



*(CLOSED TYPE)*

Excellent Proven Performance and  
Assurance of Superb Quality

# KUKEN

## COOLING TOWER

*SERIES 01*



ISO-9001 CERTIFIED  
MANUFACTURING FACTORY



ISO-14001 CERTIFIED  
MANUFACTURING FACTORY



MEMBER OF JCI

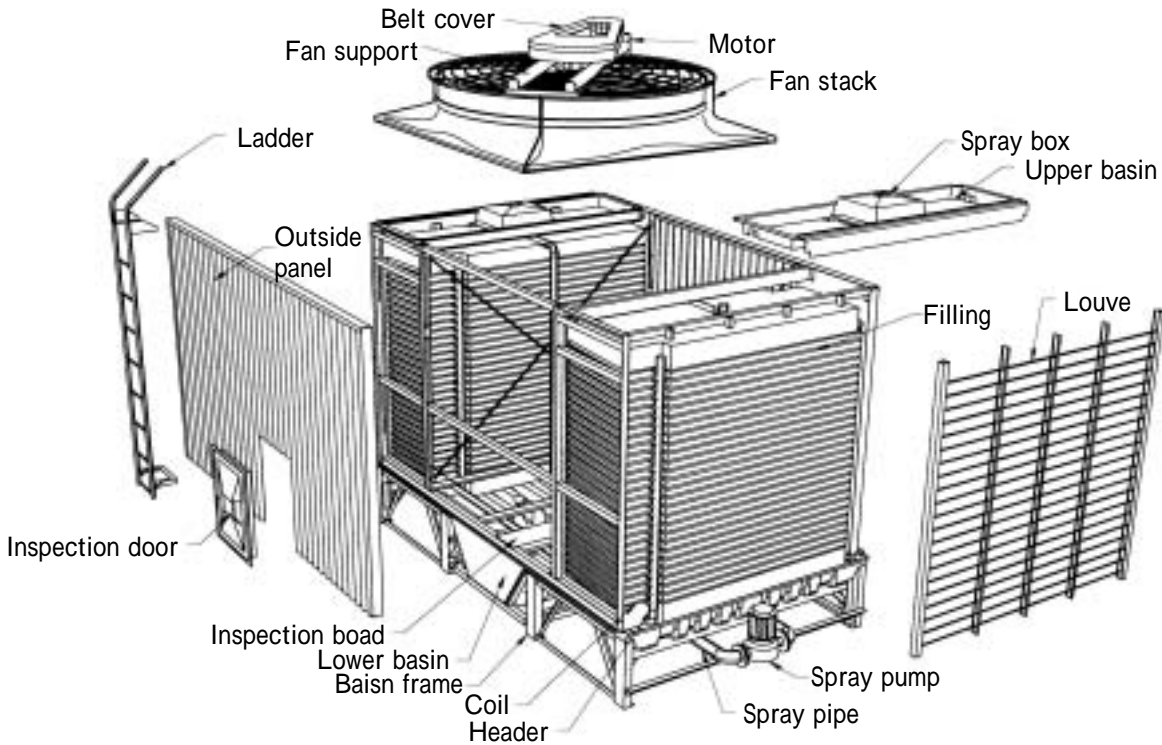


MEMBER OF CTI



***KUKEN KOGYO CO., LTD.***

# Structure of KMB <Closed> type Cooling Tower



Design concept-wise, the closed cooling tower is the opposite of the open type in the sense that circulating water never contacts ambient air during cooling process. There are two independent sources of water used for the closed type tower : Circulating water and spray water.

Circulating water runs only inside a totally enclosed copper tube while spray water runs down through infill. In this system, spray water cools circulating water running inside the copper tube circuit without contacting with each other directly.

In this way water never gets concentrated due to the fact that no evaporation takes place in the tube. Based on this fact, the equipment such as chiller is totally protected against scale, and time & cost for maintenance can be minimized.

In the region under low W.B. temperature (about 8 °C), closed-type cooling tower can be connected to main cooling equipment directly to function as "COLD WATER GENERATOR" such as chiller. This system is called "FREE-COOLING" and it greatly contributes to energy-saving.

**Heat exchanger :** Seamless phosphorus dioxide copper tube is used for the circuit, and the filling pieces are loaded at each individual stage to maximize cooling efficiencies.

**Fan unit :** Specification of newly-developed fan blade (KS wing) ensures great noise-reduction effect.

**Lower basin :** Adoption of the complete "One-piece basin" eliminates overlaying work at site, and time spent for tower erection is minimized. Basin bottom is designed to have slope towards the center for the purpose of cleaning.

