

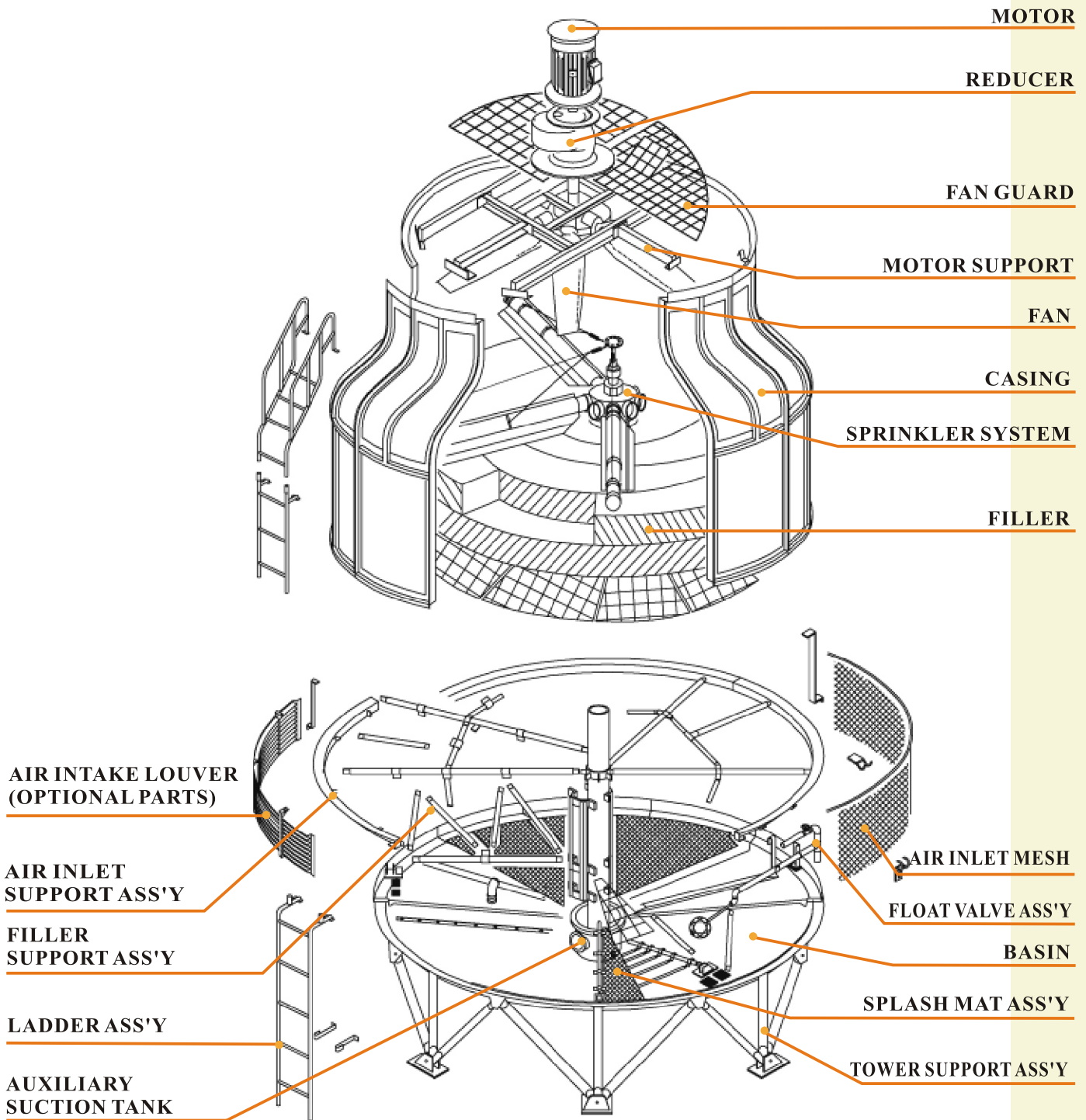


**FRP** COUNTER FLOW FT SERIES

# COOLING TOWER



# STRUCTURE



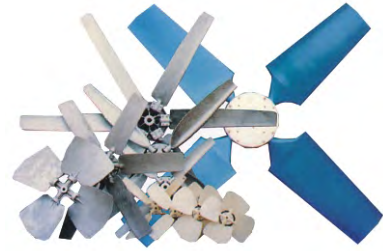
## PRINCIPLE OF OPERATION

Hot water is distributed over the filler through the low velocity automatic sprinkler system and is mixed with the upward draft of ambient air causing evaporation and thus heat is removed from the water. The cooled water falls into the basin and is pumped to the heat sources for recirculation.

