菱和
ryowo™

RYOWO COOLING TOWER

FRS SERIES

Horizontal Intake Horizontal Discharge

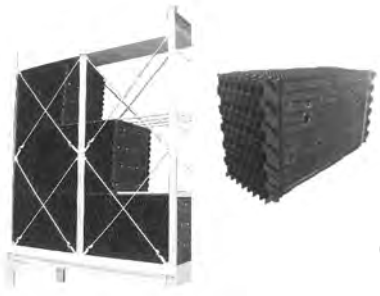
CTI CERTIFIED

DESIGN FEATURES

(A)

(B)

(C)



(D)

(A) Structure

Cross flow configuration design provides easier and safer installation and minimize the maintenance cost. Horizontal discharge arrangement requires lower headroom and is suitable for indoor installation.

(B) High Efficient Fan

Aerofoil shaped hollow blades are made from extrusion aluminum alloy or fiberglass-reinforced polyester (FRP) and pitch angle is adjustable, allowing optimization of the tower performance.

(C) Transmission System

Motors are TEFC type, IP 55 protection, Class F insulation and 1.15 service factor. Fans are driven by Vee belts with low tip speed, minimizing the vibration and the noise emitted.

(D) High Efficient Filler

Fillers are vacuum formed of 0.4mm thick PVC film. Filler sheets configuration incorporate sloped flutes in both air intake and outlet sections and high efficient wet deck media section. The wet deck media section with continuous zig-zag pattern design provides high efficient heat transfer.

SPECIFICATION

Model	Dimension (mm)			Water Flow m^3/hr	Fan Dia x Qty (mm)	Motor kW x Qty	Piping (mm)					Weight(kg)	
	L	W	H				In	Out	Fv	Of	Dr	Dry	Wet
FRS-50-1.5	2300	2000	2550	48	ø 1600 x 1	1.5 x 1	100	100	20	50	50	642	1612
FRS-50-2.2	2300	2000	2550	55	ø 1600 x 1	2.2 x 1	100	100	20	50	50	650	1620
FRS-50-4	2300	2000	2550	65	ø 1600 x 1	3.7 x 1	100	100	20	50	50	665	1635
FRS-60-2.2	2300	2600	2550	59	ø 1600 x 1	2.2 x 1	100	100	20	50	50	760	1890
FRS-60-4	2300	2600	2550	71	ø 1600 x 1	3.7 x 1	100	100	20	50	50	775	1905
FRS-60-5.5	2300	2600	2550	81	ø 1600 x 1	5.5 x 1	125	125	20	50	50	785	1915
FRS-70-2.2	2300	3000	2550	64	ø 1600 x 1	2.2 x 1	100	100	20	50	50	840	2260
FRS-70-4	2300	3000	2550	78	ø 1600 x 1	3.7 x 1	125	125	20	50	50	855	2275
FRS-70-5.5	2300	3000	2550	87	ø 1600 x 1	5.5 x 1	125	125	20	50	50	865	2285
FRS-80-2.2	3000	2300	3170	62	ø 1800 x 1	2.2 x 1	100	100	20	50	50	1200	2590
FRS-80-4	3000	2300	3170	76	ø 1800 x 1	4 x 1	125	125	20	50	50	1260	2640
FRS-80-5.5	3000	2300	3170	84	ø 1800 x 1	5.5 x 1	125	125	20	50	50	1280	2660
FRS-100-4	3000	2600	3620	90	ø 2000 x 1	4 x 1	150	150	25	50	50	1500	3020
FRS-100-5.5	3000	2600	3620	100	ø 2000 x 1	5.5 x 1	150	150	25	50	50	1560	3080
FRS-100-7.5	3000	2600	3620	111	ø 2000 x 1	7.5 x 1	150	150	25	50	50	1570	3090
FRS-150-5.5	3360	3000	4080	136	ø 2400 x 1	5.5 x 1	150	150	25	50	50	1790	3330
FRS-150-7.5	3360	3000	4080	151	ø 2400 x 1	7.5 x 1	150	150	25	50	50	1870	3410
FRS-150-11	3360	3000	4080	171	ø 2400 x 1	11 x 1	150	200	25	50	50	1910	3450
FRS-250-11	4710	3700	4600	224	ø 3000 x 1	11 x 1	125 x 2	200	40	80	50	2830	6240
FRS-250-15	4710	3700	4600	248	ø 3000 x 1	15 x 1	125 x 2	200	40	80	50	2950	6360
FRS-250-18.5	4710	3700	4600	266	ø 3000 x 1	18.5 x 1	125 x 2	200	40	80	50	3090	6500
FRS-305-15	4710	4300	4600	306	ø 1800 x 2	15 x 2	125 x 2	200	40	80	50	3420	7390
FRS-450-15	4710	6300	4600	458	ø 1800 x 3	15 x 3	125 x 3	200 x 2	40 x 2	80 x 2	50 x 2	5130	11085
FRS-610-15	4710	8300	4600	610	ø 1800 x 4	15 x 4	125 x 4	250 x 2	40 x 2	80 x 2	50 x 2	6840	14780

