu. meter
=28.32 lites
= 6.233 imp. gals.

Selection factors for 65°F wet bulb

Range °F ↓	Approach °F → 5	6	7	8	9	10	11	12	13	14	15	16
6	4.1	4.7	5.2	5.7	6.1	6.5	6.9	7.2	7.5	7.8	8.1	8.4
7	3.7	4.3	4.8	5.2	5.6	6.0	6.4	6.7	7.0	7.3	7.6	7.9
8	3.3	3.9	4.4	4.8	5.2	5.6	6.0	6.3	6.6	6.9	7.2	7.4
9	3.0	3.6	4.1	4.5	4.9	5.3	5.6	5.9	6.2	6.5	6.8	7.0
10	2.8	3.3	3.8	4.2	4.6	5.0	5.3	5.6	5.9	6.2	6.5	6.7
11	2.6	3.1	3.6	4.0	4.4	4.8	5.1	5.4	5.7	6.0	6.3	6.5
12	2.4	2.9	3.3	3.7	4.1	4.5	4.8	5.1	5.4	5.7	6.0	6.2
13	2.2	2.7	3.1	3.5	3.9	4.2	4.6	4.9	5.2	5.5	5.8	6.0
14	2.0	2.5	3.0	3.4	3.8	4.1	4.4	4.7	5.0	5.3	5.5	5.7
15	1.9	2.4	2.8	3.2	3.6	3.9	4.2	4.5	4.8	5.1	5.3	5.5
16	1.8	2.3	2.7	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.4
17	1.7	2.2	2.6	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.2
18	1.6	2.0	2.4	2.8	3.2	3.5	3.8	4.1	4.4	4.6	4.8	5.0
19	1.5	1.9	2.3	2.7	3.1	3.4	3.7	4.0	4.3	4.5	4.7	4.9
20	1.5	1.8	2.2	2.6	3.0	3.3	3.6	3.9	4.2	4.4	4.6	4.8

Table 6.

Selection factors for 70°F wet bulb

Range °F ↓	Approach °F → 5	6	7	8	9	10	11	12	13	14	15	16
6	4.6	5.2	5.7	6.1	6.6	7.0	7.4	7.7	8.0	8.3	8.5	8.5
7	4.1	4.7	5.2	5.7	6.1	6.5	6.9	7.2	7.5	7.8	8.1	8.3
8	3.8	4.4	4.8	5.3	5.7	6.1	6.4	6.7	7.0	7.3	7.6	7.9
9	3.5	4.0	4.5	5.0	5.3	5.7	6.1	6.4	6.7	7.0	7.2	7.5
10	3.3	3.8	4.2	4.7	5.1	5.4	5.8	6.1	6.4	6.7	6.9	7.2
11	3.1	3.6	4.0	4.5	4.9	5.2	5.6	5.9	6.2	6.4	6.7	6.9
12	2.8	3.3	3.8	4.2	4.6	4.9	5.3	5.6	5.9	6.1	6.4	6.6
13	2.7	3.2	3.6	4.0	4.4	4.8	5.1	5.4	5.7	5.9	6.2	6.4
14	2.5	3.0	3.4	3.8	4.2	4.5	4.8	5.1	5.4	5.7	5.9	6.2
15	2.4	2.9	3.3	3.7	4.0	4.4	4.7	5.0	5.3	5.5	5.8	6.0
16	2.3	2.7	3.1	3.5	3.9	4.2	4.5	4.8	5.1	5.3	5.6	5.8
17	2.2	2.6	3.0	3.4	3.7	4.0	4.3	4.6	4.9	5.1	5.4	5.6
18	2.0	2.5	2.9	3.3	3.6	3.9	4.2	4.5	4.8	5.0	5.3	5.5
19	1.9	2.4	2.8	3.2	3.5	3.8	4.1	4.4	4.7	4.9	5.2	5.4
20	1.8	2.3	2.7	3.1	3.4	3.7	4.0	4.3	4.6	4.8	5.1	5.3

Table 7.

Selection factors for 75°F wet bulb

Range °F ↓	Approach °F → 5	6	7	8	9	10	11	12	13	14	15	16
6	5.0	5.6	6.1	6.6	7.0	7.4	7.8	8.1	8.4	8.5	8.5	8.5
7	4.6	5.2	5.7	6.1	6.6	6.9	7.3	7.6	7.9	8.2	8.4	8.5
8	4.3	4.8	5.3	5.8	6.1	6.5	6.9	7.2	7.5	7.8	8.1	8.4
9	4.0	4.5	5.0	5.4	5.8	6.2	6.6	6.9	7.1	7.4	7.7	8.0
10	3.7	4.2	4.7	5.1	5.5	5.9	6.2	6.5	6.8	7.1	7.4	7.6
11	3.5	4.1	4.5	4.9	5.3	5.7	6.0	6.3	6.6	6.9	7.1	7.4
12	3.3	3.8	4.3	4.7	5.1	5.4	5.7	6.0	6.3	6.6	6.9	7.1
13	3.2	3.7	4.1	4.6	4.9	5.2	5.5	5.8	6.1	6.4	6.6	6.9
14	3.0	3.5	3.9	4.3	4.7	5.0	5.3	5.6	5.9	6.2	6.4	6.7
15	2.9	3.3	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0	6.2	6.5
16	2.7	3.2	3.6	4.0	4.4	4.7	5.0	5.3	5.6	5.8	6.1	6.3
17	2.6	3.1	3.5	3.8	4.2	4.6	4.9	5.2	5.4	5.7	6.0	6.2
18	2.5	3.0	3.4	3.7	4.1	4.4	4.7	5.0	5.3	5.5	5.8	6.0
19	2.4	2.9	3.3	3.6	4.0	4.3	4.6	4.9	5.2	5.4	5.7	5.9
20	2.3	2.8	3.2	3.5	3.9	4.2	4.5	4.8	5.1	5.3	5.6	5.8

Table 8.

