

上海廷亚冷却系统有限公司

Shanghai Tyacht Cooling System Co.,Ltd

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上海廷亚冷却系统有限公司

Shanghai Tyacht Cooling System Co.,Ltd

TCT低噪音横流开放式冷却塔

TCT Low Sound Cross-flow Open Type Cooling Tower

注意

使用本公司产品时, 请阅读产品的使用说明书, 并请确认注意事项, 安全检查、清扫等; 由产品的改良引起的样本数据改动, 恕不另行通知; 本样本内容未经同意不得擅自转载、拷贝。

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公司介绍 About Us

廷亚致力于冷却设备的开发、设计、生产、销售、咨询与服务。作为冷却设备的优秀制造服务商，我们拥有一批优秀的科研开发、制造人才，并与上海理工大学合作成立了冷却塔研发中心。在开发高性能、高质量产品的同时，与顾客分享我们的经验，以保持对大量已投入运行的冷却塔的支持。

廷亚冷却设备涉足于石油化工、制药、钢铁、汽车、铸造、核电站、发电厂、玻璃制造、IT工厂、食品等领域，与空调系统、感应电炉、连铸设备的结晶器、玻璃熔化炉、空压机、注塑机、焊接设备、涂装设备等配套。我们向各领域的合作伙伴提供专业的技术支持与服务，这为客户带来了实实在在的附加值。廷亚是您在换热领域忠诚的合作伙伴。

廷亚温控长期专注于为工艺过程中流体传热领域提供-120~400℃范围的温度控制系统的工程设计、系统集成、维护及相关工艺和环境配套工程解决方案，具有设计开发、项目配套并施工的能力。我们的优势在于具专业的研发团队和丰富的项目经验。

廷亚产品系列 / Products

闭式冷却塔——TCC、TAC、TMC系列
 开式冷却塔——TCT、TAT系列
 蒸发冷凝器——TAE、TME系列
 工业冷却塔——TCI、TAI系列

Tyacht, a specialist in refrigeration and air conditioning, is engaged professionally in the research and development, design, manufacturing, sales, and service. Tyacht established the cooling tower R&D Center with Shanghai University for Science and Technology. While developing high-quality, high-performance products, we like to share our experience with our customers.

Tyacht cooling equipment are designed for use at the following markets: petrochemical industry, pharmaceutical, steel, automobile, power plant, glass manufacturing, IT factories, food, and air-conditioning system. By providing professional technical support and service, we believe Tyacht is your sincere cooperater in heat-transfer field.

Tyacht Temperature Control has been long engaged professionally in providing engineering solutions for the system of -120 to 400 °C temperature control in the field of industrial process fluid heat transfer. The solutions includes project engineering, system integration, construction, maintenance and related technology and the environment supporting engineering. The company has capacity from concept development to the finally accomplish. Our strength lies in the professional R & D team and rich experience of the project.

Closed Circuit Cooler——TCC、TAC、TMC series
 Cooling Tower——TCT、TAT series
 Evaporative Condenser——TAE、TME series
 Field Erected Cooling Tower——TCI、TAI series

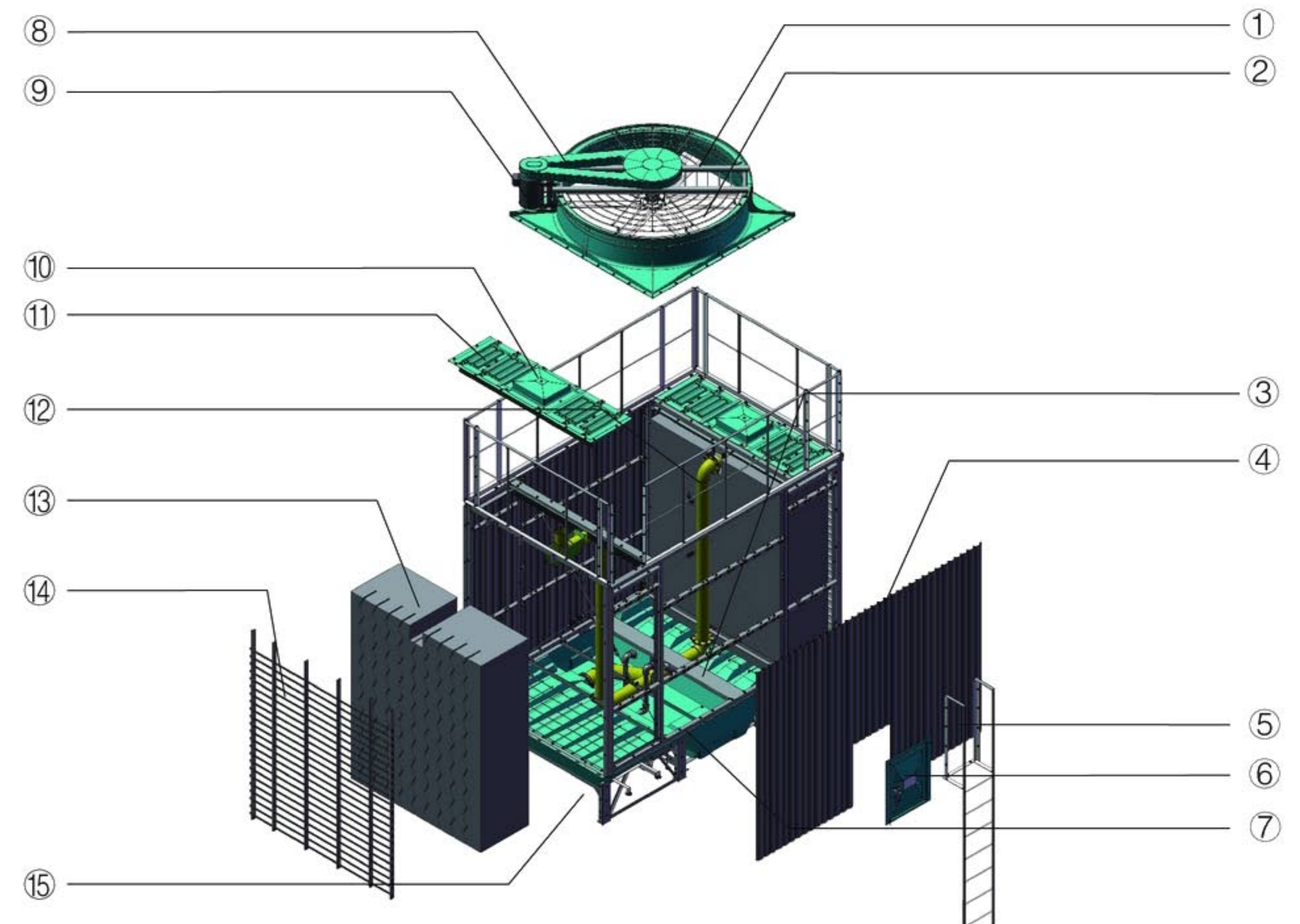
产品构造 Structure

型号表示方法 Nomenclature

TCT - 300R 02

表示模块数（省略代表单模块）Module Numbers
 R表示名义冷吨 Nominal Cooling Tons
 表示轴流风机引风横流开放式冷却塔 Induced Draft Cross-flow Cooling Tower

