TURNURI DE RACIRE seria CMK

COOLING TOWERS CMK series

BOLDROCCHI T.E.
TECNOLOGIE EVAPORATIVE

Q Atunci cand nu se specifica altfel, turnurile de racire standard sunt selectionate pentru a functiona intre urmatoarele limite:

- inaltime de instalare pana la 500 m de la nivelul marii
- temperatura minima externa -20°C.
- temperatura maxima a apei de racit 55°C.
- apa de racit nu trebuie sa contina materiale in suspensie, nu trebuie sa produca depuneri si sa nu fie coroziva.

In cazul in care este necesar, turnurile de racire se pot alege pentru a functiona in conditii diferite de cele prezentate mai sus.

U nless otherwise specified, the standard cooling towers are selected to operate withni the following limits:

- *installation height up to 500 m o.s.l.*
- *minimum outdoor temperature -20°C.*
- *maximum temperature of water to be cooled 55°C.*
- *the water to be cooled must be free from particles in suspension, of good quality and not be liable to cause scale or corrosion.*

If need be, cooling towers suitable for operation in different conditions may be selected too.

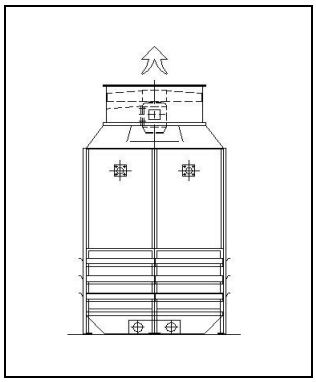
CARACTERISTICI TEHNICE

TECNICAL DATA

Model TAL / Model TAL	Debit aer m³ / s / Portata aria m³ / s	Numar motoare si ventilatoare / Number fans and motors	fiecare ventilator absorbita KW / motor KW — each fan absorbed KW	each fan installed KW	putere disipata heat rejection 36 / 30 / 24 (*) KW	36 / 30 / 24 (*) Kcal/h	45 / 30 / 24 (*) KW	45 / 30 / 24 (*) Kcal/h	greutate Kg (**) weight / Kg (**) Model "CV" gol net	Model "CV" cu apa operating	Model "SV" gol net	Model "SV" cu apa operating	Model "US" gol net	Model "US" cu apa operating
									"CV" arrang.		"SV" arrang.		"US" arrang.	
4060	16,11	1	4,9	5,5	893	759380	1429	1228940	2050	4200	1950	2700	1750	2500
4065	18,42	1	6,9	7,5	996	856660	1607	1382020	2050	4200	1950	2700	1750	2500
4090	17,27	1	7,1	7,5	1070	920200	1793	1541980	2150	4500	2050	3000	1850	2800
4095	19,56	1	9,7	11	1200	1032000	2005	1724300	2200	4600	2100	3000	1900	2800
6060	23,65	1	7,9	11	1300	1118000	2103	1808580	2600	5900	2450	3500	2200	3200
6090	23,65	1	9,6	11	1475	1268500	2480	2132800	2750	6200	2600	3900	2350	3700
6093	27,03	1	13,3	15	1670	1436200	2794	2402840	2800	6200	2650	3900	2400	3700
6095	30,35	1	18,1	18,5	1855	1595300	3100	2666000	2850	6300	2700	4000	2450	3800
8065	36,84	2	6,9	7,5	1994	1714840	3215	2764900	3700	7800	3400	4800	3100	4400
8090	34,54	2	7,1	7,5	2140	1840400	3587	3084820	3900	8600	3600	5400	3300	5000
8095	39,12	2	9,7	11	2400	2064000	4011	3449460	4000	8600	3700	5500	3400	5200
12060	47,31	2	7,9	11	2598	2234280	4206	3617160	4500	10700	4150	6100	3950	5900
12090	47,31	2	9,6	11	2950	2537000	4597	4263020	4800	11600	4450	7100	4250	6800
12093	54,06	2	13,3	15	3336	2868960	5590	4807400	4900	11600	4550	7200	4350	6900
12095	60,72	2	18,1	18,5	3713	3193180	6202	5333720	5000	11800	4650	7300	4450	7000
18060	70,95	3	7,9	11	3896	3350560	6309	5425740	6300	15500	5850	8800	8650	8500
18090	70,95	3	9,6	11	4423	3803780	7436	6394960	6750	16900	6300	10200	6100	9900
18093	81,09	3	13,3	15	5005	4304300	8385	7211100	6900	17000	6450	10400	6250	10100
18095	91,05	3	18,1	18,5	5570	4790200	9303	8000580	7050	17200	6600	10500	6400	10200
24090	94,61	4	9,6	11	5897	5071420	9915	8526900	8750	22200	8150	13300	7900	13000
24093	108,12	4	13,3	15	6673	5738780	11180	9614800	8950	22400	8350	13500	8100	13200
24095	121,42	4	18,1	18,5	7426	6386360	12404	10667440	9150	22600	8550	13700	8300	13500
30093	135,15	5	13,3	15	8345	7176700	13980	12022800	11350	28300	10550	17000	10200	16600
30095	151,75	5	18,1	18,5	9287	7986820	15515	13342900	11600	28500	10800	17200	10450	16900

