



**MST**<sup>®</sup>

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**MCR Series**  
Counter 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:



### V-Belt Reducer

- 45 carbon steel of rotating shaft with 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

MCR use high grade unsaturated polyester resin with UV inhibitors gel-coat with imported color pigment, it provides superior protection, corrosion resistant, longer life and minimal maintenance. With the high quality control of the production process assure the best quality with outstanding value.



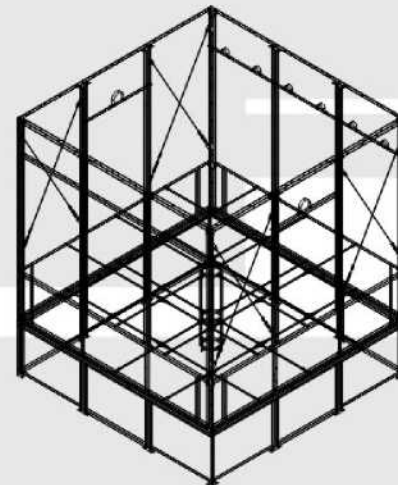
### Air Louver

Designed to block the direct sunlight to the water, to minimize the splash-out and reduce the potential growth of algae growth; also to protect the tower from ice formation and possible damage.

### 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.

### Water Distribution System

The hot water distribution piping is fabricated using PVC and the water is efficiently and uniformly distributed across entire the infill surface by the removable ABS non-clogging spray nozzle to maximum the heat transfer. For multicell installation connected to a single system, an optional balance pipe between basins to maintain the water level.



### Access & Safety

Removable panel for easy access and maintenance.

\* Also available with Safety caged platform & handrail for maintenance access.

### High Efficiency Low Drift Infill

Infill shall be film type, rigid, corrugated PVC sheets with UV protections. The high efficiency fill pack provide maximize the air/water contact and minimize air pressure drop to ensure efficient heat transfer and minimize power requirements.

\*Also available in polystyrene for higher water temperatures.



### Factory assembled

Models 2301 to 2304 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.

## ACCESSORIES

### Motor Outside with Pulley Cover



### Vibration Isolators



### Extended Discharge Hood



### Other optional Items

Motor	High Efficiency Motor	Reducer	180° Gear Box	Anti-corrosion Frame	SST304, SST316	Others	Sump Heaters
	Two Speed Motor		90° Gear Box		HDG Steel Plated with Dacromet Frame		Automatic Water Basin Cleaning System
	VFD Motor	Infill	High Temperature PVC Infill	Others	Sump Debris Screens		Balance Pipe
FRP Fan	ASTM PVC Infill		ANSI Safety Fan Guard		Safety Cage & Handrail Complied with OSHA standard		
Fan	Low Noise Fan				Vibration Switch		



### TOWER STRUCTURE

- 1 Motor
- 2 V-Belt Reducer
- 3 Motor Support
- 4 Fan
- 5 Fan Stack
- 6 Casing
- 7 Louver
- 8 Basin
- 9 Frame
- 10 Ladder
- 11 Drift Eliminator
- 12 Nozzle
- 13 Sprinkler Pipes
- 14 Infill
- 15 Infill Support
- 16 Safety Cage (Optional)



Single Water Flow: 73m<sup>3</sup>/h ~ 472m<sup>3</sup>/h



### SPECIFICATIONS

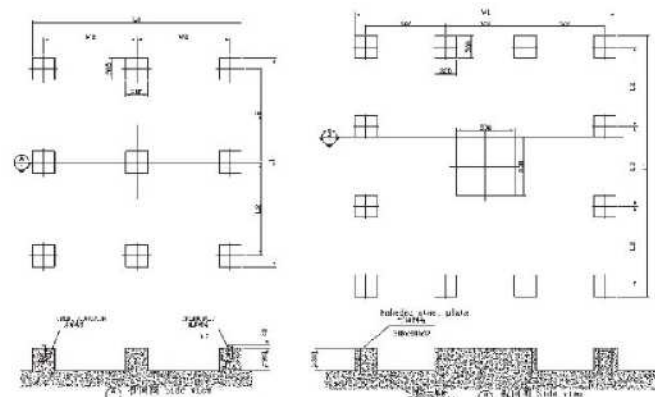
Design condition: HWT: T1=37°C, CWT:T2=32°C, DBT:Td=31.5°C, WBT:Tw=27°C, P=101.325Kpa.

