



HLF
COOLING

For Better Cooling Experience

HX SERIES COOLING TOWER

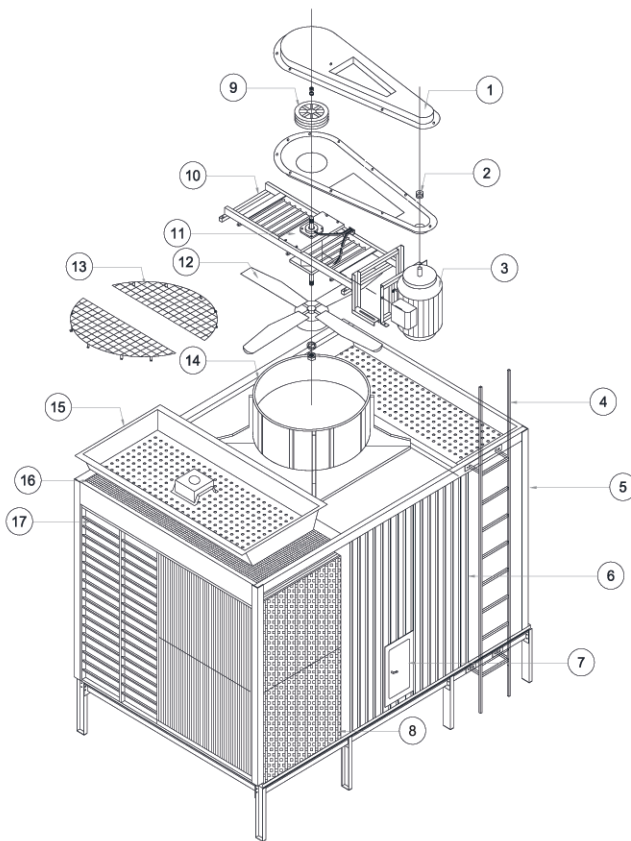
MODULAR DESIGN FRP CROSSFLOW



MULTI-CELL 100-1280 HRT COOLING CAPACITY

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

HX -SERIES TOWER SPECIFICATIONS



Item	DESCRIPTIONS
1	FRP PULLEY COVER
2	MOTOR PULLEY
3	FAN MOTOR
4	HDGS LADDER
5	MAIN FRAME STRUCTURE
6	FRP CASING
7	FRP ACCESS DOOR
8	PVC INFILL
9	FAN PULLEY
10	HDGS FAN HOLDER
11	BEARING BOX
12	CAST ALLOY / FRP AXIAL FAN
13	HDGS FAN GUARD
14	FRP FAN STACK
15	FRP HOT WATER BASIN
16	PVC DISTRIBUTION PACK
17	PVC LOUVER

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 equiped 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 balaced & assemble.

Motor - The fan motor of efficiency class IE1 shall be totally enclose 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.

