



**HLF**  
**COOLING**

For Better Cooling Experience

# **LC SERIES COOLING TOWER**

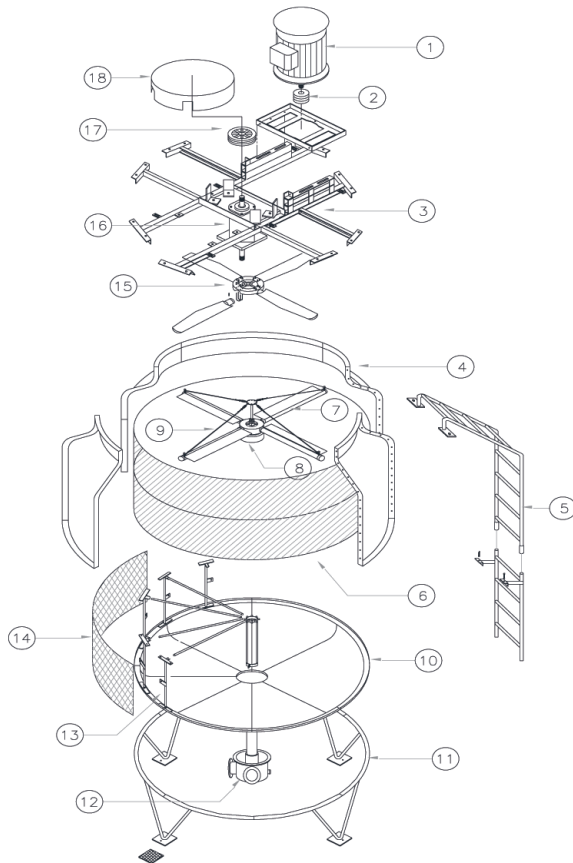
**FRP ROUND COUNTER FLOW**



**5-1000 HRT COOLING CAPACITY**

**HIGH EFFICIENCY • CONVINIENT • COMPACT • LOW NOISE • MODULAR DESIGN**

# LC -SERIES TOWER SPECIFICATIONS



Item	DESCRIPTIONS
1	FAN MOTOR
2	MOTOR PULLEY
3	HDGS FAN HOLDER
4	FRP CASING
5	HDGS LADDER
6	PVC INFILL
7	SPRINKLER PIPE
8	SPRINKLER HEAD
9	TENSION WIRE
10	FRP COLD WATER BASIN
11	MAIN FRAME STRUCTURE
12	WATER SUMP
13	INFILL SUPPORT
14	LOUVER
15	CAST ALLOY / FRP AXIAL FAN
16	BEARING BOX
17	FAN PULLEY
18	FRP PULLEY COVER

## 1.0 - TOWER STRUCTURE

The structure of the tower shall be of hot-dipped galvanized steel (HDGS) to BS 729: 1971 standard. Holes drilling and metal cutting for structure modification are prohibited at site installation.

## 2.0 - CASING

The casing shall be constructed from moulded UV resistant fibreglass reinforced polyester resin (FRP) with PVC louvers.

## 3.0 -FRP DISTRIBUTION SYSTEM

The hot water shall be distributed by an open gravity type hot water basin & evenly spread the hot water all over the infill section by PVC distribution pad on top of the infill.

## 4.0 - INFILL

High grade PVC material for better chemical resistance towards Grease, fat, oil, acid and alkaline conditions. UV absorber and antioxidant stabilizer for longer lifespan and durability to resist UV degradation due to long term sunlight exposure.

## 5.0 - COLD WATER BASIN & WATER SUMP

Constructed with H.D.G Steel Frame internally laminated with moulded UV resistant fibreglass reinforced polyester resin (FRP).The basin are equipped with suction strainer, make up ball valve, overflow & drain.

## 6.0 - FAN, MOTOR & DRIVE SYSTEM

**Fan** - Axial flow fan c/w adjustable pitch angle that are static balanced & assembled.

**Motor** - The fan motor of efficiency class IE1 shall be totally enclosed fan cooled (TEFC) weather proof IP55 with class F insulation type suitable for 415 volts / 3 phase / 50 Hz power supply frequency drive.