Model		Specifications			Tower Dimension								Piping				
FRP Box	Steel Box	Water Flow		Motor	L	W	Single cells			Multi cell			Inlet	Outlet	Overflow	Drain	Float valve
MCR		27°C	28°C				H (L)	H (SL)	H1	H (L)	H (SL)	H1	DN	DN	DN	DN	DN
		m <sup>3</sup> /h	m <sup>3</sup> /h	KW	mm	mm	mm	mm	mm	mm	mm	mm					
2300L/SL	2600L/SL	73	64	1.5	2880	2880	3580	4430	2650	3980	4830	3050	125	125	50	40	20
2301-1.5	2601-1.5	73	64	1.5													
2301-2.2	2601-2.2	83	72	2.2													
2301-3	2601-3	93	81	3													
2301-4	2601-4	101	88	4													
2302-2.2	2602-2.2	94	82	2.2	2880	2880	3800	4650	2870	4200	5050	3270	125	125	50	40	20
2302-3	2602-3	103	89	3													
2302-4	2602-4	113	99	4													
2302-5.5	2602-5.5	126	110	5.5													
2303-2.2	2603-2.2	102	89	2.2	3140	3140	3900	4750	2970	4400	5250	3470	150	150	50	40	25
2303-3	2603-3	113	99	3													
2303-4	2603-4	126	110	4													
2303-5.5	2603-5.5	138	120	5.5													
2304-3	2604-3	125	109	3	3140	3140	4050	4900	3200	4550	5400	3700	150	150	50	40	25
2304-4	2604-4	135	118	4													
2305-5.5	2605-5.5	153	134	5.5													
2304-7.5	2604-7.5	169	148	7.5													
2305-4	2605-4	166	145	4	3450	3450	4500	5350	3500	5000	5850	4000	200	200	50	40	25
2305-5.5	2605-5.5	185	161	5.5													
2305-7.5	2605-7.5	202	176	7.5													
2305-11	2605-11	225	96	11													
2306-5.5	2606-5.5	196	171	5.5	3450	3450	4720	5570	3720	5220	6070	4220	200	200	50	40	25
2306-7.5	2606-7.5	216	189	7.5													
2306-11	2606-11	245	214	11													
2306-15	2606-15	263	230	15													
2307-5.5	2607-5.5	245	214	5.5	4200	4200	4950	5950	3850	5550	6550	4450	250	250	80	50	40
2307-7.5	2607-7.5	272	237	7.5													
2307-11	2607-11	310	271	11													
2307-15	2607-15	333	291	15													
2308-7.5	2608-7.5	284	248	7.5	4200	4200	5170	6170	4070	5770	6770	4670	250	250	80	50	40
2308-11	2608-11	324	283	11													
2308-15	2608-15	355	310	15													
2308-18.5	2608-18.5	380	332	18.5													
2309-7.5	2609-7.5	324	283	7.5	4700	4700	5100	6100	3950	5800	6800	4650	250	250	80	50	40
2309-11	2609-11	360	314	11													
2309-15	2609-15	405	353	15													
2309-18.5	2609-18.5	432	377	18.5													
2310-11	2610-11	378	330	11	4700	4700	5320	6320	4170	6020	7020	4870	250	250	80	50	40
2310-15	2610-15	418	365	15													
2310-18.5	2610-18.5	450	393	18.5													
2310-22	2610-22	472	412	22													