(*) Temperatura apa intrare / iesire / bulb umed aer externa in °C
(*) Water inlet / outlet and wet bulb temperature in °C

(**) Greut. aproximative
(**) Approx. Weight

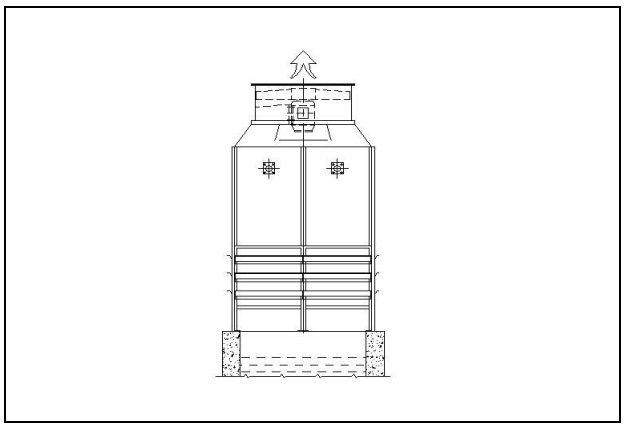


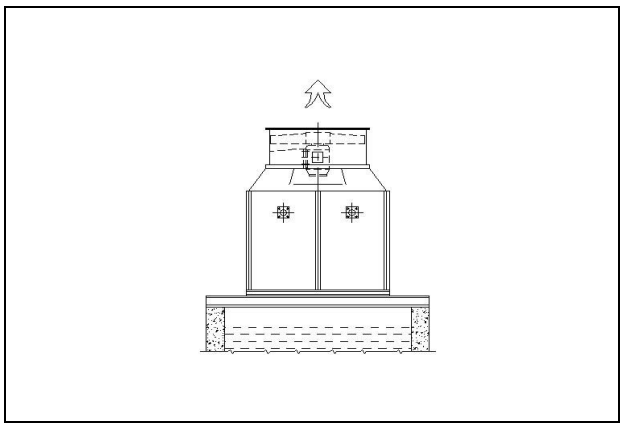
TURNURI COMPLETE (Model CV)

In instalatii simple, in care este posibila montarea turnului in punctul cel mai inalt, se poate instala un echipament dotat cu propriul bazin pentru colectarea apei.
In cazul in care instalatia functioneaza si iarna trebuie sa se ia masurile de precautie necesare pentru evitarea pericolului de inghet (izolarea tubulaturii, rezistenta anti-inghet montata in bazine, etc.