**Internal of body :** Wide inspection board and the location of internal pipe ensures easier maintenance.

**Framework :** By adopting steel, tower body strength has been increased. Also, galvanizing has been richer in property.

## CLOSED TYPE (Low noise)

### KMB-R

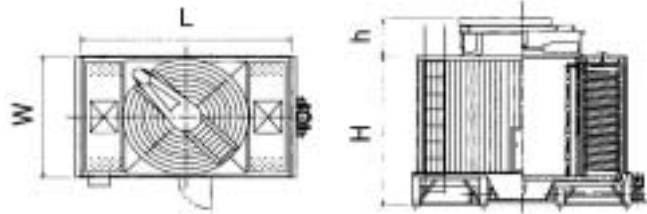
MODEL	FLOW RATE (m <sup>3</sup> /h)						DIMENSION (mm)				WEIGHT	
	IN( )	37.0	37.5	38.0	39.0	40.0	length L	width W	height H	Fan height h	Net. kg	Ope. kg
	OUT( )	32.0										
W.B( )	27.0											
KMB- 60	46.8	44.6	41.8	37.4	34.0	3030	1670	1930	570	1180	2430	
80	62.4	59.4	55.8	50.0	45.6	3230	1870	2230	570	1370	2930	
100	78.0	74.3	69.7	62.5	56.9	3230	1870	2630	570	1520	3300	
125	97.5	92.8	87.1	78.0	71.0	3630	2270	2780	700	1840	4210	
150	117	111	105	93.7	85.3	3230	3700	2130	570	2630	6020	
175	137	130	122	109	99.6	3230	3700	2430	570	2860	6360	
200	156	149	139	125	114	3230	3700	2630	570	3030	6600	
225	176	167	157	141	128	3430	4100	2630	700	3300	7460	
250	195	186	174	156	142	3630	4500	2780	700	3670	8410	
275	215	204	197	172	157	3230	5530	2430	570	4320	9600	
300	234	223	209	188	171	3230	5530	2630	570	4540	9900	
350	273	260	244	219	199	3430	6130	2780	700	5170	11480	
400	312	297	279	250	228	3230	7360	2630	570	6060	13200	
450	351	334	314	281	256	3430	8160	2630	700	6600	14910	
500	390	371	348	312	284	3630	8960	2780	700	7340	16810	
550	429	408	383	344	313	3430	10190	2630	700	8250	18340	
600	468	445	418	375	342	3430	10190	2780	700	8610	19140	

## CLOSED TYPE (Extra low noise)

### KMB-S

MODEL	FLOW RATE (m <sup>3</sup> /h)						DIMENSION (mm)				WEIGHT	
	IN( )	37.0	37.5	38.0	39.0	40.0	length L	width W	height H	Fan height h	Net. kg	Ope. kg
	OUT( )	32.0										
W.B( )	27.0											
KMB- 60	46.8	44.6	41.8	37.4	34.0	3030	1670	1930	570	1180	2430	
80	62.4	59.4	55.8	50.0	45.6	3230	1870	2230	570	1370	2930	
100	78.0	74.3	69.7	62.5	56.9	3230	1870	2630	570	1520	3300	
125	97.5	92.8	87.1	78.0	71.0	3630	2270	2780	700	1840	4210	
150	117	111	105	93.7	85.3	3230	3700	2130	570	2630	6020	
175	137	130	122	109	99.6	3230	3700	2430	570	2860	6360	
200	156	149	139	125	114	3230	3700	2630	570	3010	6580	
225	176	167	157	141	128	3430	4100	2630	700	3300	7460	
250	195	186	174	156	142	3630	4500	2780	700	3670	8410	
275	215	204	197	172	157	3230	5530	2430	570	4320	9600	
300	234	223	209	188	171	3230	5530	2630	570	4540	9900	
350	273	260	244	219	199	3430	6130	2780	700	5170	11480	
400	312	297	279	250	228	3230	7360	2630	570	6060	13200	
450	351	334	314	281	256	3430	8160	2630	700	6600	14910	
500	390	371	348	312	284	3630	8960	2780	700	7340	16810	
550	429	408	383	344	313	3430	10190	2630	700	8250	18340	
600	468	445	418	375	342	3430	10190	2780	700	8610	19140	

Keep circulating water clean,  
and avoid concentration.