产品结构图 Product Structure Diagram



- | | | | |
|--------|--------|----------------------|---------------------------|
| ① 风扇架 | ⑨ 电动机 | ① Fan support | ⑨ Fan motor |
| ② 风管 | ⑩ 散水槽盖 | ② Fan Cylinder | ⑩ Spray water basin cover |
| ③ 检修通道 | ⑪ 散水槽 | ③ Inspection access | ⑪ Spray water basin |
| ④ 塔体外板 | ⑫ 喷淋水管 | ④ Casing panel | ⑫ Spray piping |
| ⑤ 维护扶梯 | ⑬ 填料 | ⑤ Maintenance ladder | ⑬ Fill |
| ⑥ 检修门 | ⑭ 进风格栅 | ⑥ Access door | ⑭ Air inlet louvers |
| ⑦ 集水盘 | ⑮ 集水盘架 | ⑦ Drain pan | ⑮ Water pan bracket |
| ⑧ 皮带罩 | | ⑧ Belt cover | |

部件介绍

Components

通风机

采用机翼型宽叶片中空铝合金风叶，和普通铝合金板风叶比较，具有噪声低，强度高，重量轻的特点。

集水盘

采用一体式的FRP集水盘，两个模块以上的场合使用防漏密封垫连接，避免了漏水和腐蚀的问题，采用倾斜设计，使水和脏物杂质容易排出塔外。

换热器

独特设计的PVC填料，冷却效率高，耐腐蚀，耐高温性能好，填料的设计易于取出清洗和安装。

电机

采用名品配置，为低噪音冷却塔专用配置，优化能源管理，节约成本。电机防护等级IP55，绝缘等级F。

法兰连接

塔体进出水管采用法兰连接，使现场安装更加方便。

Fan Blade

Fan shall be axial flow with hollow aluminum alloy blades selected to provide optimum cooling tower thermal performance with minimum sound levels, high strength and light weight.

One-piece FRP Cold Water Basin

Leak-proof gasket connection shall be used in the case of more than two modules to resist leakage and corrosion. Optimum lean design of water basin is prone to discharge water and dirt.

Heat Exchanger

Unique design of PVC fills, with high cooling efficiency, corrosion-resist, is easily removable for cleaning and installation.

Motor

Well-known brands of fan motor is a dedicated configuration for low-noise cooling tower, optimize the energy management with protection class of IP55, Insulation class of F.

Flange Connection

Flange connection for inlet and outlet pipe, as standard configuration make site installation more convenient.



电机 Motor



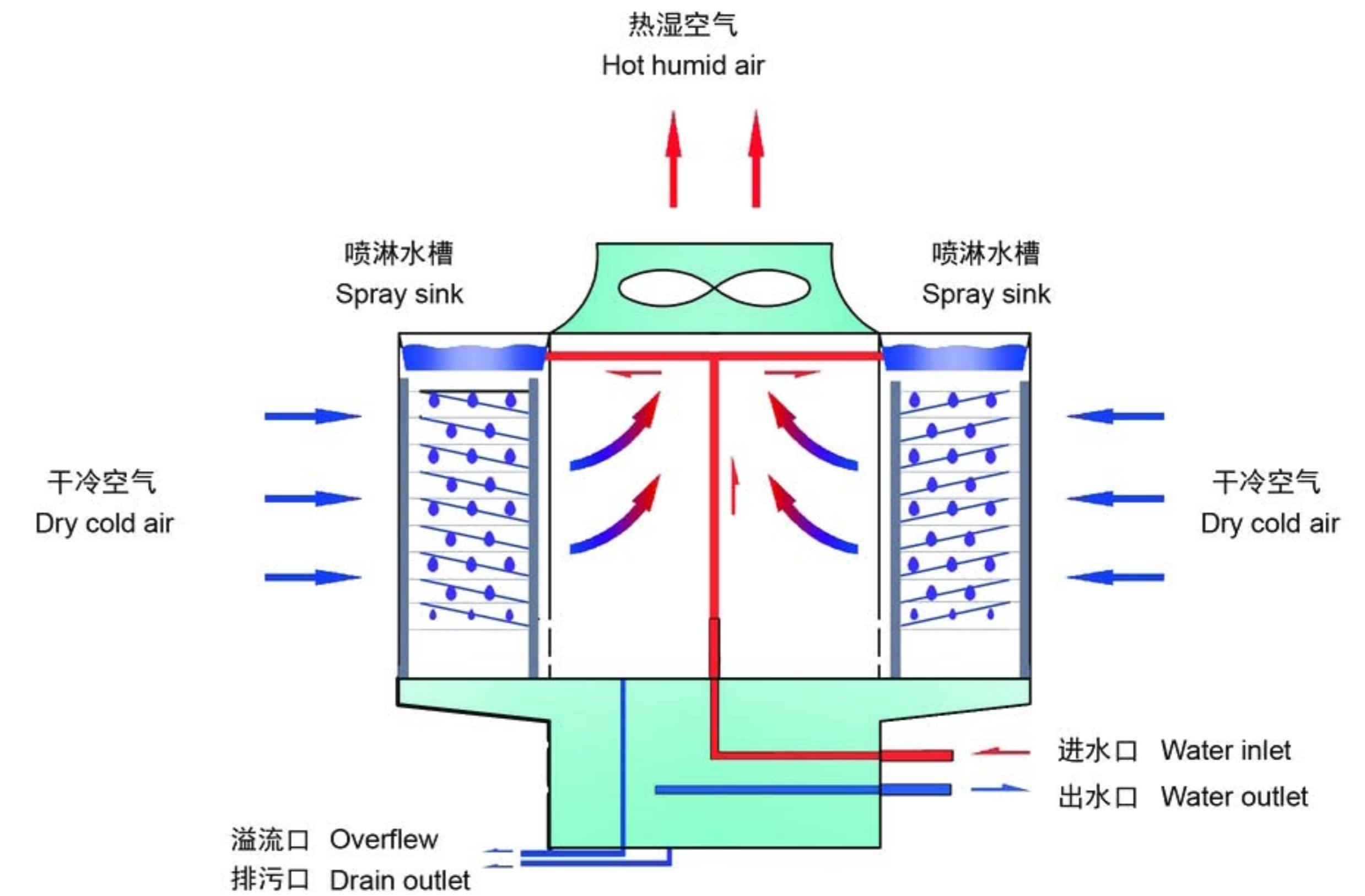
风机 Fan



填料 Packing

运行原理

Operation Principle



运行原理

热源出来的热水流入冷却塔的上部散水槽中，受重力作用，通过散水孔均匀地喷洒在填料表面，同时，空气由冷却塔两侧的进风格栅进入，横扫填料，并与喷淋水形成横流，一小部分水被蒸发，从而带走热量，降低水温。热湿空气由顶部的通风机排到周围大气中，被冷却的水则落到集水盘后重新回到热源。

Operation Principle

Cooling towers reject the heat from system (heat source) to the atmosphere. The hot water from the system enters the cooling tower and is distributed to the wet deck (PVC fills surface) by means of water spray basin on the top of cooling tower. Meanwhile cool dry air is pulled or pushed through the wet deck, causing a small portion of water evaporate. Evaporation of water removes heat from the remaining water, which is collected in the cold water basin and returned to the system (heat source). The hot saturated discharge air is drawn to the top of cooling tower by the fan and discharged to the atmosphere.

