

**MST**

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**MXR-KM Series**  
Cross Flow Type Cooling Tower

- In order to upgrade the products, MESAN reserves the right to amend the technical data without prior notice.
- MESAN provides custom design cooling tower to meet special requirement.
- One year warranty under normal operation.
- All right reserved.

Dealer:

2011.4/L



## Components

### Drive Components

#### Motor

Motor shall be TEAO, weatherproof, IP55 protection degree with class F insulation, high efficiency, low noise and specially insulated for running in humid environment.

\*Also available with Two Speed motor and VFD motor.

#### High Efficiency Fan

Cofimco high efficiency axial aluminum alloy fans with innovative aerodynamic blade design, adjustable pitch blades at low fan tip speeds with low noise emission ensures optimum performance and low power consumption.

\* Also available with FRP fan for special application.



#### V-Belt Reducer

● 45 carbon steel of rotating shaft with Japan NSK bearing and Mitsubishi transmission belts able to withstand the adverse humid air assure long credible operation and higher performance.

\*Also available with Gear box reducer

● Pulley is cast iron with dynamic tested to guarantee the performance and ensures quiet operation.

### FRP Components

UV stabilized gel coat with imported color pigment, unsaturated polyester resin with E-glass chopped strand mat, it provides superior protection, corrosion resistant, long services life and minimal maintenance. With the high quality control of the production process assure the best quality with outstanding value.

#### High Efficiency Low Drift Infill

● The vacuum forming PVC high efficiency hanging fill-type with special wave-shape design maximized the heat transfer. Integrated inlet louvers optimized air ventilation and the drift eliminators minimized the drift loss to 0.005% of the design water flow. 100% virgin material guarantees higher performance and longer service life.

● Adhesive-free hanging assembly design is environmentally-friendly and cost saving on shipping.

\*Also available with higher temperature PVC infill and PP infill



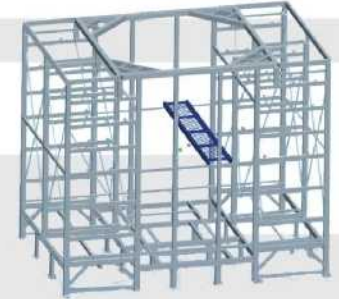
#### Air Inlet Louvers

Designed to block the direct sunlight to the infill, to minimize algae and bacteria growth, reduce the splash out and to protect the infill from ice formation and possible damage.

### Service Platform and Sloping Cold Water Basin

● Internal service platform is provided for maintenance access.  
● The cold water basin is designed with sufficient water capacity to avoid air entrainment during operation. The sloping designs for completely drain out and ease of cleaning.

\* For multicell installation connected to a single system, an optional balance pipe between basins to maintain the water level.



### Frame Structure

All structural design are analyzed and using heavy duty steel construction. The standard structural design is based on resistance of typhoon grade 12 and Richter scale 7.

\*Also available with SS304, SS316 and hot dip galvanized carbon steel with dacromet coating.

### Dacromet Coated Bolts and Nuts

Dacromet is a coating composition of metal oxides, metallic zinc and aluminum with high corrosion resistance which is widely applied in motor industry. It's durable and longer services life.



### Internal Piping System

Internal Piping for models A1 to E3 to save the piping cost and the installation time.



### Factory assembled

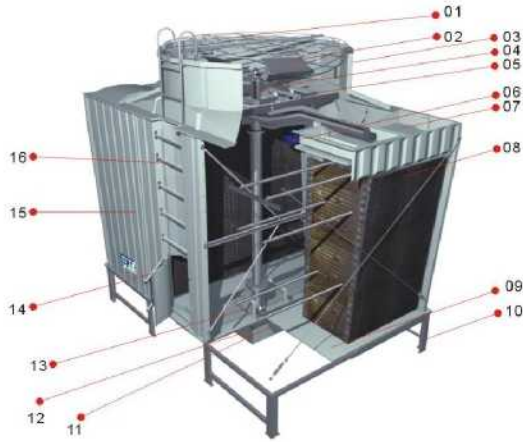
Models A1 to C4 are precisely assembled in the factory into several sections and using the fork-lifting assemble on the job site. It save the time and cost for installation and the quality is guaranteed.