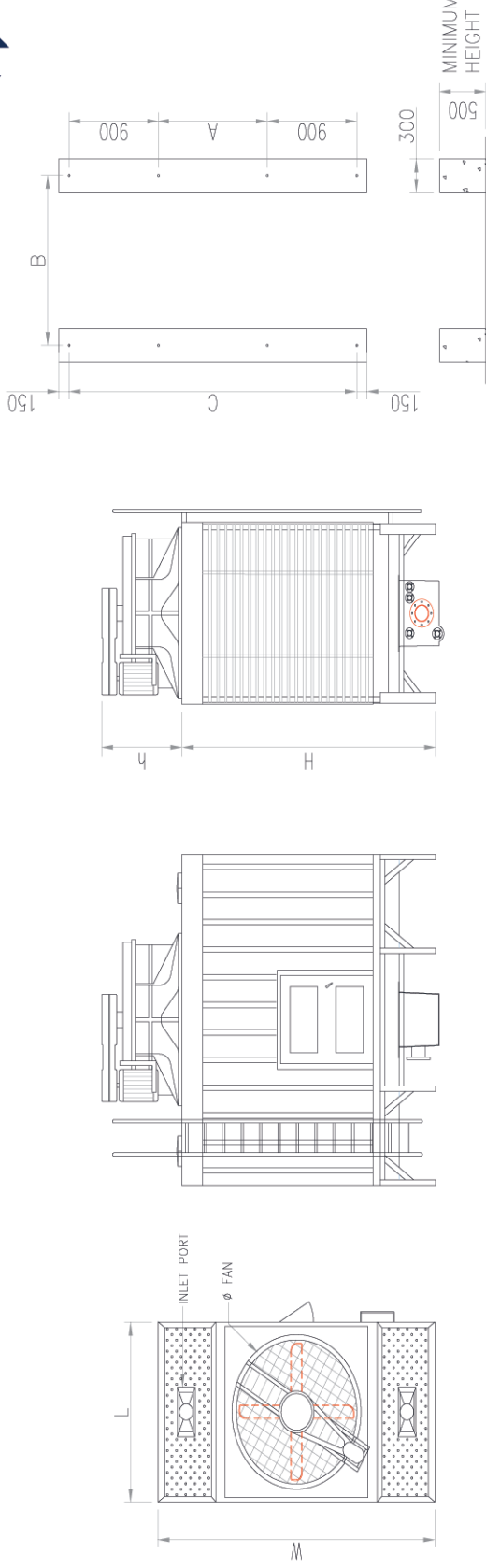
HX -SERIES QUICK SELECTION TABLE

The table shows various combination of cold water supply, hot water return & wet bulb temperature that are commonly used. Please contact HLF for selection that is not stated in table.

Deg F	Return	95	98.6	95	97	98	98.6	97	100	98.6	100	100
	Supply	85.1	89.6	86	87	88	89.6	87	90	89.6	90	90
	Wb	80.6	80.6	81	81	82	81.5	82	82	82.4	83	84
Deg C	Return	35	37	35	36.1	36.7	37	36.1	37.8	37	37.8	37.8
	Supply	29.5	32	30	30.6	31.1	32	30.6	32.2	32	32.2	32.2
	Wb	27	27	27.2	27.2	27.8	27.5	27.8	27.8	28	28.3	28.89

Model HX	HRT	Flowrate (m ³ / hr)										
100-1B	100	47.3	78	52	55	54	73	50	69	68	64	59
125-1B	125	58.5	98	65	69	68	91	62	85	84	79	74
150-1B	150	71.8	117	77	83	82	110	75	104	102	95	88
175-1B	175	79.4	137	91	97	96	128	88	121	120	112	103
200-1B	200	90	156	103	110	110	146	101	138	137	128	118
225-1B	225	98.4	176	116	125	124	165	114	155	154	144	133
250-1B	250	105.7	195	131	138	137	182	124	171	170	159	148
280-1B	280	123	225	142	155	154	209	139	194	195	180	164
300-1B	300	132	234	154	166	165	220	150	206	205	191	176
320-1B	320	141	254	162	177	176	238	158	222	223	206	189
200-2B	200	94.6	156	104	110	108	146	100	138	136	128	118
250-2B	250	117	196	130	138	136	182	124	170	168	158	148
300-2B	300	143.6	234	154	166	164	220	150	208	204	190	176
350-2B	350	158.8	274	182	194	192	256	176	242	240	224	206
400-2B	400	180	312	206	220	220	292	202	276	274	256	236