快速选型

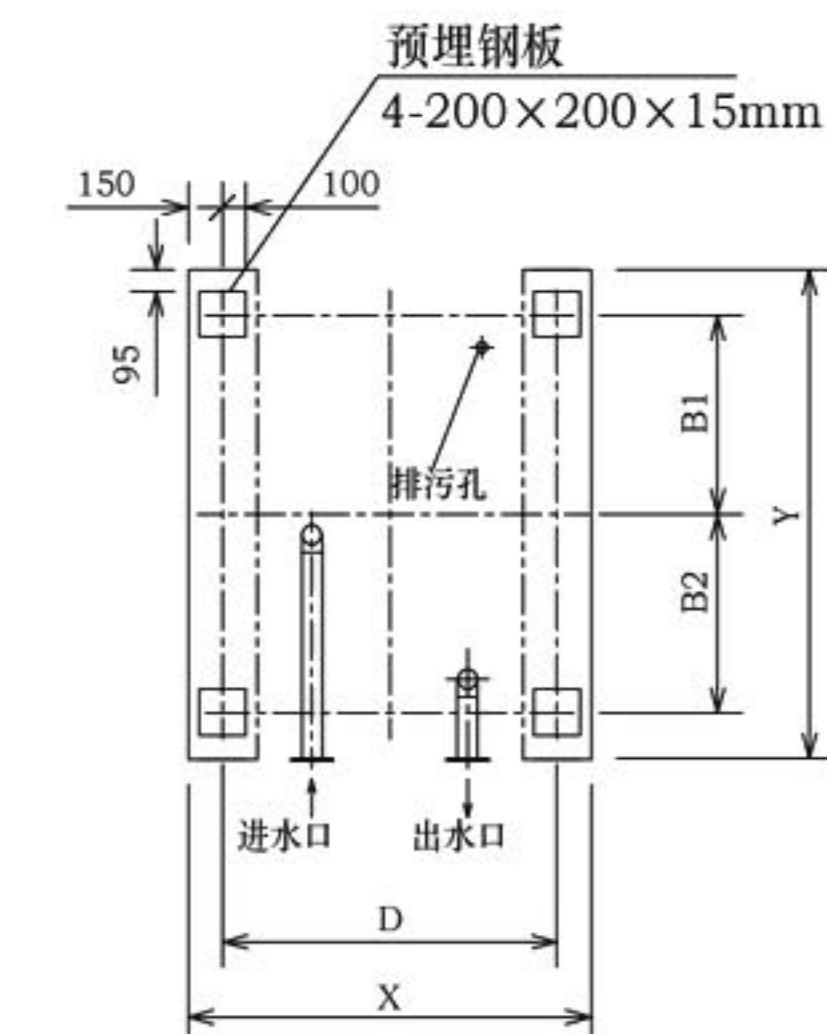
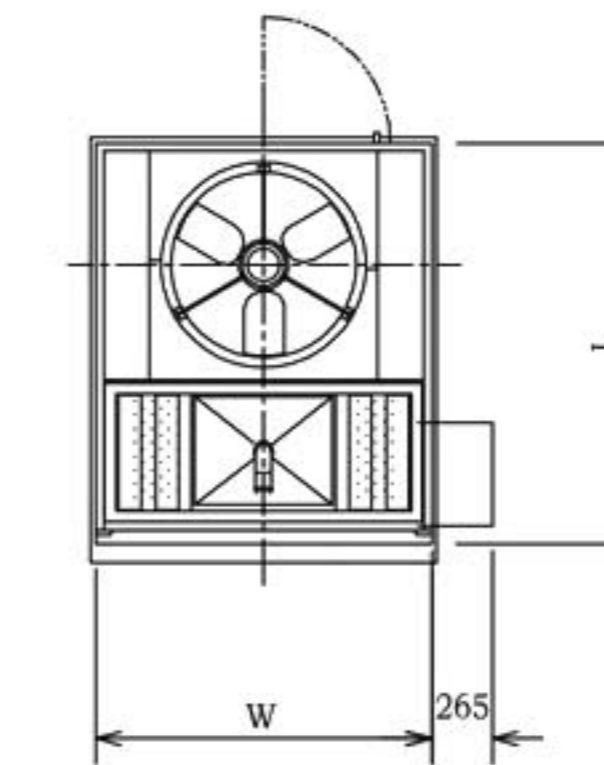
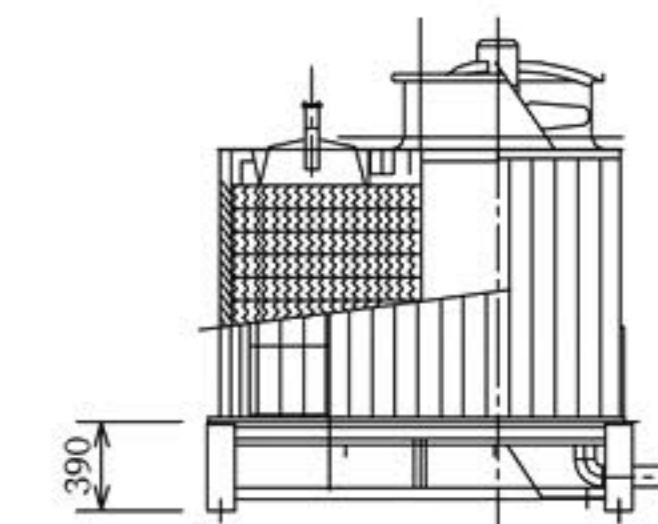
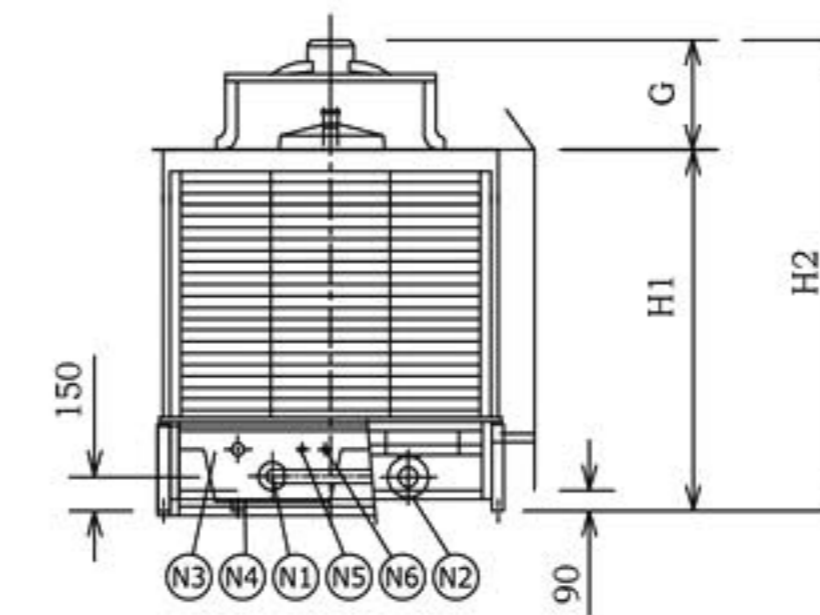
Selection Chart