## TOWER STRUCTURE

MXR-KM-A1-1.1L/SL - MXR-KM-E3-15L/SL

- 01. Fan Guard
- 02. Fan
- 03. Fan Stack
- 04. V-Belt Reducer
- 05. Motor Support
- 06. Motor
- 07. Hot Water Basin
- 08. Infill
- 09. Basin
- 10. Frame Work
- 11. Water Inlet
- 12. Suction Tank
- 13. Water Outlet
- 14. Access Door
- 15. Casing
- 16. Ladder



Single Cell Water Flow: 59 – 393m<sup>3</sup>/h



## SPECIFICATIONS

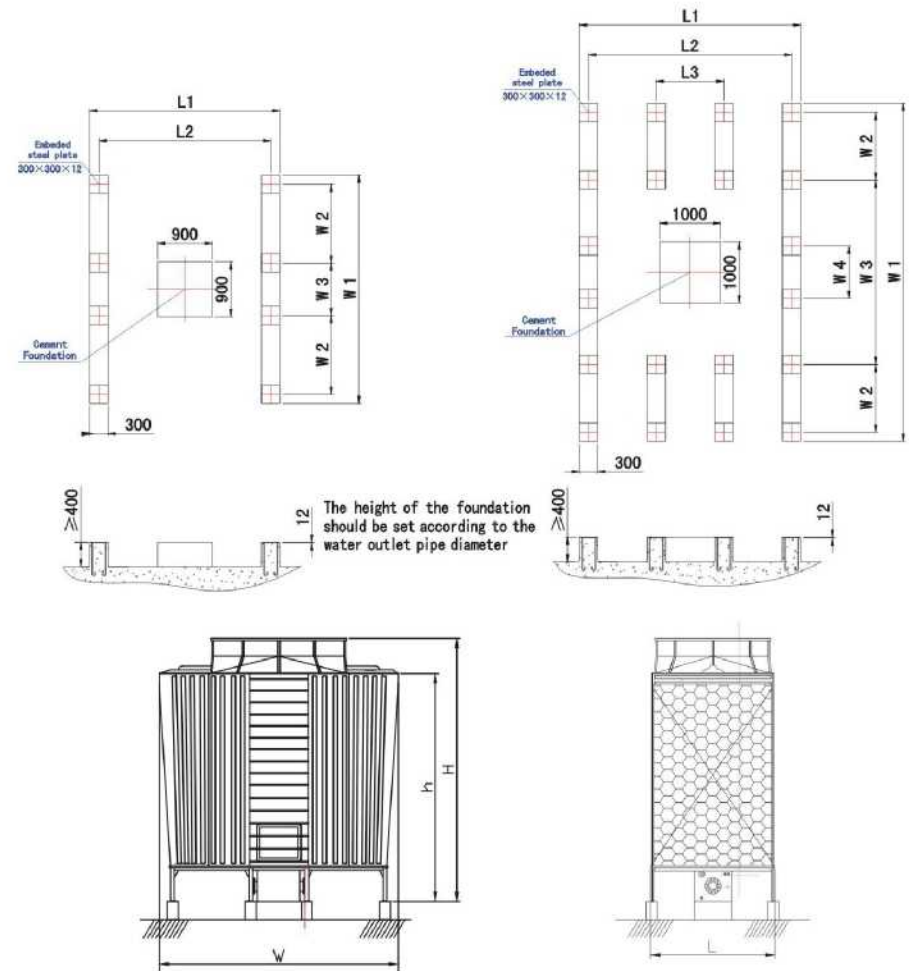
Design condition: HWT: T1=37°C, CWT: T2=32°C, DBT: Td=31.5°C, WBT: Tw=28°C, P=99.4Kpa.