COMPLETE TOWERS (CV arrangement)

In simple system, in any case where the tower may be located at the highest point, the complete equipment with its own sump may be intalled.
Care should be taken to set the pumps under head and in any case where the system is to operate in the winter as well, suitable precautions should be taken to protect it aganist frost (lagging of pipes, frost-proof heating coils in the sump, etc..).





TURNURI FARA BAZIN (Model SV)

In instalatiile mai complexe ar putea fi util sa se dispuna de unul sau mai multe bazine, ingropate sau la nivelul solului, care sa colecteze toata apa din instalatie cu pompele oprite, asigurand o utilizare mai uniforma a turnului.
Ar putea fi deci util sa se utilizeze turnuri fara bazin propriu, montate deasupra unui bazin confectionat din beton destinat colectarii apei racite.
Daca este posibil, turnurile ar trebui sa pastreze postamentul propriu, astfel incat sa aiba functionarea separata de nivelul apei in bazin si sa se indeparteze pe cat posibil intrarea aerului uscat din apa de dedesubt.

TOWERS WITHOUT SUMP (SV arrangement)

In more complex system it may be of use to have one or more interred tanks or concrete sumps containinsg all the water in the system when the pumps are not operating. This - by means of hydraulic and thermal stabilization - allows more uniform explotation of the cooling tower performance.
Therefore it may be of use to consider using cooling towers without a sump and installed on the concrete sump for the collection and containment of cooled water.
When possible the towers will be supplied with their air inlet louvers and thus be suitable for operation regardless of the water level in the sump to increase the distance between the dry air flow and the water below.

NUMAI SECTIUNEA SUPERIOARA (Model US)

Acolo unde, motive economice si/sau comerciale o recomanda, turnurile pot fi furnizate fara bazin si fara postament.

Acestea vor trebuie pozitionate astfel incat sa asigure intotdeauna trecerea aerului.

UPPER SECTION (US arrangement)

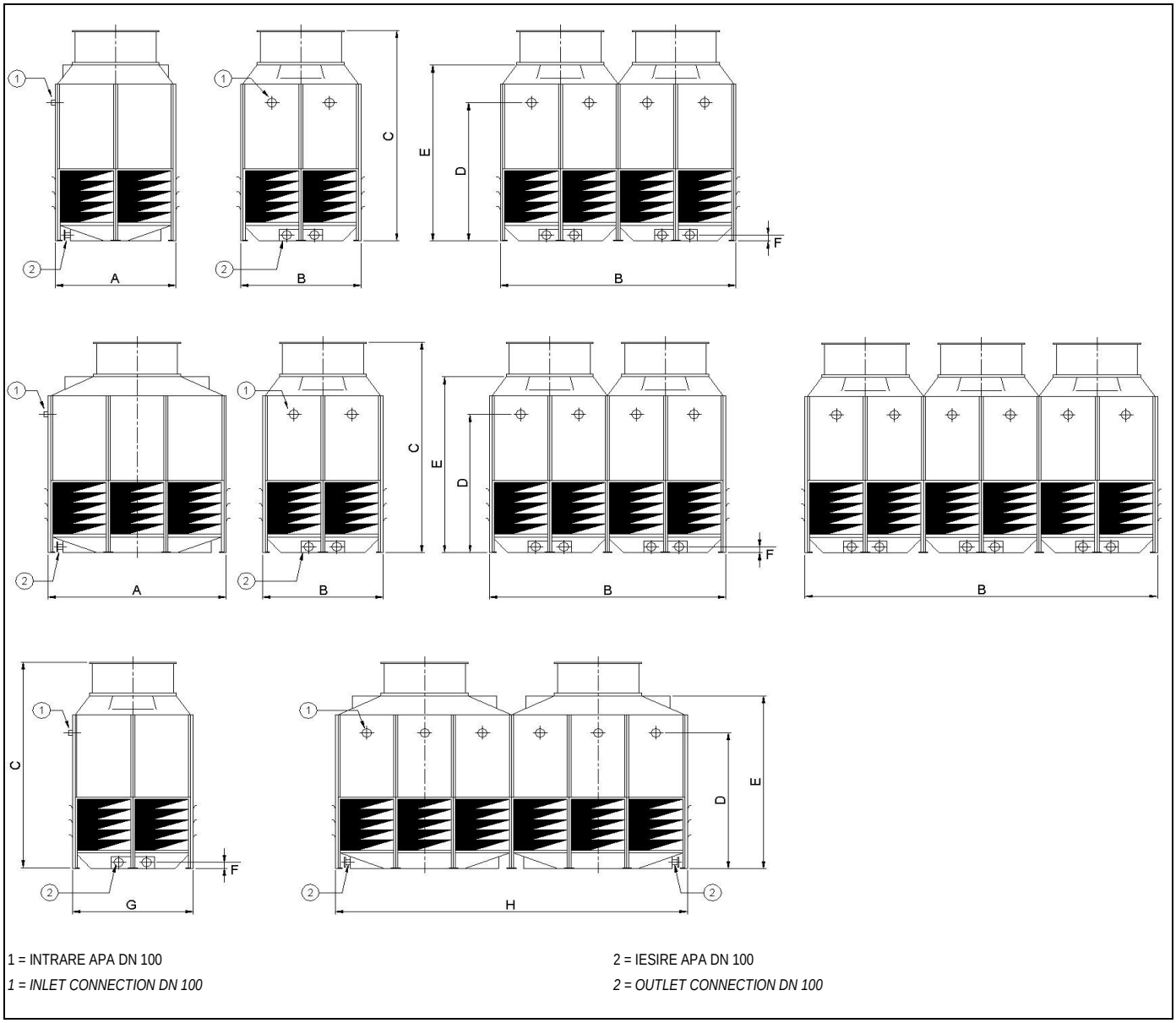
If need be, due to reason of economis and/or commercial suitability, the towers may be supplied without sump and louvers.
Therefore they have to be set up ensure air flow at all times.