1. 确定被冷却介质的入口温度、出口温度以及所处环境的湿球温度。选择表格中对应的列。
 2. 沿被选择的列，向下选择比所需要的循环水量大的行。
 3. 沿被选择的行，向左选择能满足要求的型号。
1. Determine the inlet temperature and the outlet temperature of the cold medium, as well as wet bulb temperature. Select the corresponding column in the table.
 2. Along the selected column, down to select the data which is larger than the required circulation water flow.
 3. Along the selected line, choose the right model from left side.

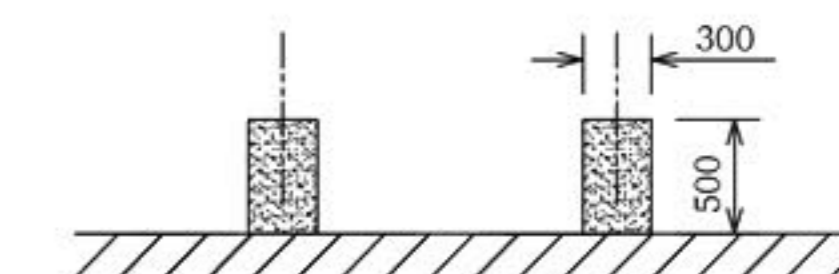
进口温度 Inlet temperature	37	38	37	38	37	38
出口温度 Outlet temperature	32	32	32	32	32	32
外部湿球温度 Wet bulb temperature	27		28		28.5	
型号 Model	循环水量 (m³/h) Water flow		循环水量 (m³/h) Water flow		循环水量 (m³/h) Water flow	
TCT-25R	19.5	17.3	16.9	15.1	15.7	14.1
TCT-30R	23.4	20.9	20.3	18.1	18.9	16.9
TCT-40R	31.2	27.8	27.1	24.1	25.1	22.6
TCT-50R	39.0	34.1	33.9	30.2	31.4	28.2
TCT-60R	46.8	41.1	40.4	32.4	37.7	33.8
TCT-80R	62.4	55.3	54.0	47.4	50.1	45.1
TCT-90R	70.2	62.4	61.0	53.8	56.4	50.7
TCT-100R	78.0	68.4	67.6	59.4	62.0	54.7
TCT-125R	97.5	85.2	84.3	73.9	77.3	68.0
TCT-140R	109.0	100.0	94.9	82.7	86.6	75.7
TCT-150R	117.0	101.0	100.0	87.9	91.8	80.9
TCT-175R	136.0	114.0	113.0	98.7	100.0	86.0
TCT-200R	156.0	131.0	129.0	113.0	115.0	98.9
TCT-225R	175.0	148.0	146.0	125.0	130.0	112.0
TCT-250R	195.0	164.0	162.0	139.0	145.0	125.0
TCT-280R	191.0	180.0	175.0	151.0	157.0	157.6
TCT-300R	204.0	201.0	200.0	170.0	180.0	165.0