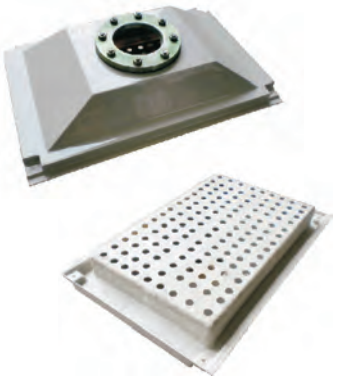
Note: Design Condition: Entering Water Temp. 37°C, Leaving Water Temp 32°C, Wet Bulb 28°C, Dry bulb 32°C, Atmospheric Pressure 101.3kPa
Dimension shown in this reference is metric sized.

RBD-150 Drift Eliminator

3 passes drift eliminator made of 0.6mm thick PVC sheet placed in front of the outlet section of filler provides further reduction of drift loss rate to 0.005% of circulating water flow.

Water Distribution System

Open gravity flow water distribution basin with removable covers designed for non-clogging operation and prevention the growth of algae.
Special design diffusion decks provide 100% guarantee for full coverage of filler with small droplets.



High Static Option

High static axial fans are direct driven designed to move high air volume and static pressure up to 40m^3/s and 600Pa respectively. The fan casing design and construction are well suit to indoor application and are mounted by individual support to increase rigidity and prevent vibration.

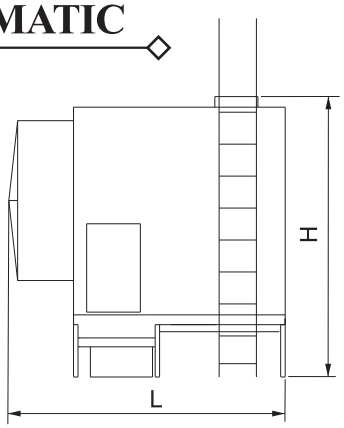
Performance Guarantee

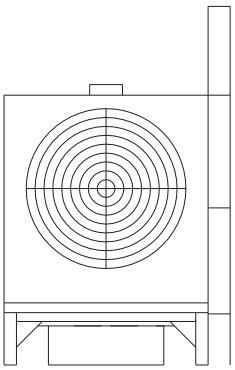
The thermal performance is certified by CTI in accordance with STD-201 standard.

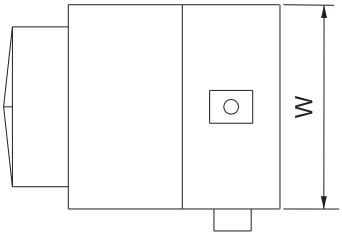
MANUFACTURER'S PUBLISHED THERMAL PERFORMANCE IS CERTIFIED BY THE COOLING TOWER INSTITUTE UNDER THE PROVISIONS OF STD-201(11)
CERTIFICATION VALIDATION NUMBER

