



Cooling Towers

HOT DEEP GALVANIZED STEEL & FIBER GLASS BODIES

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CUA Series Specifications

Structure:

Structure of the cooling towers are made of strengthened fiber glass which is sun light resistant. Other parts are made of P.V.C, A.B.S, and F.R.P or galvanized steel and aluminum which are coated with electro static paint. The air inlet openings are made in such a way that prevents from splash of water to out side and direct sunlight into the tower in order to eliminate the production of bacteria's in the tower. They are also removable, in order to be able to reach inside of the tower for cleaning and etc.

Cooling elements:

Cooling elements are made of P.V.C and formed in cellular form to improve the heat rejection.

Supports:

The cooling tower is supported with galvanized steel which is coated with electro static paint and all the screws are galvanized in order to prevent any rust.

Electromotor:

Electromotor used with the cooling towers are class IP54 (humidity resistant) and heat rejection class F. Mostly the electromotor used with the towers are Motogen trademark because of their variety in the market. Simens electromotors are also available on request.

Fans:

The fans used with the towers are manufactured by TECHNO ACTORS. and they are axial fans with four galvanized blades used with the CUA0020 and CUA0040 models. Multi-wing fans are used with CUA0010, CUA0060, CUA0080, CUA0100 and CUA0125 models where they have adjustable blades made of polyamide. Fans with aluminum blades are used with models higher than CUA0125.

Water distributor:

The inlet water is directed to the header which is made of aluminum with high pressure P.V.C pipe. Then the water is splashed on the packing by the arms made of P.V.C where special angular nozzles are fixed on the arms. The maximum heated rejection is achieved by rotation of the header and arms for uniform water distribution on the packing. Minimizing the space between the nozzles and packing prevents water splash to outside.

Fan coupling:

The fan is coupled to the electromotor directly for models up to CUA0125. and by belt and poly for models higher than CUA0125.

CTA Series Specifications

CTA series high efficiency cooling towers offer you the best solution to meet the design requirements of today's modern buildings , plants and manufacturing factories. High performance, wide capacity range, application flexibility and rugged construction are the most results of its special design and quality. Advantages are as following:

Basin from high quality hot dip galvanized steel sheets in suitable thickness, rust and corrosion resistant, including overflow, drain, quick fill, standard sized cool water strainer, make up,.. all welded and perfectly sealed, with an optimal size that allows full operation possibility for several hours without adding make up water.

- **C**asing pre-made parts from hot dip galvanized steel sheets in suitable thickness all jointed to each other by bolts and special sealing element.
- **L**ow sound centrifugal fans including scroll, all from galvanized steel in sufficient rigidity and aerodynamic profit to suit the corresponding air inlet size, galvanized wrap fixed to the side plates by electric spot welding in an aerodynamic shaped baffle fitted in scroll outlet to minimize the formation of cut air flow, forward curved impeller blades to present maximum efficiency plus low noise value, calibrated static and dynamic balancing, absence of rotating arms on the air inlet, aerodynamic doubled impeller central plate, impeller is assembled completely cold and no heat treatment there in, no welding in impeller assembling to minimize friction possibility. C40 galvanized steel shafts with more coating at end sections and key ways, a high quality product from full automatic production process, guaranteed rust proof by special color coating in suitable design thickness, fully tested and qualified by the most modern machines in various ranges of operation cycles. Low noise, pre greased and sealed ball bearings mounted on rubber or rubber vibration absorber situated below steel or cast-iron supports with full ability to resist against axial and radial loads.
- **W**ater distribution system that dispenses inlet hot water over the wet deck surface evenly. Plastic or brass nozzles of distribution system presents suitable pressure drop to provide the most possible contact between water powder and air flow and optimize mass and heat transfer rate.
- **C**orrosion resistant, rustiness and light wet deck surfaces from galvanized steel sheets at the heart of cooling tower with special forming design to present not only mass and heat transfer maximum rate by full contact between circulative water and air flow but also lower resistance against air flow.
- **S**pecially designed and formed galvanized drift eliminators to remove moisture from air and increase system performance plus decreasing of make up water use.
- **A** man sized access door for maintenance, service, inspection of floating valve and removal of the strainer, easily.
Floating valve including rubber tube and floating leader ball, vertically adjustable by its bolt on leading rail easily to control the level of basin water.
- **M**otogen brand, Aluminum shell type and high protective class electromotors protected against rain fall and dust by special covers.