**V-belt drive system** - The pulley shall be made of cast iron with grooves of standard dimensions and the V-belt shall be made of rubber with impregnated fabric designed to BS 1400 standard. The entire V-belt and pulley assembly must be fully enclosed in FRP moulded case to protect the V-belt from contact with humid discharge air.

## 7.0 - ACCESS & SAFETY

Ladder shall be provided for inspection & maintenance purpose. Hdg steel fan guard are also being provided. Cage ladder & handrail will be provided upon request will additional charges.

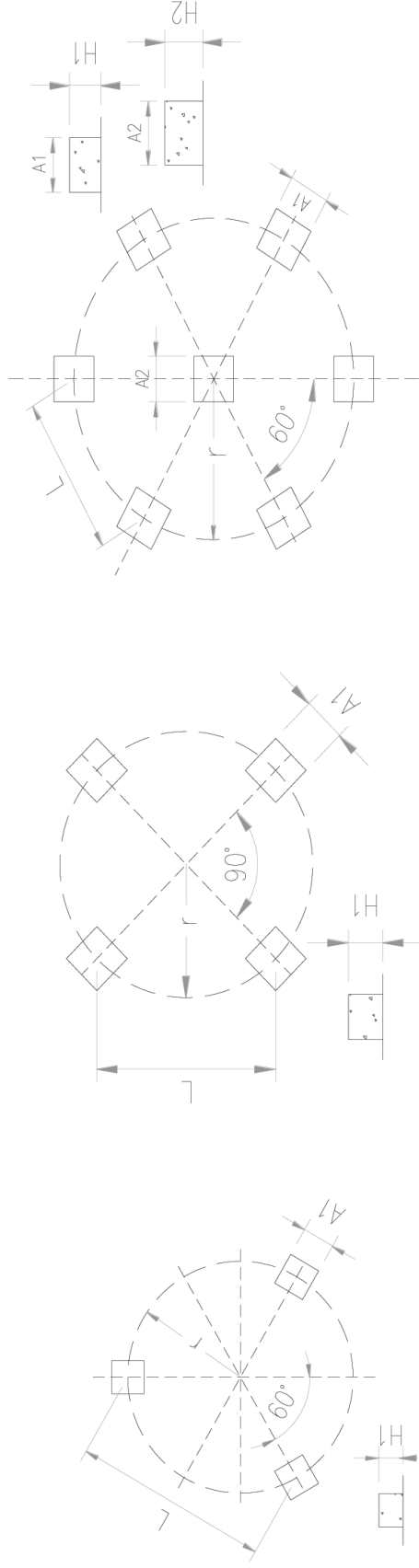
## TECHNICAL DETAIL FOR 1 CELL

Model LC	HRT	Flowrate (L/min)	Dimensions (mm)		Motor (HP)	Fan Diameter	Piping Information (mm)					Weight	
			Diameter	Height			Inlet	Outlet	Drain	Over Flow	Make Up	Dry	Operating
5	5	64.8	840	1380	0.16	522	40	40	25	25	15	41	119
10	10	130	1040	1400	0.25	580	40	40	25	25	15	64	175
15	15	195	1040	1440	0.5	580	50	50	25	25	15	64	240
20	20	260	1410	1600	0.75	770	50	50	25	25	15	87	330
25	25	325	1410	1805	0.75	770	65	65	25	25	15	100	400
30	30	390	1590	1750	1	770	65	65	25	25	15	116	490
40	40	520	1810	1895	1.5	965	65	65	32	32	20	170	520
50	50	650	2010	1910	1.5	965	80	80	32	32	20	200	600
60	60	780	2010	1950	1.5	1165	80	80	32	32	20	230	672
70	70	910	2180	2010	1.5	1165	100	100	32	32	25	275	710
80	80	1040	2180	2010	2	1165	100	100	32	32	25	292	725
100	100	1300	2640	2170	3	1470	100	100	32	32	25	405	1074
125	125	1625	3040	2220	3	1470	125	125	40	40	25	470	1360
150	150	1950	3290	2350	5	1750	125	125	40	40	25	630	2610
175	175	2275	3290	2490	5	1750	125	125	40	40	25	715	2685
200	200	2600	3710	3010	5	1750	150	150	50	50	25	880	3470
225	225	2925	3710	3195	7.5	2360	150	150	50	50	25	970	3530
250	250	3250	3710	3195	7.5	2360	200	200	50	50	25	1040	3610
300	300	3900	4410	3380	10	2360	200	200	50	50	32	1290	4555
350	350	4550	4750	3430	10	2360	200	200	50	50	32	1380	4720
400	400	5200	4750	4180	15	2985	200	200	80	80	40	2180	6923
500	500	6500	5580	4590	15	2985	250	250	80	80	40	2450	7122
600	600	7800	6600	4350	20	3495	250	250	80	80	50	3370	10790
700	700	9100	6600	4350	20	3495	250	250	80	80	50	3580	10982
800	800	10400	7600	5120	30	3695	300	300	80	80	50	4400	11995
1000	1000	13000	7600	5120	30	3695	300	300	80	80	50	4650	12454