Model	Specifications			Tower Dimension					Water Pressure Kpa	Piping					Foundation Dimension						
	Water Flow		Motor	L	W	H (L)	h	H (S)		Inlet	Outlet	Overflow	Drain	Float valve	L1	L2	L3	W1	W2	W3	W4
	28°C	27°C	KW	mm	mm	mm	mm	mm		DN	DN	DN	DN	DN	mm	mm	mm	mm	mm	mm	mm
MXR-KM	m <sup>3</sup> /h	m <sup>3</sup> /h																			
A1-0.75	52	59	0.75																		
A1-1.1	59	67	1.1	2110	4060	3470	2870	3970	60	125	125	50	40	20	2330	2030		3910	1330	950	
A1-1.5	65	74	1.5																		
A1-2.2	74	85	2.2																		
A1-3	82	94	3																		
A1-4	90	103	4																		
A2-1.1	62	71	1.1																		
A2-1.5	68	78	1.5	2110	4060	3470	2870	3970	60	125	125	50	40	20	2330	2030		3910	1330	950	
A2-2.2	78	89	2.2																		
A2-3	87	99	3																		
A2-4	96	110	4																		
A2-5.5	106	121	5.5																		
A3-2.2	86	98	2.2																		
A3-3	95	109	3	2110	4060	3970	3370	4470	60	125	125	50	40	20	2330	2030		3910	1330	950	
A3-4	105	120	4																		
A3-5.5	117	134	5.5																		
A4-2.2	90	103	2.2																		
A4-3	101	115	3	2110	4060	3970	3370	4470	60	125	125	50	40	20	2330	2030		3910	1330	950	
A4-4	110	126	4																		
A4-5.5	123	141	5.5																		
A5-2.2	94	107	2.2																		
A5-3	105	120	3	2110	4060	4470	3870	4970	60	125	125	50	40	20	2330	2030		3910	1330	950	
A5-4	116	133	4																		
A5-5.5	128	146	5.5																		
A5-7.5	144	165	7.5																		
A6-2.2	98	112	2.2																		
A6-3	109	125	3	2110	4060	4470	3870	4970	60	125	125	50	40	20	2330	2030		3910	1330	950	
A6-4	120	137	4																		
A6-5.5	134	153	5.5																		
A6-7.5	150	171	7.5																		
B1-2.2	93	106	2.2																		
B1-3	104	119	3	2280	4240	3850	3220	4650	60	150	150	50	40	25	2500	2200		4020	1385	950	
B1-4	115	131	4																		
B1-5.5	129	147	5.5																		
B2-2.2	97	111	2.2																		
B2-3	108	123	3																		
B2-4	119	136	4	2280	4240	3850	3220	4650	60	150	150	50	40	25	2500	2200		4020	1385	950	
B2-5.5	132	151	5.5																		
B2-7.5	147	168	7.5																		
B2-11	167	191	11																		
B3-3	115	131	3																		
B3-4	127	145	4	2280	4240	4350	3720	5150	60	150	150	50	40	25	2500	2200		4020	1385	950	
B3-5.5	141	161	5.5																		
B3-7.5	158	181	7.5																		
B4-3	119	136	3																		
B4-4	132	151	4	2280	4240	4350	3720	5150	60	150	150	50	40	25	2500	2200		4020	1385	950	
B4-5.5	147	168	5.5																		
B4-7.5	162	185	7.5																		
B5-3	118	135	3																		
B5-4	131	150	4	2280	4240	4530	3900	5330	60	150	150	50	40	25	2500	2200		4020	1385	950	
B5-5.5	147	168	5.5																		
B5-7.5	163	185	7.5																		
B6-3	123	141	3																		
B6-4	136	155	4	2280	4240	4530	3900	5330	60	150	150	50	40	25	2500	2200		4020	1385	950	
B6-5.5	152	174	5.5																		
B6-7.5	169	193	7.5																		
B7-3	126	143	3																		
B7-4	138	158	4	2280	4240	4650	4220	5650	70	150	150	50	40	25	2500	2200		4020	1385	950	
B7-5.5	154	176	5.5																		
B7-7.5	172	197	7.5																		
B7-11	196	224	11																		
B8-3	129	147	3																		
B8-4	143	163	4	2280	4240	4650	4220	5650	70	150	150	50	40	25	2500	2200		4020	1385	950	
B8-5.5	159	182	5.5																		
B8-7.5	178	203	7.5																		
B8-11	203	232	11																		