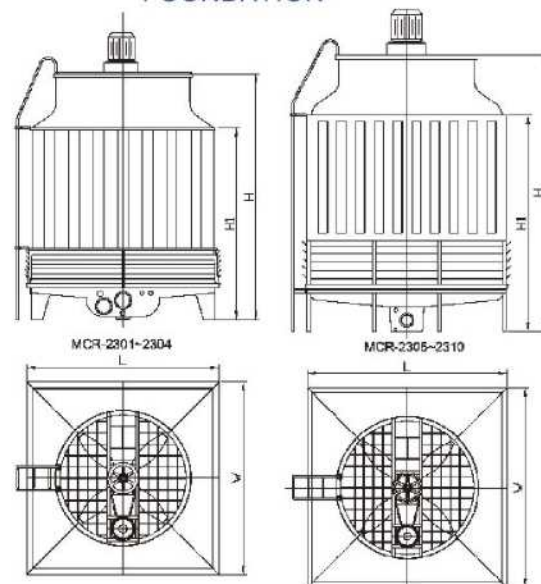


### FOUNDATION

Model	Foundation Dimension					
	W1	W2	W3	L1	L2	L3
MCR-	mm	mm	mm	mm	mm	mm
2300L/SL						
2301-1.5	2580	1140	—	2580	1140	—
2301-2.2						
2301-3						
2301-4						
2302-2.2	2580	1140	—	2580	1140	—
2302-3						
2302-4						
2302-5.5						
2303-2.2	2840	1270	—	2840	1270	—
2303-3						
2303-4						
2303-5.5						
2304-3	2840	1270	—	2840	1270	—
2304-4						
2305-5.5						
2304-7.5						
2305-4	3550	1083.3	1083.3	3550	1083.3	1083.3
2305-5.5						
2305-7.5						
2305-11						
2306-5.5	3550	1083.3	1083.3	3550	1083.3	1083.3
2306-7.5						
2306-11						
2306-15						
2307-5.5	4300	1172	1656	4300	1172	1656
2307-7.5						
2307-11						
2307-15						
2308-7.5	4300	1172	1656	4300	1172	1656
2308-11						
2308-15						
2308-18.5						
2309-7.5	4800	1318	1864	4800	1318	1864
2309-11						
2309-15						
2309-18.5						
2310-11	4800	1318	1864	4800	1318	1864
2310-15						
2310-18.5						
2310-22						



FOUNDATION



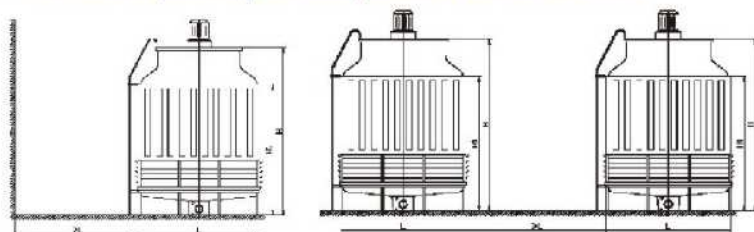
LAYOUT

**NOTE:**

- The height of the foundation should be set according to the water outlet pipe diameter.
- Apply the usual National code when making the foundation.
- The inlet and outlet pipe height level must be installed lower than the bottom the suction tank.
- When the towers 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.
- The clearance between towers to towers must be maintained as below.
- Satisfactory performance of MCR series is based on precise selection, proper system design and installation in a clean and well-ventilated locations.

Model	Distance
01~04	3m
05~10	4m

For critical plant operation, please consult MESAN.



### SELECTION TABLE

Design condition: HWT: T<sub>1</sub>=37°C, CWT: T<sub>2</sub>=32°C, DBT: T<sub>d</sub>=31.5°C, WBT: T<sub>w</sub>=27°C, P=101.325KPa, ΔT<sub>s</sub>=5°C, Water flow rate: 1m<sup>3</sup>/h

Model	Waterflow	Temp	T1	T2	TW	32.22	32.22	35	33.33	35	35	32.22	34.44	35	36.11	35
						26.67	26.67	29.44	27.78	27.78	29.44	28.33	29.44	29.44	30.56	29.44
						18.33	21.11	21.11	22.22	22.22	22.22	23.89	23.89	23.89	23.89	25
2301	2601	1.5	73	57	83	60	51	76	68	70	65	76	56			
		2.2	83	65	94	68	57	86	78	79	73	86	64			
		3	93	73	106	76	64	96	87	89	82	97	72			
		4	101	79	115	83	70	105	94	96	89	105	78			
2302	2602	2.2	94	73	107	77	65	97	88	90	83	98	72			
		3	103	80	117	85	71	107	96	98	91	107	79			
		4	113	88	128	93	78	117	106	108	100	118	87			
		5.5	126	98	143	104	87	131	118	120	112	131	97			
2303	2603	2.2	102	80	116	84	71	106	95	97	90	106	79			
		3	113	88	128	93	78	117	106	108	100	118	87			
		4	126	98	143	104	87	131	118	120	112	131	97			
		5.5	138	108	157	113	95	143	129	132	122	144	106			
2304	2604	3	125	98	142	103	86	130	117	119	111	130	96			
		4	135	105	153	111	93	140	126	129	119	141	104			
		5.5	153	119	174	126	106	159	143	146	135	159	118			
		7.5	169	132	192	139	117	175	158	161	150	176	130			
2305	2605	4	166	130	189	136	115	172	155	158	147	173	128			
		5.5	185	144	210	152	128	192	173	176	164	193	143			
		7.5	202	158	230	166	140	209	189	193	179	210	156			
		11	225	176	256	185	156	233	210	214	199	234	173			
2306	2606	5.5	196	153	223	161	136	203	183	187	173	204	151			
		7.5	216	169	245	178	149	224	202	206	191	225	167			
		11	245	191	278	201	170	254	229	234	217	255	189			
		15	264	205	299	216	182	273	246	251	233	274	203			
2307	2607	5.5	245	191	278	201	170	254	229	234	217	255	189			
		7.5	273	212	309	224	188	282	254	259	241	283	210			
		11	311	242	352	255	214	321	290	295	274	323	239			
		15	334	260	378	274	230	345	311	317	295	347	257			
2308	2608	7.5	285	222	323	233	196	294	265	271	251	296	219			
		11	325	253	368	266	224	336	303	309	287	337	250			
		15	356	277	403	292	246	368	332	338	314	369	274			
		18.5	381	296	432	312	263	394	355	362	336	396	293			
2309	2609	7.5	325	253	368	266	224	336	303	309	287	337	250			
		11	361	281	409	296	249	373	336	343	319	375	278			
		15	406	316	460	333	280	420	378	386	358	422	312			
		18.5	433	337	491	355	299	448	404	412	382	450	333			
2310	2610	11	379	295	430	311	262	392	353	360	335	393	291			
		15	419	326	475	344	289	433	390	398	370	435	322			
		18.5	451	351	511	370	311	466	420	429	398	468	347			
		22	473	368	536	388	327	489	441	450	418	491	364			