Selection method:

Given cooling capacities in performance data table are based on MASS standard conditions:

Entering water temperature:	35 °C	(95 °F)
Leaving water temperature:	29.5 °C	(85 °F)
Entering air wet bulb temperature:	25 °C	(77 °F)

Performance data table can be used for selecting directly, if the standard conditions meet your design conditions entirely. On nonstandard conditions the model of cooling tower can be selected by specifying the values of four initial requisite parameters as following examples:

Example 1.

Given initial data:

Water flow rate:	106 L/s
Entering water temperature:	43 °C
Leaving water temperature:	37 °C
Entering air wet bulb temperature:	30 °C

Temperature range = Entering water temperature - Leaving water temperature = 43 - 37
Temperature range = 6 °C

Approach temperature = Leaving water temperature - Entering air W.B. temperature = 37 - 30
Approach temperature = 7 °C

Choose CTAS or CTAD or CUA model type through a planar view on general data table by considering water flow rate.

Actual capacity = Q(kw) 106 Lit/s of water =106 Kg/s

$$Q = 4.2(\text{Kj}/(\text{Kg X } ^\circ\text{C})) \times \text{Watre flow (Kg/s)} \times \text{Temp. range}$$

$$= 4.2 \times 106 \times 6 = 2671.2 \text{ Kw}$$

From table 1 read coreection factor =0.68

$$\text{Nominal capacity} = \text{Actual X Correction factor}$$

$$= 2671.2 \times 0.68 = 1816.42 \text{ Kw}$$

$$= 516.62 \text{ R-ton}$$

Selected model : **CTAD0580 or CUA0600**

Table 1 - Correction factor - SI unit

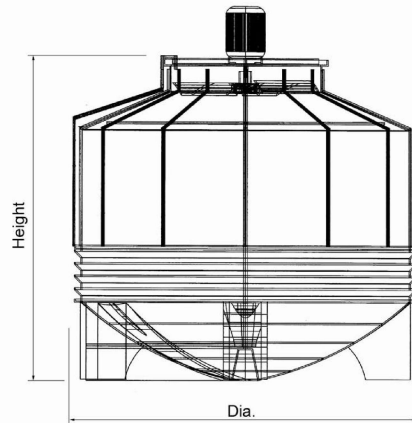
Approach	Temperature range [°C]												
Temp. [°C]	2	3	4	5	6	7	8	9	10	11	12	13	14
2	.71	1.25	1.57	1.77	1.83	2.01	2.32	2.38	2.49	2.57	2.72	2.86	3.00
3	.64	.90	1.10	1.29	1.45	1.57	1.67	1.75	1.81	1.99	2.09	2.20	2.30
4	.59	.71	.85	1.01	1.12	1.23	1.32	1.42	1.51	1.63	1.68	1.74	1.79
5	.38	.56	.71	.86	.95	1.05	1.11	1.20	1.30	1.41	1.47	1.52	1.59
6	.30	.45	.62	.63	.77	.89	.98	1.04	1.09	1.16	1.26	1.32	1.37
7	.25	.40	.49	.56	.68	.75	.84	.90	.97	1.01	1.07	1.11	1.15
8	.24	.34	.43	.50	.62	.68	.74	.77	.80	.88	.93	.98	1.04
9	.21	.32	.38	.44	.54	.59	.64	.69	.75	.78	.83	.90	.99
10	.26	.28	.34	.41	.46	.52	.57	.60	.68	.72	.76	.81	.85
11	.16	.24	.29	.36	.43	.46	.50	.56	.63	.67	.70	.74	.78
12	.10	.19	.26	.31	.38	.42	.44	.52	.59	.64	.63	.67	.71