N.B. Numai pentru modelele SV si US, atunci cand este vorba de turnuri cu mai multe celule, se poate utiliza legarea celulelor pe partea inferioara si se poate obtine o aranjare in panta, asa cum este indicat in tabelul cu dimensiuni de la pagina urmatoare, este insa necesar sa se prevada aceasta aranjare in faza de comanda.

***N.B.** : only for "SV" and "US" arrangements when towers with several cells are used, the cells may be fitted on the shorter side to obtain a more straightforward plan dimension, asa show in the tables of dimensions contained in the pages hereafter; it is necessary to make provision for that arrangement when placing order.*

TURNURI COMPLETE (Model CV)

COMPLETE TOWERS (CV arrangement)



1 = INTRARE APA DN 100
1 = INLET CONNECTION DN 100

2 = IESIRE APA DN 100
2 = OUTLET CONNECTION DN 100

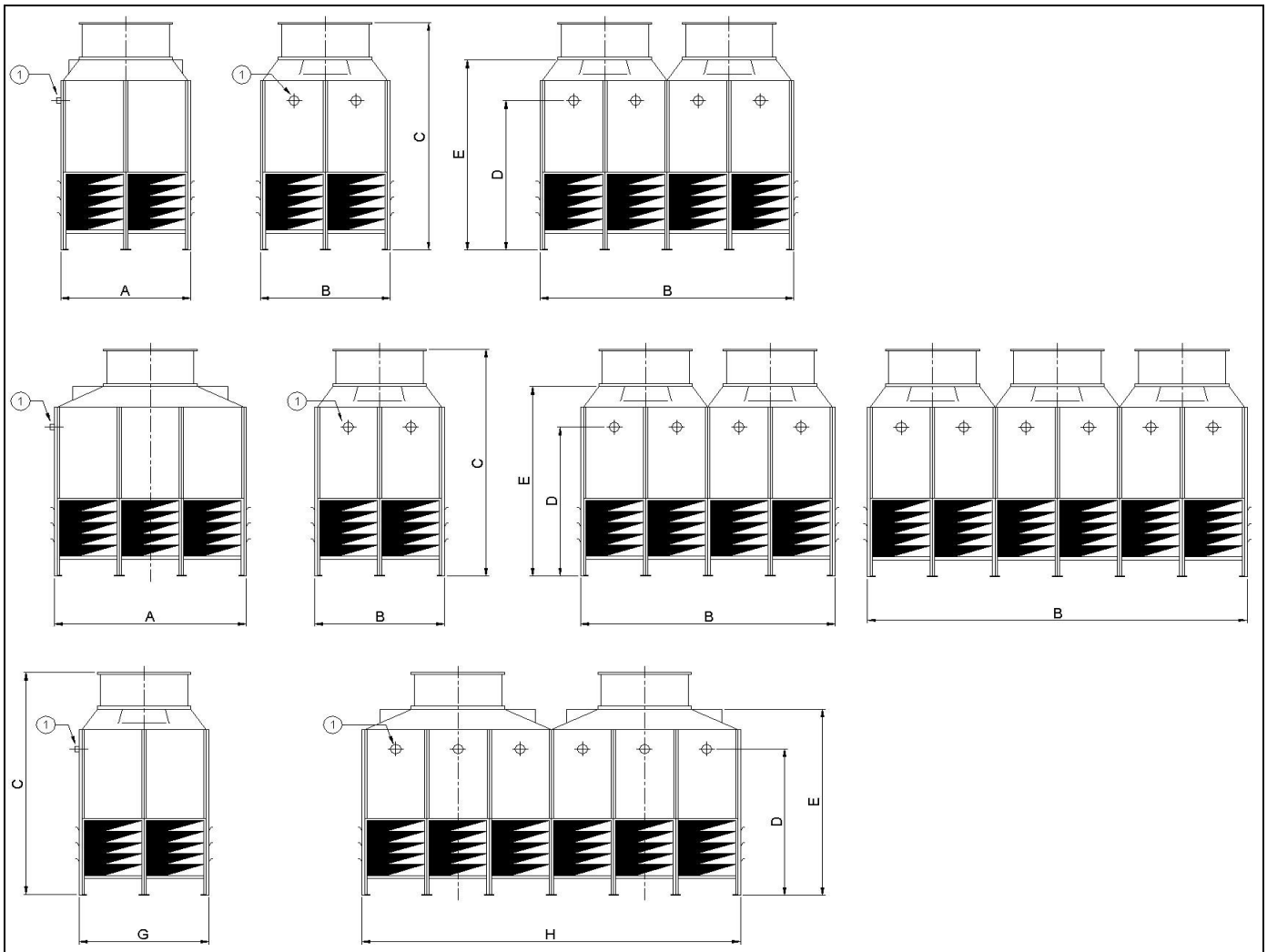
MODEL CMK MODEL	A	B	C	D	E	F	G	H	1	2
									NR.	NR.
4060 - 4095	2382	2382	4370	3125	3620	120	-	-	2	2
6060 - 6095	3523	2382	4470	3125	3620	120	-	-	2	2
8065 - 8095	2382	4664	4370	3125	3620	120	-	-	4	4
12060 - 12095	3523	4664	4470	3125	3620	120	-	-	4	4
12060 - 12095*	-	-	4470	3125	3620	120	2382	6946	6	6
18060 - 18095	3523	6946	4470	3125	3620	120	-	-	6	6
24090 - 24095	3523	9228	4470	3125	3620	120	-	-	8	8
30093 - 30095	3523	11560	4470	3125	3620	120	-	-	10	10

Dimensiuni in mm.
* Solutii in linie la cerere
Dimensiuni orientative
Daca este necesar, va putem furniza desenele definitive in functie de solicitarile Dvs.