450-2B	450	196.8	352	232	250	248	330	228	310	308	288	266
500-2B	500	211.4	390	262	276	274	364	248	342	340	318	296
560-2B	540	246	450	284	310	308	418	278	388	390	360	328
600-2B	600	264	468	308	332	330	440	300	412	410	382	352
640-2B	640	282	508	324	354	352	476	316	444	446	412	378
300-3B	300	141.9	234	156	165	162	219	150	207	204	192	177
375-3B	375	175.5	294	195	207	204	273	186	255	252	237	222
450-3B	450	215.4	351	231	249	246	330	225	312	306	285	264
525-3B	525	238.2	411	273	291	288	384	264	363	360	336	309
600-3B	600	270	468	309	330	330	438	303	414	411	384	354
700-3B	700	295.2	528	348	375	372	495	342	465	462	432	399
750-3B	750	317.1	585	393	414	411	546	372	513	510	477	444
840-3B	840	369	675	426	465	462	627	417	582	585	540	492
900-3B	900	396	702	462	498	495	660	450	618	615	573	528
960-3B	960	423	762	486	531	528	714	474	666	669	618	567
400-4B	400	189.2	312	208	220	216	292	200	276	272	256	236
500-4B	500	234	392	260	276	272	364	248	340	336	316	296
600-4B	600	287.2	468	308	332	328	440	300	416	408	380	352
700-4B	700	317.6	548	364	388	384	512	352	484	480	448	412
800-4B	800	360	624	412	440	440	584	404	552	548	512	472
900-4B	900	393.6	704	464	500	496	660	456	620	616	576	532
1000-4B	1000	422.8	780	524	552	548	728	496	684	680	636	592
1120-4B	1120	492	900	568	620	616	836	556	776	780	720	656
1200-4B	1200	528	936	616	664	660	880	600	824	820	764	704
1280-4B	1280	564	1016	648	708	704	952	632	888	892	824	756