KUKEN AXIAL FLOW FAN					PIPING SIZE (mm)				SPRAY PUMP	SOUND LEVEL dB(A)					
Fan Diameter mm	Kw	Poles P	Current (50Hz/60Hz) A	No.	Water In/Out	Over flow	Drain	Make up (Auto, Manual)		kw x Q'ty	Louver side		Panel side		Fan 45 ° D m (min:1.5m)
											2 m	10 m	2 m	10 m	
1400	3.7	4	14.6/14.2	1	100	50	50	15	1.5	1.5	67.0	59.0	62.5	57.0	71.0
1600	3.7	4	14.6/14.2	1	100	50	50	15	1.5	1.5	67.5	59.0	63.0	57.0	72.0
1600	5.5	4	22.0/21.0	1	100	50	50	15	1.5	1.5	69.0	61.0	64.0	58.0	73.0
2000	5.5	4	22.0/21.0	1	100	50	50	15	2.2	2.2	69.5	61.0	65.0	59.5	74.0
1600	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	71.0	63.0	65.5	59.0	75.0
1600	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	71.0	63.0	65.5	59.0	75.0
1600	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	71.0	63.0	65.5	59.0	75.0
1800	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	71.0	63.0	66.0	60.0	75.5
2000	5.5	4	22.0/21.0	2	100x2	50x2	50x2	32	2.2x2	2.2x2	71.5	63.5	67.0	61.5	76.0
1600	5.5	4	22.0/21.0	3	100x3	50x3	50x3	32	1.5x3	1.5x3	72.0	64.0	67.5	60.0	76.0
1600	5.5	4	22.0/21.0	3	100x3	50x3	50x3	32	1.5x3	1.5x3	72.0	64.0	67.5	60.0	76.0
1800	5.5	4	22.0/21.0	3	100x3	50x3	50x3	32	1.5x3	1.5x3	72.0	64.0	67.5	61.0	76.0
1600	5.5	4	22.0/21.0	4	100x4	50x4	50x4	32	1.5x4	1.5x4	73.0	65.0	68.5	61.5	77.0
1800	5.5	4	22.0/21.0	4	100x4	50x4	50x4	32x2	1.5x4	1.5x4	73.0	64.5	68.0	63.0	77.5
2000	5.5	4	22.0/21.0	4	100x4	50x4	50x4	32x2	2.2x4	2.2x4	74.0	66.0	69.5	64.0	78.0
1800	5.5	4	22.0/21.0	5	100x5	50x5	50x5	32x2	1.5x5	1.5x5	74.0	66.5	70.0	63.5	78.5
1800	5.5	4	22.0/21.0	5	100x5	50x5	50x5	32x2	1.5x5	1.5x5	74.0	66.5	70.0	63.5	78.5

Most suitable for the environment in need of super-quiet equipment.

By adopting newly-developed super silent fan blade, sound level has been decreased by 2-4dB(A).

KUKEN AXIAL FLOW FAN					PIPING SIZE (mm)				SPRAY PUMP	SOUND LEVEL dB(A)					
Fan Diameter mm	Kw	Poles P	Current (50Hz/60Hz) A	No.	Water In/Out	Over flow	Drain	Make up (Auto, Manual)		kw x Q'ty	Louver side		Panel side		Fan 45 ° D m (min:1.5m)
											2 m	10 m	2 m	10 m	
1400	3.7	4	14.6/14.2	1	100	50	50	15	1.5	1.5	63.0	56.0	59.0	53.0	67.0
1600	3.7	4	14.6/14.2	1	100	50	50	15	1.5	1.5	63.0	56.5	60.0	54.5	67.5
1600	5.5	4	22.0/21.0	1	100	50	50	15	1.5	1.5	64.0	57.0	60.0	54.0	69.0
2000	5.5	4	22.0/21.0	1	100	50	50	15	2.2	2.2	65.0	57.5	60.5	55.0	69.0
1600	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	66.0	59.0	62.0	55.0	70.5
1600	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	66.0	59.0	62.0	55.0	70.5
1600	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	66.0	59.0	62.0	55.0	70.5
1800	5.5	4	22.0/21.0	2	100x2	50x2	50x2	20	1.5x2	1.5x2	66.0	59.0	62.0	55.0	71.0
2000	5.5	4	22.0/21.0	2	100x2	50x2	50x2	32	2.2x2	2.2x2	67.0	60.0	62.5	57.0	71.0
1600	5.5	4	22.0/21.0	3	100x3	50x3	50x3	32	1.5x3	1.5x3	67.0	60.0	63.0	56.0	71.5
1600	5.5	4	22.0/21.0	3	100x3	50x3	50x3	32	1.5x3	1.5x3	67.0	60.0	63.0	56.0	71.5
1800	5.5	4	22.0/21.0	3	100x3	50x3	50x3	32	2.2x3	2.2x3	67.0	60.0	63.0	56.0	72.0
1600	5.5	4	22.0/21.0	4	100x4	50x4	50x4	32	1.5x4	1.5x4	68.0	61.0	64.0	57.0	72.5
1800	5.5	4	22.0/21.0	4	100x4	50x4	50x4	32x2	1.5x4	1.5x4	68.0	61.0	64.0	57.0	73.0
2000	5.5	4	22.0/21.0	4	100x4	50x4	50x4	32x2	2.2x4	2.2x4	69.0	62.0	64.5	59.0	73.0
1800	5.5	4	22.0/21.0	5	100x5	50x5	50x5	32x2	1.5x5	1.5x5	69.0	62.0	65.0	58.5	74.0
1800	5.5	4	22.0/21.0	5	100x5	50x5	50x5	32x2	2.2x5	2.2x5	69.0	62.0	65.0	58.5	74.0