Table 2 - Correction factor table - Imperial unit

Approach	Temperature range [°F]												
Temp. [°F]	5	6	7	8	9	10	12	14	16	18	20	22	24
4	1.07	1.33	1.42	1.57	1.65	1.71	1.80	2.14	2.21	2.30	2.46	2.61	2.75
5	.89	1.04	1.14	1.25	1.36	1.47	1.62	1.71	1.79	1.85	2.14	2.25	2.38
6	.76	.89	.99	1.11	1.19	1.27	1.42	1.59	1.66	1.75	1.84	1.89	2.01
7	.70	.77	.85	.94	1.02	1.09	1.22	1.33	1.42	1.53	1.66	1.72	1.77
8	.61	.67	.76	.86	.93	1.00	1.13	1.22	1.33	1.42	1.53	1.62	1.69
9	.52	.62	.69	.79	.86	.89	1.02	1.10	1.19	1.30	1.42	1.48	1.54
10	.46	.56	.60	.66	.69	.76	.91	1.02	1.10	1.17	1.30	1.37	1.45
11	.40	.50	.61	.62	.63	.70	.85	.94	1.02	1.07	1.13	1.25	1.30
12	.37	.46	.49	.56	.61	.66	.75	.87	.94	1.04	1.07	1.14	1.19
13	.36	.43	.46	.51	.52	.63	.69	.81	.86	.92	.98	1.04	1.09
14	.33	.38	.43	.46	.51	.61	.68	.75	.79	.81	.93	.94	1.02
15	.31	.37	.40	.44	.49	.56	.64	.69	.74	.79	.85	.92	.97
16	.30	.36	.37	.43	.44	.51	.58	.63	.69	.75	.80	.85	.94
17	.29	.33	.34	.40	.43	.49	.54	.60	.62	.72	.75	.81	.88
18	.28	.29	.34	.37	.41	.44	.50	.56	.60	.68	.73	.77	.82
19	.25	.28	.31	.34	.38	.43	.46	.52	.56	.64	.69	.74	.79
20	.21	.27	.28	.31	.36	.40	.44	.49	.55	.62	.68	.69	.75

CUA Series Performance data :