TECHNICAL DETAIL FOR 1 CELL

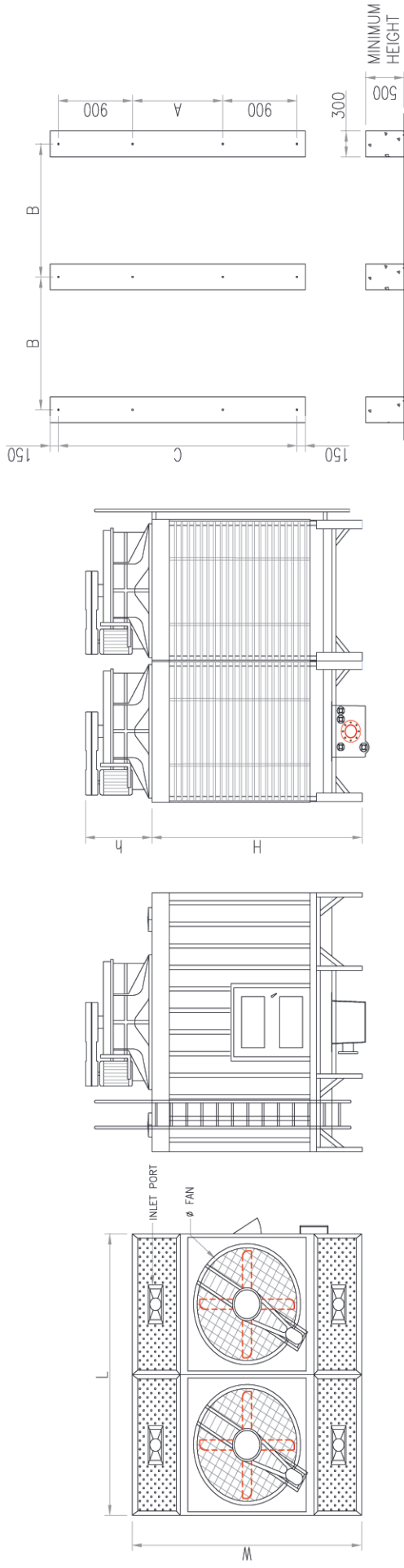


Model	Tower Dimension (mm)				Motor		Axial Fan Diameter		Piping Information (mm)				Anchor Bolt Details (mm)			Weight (Kg)			
	L	W	h	H	Power (kW)	Rated Current (380/415)	F (mm)	RPM	Internal Inlet	External Inlet	Outlet	Drain	Over Flow	Make Up Auto & Manual	A	B	C	Dry Weight	Operating Weight
100-1B	1700	3280	880	2840	2.2	5.09 /4.66	1500	483	100 X 1	100 X 2	125 X 1	50 X 1	50 X 1	25 X 1	1430	1650	3230	980	2140
125-1B	1700	3280	880	2840	3.7	8.13/7.44	1500	487	100 X 1	100 X 2	125 X 1	50 X 1	50 X 1	25 X 1	1430	1650	3230	1005	2155
150-1B	1890	3620	880	2840	3.7	8.13/7.44	1500	487	125 X 1	100 X 2	125 X 1	50 X 1	50 X 1	25 X 1	1770	1840	3570	1200	2650
175-1B	1890	3620	880	2840	5.5	12/11	1500	581	125 X 1	100 X 2	150 X 1	50 X 1	50 X 1	25 X 1	1770	1840	3570	1210	2660
200-1B	2050	3940	915	2840	5.5	12/11	1700	512	125 X 1	125 X 2	150 X 1	50 X 1	50 X 1	25 X 1	2090	2000	3890	1250	2820
225-1B	2400	4280	890	2840	5.5	12/11	2000	407	150 X 1	125 X 2	200 X 1	50 X 1	50 X 1	25 X 1	2430	2350	4230	1420	3560
250-1B	2400	4280	890	2840	7.5	14.9/13.6	2000	428	150 X 1	125 X 2	200 X 1	50 X 1	50 X 1	25 X 1	2430	2350	4230	1430	3570
280-1B	2400	4280	890	2840	11	22/20.1	2000	430	200 X 1	150 X 2	200 X 1	50 X 1	50 X 1	40 X 1	2430	2350	4230	1470	3610
300-1B	2400	4280	890	3855	7.5	14.9/13.6	2000	428	200 X 1	150 X 2	200 X 1	50 X 1	50 X 1	40 X 1	2430	2350	4230	1670	3810
320-1B	2400	4280	890	3855	11	22/20.1	2000	430	200 X 1	150 X 2	200 X 1	50 X 1	50 X 1	40 X 1	2430	2350	4230	1710	3850

REMARKS :-

- 1.Nominal flow rate will be 13 liter / minute per hrt at 37/32/27 deg celcius conditions.
- 2.Balacing connection will available upon request.
- 3.Internal piping diameter shall be the with water outlet diameter.