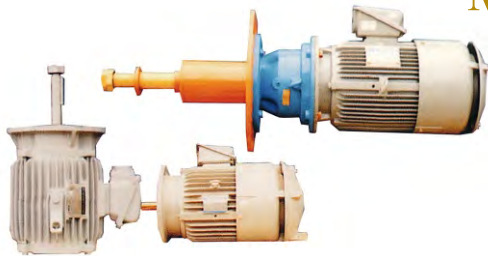
# COMPONENT FUNCTION & FEATURE

## AXIAL FAN

All fans are induced-draft axial type with adjustable pitch. Material chosen are non-corrosion of plastic, FRP or alu-minium alloy. The high efficiency design ensures low running cost and the lowest possible noise level . Fan blade pitches is factory set and balanced.



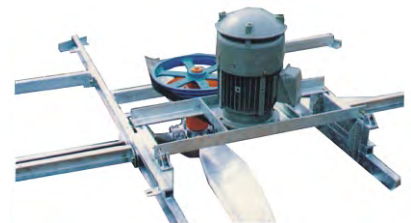
## MOTOR



The motors, totally enclosed, fan cooled flange type, 380V/ 3ph/ 50 Hz, induction weather proof, are specially designed for RYOWO. Motors from 5.5 kw and up are Y- start and below are direct-on-line start.

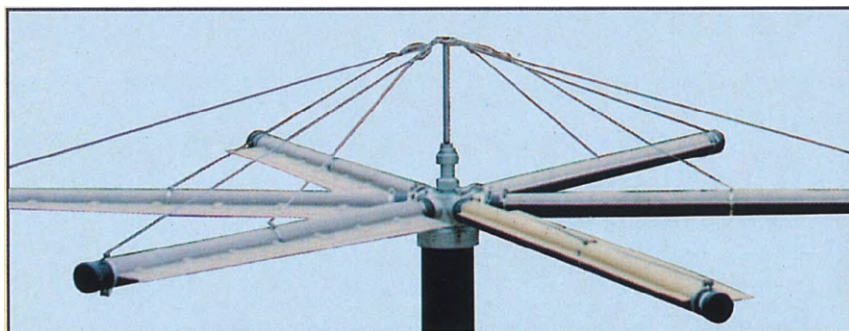
## TRANSMISSION SYSTEM

The fans of small models are designed to be driven by low speed motor of 6,8,10 or 12 poles which can minimise the numbers of transmission parts used. For large models, the fans are vee-belt or gear driven with 4 poles motors so the speed of fans can be adjustable to suit various application.



## SPRINKLER SYSTEM

Automatic rotary sprinkler system with rotary head and sprinkler pipe distributes the hot water over the entire face area of the filler. Sprinkler pipes are non-clogging, require low-pressure to operate, and assures uniform water flow with minimal operating pump head. The F.R.P. eliminators attached to sprinkler pipes are specifically designed for Low pressure drop and minimises the drift loss of water.



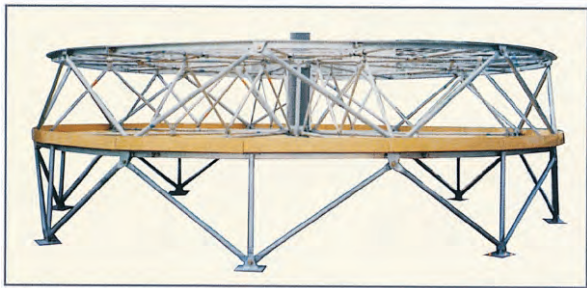


# COMPONENT FUNCTION & FEATURE

## CASING & BASIN

F.R.P. (fibreglass reinforced polyester) formed casings are durable, non-corrosive, weather-proof, and light weight. Cylindrical form is shaped to fully withstand wind pressure, vibration and such F.R.P. casings obviate need for painting, reduce maintenance costs and guarantee long dependable service.

Bowl-shape basins are also made from F.R.P. with built in socket or flanged outlets for piping connections. For large models, a F.R.P. aux. suction tank is employed and fitted with piping flanges or sockets.



## STEEL STRUCTURE

All supporting steel members are hot-dip galvanized to minimise rusting and corrosion ensuring long service life even in corrosive atmosphere. The stainless hardware members are also available upon request.

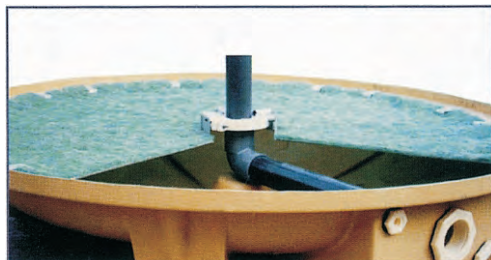
## FILLER

High performance RYOWO V-30 film filler is the heart of the tower. The specially formed PVC sheets maximize the air/water contact area and minimise air pressure drop to assure efficient heat transfer while keeping fan power requirement low. It is virtually immune to corrosion and decay.