**REMARKS : -**

- 1.Cooling Capacity is base on nominal condition that is 13 L/min @ 37/32/27 deg celcius.
- 2.Plinth information need to refer general drawing.

# PLINTH DETAILS



**Model:**  
LC5, LC10, LC15, LC20 & LC25

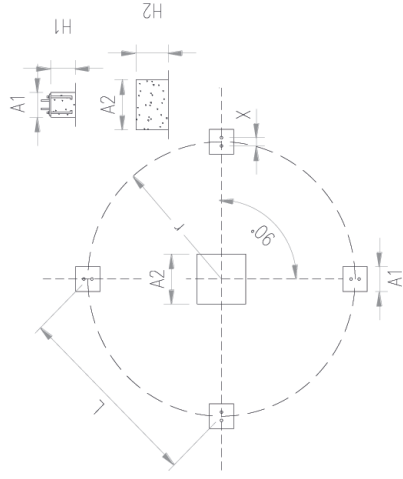
**Model:**  
LC30, LC40, LC50 & LC60

**Model:**  
LC70, LC80, LC100, LC125, LC150 & LC175

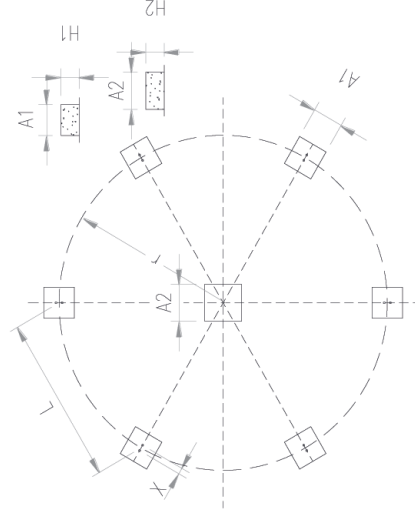
Model LC	Dimension In (mm)						
	r	L	A1	A2	H1	H2	
5	275	476	200	-	150	-	
10	355	610	200	-	150	-	
15	355	610	200	-	150	-	
20	560	970	200	-	150	-	
25	560	970	200	-	150	-	
30	665	940	250	-	150	-	
40	735	1040	250	-	200	-	
50	840	1190	250	-	200	-	
60	840	1190	250	-	200	-	
70	850	840	250	250	200	240	
80	850	840	250	250	200	240	
100	1175	1175	300	350	300	400	
125	1310	1310	300	350	300	350	
150	1430	1430	300	350	300	340	
175	1430	1430	300	350	300	340	