工程数据

Engineering Data

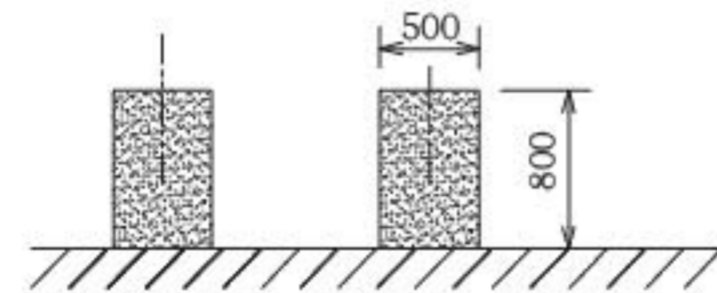
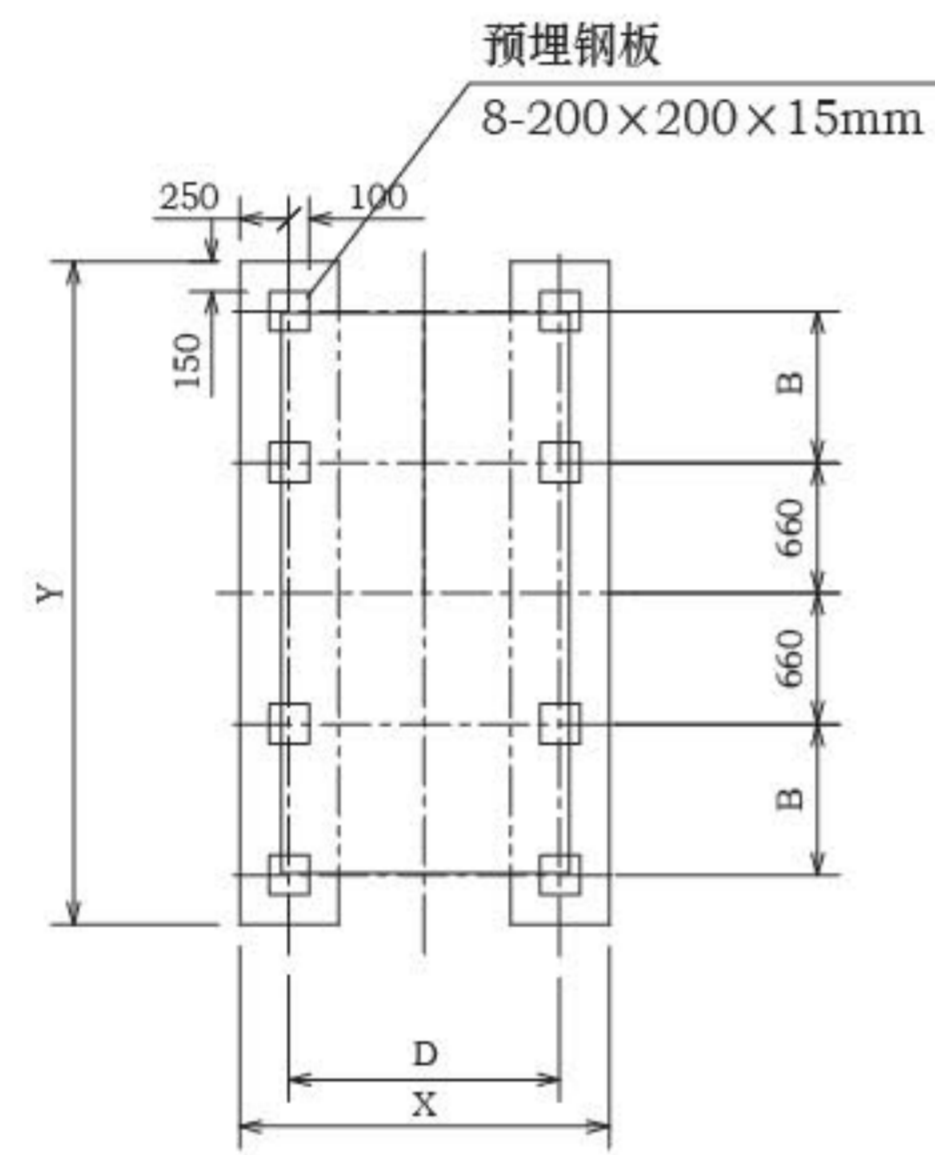
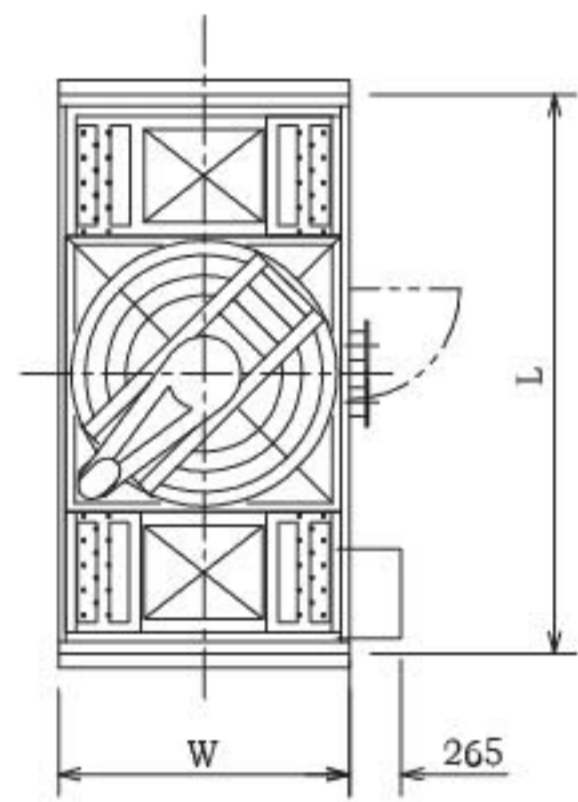
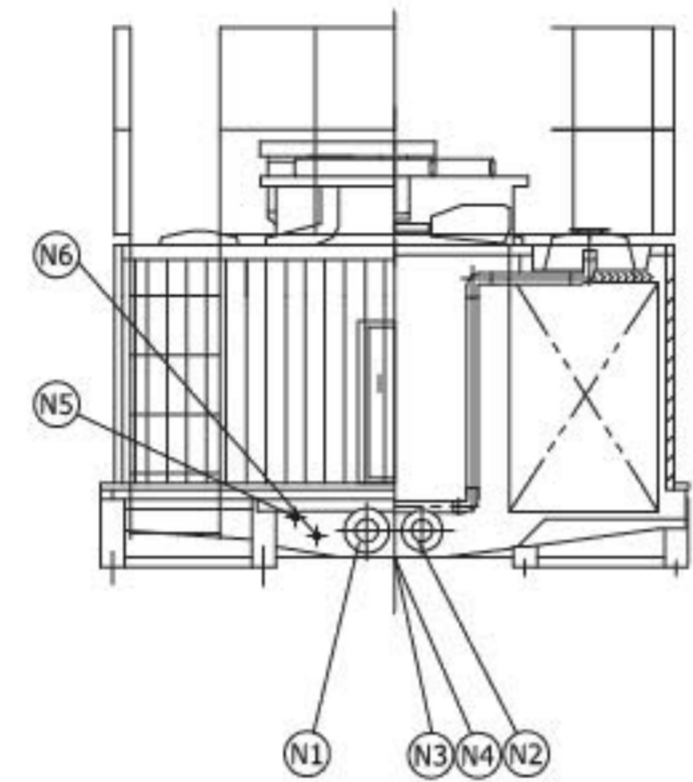
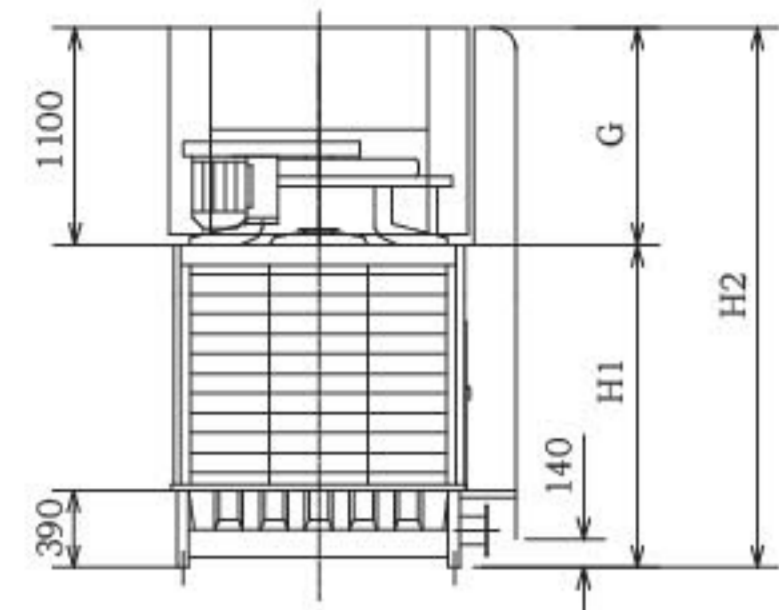


编号	配管名称
Pipe No.	Branch pipe
N1	进水管 Water inlet
N2	出水管 Water outlet
N3	溢水管 Overflow
N4	排污管 Drain
N5	自动给水管 Auto make-up
N6	手动给水管 Manual make-up