## Eliminator

Specially made drift eliminator consisted of 2 types of sheets forms a “v” shape path for the transmission of the cooling tower discharge air stream. The small water droplets in the stream impact the surfaces of the drift eliminator sheets and are separated from the stream such that the drift loss ratio maintain at less than 0.001% of circulating water flow rate.



## SPLASH MAT (LOW NOISE MODELS)

Specially designed noise absorbing splash mat is provided for low noise models on the water basin to minimise the unpleasant water dripping noise in the basin.

ITEM	MODEL	FT-8	FT-10	FT-15	FT-20	FT-25	FT-30	FT-40	FT-50	FT-60	FT-80	FT-100	FT-125	FT-150	FT-175	FT-200	FT-225	FT-250	FT-300	FT-350	FT-400	FT-500	FT-600	FT-700	FT-800	FT-1000												
Capacity	27 °C WB	Circulating water flow rate	m <sup>3</sup> / hr	6.2	7.8	11.7	15.6	19.5	23.4	31.2	39.1	46.9	62.5	78.1	97.7	117.2	136.7	156.2	175.8	195.3	234.4	273.4	312.5	390.6	468.7	546.8	625.0	781.2										
		Make-up water ( Approx. )	m <sup>3</sup> / hr	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.6	0.7	0.9	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.4	3.9	4.5	5.6	6.7	7.8	8.9	11.2										
	28 °C WB	Circulating water flow rate	m <sup>3</sup> / hr	5.6	7.4	10.6	14.4	17.8	21.5	28.7	36.3	42.5	58.8	70.6	88.2	107.5	125.0	142.5	160.0	176.2	212.5	250.0	287.5	337.5	431.2	512.4	575.0	718.7										
		Make-up water ( Approx. )	m <sup>3</sup> / hr	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.8	1.0	1.3	1.5	1.8	2.0	2.3	2.5	3.0	3.6	4.1	4.8	6.2	7.3	8.2	10.3										
		Air flow rate ( Approx. )	m <sup>3</sup> / min	70	85	140	160	230	280	330	420	450	700	830	950	1150	1200	1250	1600	1750	2000	2200	2450	2700	3500	3750	5000	5400										
		Hot water temperature	°C	37																																		
	Cold water temperature	°C	32																																			
Overall Dimension	Diameter ( ϕ )	mm	920	920	1160	1160	1490	1660	1660	1890	2100	2100	2900	2900	2900	3310	3310	3960	3960	4360	4760	4760	5600	6600	6600	7600	7600											
	Height ( H )	mm	1560	1700	1585	1835	1945	1885	2035	2110	2300	2475	2910	3110	3110	3300	3450	3920	3920	3990	4195	4255	4590	5310	5510	5660	5860											
	Height (w/o motor) ( m )	mm	1390	1530	1395	1645	1760	1720	1785	1860	1980	2155	2590	2790	2790	2880	3030	3300	3300	3290	3495	3495	3830	4470	4670	4720	4940											
Material	Air inlet mesh		PVC																																			
	Basin		FRP																																			
	Casing		FRP																																			
	Eliminator		FRP																																			
	Fan		ABS Plastic										FRP							Aluminium alloy							FRP											
	Filler		PVC																																			
	Motor support		Steel (Hot-dip galvanized)																																			
	Sprinkler head		ABS Plastic										Aluminium alloy																									
	Sprinkler pipe		PVC pipe																																			
	Stand pipe		PVC pipe																																			
	Structure		Steel (Hot-dip galvanized)																																			
Fan	TYPE		Axial-flow																																			
	Diameter	mm	550	640	770	930	1200	1500	1800	2400	3000	3400	3700																									
	Speed	rpm	970						750						600						450						375						314					
	Driven type		Direct driven												Belt driven												Gear driven											
Motor	TYPE		Totally enclosed fan cooled outdoor 3 phase induction motor																																			
	Power source		380V / 3 / 50Hz																																			
	Rated output	kw	0.18	0.37	0.75	1.5	2.2	3.7	5.5	7.5	11	15	22																									
	No of pole	Pole	6						8						10						4																	
Distribution System	TYPE		Automatic sprinkler system																																			
	Inlet dia	mm	40	50	80	100	125	150	200	250	300																											
	Outlet dia		15	20	40	65	75	100	75	100	75	100																										
	No of outlet		4						6						4						6						8						10					
Piping	Inlet	mm	40	50	80	100	125	150	200	250	300																											
	Outlet	mm	40	50	80	100	125	150	200	250	300																											
	Drain	mm	25						50						80						100																	
	Overflow	mm	25						50						80						100																	
	Float valve	mm	15						20						25						32						50						80					
	Manual make-up	mm	15						20						25						32						50						80					
Weight	Dry weight	Kg	56	65	75	85	105	130	150	180	250	270	500	540	580	870	900	1300	1350	1550	1720	2050	2450	3950	4050	4700	4900											
	Operating weight	Kg	140	150	200	210	290	370	390	550	840	860	1600	1640	1680	2170	2200	2700	2750	3350	3720	3950	6150	9350	9450	11900	12100											
Noise Level	Sound pressure level	dB(A)	45.5	47	48	50	52	54	58	59	58	59	61	61.5	62	62	62	63	63	64	64.5	61.5	62	65	66	73	74											