C27C-05R03

TOWER SCHEMATIC







MODEL SELECTION

Model	Temp.	Water flow rate at indicated HWT, CWT & WBT (M^3/Hr)																					
	HWT °C	33	31	37	33	32	37	35	34	33	37	36	35	34	38	37	36	35	39	38	37	36	37
	CWT °C	28	27	32	28	27	32	30	29	28	32	31	30	29	32	32	31	30	33	33	32	31	32
	WBT °C	23	23	24	24	24	25	25	25	25	26	26	26	26	27	27	27	27	28	28	28	28	29
FRS-50-1.5		45	44	74	40	32	68	50	41	33	62	52	44	35	49	55	46	37	51	58	48	39	40
FRS-50-2.2		52	50	85	45	36	78	57	48	38	71	60	50	40	56	63	52	42	59	66	55	44	46
FRS-50-3.7		61	59	100	54	43	92	68	56	45	84	71	59	47	66	75	62	50	70	78	65	52	55
FRS-60-2.2		56	54	91	49	39	84	61	51	41	76	64	54	43	60	68	56	45	63	71	59	47	50
FRS-60-3.7		67	65	110	58	47	101	74	61	49	91	78	64	52	72	81	68	54	76	86	71	57	60
FRS-60-5.5		77	74	125	67	54	115	84	70	56	104	89	73	59	83	93	77	62	87	98	81	65	68
FRS-70-2.2		61	58	99	53	42	91	67	55	44	82	70	58	47	65	73	61	49	69	77	64	51	54
FRS-70-3.7		74	71	120	64	52	111	81	67	54	100	85	71	57	79	89	74	60	84	94	78	63	66
FRS-70-5.5		82	79	134	72	58	123	91	75	60	112	95	79	63	89	100	83	67	93	105	87	70	73
FRS-80-2.2		58	56	99	50	40	91	65	53	42	81	68	56	44	63	72	59	46	67	76	62	49	52
FRS-80-4		72	69	122	62	48	111	79	65	51	100	84	68	54	78	88	72	57	82	93	76	60	63
FRS-80-5.5		79	76	134	68	54	123	88	72	56	110	92	76	59	86	97	80	63	90	103	84	66	70
FRS-100-4		85	81	143	73	58	131	94	77	61	118	99	81	64	92	104	85	67	97	110	90	71	75
FRS-100-5.5		94	90	159	81	64	145	104	85	67	131	110	90	71	102	116	95	75	108	122	100	79	83
FRS-100-7.5		104	100	177	90	71	161	116	95	75	145	122	100	79	113	129	105	83	120	136	111	88	92
FRS-150-5.5		128	123	215	110	87	197	142	116	92	177	149	122	97	139	157	129	102	146	166	136	108	114
FRS-150-7.5		142	136	239	123	97	218	157	129	102	197	166	136	108	154	175	143	113	163	184	151	120	126
FRS-150-11		161	154	270	139	110	247	178	146	116	223	188	154	122	175	198	162	128	184	208	171	135	143
FRS-250-11		210	201	346	183	146	318	232	192	154	288	244	202	162	229	257	213	170	241	271	224	179	189
FRS-250-15		232	223	383	202	162	352	257	213	170	319	270	224	179	253	284	236	188	267	300	248	198	209
FRS-250-18.5		249	239	411	217	173	377	275	228	182	342	290	240	192	271	305	253	202	286	321	266	213	224
FRS-305-15		286	275	471	250	200	433	317	262	210	393	333	276	221	312	351	291	233	329	369	306	245	258
FRS-450-15		429	411	705	374	299	648	474	393	315	588	499	413	331	467	525	435	349	492	553	458	367	387
FRS-610-15		571	548	939	498	399	863	631	523	419	783	664	550	441	622	699	579	464	656	736	610	489	515

Note: **CTI Certification applies to operation with the Wet Bulb Temperature between 12.8°C and 32.2°C, Max. Entering Water Temperature 51.7°C, Min. Temperature Range of 2.2°C and Min. Temperature Approach of 2.8°C**

RYOWO (HOLDING) CO., LTD.

Head Office:
Room 1908, Nathan Road 700 Mong Kok, Kowloon HongKong.

Tel : (852) 23918381
Fax: (852) 27893802
Web site: http://www.ryowo.com
E-mail : ryinfo@ryowo.com

DONGGUAN RYOWO COOLING TOWER CO., LTD.

No.263 MeiJing Road West,Dalang,Dongguan,Guangdong,PRC

Tel : (86)-769 89399698
Fax: (86)-769 82973398
Postal Code: 523795

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