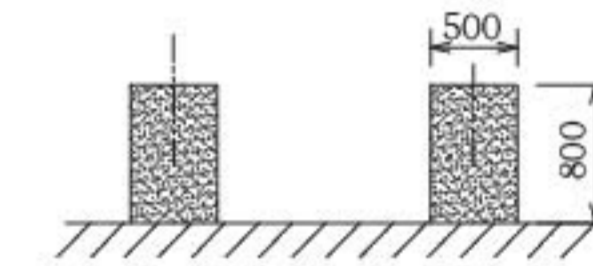
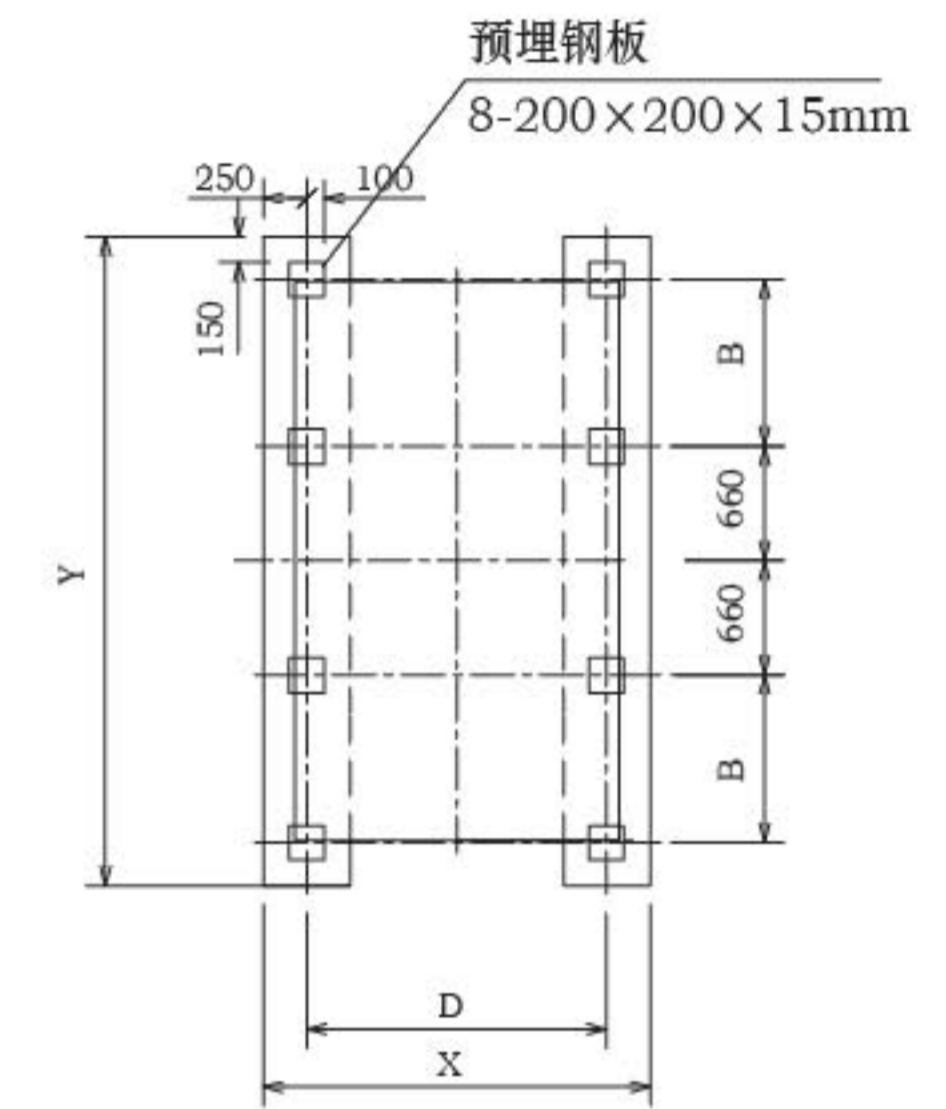
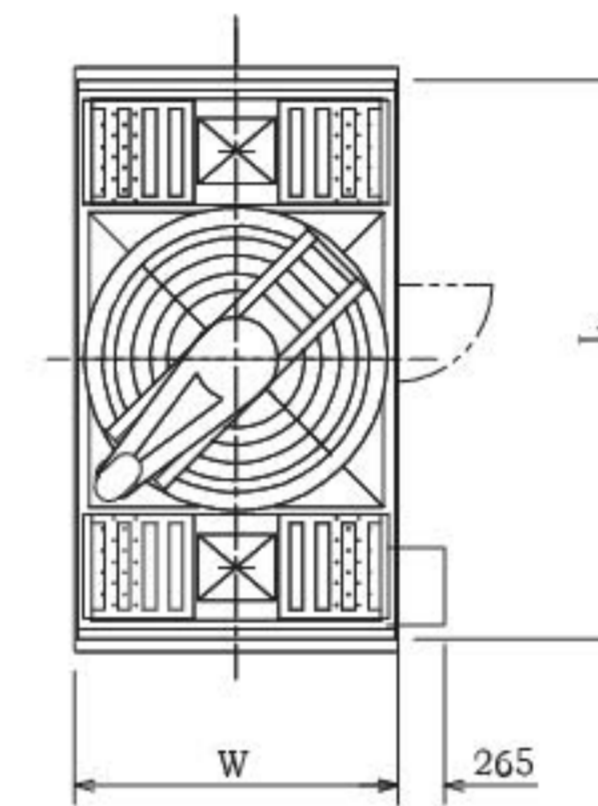
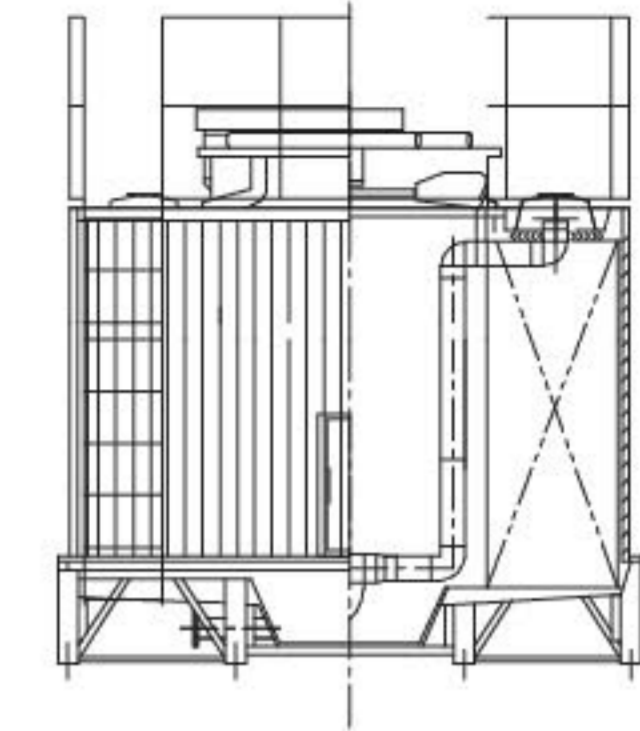
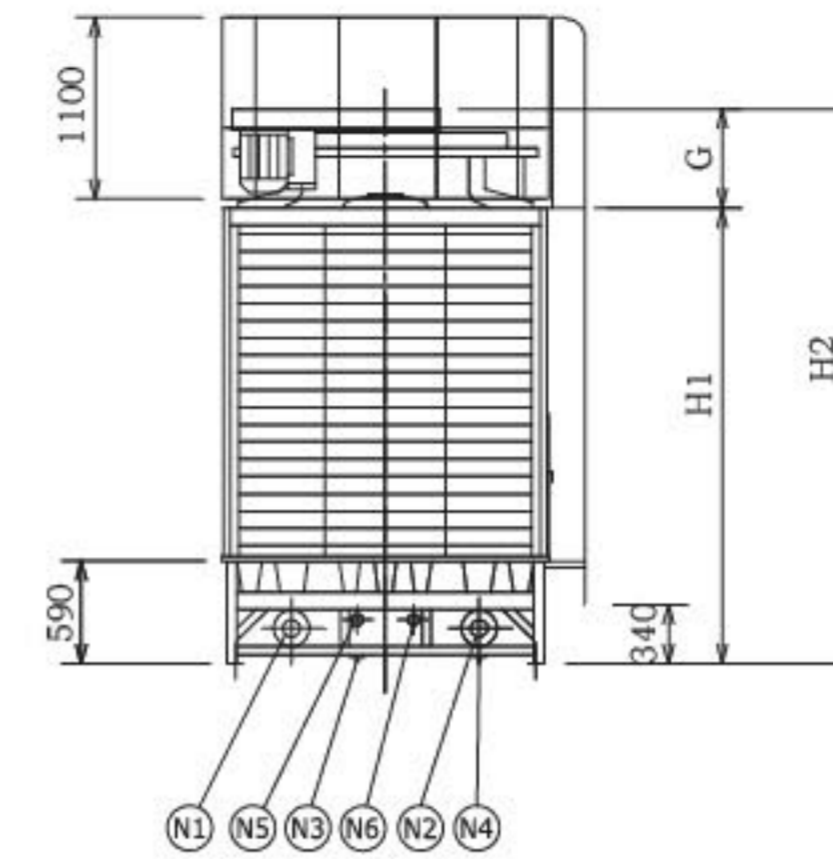
基础图