**NOTE :** Nominal cooling capacity is based on 13 ℓ / min / RT (1 RT=3,900 Kcal / hr) at 37°C inlet water temperature, 32°C outlet water temperature and 27°C ambient wet bulb temperature.

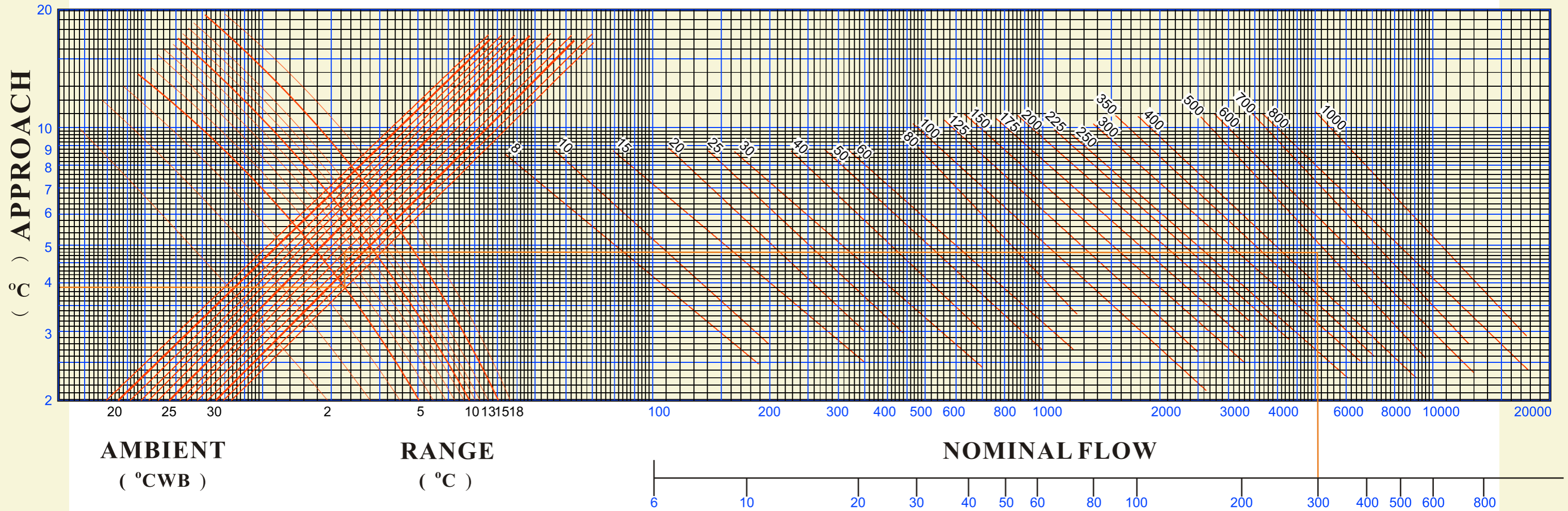
The SPLs are measured 16m horizontally from the edge of the tower at 1.5m above the foundation level.

Pump head is obtained by adding resistance of piping/condenser and the tower height(H).

The unit dimension in this catalogue is metric. Specifications listed in this catalogue are subject to change without further notice for technical improvement of our products.

# FT OR FT/LN SERIES QUICK SELECTION TABLE

(20°CWB~30°CWB)



## EXAMPLE:

**RATE** : 300m<sup>3</sup>/hr    **RANGE: INLET WATER TEMP-OUTLET WATER TEMP**  
**INLET WATER TEMP:** 37°C    : 37°C - 32°C = 5°C  
**OUTLET WATER TEMP** : 32°C    **APPROACH: OUTLET WATER TEMP-WET BULB TEMP**  
    : 37°C - 32°C = 5°C  
**WET BULB TEMP** : 28°C    **TOWER SELECTED: FT-500 OR FT/LN-500**

COOLING TOWER	CT						
NOMINAL FLOW	m <sup>3</sup> /hr						
INLET WATER	HWT°C						
OUTLET WATER	CWT°C						
AMBIENT WB	WB°C						
RANGE	(HWT-CWT)°C						
APPROACH	(CWT-WB)°C						
MODEL							