Selection factors for 80°F wet bulb

Range °F ↓	Approach °F → 5	6	7	8	9	10	11	12	13	14	15	16
6	5.5	6.1	6.6	7.1	7.5	7.9	8.3	8.5	8.5	8.5	8.5	8.5
7	5.1	5.7	6.2	6.6	7.0	7.4	7.8	8.1	8.4	8.5	8.5	8.5
8	4.8	5.3	5.8	6.2	6.6	7.0	7.4	7.7	8.0	8.3	8.5	8.5
9	4.5	4.9	5.5	5.9	6.3	6.7	7.0	7.3	7.6	7.9	8.2	8.4
10	4.2	4.7	5.2	5.6	6.0	6.4	6.7	7.0	7.3	7.6	7.9	8.1
11	4.0	4.5	4.9	5.4	5.7	6.2	6.5	6.8	7.1	7.4	7.6	7.9
12	3.8	4.3	4.7	5.1	5.5	5.9	6.2	6.5	6.8	7.1	7.3	7.6
13	3.7	4.2	4.6	5.0	5.3	5.7	6.0	6.3	6.6	6.9	7.1	7.4
14	3.5	4.0	4.4	4.8	5.1	5.5	5.8	6.1	6.4	6.6	6.9	7.1
15	3.3	3.8	4.2	4.6	5.0	5.3	5.6	5.9	6.2	6.4	6.7	6.9
16	3.2	3.7	4.1	4.5	4.8	5.2	5.5	5.7	6.0	6.3	6.5	6.8
17	3.1	3.5	4.0	4.4	4.7	5.1	5.4	5.6	5.9	6.1	6.3	6.6
18	3.0	3.4	3.9	4.2	4.6	4.9	5.2	5.5	5.8	6.0	6.2	6.5
19	2.9	3.3	3.7	4.1	4.5	4.8	5.1	5.4	5.7	5.9	6.1	6.4
20	2.8	3.2	3.6	4.0	4.4	4.7	5.0	5.3	5.6	5.8	6.0	6.3

Table 9.

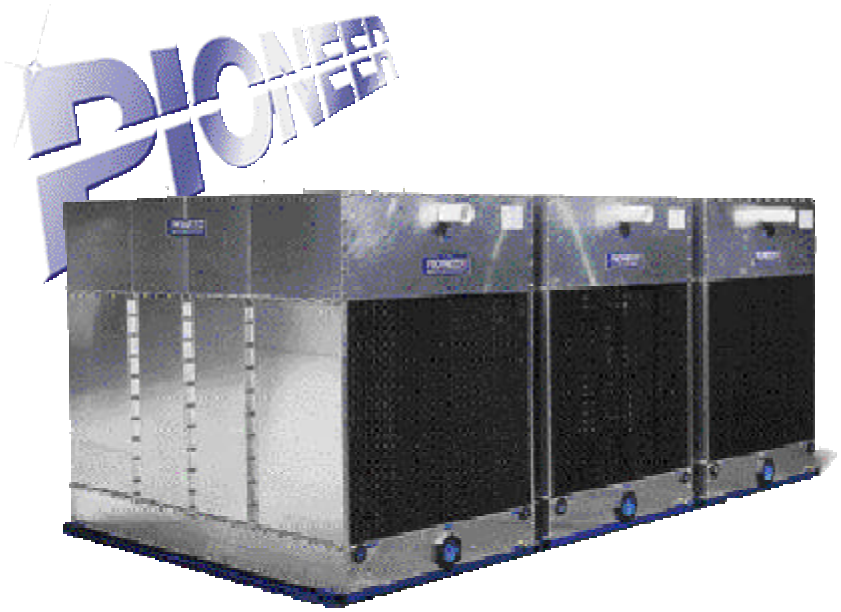


Figure 9. Pioneer multiple module system as sold to Coca Cola Company

Pioneer Partners

Nanjing Shunfeng-Pioneer
Xiao HangZhang Hua Men Wai
Nanjing, China
Tel / Fax: 8625-241-7271/1128

OnlineMRO.com, Inc.
P.O. Box 5645
Oak Ridge, TN 37831-5645 U.S.A
Tel/Fax: (865)220-8747/9664
Http:// www.onlineMRO.com
E-mail : MRO@onlineMRO.com

'GFG' Hayoung Korea Co. LTD.
82 Dae Ssang Ryung-Ri, Cho Wol-Myon
Kwang Ju-Kun, Kyoung Ki-Do, Korea 464-860
Tel/Fax: 82347-766-6131/6166