型号 Mode	塔体尺寸 (mm) Dimensions					重量 (kg) Weights		风机参数 Fan assembly			基础尺寸 (mm) Supporting dimensions					配管尺寸 (mm) Pipe dimensions						
	R	L	W	H1	H2	G	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B1	B2	Y	N1	N2	N3	N4	N5	N6
25	1750	1470	1580	2060	480	330	330	590	800	0.75	1	1462	1762	870	870	2140	80	80	50	50	15	15
30	1750	1470	1880	2360	480	360	360	610	800	0.75	1	1462	1762	870	870	2140	80	80	50	50	15	15
40	1750	1470	2180	2650	480	390	390	640	800	1.5	1	1462	1762	870	870	2140	80	80	50	50	15	15
50	2350	1870	2180	2650	480	510	510	900	950	1.5	1	1862	2162	870	1470	2740	80	80	50	50	15	15



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N4	排污管 Drain
N5	自动给水管 Auto make-up
N6	手动给水管 Manual make-up

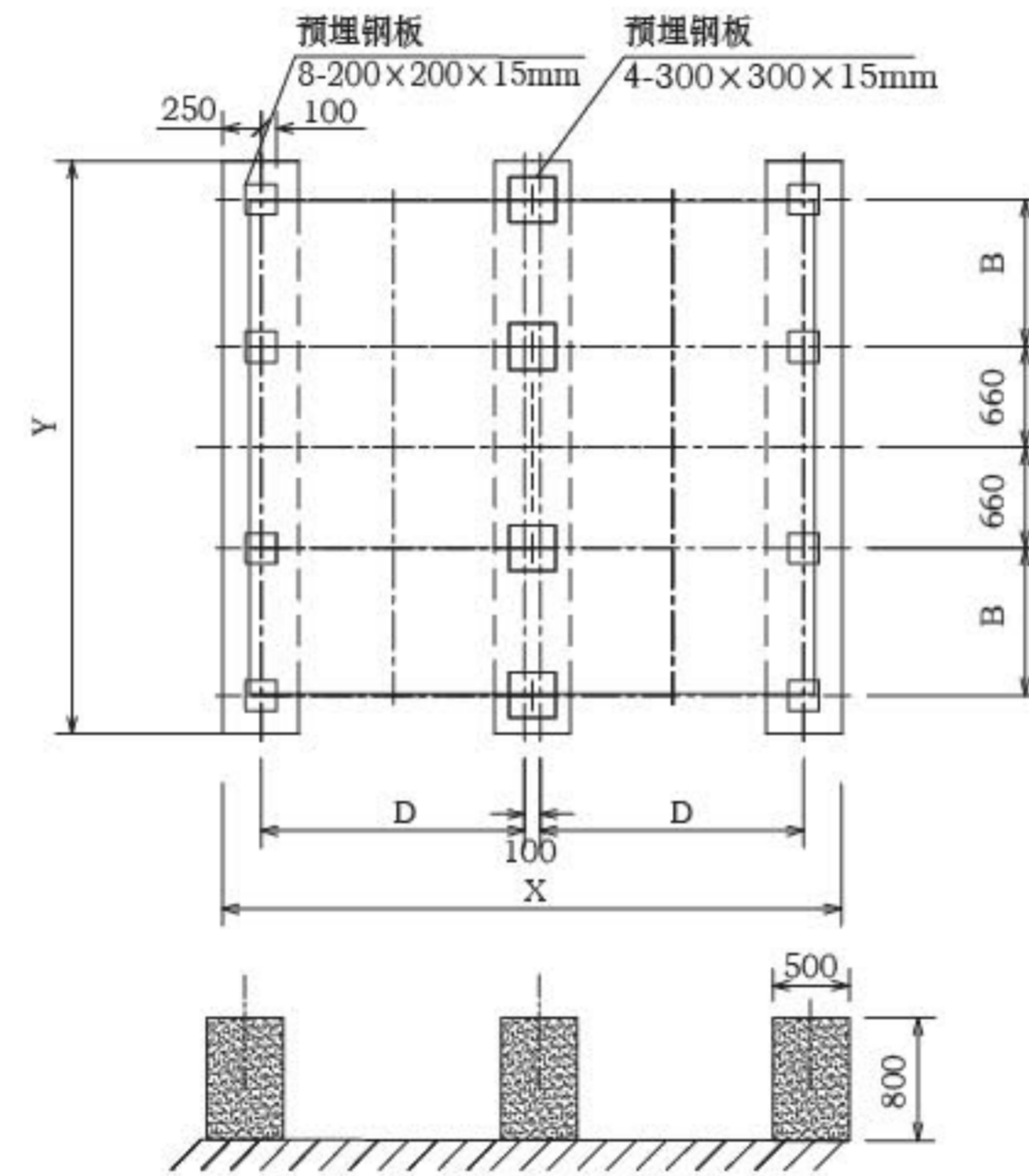