REMARKS

\* 1: Rated current values indicated above are just for reference.

(Based on 1 unit of motor under 200V/50Hz or 200V/60Hz)

\* 2: Piping size varies depending on circulating water flow rate and temperature.

# FAX Form for Inquiry

For inquiry, kindly fill out this form and fax to the agents.

Your company name

Job site name

Person in charge

Tel No.

Fax No.

Inquiry Contents ( Order, Quotation, Specification details, Delivery, Others )

Information required.

- |                              |   |
|------------------------------|---|
| 1 Type of cooling tower      | ( Open type : Closed type )   |
| 2 Cold water flow rate       | (            l/min:            m3/h )   |
| 3 Application                | (Chiller <Turbo, Absorption> : Power Generator : Others )   |
| 4 Inlet water temp.          | (37:37.5:37.7:38:Others            °F)  |
| 5 Outlet water temp.         | (32:32.5:Others            °F)  |
| 6 Ambient wet bulb temp.     | (27:27.5:Others            °F)  |
| 7 Power supply               | (200V: 220V: 380V: 400V: 415V:440V: Others            )<br>(50Hz: 60Hz: Inverter utilized: Others            )        |
| 8 Sound level                | (Low noise type: Extra low noise type: others            )  |
| 9 Plume Abatement            | Not required / Required   |
| 10 Model                     | ( R : S )   |
| 11 Space for Cooling Tower   | ( L    or less : W    or less : H    or less )<br>Plain / cross-sectional view drawings for the space is appreciated. |
| 12 Material of outside panel | (PVC: FRP: SUS304: Asbesto cement :Others            )  |
| 13 Framework                 | (HDGS: SUS304: Others            )  |
| 14 Vibration Isolator        | Not required / Required   |
| 15 Duct                      | Not required / Required (1m : 2m : 3m :Others )   |
| 16 Elbow duct                | Not required / Required (45 degree : 90 degree :Others )  |
| 17 Handrail                  | Not required / Required   |
| 18 Ladder with cage          | Not required / Required   |
| 19 Upper basin cover         | Not required / Required   |
| 20 Chemical feeder           | Not required / Required   |
| 21 Auto-blow device          | Not required / Required   |
| 22 Heater                    | Not required / Required   |
| 23 Special request           |   |

## Optional Parts

Variety of optional parts are available for Kuken Cooling Tower.  
Consult with KUKEN sales-agents for more detail.



### For Safety

Handrail, Ladder with cage,  
Upper basin cover, staircase, etc..

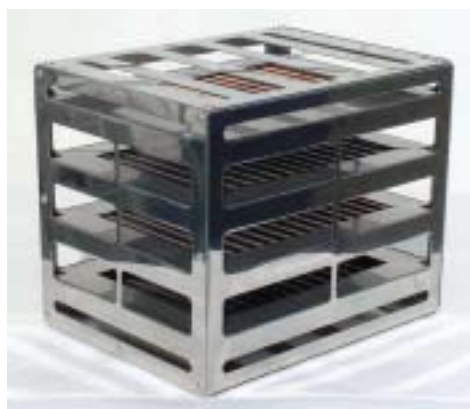


### For Discharge Air, Silencer

Duct, Elbow duct, Silencer,  
Bird-proof net, Snow-proof parts, etc..



### Heater Unit



### Water activator

\*Specification subject to change without notice.

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## AGENT