Model	Specifications			Tower Dimension					Water Pressure Kpa	Piping					Foundation Dimension							
	Water Flow		Motor KW	L mm	W mm	H (L) mm	h mm	H (SL) mm		Inlet DN	Outlet DN	Overflow DN	Drain DN	Float valve DN	L1 mm	L2 mm	L3 mm	W1 mm	W2 mm	W3 mm	W4 mm	
	28°C m³/h	27°C m³/h																				
MXR-KM	m³/h	m³/h	KW	mm	mm	mm	mm	mm	Kpa	DN	DN	DN	DN	DN	mm	mm	mm	mm	mm	mm	mm	
C1-3	126	144	3																			
C1-4	139	169	4																			
C1-5.5	155	177	5.5	2610	4540	4280	3480	4970	60	200	200	50	40	25	2630	2530	-	4290	1470	1050	-	
C1-7.5	170	194	7.5																			
C2-3	130	149	3																			
C2-4	144	165	4																			
C2-5.5	161	184	5.5	2610	4540	4280	3480	5080	60	200	200	50	40	25	2630	2530	-	4290	1470	1050	-	
C2-7.5	178	203	7.5																			
C3-4	155	177	4																			
C3-5.5	173	198	5.5	2610	4540	4780	3980	5590	60	200	200	50	40	25	2630	2530	-	4290	1470	1050	-	
C3-7.5	193	221	7.5																			
C3-11	220	252	11																			
C4-4	160	183	4																			
C4-5.5	179	205	5.5	2610	4540	4780	3980	5580	64	200	200	50	40	25	2630	2530	-	4290	1470	1050	-	
C4-7.5	199	227	7.5																			
C4-11	227	260	11																			
C5-4	163	186	4																			
C5-5.5	182	208	5.5																			
C5-7.5	203	232	7.5	2610	4540	5110	4310	5910	70	200	200	50	40	25	2630	2530	-	4290	1470	1050	-	
C5-11	232	265	11																			
C5-15	258	295	15																			
C6-4	168	192	4																			
C6-5.5	188	215	5.5	2610	4540	5110	4310	5910	70	200	200	50	40	25	2630	2530	-	4290	1470	1050	-	
C6-7.5	210	240	7.5																			
C6-11	239	273	11																			
C6-15	265	304	15																			
D1-4	174	199	4																			
D1-5.5	195	223	5.5	2600	4820	4810	4010	5510	70	200	200	50	50	25	3200	2900	-	4510	1580	1050	-	
D1-7.5	217	248	7.5																			
D1-11	248	284	11																			
D2-4	180	206	4																			
D2-5.5	202	231	5.5																			
D2-7.5	225	257	7.5	2960	4820	4810	4010	5510	70	200	200	50	50	25	3200	2900	-	4510	1580	1050	-	
D2-11	256	293	11																			
D3-4	184	210	4																			
D3-5.5	206	235	5.5																			
D3-7.5	230	263	7.5	2960	4820	5110	4310	5910	60	200	200	80	50	25	3200	2900	-	4510	1580	1050	-	
D3-11	262	300	11																			
D3-15	292	334	15																			
D4-4	190	217	4																			
D4-5.5	213	244	5.5																			
D4-7.5	237	271	7.5	2960	4820	5110	4310	5910	60	200	200	80	50	25	3350	3050	-	4510	1580	1050	-	
D4-11	270	309	11																			
D4-15	301	344	15																			
E1-5.5	226	258	5.5																			
E1-7.5	252	288	7.5																			
E1-11	287	328	11	3120	5520	5018	4148	6018	70	250	250	80	50	40	3350	3050	1000	5170	1200	2470	700	
E1-15	319	365	15																			
E2-5.5	248	284	5.5																			
E2-7.5	274	313	7.5																			
E2-11	314	359	11	3120	5520	5350	4500	6350	70	250	250	80	50	40	3350	3050	1000	5170	1200	2470	700	
E2-15	349	399	15																			
E3-5.5	242	277	5.5																			
E3-7.5	270	309	7.5																			
E3-11	309	363	11	3120	5520	5560	4688	6596	70	250	250	80	50	40	3700	3050	1000	5170	1200	2470	700	
E3-15	344	393	15																			

## FOUNDATION

MXR-KM-A1-1.1 L/SL~MXR-KM-E3-15 L/SL



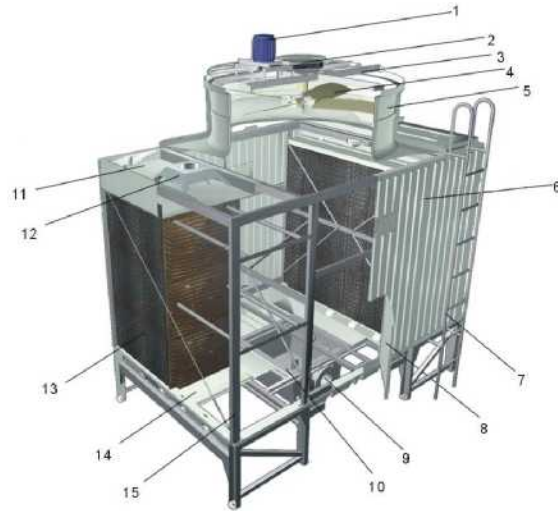
In order to ensure the optimum performance of the cooling towers, please ensure the foundation is done according to the following requirements:

1. The height of the foundation should be set according to the water outlet pipe diameter.
2. Apply the usual National code when making the foundation.
3. The inlet and outlet pipe height level must be installed lower than the bottom of cooling tower suction tank.