# SPECIFICATION FOR FT/LN(LOW NOISE TYPE)

# SPECIFICATION FOR FT/LN(LOW NOISE TYPE)

ITEM	MODEL		FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN	FT/LN							
			8	10	15	20	25	30	40	50	60	80	100	125	150	175	200	225	250	300	350	400	500	600	700	800	1000							
Capacity	27 °C WB	Circulating water flow rate	m <sup>3</sup> / hr	6.2	7.8	11.7	15.6	19.5	23.4	31.2	39.1	46.9	62.5	78.1	97.7	117.2	136.7	156.2	175.8	195.3	234.4	273.4	312.5	390.6	468.7	546.8	625.0	781.2						
		Make-up water ( Approx. )	m <sup>3</sup> / hr	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.6	0.7	0.9	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.4	3.9	4.5	5.6	6.7	7.8	8.9	11.2						
	28 °C WB	Circulating water flow rate	m <sup>3</sup> / hr	5.6	7.1	10.6	14.4	17.8	21.5	28.7	36.3	42.5	58.8	70.6	88.2	107.5	125.0	142.5	160.0	176.2	212.5	250.0	287.5	337.5	431.2	512.4	575.0	718.7						
		Make-up water ( Approx. )	m <sup>3</sup> / hr	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.8	1.0	1.3	1.5	1.8	2.0	2.3	2.5	3.0	3.6	4.1	4.8	6.2	7.3	8.2	10.3						
	Air flow rate ( Approx. )		m <sup>3</sup> / min	70	85	140	160	230	280	330	420	450	700	830	950	1150	1200	1250	1600	1750	2000	2200	2450	2700	3500	3750	5000	5400						
	Hot water temperature		°C	37																														
Cold water temperature		°C	32																															
Overall Dimension	Diameter	mm	920	1160	1160	1490	1660	1660	1890	1890	2100	2100	2900	2900	2900	3310	3310	3960	3960	4360	4760	4760	5600	6600	6600	7600	7600							
	Height ( H )	mm	1755	1620	1870	1945	1885	2145	2220	2220	2340	2515	3060	3260	3260	3450	3600	3920	3920	3990	4195	4255	4590	5310	5510	5660	5860							
	Height (w/o motor) ( m )	mm	1530	1395	1645	1760	1720	1785	1860	1860	1980	2155	2590	2790	2790	2880	3030	3300	3300	3290	3495	3495	3830	4470	4670	4720	4940							
Material	Air inlet mesh		PVC																															
	Basin		FRP																															
	Casing		FRP																															
	Eliminator		FRP																															
	Fan		ABS Plastic										Aluminium alloy										FRP											
	Filler		PVC																															
	Motor support		Steel (Hot-dip galvanized)																															
	Sprinkler head		ABS Plastic										Aluminium alloy																					
	Sprinkler pipe		PVC pipe																															
	Stand pipe		PVC pipe																															
	Structure		Steel (Hot-dip galvanized)																															
	Splash mat		Nylon																															
Fan	TYPE		Axial-flow																															
	Diameter	mm	640	770				930				1200				1500				1800				2400				3000		3400		3700		
	Speed	rpm	750						600						500						440						375				314		257	
	Driven type		Direct driven										Belt driven										Gear driven											
Motor	TYPE		Totally enclosed fan cooled outdoor 3 phase induction motor																															
	Power source		380V / 3 / 50Hz																															
	Rated output	kw	0.2	0.37				1.1				1.5				3.7				5.5				7.5		11		15		22				
	No of pole	Pole	8						10						12						4													
Distribution System	TYPE		Automatic sprinkler system																															
	Inlet dia	mm	40	50				80				100				125				150				200				250		300				
	Outlet dia	mm	15	20				40				65				75				100		75		100										
No of outlet		4						6						4				6				8		10										
Piping	Inlet	mm	40	50				80				100				125				150				200				250		300				
	Outlet	mm	40	50				80				100				125				150				200				250		300				
	Drain	mm	25						50															80				100						
	Overflow	mm	25						50															80				100						
	Float valve	mm	15						20										25				32				50		80					
	Manual make-up	mm	15						20										25				32				50		80					
Weight	Dry weight	Kg	80	85	100	125	145	240	280	290	380	400	600	640	680	970	1000	1400	1450	1700	1920	2250	2650	4250	4350	5100	5300							
	Operating weight	Kg	160	205	220	290	375	470	625	635	970	990	1700	1740	1780	2270	2300	2800	2850	3500	3920	4250	6350	9650	9750	12300	12500							
Noise Level	Sound pressure level	dBA	40	41	42.5	43.5	44.5	46	47	48	48	49.5	52	52.5	53	54	54.5	55	55	56	57	58	60	62	62.5	65	66							

## GUARANTEE:

All components are guaranteed against defective material for a period of one (1) year.