Model	Waterflow	Temp T1 T2 TW	35	36.67	40.56	44.44	35.56	36.67	37.78	37	36.67	37.78
			29.44	31.11	32.22	33.33	30	31.11	32.22	32	31.11	32.22
			25.56	25.56	25.56	25.56	26.67	26.67	26.67	27	27.78	28.89
2301	2601	1.5	52	70	64	62	48	61	73	73	51	54
		2.2	59	80	72	71	55	69	83	83	58	61
		3	66	89	81	79	61	78	93	93	65	69
		4	72	97	88	86	67	84	101	101	71	75
2302	2602	2.2	67	90	82	80	62	78	94	94	66	69
		3	73	99	90	88	68	86	103	103	72	76
		4	80	108	99	96	75	94	113	113	79	84
		5.5	89	121	110	108	83	105	126	126	88	93
2303	2603	2.2	72	98	89	87	67	85	102	102	72	75
		3	80	108	99	96	75	94	113	113	79	84
		4	89	121	110	108	83	105	126	126	88	93
		5.5	98	132	120	118	91	115	138	138	97	102
2304	2604	3	89	120	109	107	83	104	125	125	88	92
		4	96	129	118	115	89	113	135	135	95	100
		5.5	109	147	134	131	101	128	153	153	107	113
		7.5	120	162	147	144	112	141	169	169	119	125
2305	2605	4	118	159	145	142	110	138	166	166	116	123
		5.5	131	177	161	158	122	154	185	185	130	137
		7.5	143	194	176	172	133	168	202	202	142	149
		11	160	216	196	192	149	188	225	225	158	166
2306	2606	5.5	139	188	171	167	129	163	196	196	138	145
		7.5	153	207	189	184	143	180	216	216	152	160
		11	174	235	214	209	162	204	245	245	172	181
		15	187	252	230	225	174	219	263	263	185	194
2307	2607	5.5	174	235	214	209	162	204	245	245	172	181
		7.5	193	261	237	232	180	227	272	272	191	201
		11	220	297	271	265	205	258	310	310	217	229
		15	236	319	291	284	220	278	333	333	234	246
2308	2608	7.5	202	272	248	242	187	237	284	284	199	210
		11	230	311	283	277	214	270	324	324	227	239
		15	252	340	310	303	234	296	355	355	249	262
		18.5	270	364	332	324	251	317	380	380	267	281
2309	2609	7.5	230	311	283	277	214	270	324	324	227	239
		11	256	345	314	307	238	300	360	360	253	266
		15	288	388	353	346	267	338	405	405	284	299
		18.5	307	414	377	369	285	360	432	432	303	319
2310	2610	11	268	362	330	323	249	315	378	378	265	279
		15	297	401	365	357	276	348	418	418	293	309
		18.5	320	431	393	384	297	375	450	450	316	333
		22	335	453	412	403	312	393	472	472	331	349

Cooling Technology Institute (CTI) provides a certification program to validate the performance of cooling towers. The mission of CTI is to advocate Environmental Systems (EHS) 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.



MXR-KM Series



MCX Series



MCR-2300 Series



MCR-KM Series