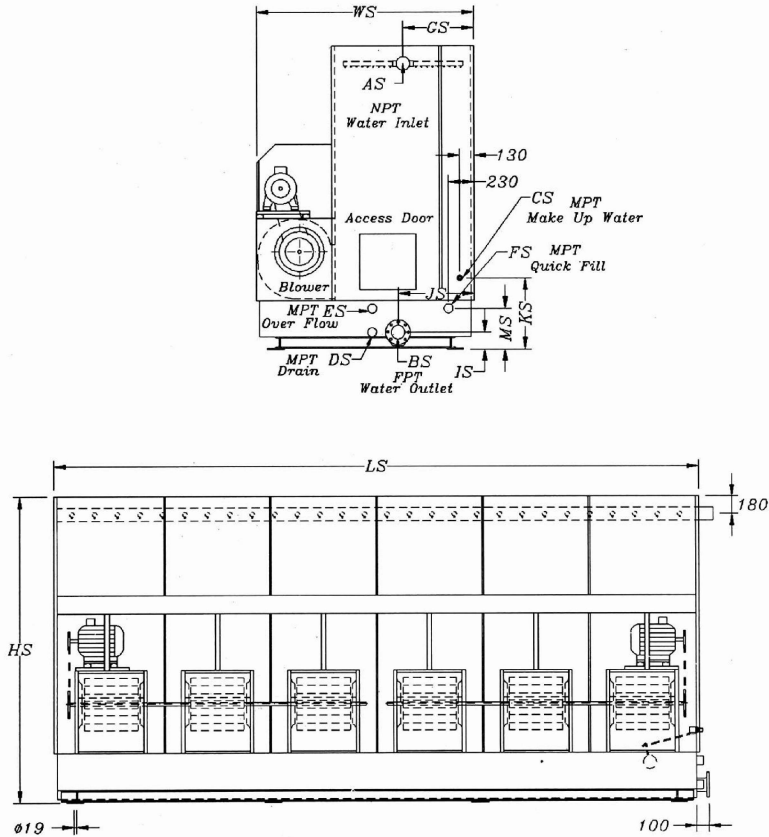
MODEL	Nominal Capacity	Nominal Water Flow [G.P.M]	Fan		Dimensions [m]		Weight [Kg]		Pipe Connections[inch]				Pump Head [m.H2o]	
			Motor Power [Kw]	Nominal DIA [m]	Nominal air flow [cfm]	Height	DIA	DRY	OPER	In let	Over Flow	Float Valve		Quick Fill
CUA0010	10	35	0.75	0.60	3200	1.04	0.93	60	140	2	1 1/4	3/4	-	1.3
CUA0020	20	70	1.2	0.76	6700	1.68	1.17	85	220	3	1 1/4	3/4	-	1.6
CUA0040	40	140	1.5	0.76	7800	2.02	1.38	160	365	3	1 1/4	3/4	-	2
CUA0060	60	210	2.2	1.90	12000	2.00	1.78	220	520	4	1 1/4	3/4	-	2.5
CUA0080	80	280	2.2	1.20	14500	2.38	2.00	400	710	4	1 1/4	1	-	2.5
CUA0100	100	320	3	1.20	17300	2.48	2.00	435	795	4	1 1/4	1	3/4	3
CUA0125	125	440	3	1.20	24000	2.57	2.6	520	950	5	1 1/4	1	3/4	3.6
CUA0150	150	530	4	1.5	28000	2.4	2.95	630	1055	5	1 1/2	1	3/4	3.6
CUA0175	175	620	4	1.5	30000	2.62	2.95	790	1470	5	1 1/2	1	3/4	3.8
CUA0200	200	700	4	1.8	33000	2.62	3.35	875	1555	5	1 1/2	2	3/4	4.4
CUA0225	225	790	5.5	1.8	47000	2.92	3.7	1340	3040	5	1 1/2	2	3/4	4.4
CUA0250	250	880	5.5	1.8	57000	3.15	3.7	1460	3160	5	1 1/2	2	1	4.6
CUA0300	300	1050	7.5	2.4	67000	3.65	4.4	1660	3360	6	1 1/2	2	1	4.8
CUA0350	350	1230	7.5	2.4	84000	3.28	4.4	1765	3475	6	1 1/2	2	1	5
CUA0400	400	1400	11	2.4	91000	3.45	4.85	1860	3860	6	2	2	1	5
CUA0450	450	1580	11	3	107000	3.68	4.85	2310	4310	6	2	2	1	5.3
CUA0500	500	1760	15	3	120000	4.05	5.5	2535	8520	6	2	2	2	5.3
CUA0600	600	2110	15	3	140000	4.27	5.5	2590	7155	6	2	2	2	5.5



CTA Series Performance data :