Dimensions in mm.
** Straightforqard plan dimension when required*
Dimensions not binding
If required, definitive drawings are supplied.

MODEL SV

SV ARRANGEMENT



1 = INTRARE APA DN 100

1 = INLET CONNECTION DN 100

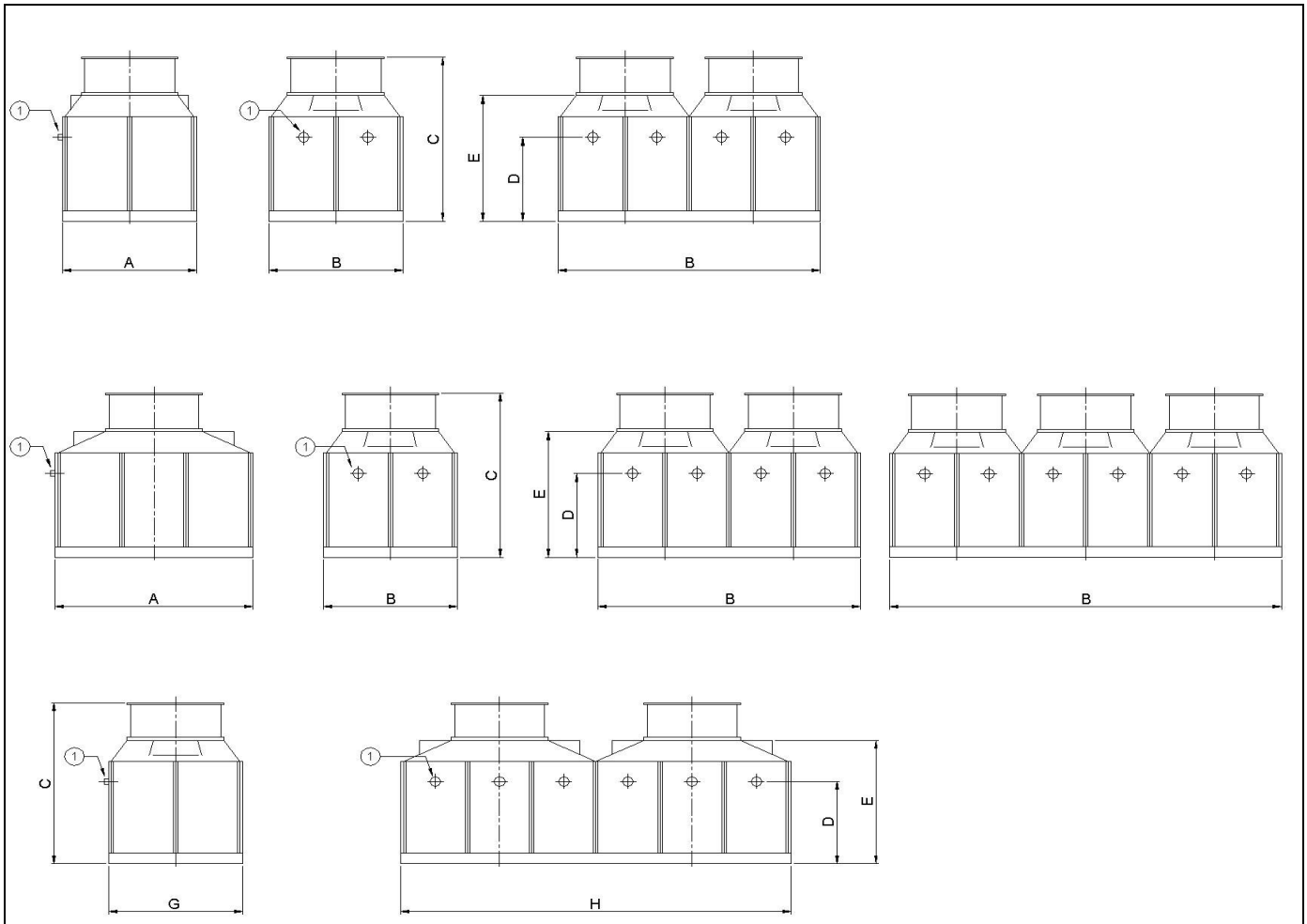
MODEL CMK MODEL	A	B	C	D	E	G	H	1 NR.
4060 - 4095	2382	2382	4370	3125	3620	-	-	2
6060 - 6095	3523	2382	4470	3125	3620	-	-	2
8065 - 8095	2382	4664	4370	3125	3620	-	-	4
12060 - 12095	3523	4664	4470	3125	3620	-	-	4
12060 - 12095*	-	-	4470	3125	3620	2382	6946	6
18060 - 18095	3523	6946	4470	3125	3620	-	-	6
18060 - 18095*	-	-	4470	3125	3620	2382	10420	9
24090 - 24095	3523	9228	4470	3125	3620	-	-	8
24090 - 24095*	-	-	4470	3125	3620	2382	13842	12
30093 - 30095	3523	11560	4470	3125	3620	-	-	10
30093 - 30095*	-	-	4470	3125	3620	2382	17265	15