TECHNICAL DETAIL FOR 2 CELLS



PLAN VIEW

SIDE VIEW

FRONT VIEW

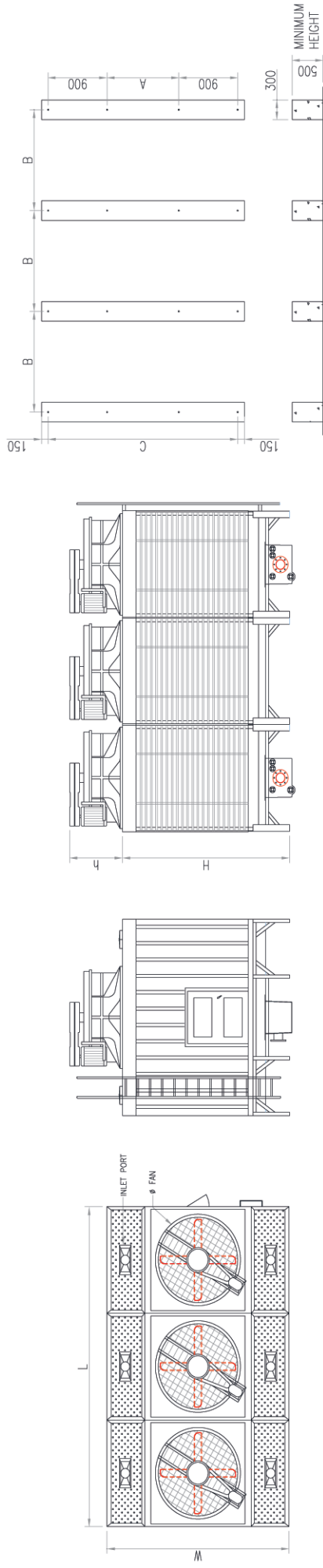
RC FOUNDATION
DETAIL

Model	Tower Dimension (mm)				Motor		Axial Fan Diameter		Piping Information (mm)						Anchor Bolt Details (mm)			Weight (Kg)	
	L	W	h	H	Power (kW)	Rated Current (380/415)	F (mm)	RPM	Internal Inlet	External Inlet	Outlet	Drain	Over Flow	Make Up Auto & Manual	A	B	C	Dry Weight	Operating Weight
200-2B	3400	3280	880	2840	2.2	5.09 /4.66	1500	483	100 X 2	100 X 4	150 X 1	50 X 1	50 X 1	25 X 1	1430	1650	3230	1960	4280
250-2B	3400	3280	880	2840	3.7	8.13/7.44	1500	487	125 X 2	100 X 4	150 X 1	50 X 1	50 X 1	32 X 1	1430	1650	3230	2010	4310
300-2B	3780	3620	880	2840	3.7	8.13/7.44	1500	487	125 X 2	100 X 4	200 X 1	50 X 1	50 X 1	32 X 1	1770	1840	3570	2400	5300
350-2B	3780	3620	880	2840	5.5	12/11	1500	581	125 X 2	100 X 4	200 X 1	50 X 1	50 X 1	32 X 1	1770	1840	3570	2420	5320
400-2B	4100	3940	915	2840	5.5	12/11	1700	512	125 X 2	125 X 4	250 X 1	50 X 1	50 X 1	50 X 1	2090	2000	3890	2500	5640
450-2B	4800	4280	890	2840	5.5	12/11	2000	407	150 X 2	125 X 4	250 X 1	50 X 1	50 X 1	50 X 1	2430	2350	4230	2840	7120
500-2B	4800	4280	890	2840	7.5	14.9/13.6	2000	428	150 X 2	125 X 4	250 X 1	50 X 1	50 X 1	50 X 1	2430	2350	4230	2860	7140
560-2B	4800	4280	890	2840	11	22/20.1	2000	430	200 X 2	150 X 4	250 X 1	50 X 1	50 X 1	50 X 1	2430	2350	4230	2940	7220
600-2B	4800	4280	890	3855	7.5	14.9/13.6	2000	428	200 X 2	150 X 4	250 X 1	50 X 1	50 X 1	50 X 1	2430	2350	4230	3340	7620
640-2B	4800	4280	890	3855	11	22/20.1	2000	430	200 X 2	150 X 4	250 X 1	50 X 1	50 X 1	50 X 1	2430	2350	4230	3420	7700

REMARKS :-

- 1.Nominal flow rate will be 13 liter / minute per hrt at 37/32/27 deg celcius conditions
- 2.Balacing connection will available upon request.
- 3.Internal piping diameter shall be the with water outlet diameter