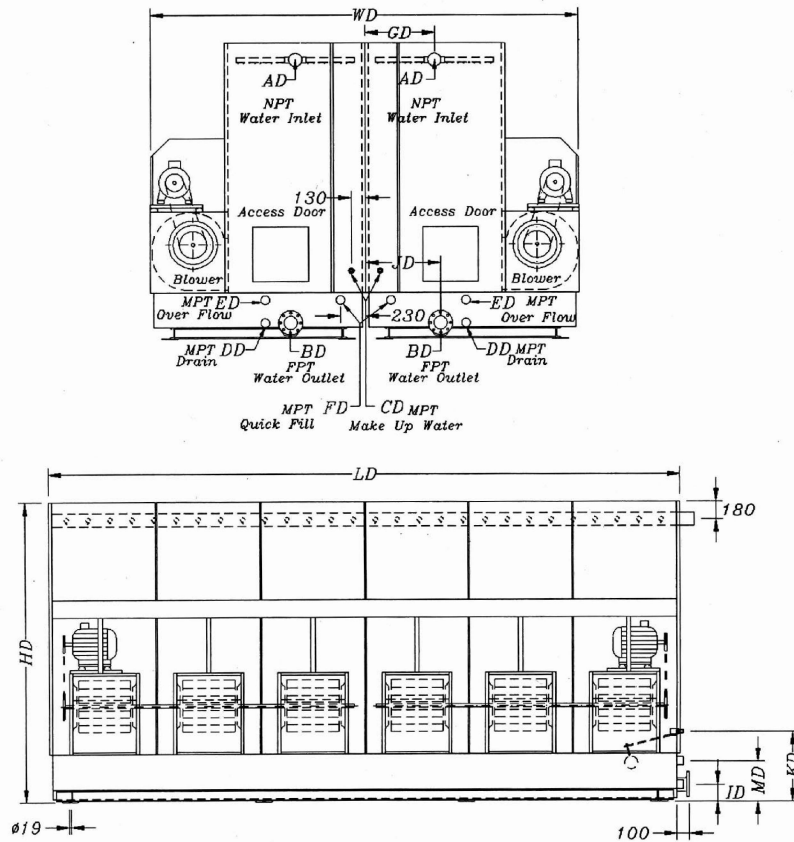
Model	Nom. cap.		Nom. flow		Air flow rate		P.D.	Ele. Mot.	Fan(s)	Weight	
	[R.ton]	[kW]	[GPM]	[L/s]	[m ³ /hr]	[CFM]				[m]	Quantity [kW]
CTAS0020	20	71	60	3.785	7200	4237	12.5	1 X 1.5	1 X380 (600)	590	870
CTAS0030	30	106	90	5.677	10800	6357	12.5	1 X 2.2	1 X380 (650)	700	1000
CTAS0040	40	141	120	7.570	14400	8476	12.5	1 X 2.2	1 X457 (600)	920	1220
CTAS0050	50	176	150	9.463	18000	10594	12.5	1 X 4.0	1 X457 (700)	1070	1370
CTAS0060	60	212	180	11.355	21600	12714	13.2	1 X 4.0	2 X380 (600)	1250	1850
CTAS0070	70	247	210	13.248	25300	14892	13.2	1 X 5.5	2 X380 (650)	1350	1950
CTAS0080	80	282	240	15.141	28900	17010	13.2	1 X 5.5	2 X457 (600)	1450	2050
CTAS0100	100	352	300	18.926	36100	21274	13.2	1 X 7.5	2 X457 (700)	1700	2200
CTAS0120	120	423	360	22.711	43300	25486	13.2	(1 X5.5)(1 X 2.2)	3 X457 (600)	2700	3600
CTAS0140	140	493	420	26.497	50600	29782	13.2	2 X 5.5	4 X380 (750)	3500	4700
CTAS0160	160	564	480	30.282	57800	34020	13.2	2 X 5.5	4 X457 (600)	3700	4900
CTAS0200	200	704	600	37.853	72300	42555	13.2	(1 X7.5)(1 X 5.5)	5 X457 (600)	3850	5350
CTAS0240	240	845	720	45.423	86700	51030	13.2	2 X 7.5	6 X457 (600)	4500	6300
CTAD0320	320	1127	960	60.564	115500	67686	13.2	(2 X 5.5)(2 X 7.5)	10 X380 (675)	6000	9000
CTAD0400	400	1408	1200	75.706	144000	84756	13.2	4 X 7.5	12 X380 (700)	7200	12800
CTAD0500	500	1760	1500	94.632	180000	105954	13.2	6 X 5.5	12 X457 (620)	9500	13400
CTAD0580	580	2042	1740	109.77	210600	123955	13.2	(2 X 11)(4 X 7.5)	14 X457 (600)	10200	14200
CTAD0660	660	2323	1980	124.91	237800	139965	13.2	8 X 5.5	16 X457 (600)	13000	17800
CTAD0740	740	2605	2220	140.06	267500	157445	13.2	(4 X 11)(4 X 7.5)	20 X457 (600)	16500	21900
CTAD0820	820	2886	2460	155.20	296500	174515	13.2	(4 X 11)(4 X 7.5)	20 X457 (650)	17000	23000
CTAD0900	900	3168	2700	170.34	326000	191877	13.2	(6 X 11)(2 X 7.5)	22 X457 (600)	18500	25100
CTAD0980	980	3449	2940	185.48	354000	208357	13.2	8 X 11	24 X457 (600)	19200	26400
CTAD1060	1060	3731	3180	200.62	383000	225427	13.2	(6 X 11)(4 X 7.5)	26 X457 (600)	21000	28800
CTAD1140	1140	4012	3420	215.76	412000	242496	13.2	(6 X 11)(4 X 7.5)	26 X457 (650)	23000	30800