Dimensiuni in mm.
* Solutii in linie la cerere
Dimensiuni orientative
Daca este necesar, va putem furniza desenele definitive in functie de solicitarile Dvs.

Dimensions in mm.
** Straightforqard plan dimension when required*
Dimensions not binding
If required, definitive drawings are supplied.

MODEL US

US ARRANGEMENT



1 = INTRARE APA DN 100

1 = INLET CONNECTION DN 100

MODELLO CMK MODEL	A	B	C	D	E	G	H	1 NR.
4060 - 4095	2400	2400	3050	1745	2190	-	-	2
6060 - 6095	3510	2400	3100	1765	2260	-	-	2
8065 - 8095	2400	4685	3050	1745	2190	-	-	4
12060 - 12095	3555	4695	3100	1765	2260	-	-	4
12060 - 12095*	-	-	3100	1765	2260	2415	6980	6
18060 - 18095	3555	6980	3100	1765	2260	-	-	6
18060 - 18095*	-	-	3100	1765	2260	2415	10400	9
24090 - 24095	3555	9265	3100	1765	2260	-	-	8
24090 - 24095*	-	-	3100	1765	2260	2415	13900	12
30093 - 30095	3570	11600	3150	1825	2330	-	-	10
30093 - 30095*	-	-	3150	1825	2330	2415	17320	15

Dimensiuni in mm.
* Solutii in linie la cerere
Dimensiuni orientative
Daca este necesar, va putem furniza desenele definitive in functie de solicitarile Dvs.

Dimensions in mm.
** Straightforqard plan dimension when required*
Dimensions not binding
If required, definitive drawings are supplied.

SPECIFICATIE TEHNICA

Turnurile de racire din seria CMK sunt compuse in principal din urmatoarele componente.
Structura de sustinere si de rigidizare din profile robuste din otel carbon zincate in baie dupa prelucrare.
Manta din panouri autoportante din tabla zincata din otel carbon.
Ventilatoare montate pe aspiratie, cu carcasa din otel carbon zincat in baie dupa prelucrare.
Rotorul, de tip axial, are pale cu profil aerodinamic si este legat direct pe axul unui motor electric trifazat, avand nivel de protectie IP 55 pe toata carcasa, izolatie clasa F, construit conform normelor IEC 72 si IEC 34.I.
Capac din rasina de cea mai buna calitate realizat prin presare.
Capacul este ulterior protejat, in faza de formatare, prin aplicarea unui strat de material impermeabil, special.