## TOWER STRUCTURE

MXR-KM-F1-5.5L/SL ~ MXR-KM-K3-45L/SL



- 01 Motor
- 02 V-Belt Reducer
- 03 Motor Support
- 04 Fan
- 05 Fan Stack
- 06 Panel
- 07 Ladder
- 08 Access Door
- 09 Water Outlet
- 10 Suction Tank
- 11 Hot Water Basin
- 12 Water Inlet
- 13 Infill
- 14 Basin
- 15 Frame Work

Single Cell Water Flow: 276 - 1303m<sup>3</sup>/h



Model	Specifications			Tower Dimension					Water Pressure	Piping					Foundation Dimension						
	Water Flow		Motor	L	W	H (L)	h	H (SI)		Inlet	Outlet	Overflow	Drain	Floatvalve	L1	L2	L3	W1	W2	W3	W4
	28°C	27°C																			
MXR-KM	m <sup>3</sup> /h	m <sup>3</sup> /h	KW	mm	mm	mm	mm	mm	Kpa	DN	DN	DN	DN	mm	mm	mm	mm	mm	mm	mm	
F1-5.5	241	276	6.5																		
F1-7.5	269	309	7.5	3530	5480	5000	3910	5980	70	150x2	250	80	50	40	3750	3450	1250	5600	1440	2420	1150
F1-11	307	351	11																		
F1-15	342	391	15																		
F2-5.5	262	300	6.5																		
F2-7.5	293	336	7.5	3530	5480	5460	4400	6470	70	150x2	250	80	50	40	3750	3450	1250	5600	1440	2420	1150
F2-11	334	382	11																		
F2-15	373	428	15																		
F2-18.5	401	458	18.5																		
F2-22	425	486	22																		
F3-5.5	269	309	6.5																		
F3-7.5	300	343	7.5	3530	5480	5670	4580	6650	70	150x2	250	80	50	40	3750	3450	1250	5600	1440	2420	1150
F3-11	342	391	11																		
F3-15	382	437	15																		
F3-18.5	411	470	18.5																		
F3-22	436	498	22																		
G1-11	374	429	11																		
G1-15	416	476	15	4030	6260	5210	4120	6190	70	125x4	250	80	50	40	4250	3950	1450	6380	1700	2680	1150
G1-18.5	448	512	18.5																		
G1-22	476	543	22																		
G2-11	393	449	11																		
G2-15	439	502	15	4030	6260	5540	4450	6520	70	125x4	250	80	50	40	4250	3950	1450	6380	1700	2680	1150
G2-18.5	472	540	18.5																		
G2-22	501	573	22																		
G2-30	557	637	30																		
G3-11	403	461	11																		
G3-15	450	514	15	4030	6260	5720	4630	6700	70	125x4	250	80	50	40	4250	3950	1450	6380	1700	2680	1150
G3-18.5	484	553	18.5																		
G3-22	514	589	22																		
G3-30	572	654	30																		
H1-7.5	355	406	7.5																		
H1-11	402	460	11	4430	6640	5260	4110	6260	70	150x4	300	100	100	50	4650	4350	1450	6760	1700	3060	1150
H1-15	452	517	15																		
H1-18.5	486	556	18.5																		
H1-22	516	590	22																		
H1-30	574	656	30																		
H2-11	439	502	11																		
H2-15	490	560	15	4430	6640	5760	4630	6760	70	150x4	300	100	100	50	4650	4350	1450	6760	1700	3060	1150
H2-18.5	527	602	18.5																		
H2-22	560	640	22																		
H2-30	623	712	30																		
H3-11	457	522	11																		
H3-15	510	583	15	4430	6640	6110	4960	7110	80	150x4	300	100	100	50	4850	4350	1450	6760	1700	3060	1150
H3-18.5	550	629	18.5																		
H3-22	584	668	22																		
H3-30	650	743	30																		
H3-37	699	799	37																		
I1-7.5	434	496	7.5																		
I1-11	498	569	11	5130	7360	5880	4730	7080	70	150x4	300	100	100	50	5350	5050	1667	7480	1700	3780	1150
I1-15	556	636	15																		
I1-18.5	598	684	18.5																		
I1-22	636	727	22																		
I1-30	708	809	30																		
I1-37	761	870	37																		
I2-11	519	593	11																		
I2-15	580	663	15	5130	7360	6210	5060	7410	80	150x4	300	100	100	50	5350	5050	1667	7480	1700	3780	1150
I2-18.5	623	712	18.5																		
I2-22	664	759	22																		
I2-30	740	846	30																		
I2-37	796	910	37																		
I2-45	851	973	45																		
I3-11	530	606	11																		
I3-15	593	678	15	5130	7360	6380	5230	7580	80	150x4	300	100	100	50	5350	5050	1667	7480	1700	3780	1150
I3-18.5	639	731	18.5																		
I3-22	679	776	22																		
I3-30	766	864	30																		
I3-37	814	931	37																		
I3-45	871	996	45																		