CTAS Series Dimensions:



Model	End dimensions [mm]			Connection sizes [inch]						Allocations [mm]				
	LS	WS	HS	AS	BS	CS	DS	ES	FS	GS	IS	JS	KS	MS
CTAS0020	940	1940	2750	3	3	1	1 1/4	1 1/4	-	635	150	680	630	-
CTAS0030	940	1940	2750	3	3	1	1 1/4	1 1/4	-	635	150	680	630	-
CTAS0040	940	1940	2750	3	2	1	1 1/4	1 1/4	-	635	150	680	630	-
CTAS0050	940	1940	2750	3	2	1	1 1/4	1 1/4	-	635	150	680	630	-
CTAS0060	1880	1940	2750	4	4	2	1 1/4	1 1/4	-	635	150	680	630	-
CTAS0070	1880	1940	2750	4	4	2	2	1 1/4	-	635	150	680	630	-
CTAS0080	1880	1940	2750	4	4	2	2	1 1/4	-	635	150	680	630	-
CTAS0100	1880	1940	2750	4	4	2	2	1 1/4	3/4	635	150	680	630	250
CTAS0120	2820	1940	2750	5	4	2	2	1 1/4	3/4	635	190	680	630	250
CTAS0140	3760	1940	2750	5	5	2	2	1 1/4	3/4	635	190	680	630	250
CTAS0160	3760	1940	2750	5	5	2	2	1 1/4	3/4	635	190	680	630	250
CTAS0200	4700	1940	2750	5	5	2	2	1 1/4	3/4	635	190	680	630	250
CTAS0240	5640	1940	2750	5	5	2	2	1 1/4	3/4	635	190	680	630	250

CTAD Series Dimensions:



Model	End dimensions [mm]			Connection sizes [inch]						Allocations [mm]				
	LD	WD	HD	AD	BD	CD	DD	ED	FD	GD	ID	JD	KD	MD
CTAD0320	4700	3880	2750	5	5	2	1 1/2	3	1	635	190	680	630	250
CTAD0400	5640	3880	2750	5	5	2	1 1/2	3	1	635	190	680	630	250
CTAD0480	5640	3880	2750	5	5	2	3	3	1	635	190	680	630	250
CTAD0500	5640	3880	2750	5	5	3	3	3	2	635	190	680	630	250
CTAD0580	6580	3880	2750	6	6	4	3	3	2	635	190	680	630	250
CTAD0660	7520	3880	2750	6	6	4	3	4	2	635	190	680	630	250
CTAD0740	8460	3880	2750	6	6	4	3	4	2	635	190	680	630	250
CTAD0820	9400	3880	2750	6	6	4	3	4	3	635	190	680	630	250
CTAD0900	10340	3880	2750	6	6	4	3	4	3	635	190	680	630	250
CTAD0980	11280	3880	2750	6	6	4	3	4	3	635	190	680	630	250
CTAD1060	12220	3880	2750	6	6	4	3	4	3	635	190	680	630	250
CTAD1140	12220	3880	2750	6	6	4	3	4	3	635	190	680	630	250