TECHNICAL DETAIL FOR 3 CELLS



PLAN VIEW

SIDE VIEW

FRONT VIEW

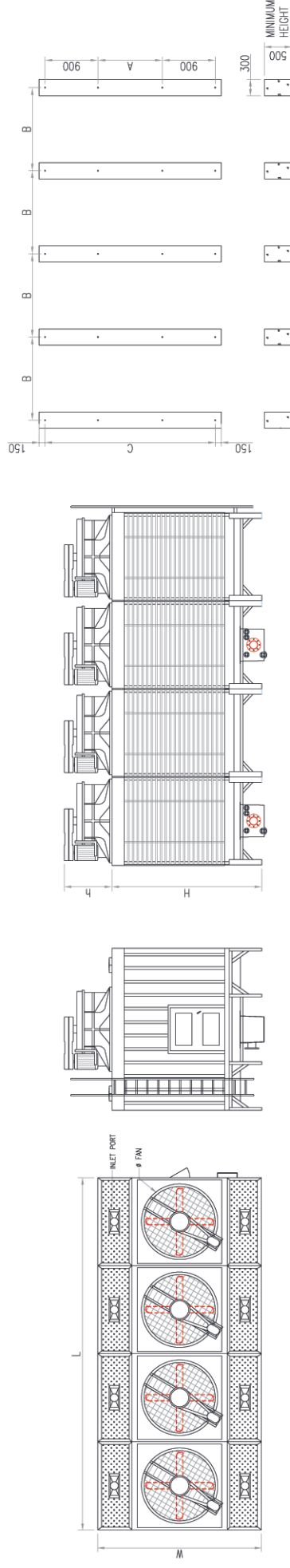
RC FOUNDATION
DETAIL

Model	Tower Dimension (mm)				Motor		Axial Fan Diameter		Piping Information (mm)						Anchor Bolt Details (mm)			Weight (Kg)	
	L	W	h	H	Power (kW)	Rated Current (380/415)	F (mm)	RPM	Internal Inlet	External Inlet	Outlet	Drain	Over Flow	Make Up Auto & Manual	A	B	C	Dry Weight	Operating Weight
300-3B	5100	3280	880	2840	2.2	5.09 /4.66	1500	483	100 X 3	100 X 6	150 X 2	50 X 2	50 X 2	25 X 2	1430	1650	3230	2940	6420
375-3B	5100	3280	880	2840	3.7	8.13/7.44	1500	487	125 X 3	100 X 6	150 X 2	50 X 2	50 X 2	25 X 2	1430	1650	3230	3015	6465
450-3B	5670	3620	880	2840	3.7	8.13/7.44	1500	487	125 X 3	100 X 6	200 X 2	50 X 2	50 X 2	25 X 2	1770	1840	3570	3600	7950
525-3B	5670	3620	880	2840	5.5	12/11	1500	581	125 X 3	100 X 6	200 X 2	50 X 2	50 X 2	32 X 2	1770	1840	3570	3630	7980
600-3B	6150	3940	915	2840	5.5	12/11	1700	512	125 X 3	125 X 6	200 X 2	50 X 2	50 X 2	50 X 2	2090	2000	3890	3750	8460
700-3B	7200	4280	890	2840	5.5	12/11	2000	407	150 X 3	125 X 6	200 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	4260	10680
750-3B	7200	4280	890	2840	7.5	14.9/13.6	2000	428	150 X 3	125 X 6	200 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	4290	10710
840-3B	7200	4280	890	2840	11	22/20.1	2000	430	200 X 3	150 X 6	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	4410	10830
900-3B	7200	4280	890	3855	7.5	14.9/13.6	2000	428	200 X 3	150 X 6	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	5010	11430
960-3B	7200	4280	890	3855	11	22/20.1	2000	430	200 X 3	150 X 6	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	5130	11550

REMARKS :-

- 1.Nominal flow rate will be 13 liter / minute per hrt at 37/32/27 deg celcius conditions
- 2.Balacing connection will available upon request.
- 3.Internal piping diameter shall be the with water outlet diameter