Cadre interne de sustinere din profile de otel zincat in baie dupa prelucrare.
Suprafata de schimb compusa din mai multe sectiuni.
Fiecare sectiune este construita din PVC sau PP laminat, ondulate pe diagonala si unite prin unde alternative, astfel incat sa garanteze cel mai bun contact intre fluidele apa / aer si cu o rezistenta limitata la trecerea aerului.
Sistem de distributie a apei de tip "fara duze", constituit din unul sau mai multi colectori principali, din colectori secundari din teava de otel carbon zincat in baie dupa prelucrare si din distribuitori cu gravitatie, care prezinta risc redus de obturare, din otel inoxidabil AISI 304, fixati prin sudura la colectorii secundari care, fara a necesita nici un fel de intretinere, si cu pierderi de sarcina reduse, asigura o distribuire uniforma a apei pe toata suprafata de schimb.
Separator de picaturi din PVC compus din mai multe sectiuni usor demontabile.
Grila de sustinere a suprafetei de schimb constituita din profile metalice plane, zincate in baie dupa prelucrare. Grila robusta are si functia de a garanta siguranta personalului insarcinat cu intretinerea interna a turnului.

Jaluzele de protectie cu ample deschideri de intrare a aerului, realizate din tabla zincata cu grosimea de 20/10 mm si fixate pe profilele structurii cu buloane.
Bazin de colectare apa din rasina de cea mai buna calitate realizat prin presare si protejat ulterior, in faza de formare, cu un strat de material impermeabil special.

Bazinul este dotat cu:

- racord de iesire completat cu filtru apa de tip anticavitatie
- racord pentru apa de completare dotat cu vana cu plutitor
- racord de prea-plin

Buloane zincate, garnituri de sigilare pentru asamblarea tuturor componentelor.

Toate indicatiile cuprinse in prezentul cataloc sunt orientative si pot fi modificate fara preaviz.

TECHNICAL SPECIFICATIONS

Series CMK cooling towers consist essentially of the components specified below.
Support and stiffening frame made of robust steel profile, hot dip galvanized after manufacturing.
Casing consisting of self-bearing galvanized sheet panels with 20/10 mm thickness.
Suction fans with supporting structure, hot-dip galvanized after manufacturing.
The axial impeller has smooth contoured blades and is coupled into the shaft of the three-phase TEFC electric motor, according with IEC 72 and IEC 34.I, IP55 protection, class F insulation on the entire body.
Upper cap in high quality moulded glass fibre construction. The upper cap is further protected during moulding by the application of a coat-waterproofing agent.
Internal framework made of steel profile construction, hot-dip galvanized after manufacturing.
Wet deck surface made up of several sections. Each section consists of PVC or P.P. baffles corrugated diagonally and assembled with alternate course maximizing fluid/air contact and reducing resistance to the air flow.
Water distribution system without spray nozzles made up of one or more main headers, secondary headers made of tubular steel hot-dip galvanized after manufacturing and gravity distributors, non clogging, in AISI 304 stainless steel, connected to the main headers which, since they require no maintenance and offer reduced water leaks, ensure uniform water distribution in all wet deck surface.
Drift eliminator in PVC composed of several easily lift.
Support grids for the wet deck surface consisting of flat metal profiles hot-dip galvanized after manufacturing. The robust grid also provides for safety of maintenance personnel working on the inside of the tower.
Protection louvers with broad opening for air inlet, made of galvanized steel of thickness 20/10 mm and bolted to the structure profiles.
Sump of quality glass fibre construction, moulded and protected by the application of a specific waterproofing coat during moulding.
The sump is supplied with:

- water outlet connection with anti-vortexing strainer
- connection for make-up water with float valve
- overflow connection
-

Galvanized bolts, packing and sealing compound for the assembly of all components.
Accessories more frequently requested:

- safety protection grid of the fan
- panels, louvers and bolts in AISI 304 stainless steel
- splash type wet deck surface, non clogging, suitable for up to 90 °C.

All the indications contained in the present catlogue are indicative.
Boldrocchi T.E. reserves the right to bring without forewarning all the variations that became necessary owing to technical or productive exigencies.

BOLDROCCHI T.E. S.R.L.

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