Model	Specifications			Tower Dimension					Water Pressure Kpa	Piping					Foundation Dimension							
	Water Flow		Motor KW	L mm	W mm	H (L) mm	h mm	H (S) mm		Inlet DN	Outlet DN	Overflow DN	Drain DN	Float valve DN	L1 mm	L2 mm	L3 mm	W1 mm	W2 mm	W3 mm	W4 mm	
	28°C m³/h	27°C m³/h																				
MXR-KM	m³/h	m³/h	KW	mm	mm	mm	mm	mm	Kpa	DN	DN	DN	DN	DN	mm	mm	mm	mm	mm	mm	mm	
J1-15	633	724	15																			
J1-18.5	662	780	18.5																			
J1-22	725	829	22	5530	7680	6000	5060	7640	80	200x4	350	100	100	50	5750	5450	1800	7780	1700	4080	1400	
J1-30	808	924	30																			
J1-37	889	993	37																			
J1-45	930	1063	45																			
J2-18.5	697	797	18.5																			
J2-22	741	847	22	5530	7680	6170	5230	6010	80	200x4	350	100	100	50	5750	5450	1800	7780	1700	4080	1400	
J2-30	826	944	30																			
J2-37	889	1016	37																			
J2-45	952	1088	45																			
J3-18.5	735	841	18.5																			
J3-22	785	897	22	5530	7680	6680	5740	6520	80	200x4	350	100	100	50	5750	5450	1800	7780	1700	4080	1400	
J3-30	874	999	30																			
J3-37	941	1076	37																			
J3-45	995	1141	45																			
K1-18.5	737	843	18.5																			
K1-22	784	896	22	6080	8160	6220	5230	6070	80	200x4	400	100	100	50	6300	6000	1950	8280	1700	4580	1500	
K1-30	875	1000	30																			
K1-37	941	1076	37																			
K1-45	1008	1152	45																			
K2-22	829	948	22	6080	8160	6220	5740	6580	80	200x4	400	100	100	50	6300	6000	1950	8280	1700	4580	1500	
K2-30	926	1059	30																			
K2-37	997	1140	37																			
K2-45	1067	1220	45																			
K2-55	1140	1303	55																			
K3-22	854	976	22	6080	8160	6220	6090	6930	90	200x4	400	100	100	50	6300	6000	1950	8280	1700	4580	1500	
K3-30	954	1091	30																			
K3-37	1028	1175	37																			
K3-45	1100	1268	45																			

## ACCESSORIES

Safety Cages & Handrail Complied with OSHA standard



Vibration Isolators



Motor installed Outside the fan stack with fully FRP pulley cover



Service platform fully cover on cold water basin



Extended Discharge Hood

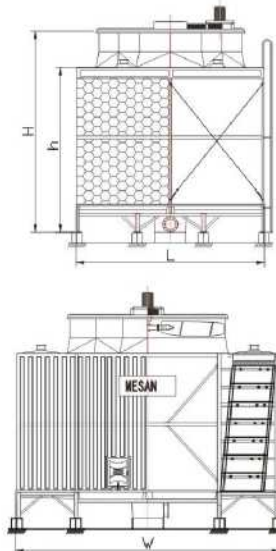
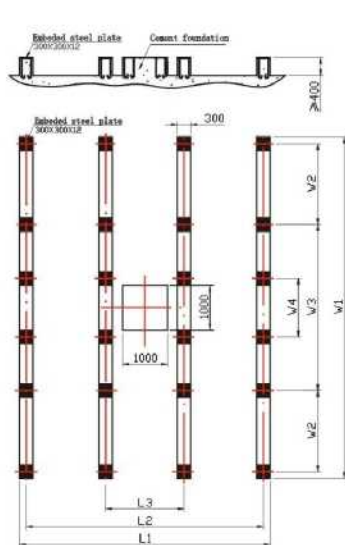