TECHNICAL DETAIL FOR 4 CELLS



PLAN VIEW

SIDE VIEW

FRONT VIEW

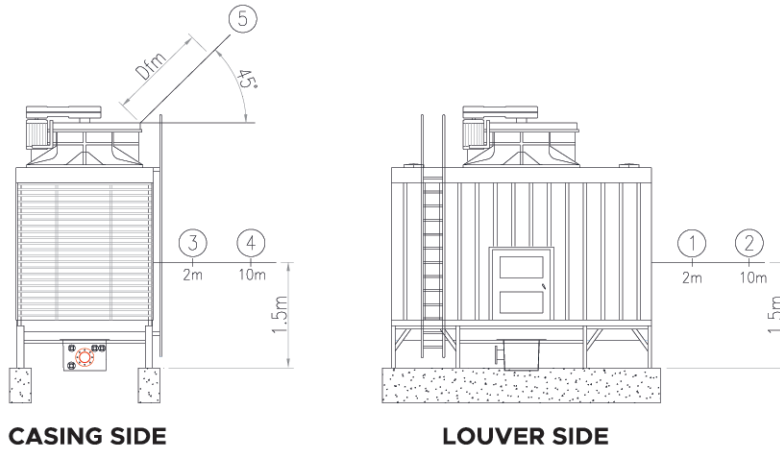
RC FOUNDATION
DETAIL

Model	Tower Dimension (mm)				Motor	Axial Fan Diameter		Piping Information (mm)						Anchor Bolt Details (mm)			Weight (Kg)		
	L	W	h	H		Power (kW)	Rated Current (380/415)	F (mm)	RPM	Internal Inlet	External Inlet	Outlet	Drain	Over Flow	Make Up Auto & Manual	A	B	C	Dry Weight
400-4B	6800	3280	880	2840	2.2	5.09 /4.66	1500	483	100 X 4	100 X 8	150 X 2	50 X 2	50 X 2	32 X 2	1430	1650	3230	3920	8560
500-4B	6800	3280	880	2840	3.7	8.13/7.44	1500	487	125 X 4	100 X 8	150 X 2	50 X 2	50 X 2	32 X 2	1430	1650	3230	4020	8620
600-4B	7560	3620	880	2840	3.7	8.13/7.44	1500	487	125 X 4	100 X 8	200 X 2	50 X 2	50 X 2	32 X 2	1770	1840	3570	4800	10600
700-4B	7560	3620	880	2840	5.5	12/11	1500	581	125 X 4	100 X 8	200 X 2	50 X 2	50 X 2	32 X 2	1770	1840	3570	4840	10640
800-4B	8200	3940	915	2840	5.5	12/11	1700	512	125 X 4	125 X 8	250 X 2	50 X 2	50 X 2	50 X 2	2090	2000	3890	5000	11280
900-4B	9600	4280	890	2840	5.5	12/11	2000	407	150 X 4	125 X 8	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	5680	14240
1000-4B	9600	4280	890	2840	7.5	14.9/13.6	2000	428	150 X 4	125 X 8	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	5720	14280
1120-4B	9600	4280	890	2840	11	22/20.1	2000	430	200 X 4	150 X 8	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	5880	14440
1200-4B	9600	4280	890	3855	7.5	14.9/13.6	2000	428	200 X 4	150 X 8	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	6680	15240
1280-4B	9600	4280	890	3855	11	22/20.1	2000	430	200 X 4	150 X 8	250 X 2	50 X 2	50 X 2	50 X 2	2430	2350	4230	6840	15400

REMARKS :-

- 1.Nominal flow rate will be 13 liter / minute per hrt at 37/32/27 deg celcius conditions
- 2.Balacing connection will available upon request.
- 3.Internal piping diameter shall be the with water outlet diameter

HX -SERIES SOUND LEVEL



REMARKS : -

1.For measuring item no 5, the noise meter shall be place 45 degrees above the top edge of the fan stack & shall be in opposite of motor side.

Model HX	Louver Side		Casing Side		Fan
	1	2	3	4	5
100-1B	63.5	52	57.5	50	68
125-1B	65	53	61.5	51	68.5
150-1B	66	54.5	62.5	52.5	69
175-1B	67.5	55	63	53	69.5
200-1B	68	56	63.5	54	71
225-1B	68.5	56.5	63.5	54.5	72
250-1B	69	57	64	55	72.5
280-1B	69.5	58	64.5	56	74
300-1B	69	57.5	64	55.5	73.5
320-1B	69.5	58.5	65	56.5	74
200-2B	66.5	55.0	60.5	53.0	71.0
250-2B	68.0	56.0	64.5	54.0	71.5
300-2B	69.0	57.5	65.5	55.5	72.0
350-2B	70.5	58.0	66.0	56.0	72.5
400-2B	71.0	59.0	66.5	57.0	74.0
450-2B	71.5	59.5	66.5	57.5	75.0
500-2B	72.0	60.0	67.0	58.0	75.5
560-2B	72.5	61.0	67.5	59.0	77.0
600-2B	72.0	60.5	67.0	58.5	76.5
640-2B	72.5	61.5	68.0	59.5	77.0
300-3B	68.3	56.8	62.3	54.8	72.8
375-3B	69.8	57.8	66.3	55.8	73.3
450-3B	70.8	59.3	67.3	57.3	73.8
525-3B	72.3	59.8	67.8	57.8	74.3
600-3B	72.8	60.8	68.3	58.8	75.8
700-3B	73.3	61.3	68.3	59.3	76.8
750-3B	73.8	61.8	68.8	59.8	77.3
840-3B	74.3	62.8	69.3	60.8	78.8
900-3B	73.8	62.3	68.8	60.3	78.3
960-3B	74.3	63.3	69.8	61.3	78.8
400-4B	68.3	56.8	62.3	54.8	72.8
500-4B	69.8	57.8	66.3	55.8	73.3
600-4B	70.8	59.3	67.3	57.3	73.8
700-4B	72.3	59.8	67.8	57.8	74.3
800-4B	72.8	60.8	68.3	58.8	75.8
900-4B	73.3	61.3	68.3	59.3	76.8
1000-4B	73.8	61.8	68.8	59.8	77.3
1120-4B	74.3	62.8	69.3	60.8	78.8
1200-4B	73.8	62.3	68.8	60.3	78.3
1280-4B	74.3	63.3	69.8	61.3	78.8