When return to RYOWO with transportation prepaid , all parts found by factory inspection to be defective will be repaired replaced without charge , FOB HONG KONG.

No liability will be assumed for loss or damage resulting from misuse of products.

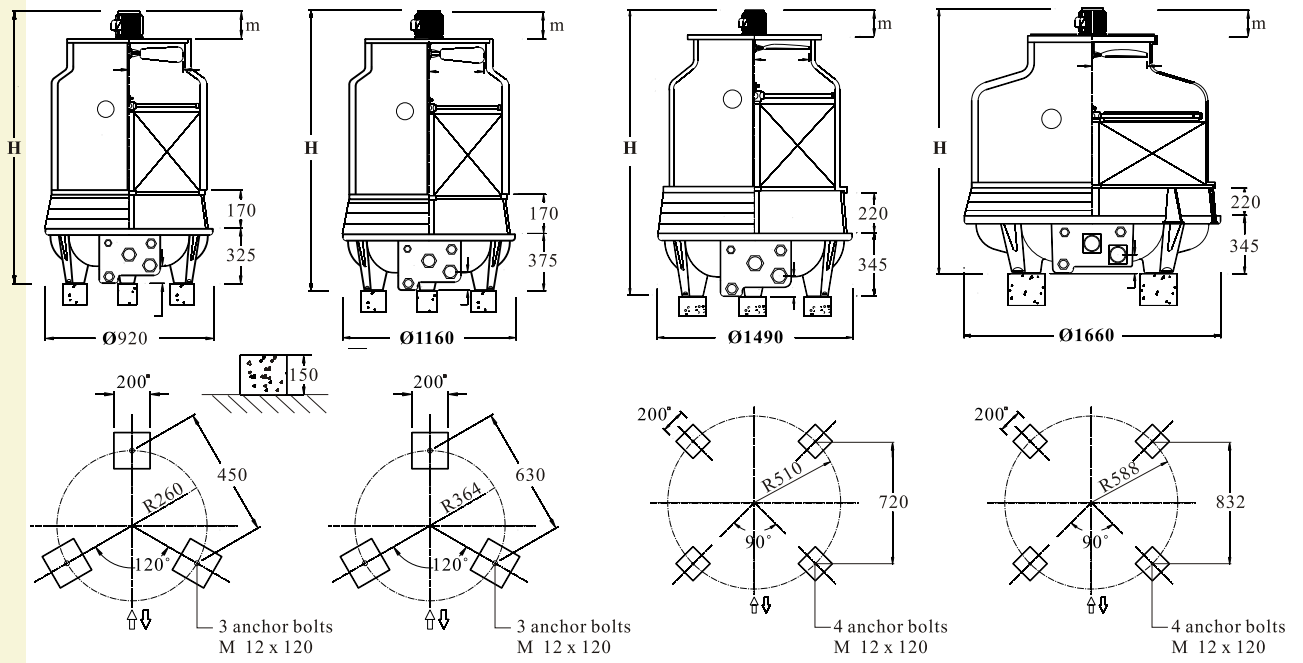
## APPLICATION

For inquiry on RYOWO cooling towers , please contact local agents and specify the following conditions:

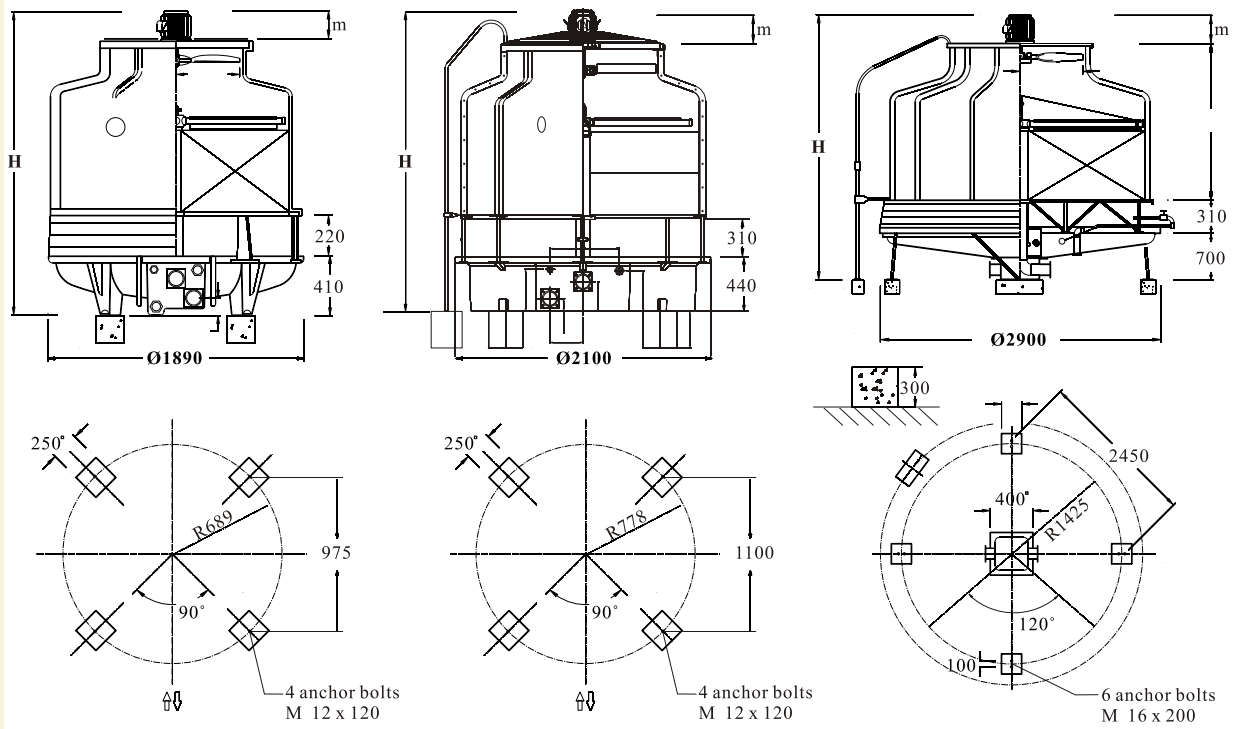
- Circulating water flow
- Inlet water temperature
- outlet water temperature
- ambient wet bulb temperature
- power sources-voltage & frequency

# TOWER FOUNDATION

FT-8 10 FT/LN-8 FT-15·20 FT/LN-10 15 FT-25 FT/LN-20 FT-30 40 FT/LN-25 30



FT-50 FT/LN-40·50 FT·FT/LN-60·80 FT·FT/LN-100·125·150



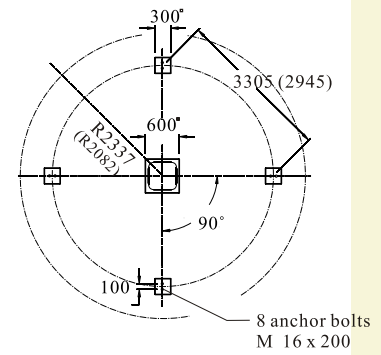
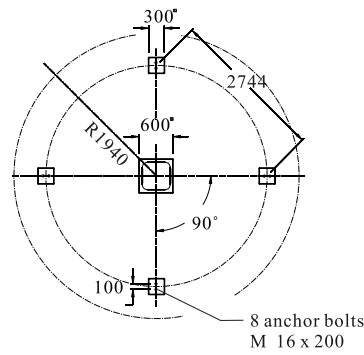
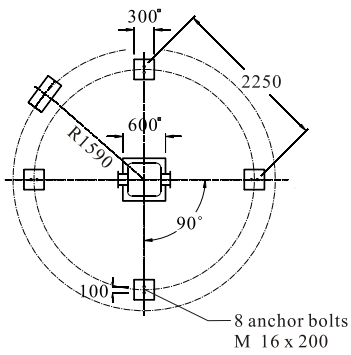
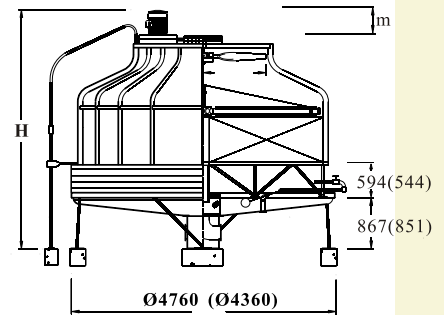
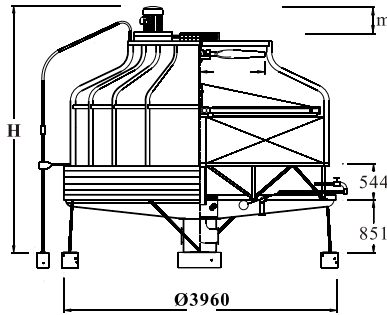
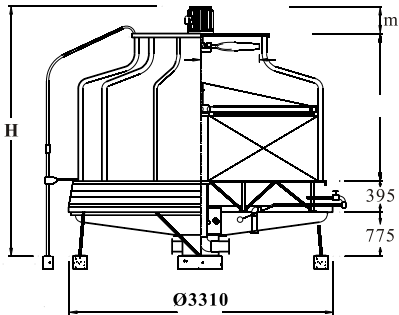