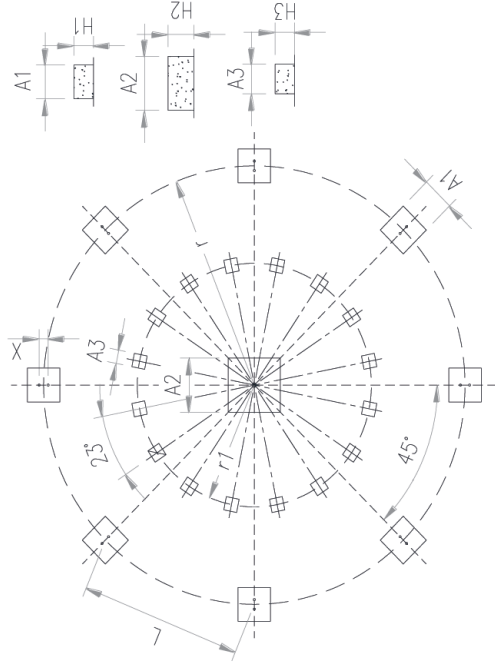
# PLINTH DETAILS



**Model:**  
LC200, LC225, LC250, LC300, LC350 & LC400



**Model:**  
LC500



**Model:**  
LC600, LC700, LC800 & LC1000

Model	Dimension In (mm)										
	r	R1	L	A1	A2	A3	H1	H2	H3	X	
200	1650	-	2335	300	600	-	300	400	-	130	
225	1650	-	2335	300	600	-	300	400	-	130	
250	1650	-	2335	300	600	-	300	400	-	130	
300	1980	-	2803	300	600	-	300	400	-	140	
350	2150	-	3039	300	600	-	300	400	-	140	
400	2340	-	3306	400	600	-	300	300	-	100	
500	2690	-	2680	500	600	-	300	300	-	100	
600	3240	1800	2480	500	800	200	300	400	300	140	
700	3240	1800	2480	500	800	200	300	400	300	140	
800	3750	2080	2870	500	800	200	300	400	300	140	
1000	3750	2080	2870	500	800	200	300	400	300	140	



**Pangkalan Tentera Laut (Lumut)**



**Dindings Poultry Processing (Ipoh)**



**Jaya Nets Sdn. Bhd (Selangor)**



**Pulaiplas Manufacturing (Selangor)**



**Kossan Paint (Selangor)**



**Rubber Factory (Selangor)**



**Central Cables Berhad (Melaka)**



**Roflex Pipe (Nilai)**

# MAKE UP WATER CALCULATIONS

## NOTATIONS

FLOW RATE	m
INLET TEMPERATURE	T <sub>1</sub>
OUTLET TEMPERATURE	T <sub>2</sub>
SPECIFIC HEAT (4.2 kJ/kg °C)	C <sub>p</sub>
LATENT HEAT OF EVAPORATION (2520kJ/kg)	R
DRIFT LOSS (%) FOR LC TOWER	0.50%

## EXAMPLE

1. COOLING TOWER MODEL	LC 100
FLOW RATE	78 M <sup>3</sup> /H
INLET TEMPERATURE	37 °C
OUTLET TEMPERATURE	32 °C
AMBIENT WET BULB TEMPERATURE	27 °C

## YOUR SELECTION

1. COOLING TOWER MODEL	
FLOW RATE	
INLET TEMPERATURE	
OUTLET TEMPERATURE	
AMBIENT WET BULB TEMPERATURE	

**REMARKS : FLOWRATE MUST BE IN (M<sup>3</sup>/H) & TEMPERATURE IN (°C)**

### 2. EVAPORATION LOSS ( E )

$$\begin{aligned}
 E &= (T_1 - T_2) / R \times m \times C_p \\
 &= (37 - 32) / 2520 \times 78 \times 4.2 \\
 &= 0.65 \text{ M}^3/\text{H}
 \end{aligned}$$

### 3. DRIFT LOSS ( D )

$$\begin{aligned}
 D &= m \times \text{DRIFT LOSS (\%)} \\
 &= 78 \times 0.5 / 100 \\
 &= 0.39 \text{ M}^3/\text{H}
 \end{aligned}$$

### 4. BLOWN DOWN ( BD )

$$\begin{aligned}
 BD &= (E + D) / 4 \\
 &= 0.65 + 0.39 / 4 \\
 &= 0.26 \text{ M}^3/\text{H}
 \end{aligned}$$

### 5. MAKE UP ( MU )

$$\begin{aligned}
 MU &= E + D + BD \\
 &= 0.65 + 0.39 + 0.26 \\
 &= 1.3 \text{ M}^3/\text{H}
 \end{aligned}$$

### 2. EVAPORATION LOSS ( E )

$$E = (T_1 - T_2) / R \times m \times C_p$$

### 3. DRIFT LOSS ( D )

$$D = m \times \text{DRIFT LOSS (\%)}$$

### 4. BLOWN DOWN ( BD )

$$BD = (E + D) / 4$$

### 5. MAKE UP ( MU )

$$MU = E + D + BD$$



## **HLF COOLING SDN BHD**

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