External Pipe Supporting Stand



Other optional accessories

Motor	High Efficiency Motor	Two Speed Motor	VFD Motor	FRP Fan	Low Noise Fan	180° Gear Box	90° Gear Box	High Temperature PVC Infill	ASTM PVC Infill	Anti-corrosion Frame	SST304, SST316	HDG Steel Plated with Dacromet Frame	ANSI Safety Fan Guard	Vibration Switch	Removable Strainer	Cold Water Basin Heaters	FRP Louver	Automatic Water Basin Cleaning System	Balance Pipe





### Cooling Tower Freeze Protection

- When the cooling tower is shut down at the wet-bulb temperature is under 0°C/32° F, the basin water must be protected by draining to a separate indoor sump tank or by providing supplementary heat to insure the tower operates at maximum possible heat load from the electric immersion heaters to protect the cold water basin. The indoor sump tank should be large enough to fill the entire recirculation system without danger of pump cavitations.
- The entire inlet and distribution system must be drained for shutdown in sub-freezing ambient to prevent the damage of the distribution system.
- All exposed water piping, make-up lines and spray pump should be insulated and heat traced.
- Regulating air flow with a speed drive or thermostatic control fan for on/off operation is the best way to manage cooling tower capacity while reducing the operating costs and minimize freeze potential on the air intake louvers and the wet decking.

Cooling tower must be installed at a well-ventilated location. It must be avoided to install at a dusty, hot air surrounded location or close to smokestack, Boiler, kitchen area.

### Single Unit Installation

When the cooling tower are located adjacent to the walls or in enclosures, the clearances between a cooling tower and the walls must be carefully examined to ensure the saturated discharge air is not drawn back to the air inlets (see Fig 1). These conditions can be resolved by elevating the unit on concrete plinths or steel foundation to discharge the air above the wall level (see Fig 2)

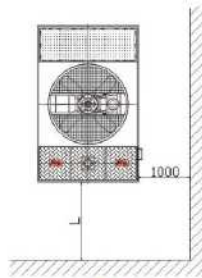
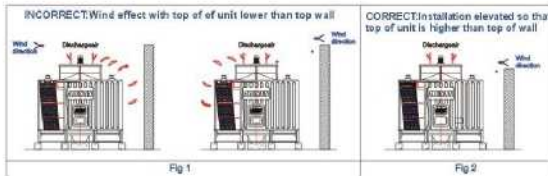


Fig 3

When a cooling tower is installed close to a wall, consideration must be given to the clearance distance between the air inlets and the wall structure(s) to ensure adequate air flow. (See Fig 3)

Mode	L
A-C	3m
D-F	4m
G-K	5m

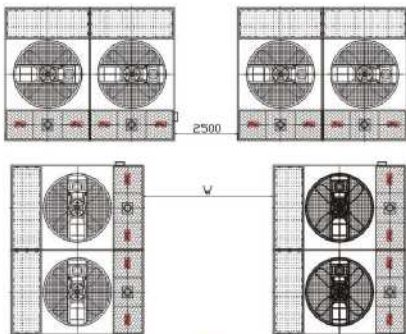


Fig 4

### Multicells Installation

The clearance between towers to towers must be maintained to ensure adequate airflow for towers (See Fig. 4)

Mode	L
A-C	4.5m
D-F	5.5m
G-K	6.5m

For critical plant installation, please consult MESAN.

Satisfactory performance of MXR-KM series is based on precise selection, proper system design and installation in clean and well-ventilated locations.

Cooling Technology Institute (CTI) provides a certification program to validate the performance of cooling towers. The mission of CTI is to advocate Environmental Systems (EHTS) for the benefit of the public, equipment owner & operators. Having CTI certification means the cooling towers have been verified by the CTI provides independent assurance. MESAN is committed to providing thermal efficiency products for all of our CTI certified series; we guarantee the tower supplied will meet the thermal performance in accordance with the published rating.