# TOWER FOUNDATION

FT· FT/LN-175· 200

FT· FT/LN-225· 250

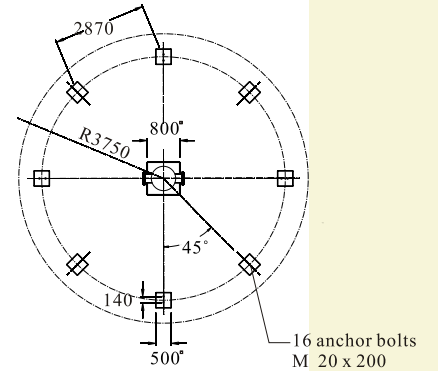
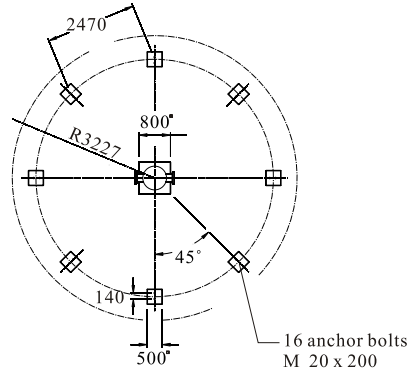
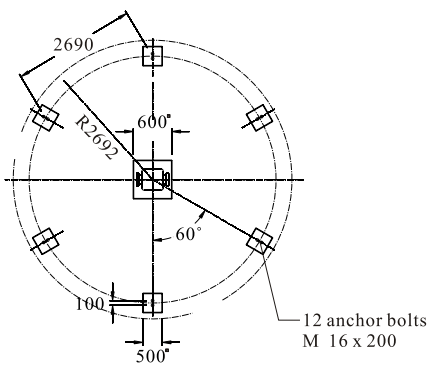
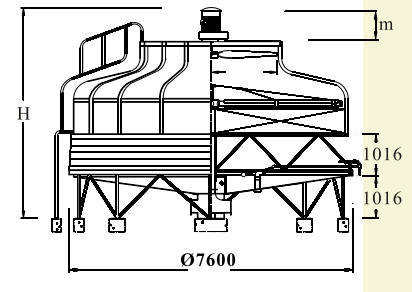
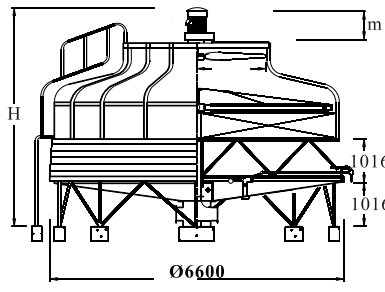
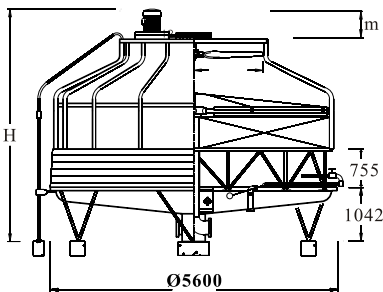
FT· FT/LN-(300)· 350· 400



FT· FT/LN- 500

FT· FT/LN-600· 700

FT· FT/LN-800· 1000



# AVAILABLE OPTIONAL ACCESSORIES

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## DISCHARGE HOOD

This option is available on small models. It provides another direction of discharge air leaving the tower. It is made of F.R.P. with services door and wiring mesh on the air outlet.

## HIGH TEMPERATURE FILLER

For high temperature operation such as waste water treatment , P.P. filler can withstand up to 80°C inlet water. (Special arrangement should be made for other components, please contact us for details.)

## STAINLESS STEEL COMPONENTS

As an option, we can provide type 304 stainless steel major steel members, bolts and nuts.

## TWO-SPEED MOTOR

As an option, two-speed motor can be provided in 4P/6P single winding configuration. A considerable reduction in noise and energy management can be achieved.

## F.R.P. AIR INLET LOUVER

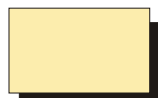
Inlet louver constructed of F.R.P. material can be provided, which matches the rest of tower and prevents water splashing out from the tower.

## BASIN HEATERS

Electric immersion heaters with thermostat and control box are available to keep the basin water from freezing in sub-zero weather.

## BODY COLOR

Cooling tower installed on the roof of building may be barely noticeable from the ground, and a colored cooling tower matching to building color will make it "good look".



# JOB REFERENCES



**FT-400 X 2**  
Bank of China, Shen Zhen

**FT/LN-600 X 11**  
Hotel Lisboa, Macau



**FT/LN-300 X 6**  
Hong Kong University



**FT-1000 X 3**  
**FT-500 X 10**  
CITIC Plaza, Guangzhou



**FT-200 X 2**  
Miami University, U.S.A



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**COOLING TOWER MANUFACTURER SINCE 1978**

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