PROJECT REFERENCE



Wei Dat Steel Wire Sdn Bhd (Plant 1)



Wei Dat Steel Wire Sdn Bhd (Plant 2)



Pastel Glove Sdn Bhd



Modernria Plastic Industries (M) Sdn Bhd



Walsin Precision Technology Sdn Bhd



Wan Cheng Plastic Industries Sdn Bhd



Nippon Electric Glass (Malaysia) Sdn Bhd



Triplast Plastic Industries

AXG Industries Sdn Bhd



Sunshine Industries (Malaysia) Sdn Bhd

Wear Safe (Malaysia) Sdn Bhd (WSM3)

MAKE UP WATER CALCULATIONS

NOTATIONS

FLOW RATE	m
INLET TEMPERATURE	T ₁
OUTLET TEMPERATURE	T ₂
SPECIFIC HEAT (4.2 kJ/kg °C)	C _p
LATENT HEAT OF EVAPORATION (2520kJ/kg)	R
DRIFT LOSS (%) FOR HX TOWER	0.02%

EXAMPLE

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

YOUR SELECTION

1. COOLING TOWER MODEL	<input type="text"/>
FLOW RATE	<input type="text"/>
INLET TEMPERATURE	<input type="text"/>
OUTLET TEMPERATURE	<input type="text"/>
AMBIENT WET BULB TEMPERATURE	<input type="text"/>

REMARKS : FLOWRATE MUST BE IN (M3/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)

$$\begin{aligned}
 D &= m \times \text{DRFIT LOSS (\%)} \\
 &= 78 \times 0.02 / 100 \\
 &= 0.0156 \text{ M}^3/\text{H}
 \end{aligned}$$

4. BLOWN DOWN (BD)

$$\begin{aligned}
 BD &= ((E + D) / 4) \\
 &= 0.1664 \text{ M}^3/\text{H}
 \end{aligned}$$

5. MAKE UP (MU)

$$\begin{aligned}
 MU &= E + D + BD \\
 &= 0.65 + 0.0156 + 0.1664 \\
 &= 0.832 \text{ M}^3/\text{H}
 \end{aligned}$$

2. EVAPORATION LOSS (E)

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

3. DRIFT LOSS (D)

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

4. BLOWN DOWN (BD)

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

5. MAKE UP (MU)

$$MU = E + D + BD$$



HLF COOLING SDN BHD

201901043853 (1353183-A)

HQ OFFICE

3-9, Jalan Puteri 4/8,
Bandar Puteri,
47100 Puchong,
Selangor Darul Ehsan.

FACTORY

AL165E, Jalan Industri,
Kampung Baru Sungai Buloh,
Seksyen U19, 47100 Sungai Buloh,
Selangor Darul Ehsan.

Tel: 03-8060 3183

Email: hlfcooling@gmail.com

Website: www.hlfcooling.com.my