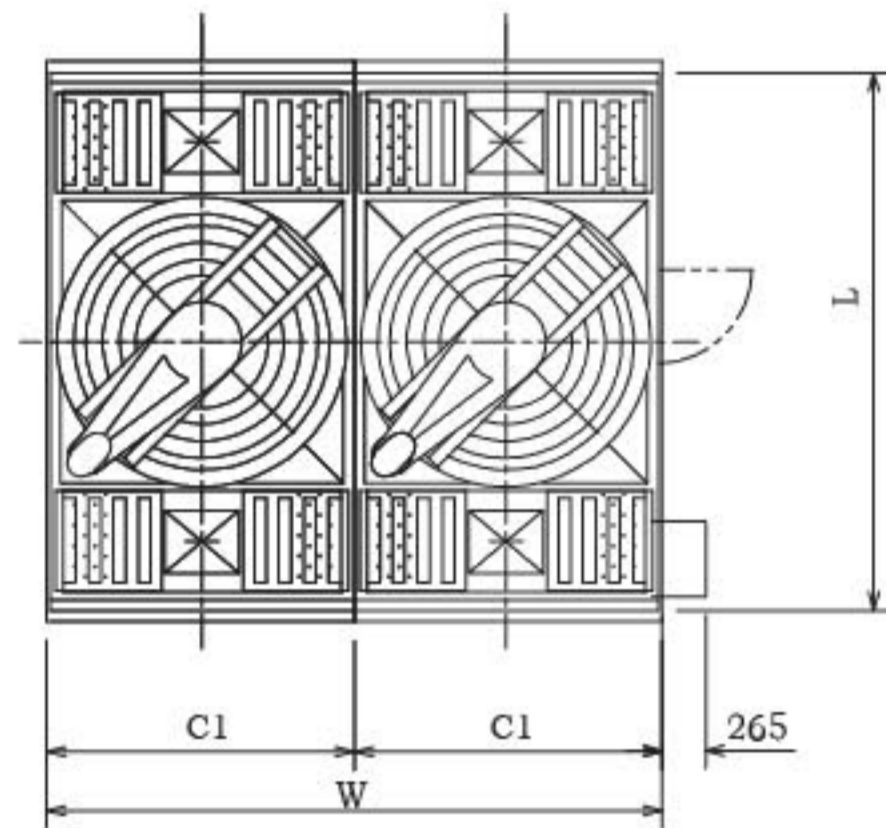
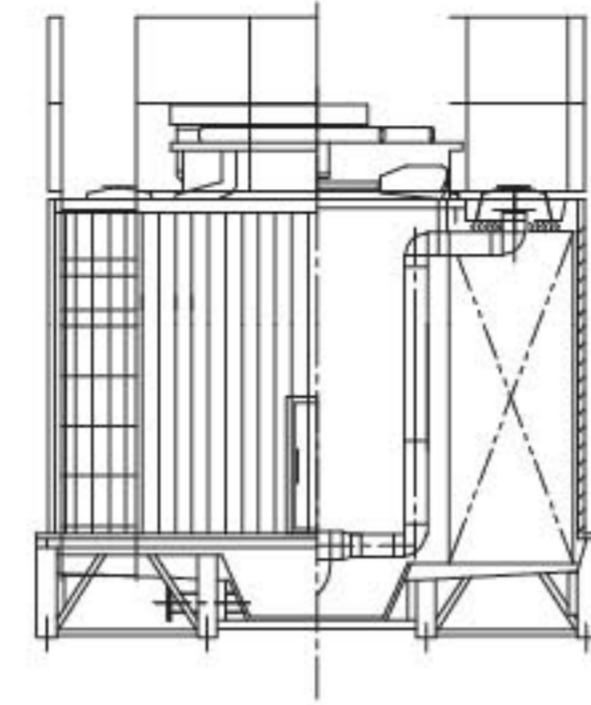
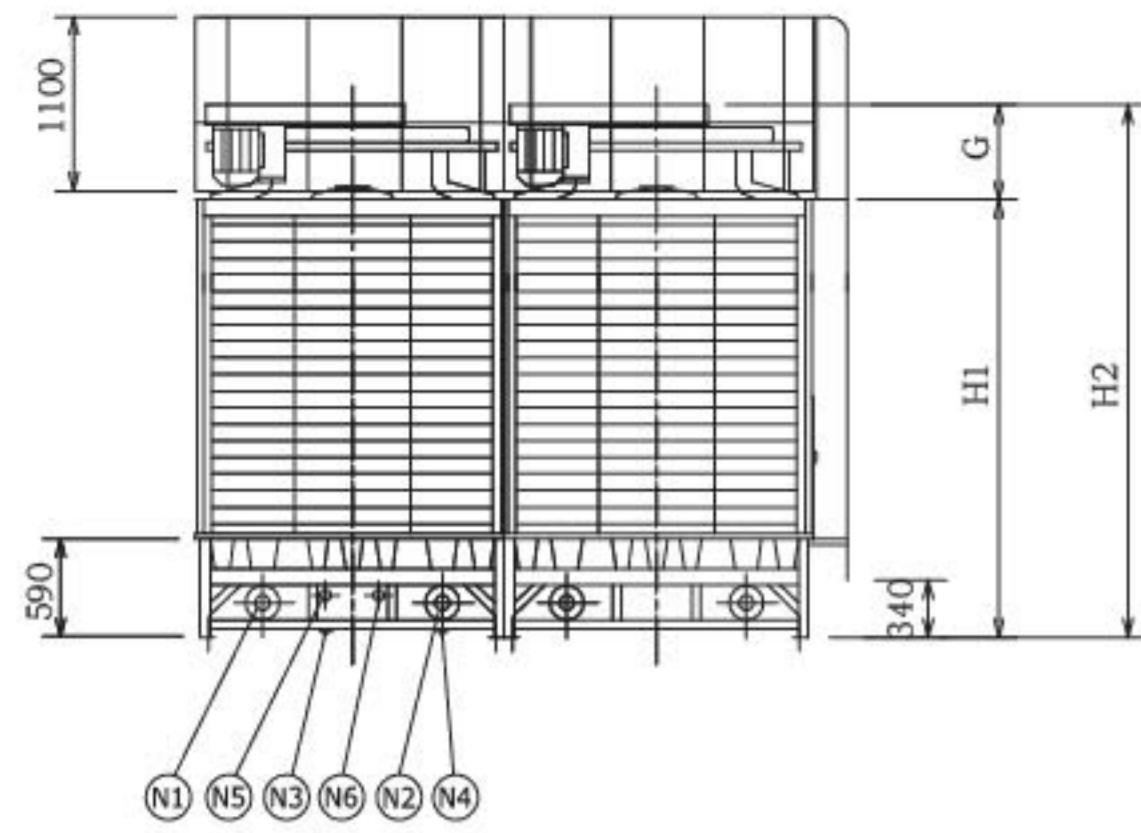


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	L	W	H1	H2	G	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B	Y	N1	N2	N3	N4	N5	N6
R	2830	1470	1630	2150	520	630	1490	1200	2.2	1	1370	1870	765	3350	100	100	50	50	15	15
60	2830	1470	1930	2450	520	650	1520	1200	2.2	1	1370	1870	765	3350	100	100	50	50	15	15
80	2830	1470	2230	2750	520	690	1560	1200	2.2	1	1370	1870	765	3350	100	100	50	50	15	15
100	3030	1670	2230	2800	570	750	1790	1400	2.2	1	1570	2070	865	3350	100	100	50	50	15	15
125	3230	1870	2230	2800	570	860	2100	1600	4.0	1	1730	2230	965	3751	125	125	50	50	15	15
140	3230	1870	2230	2800	570	870	2110	1600	5.5	1	1730	2230	965	3751	125	125	50	50	15	15

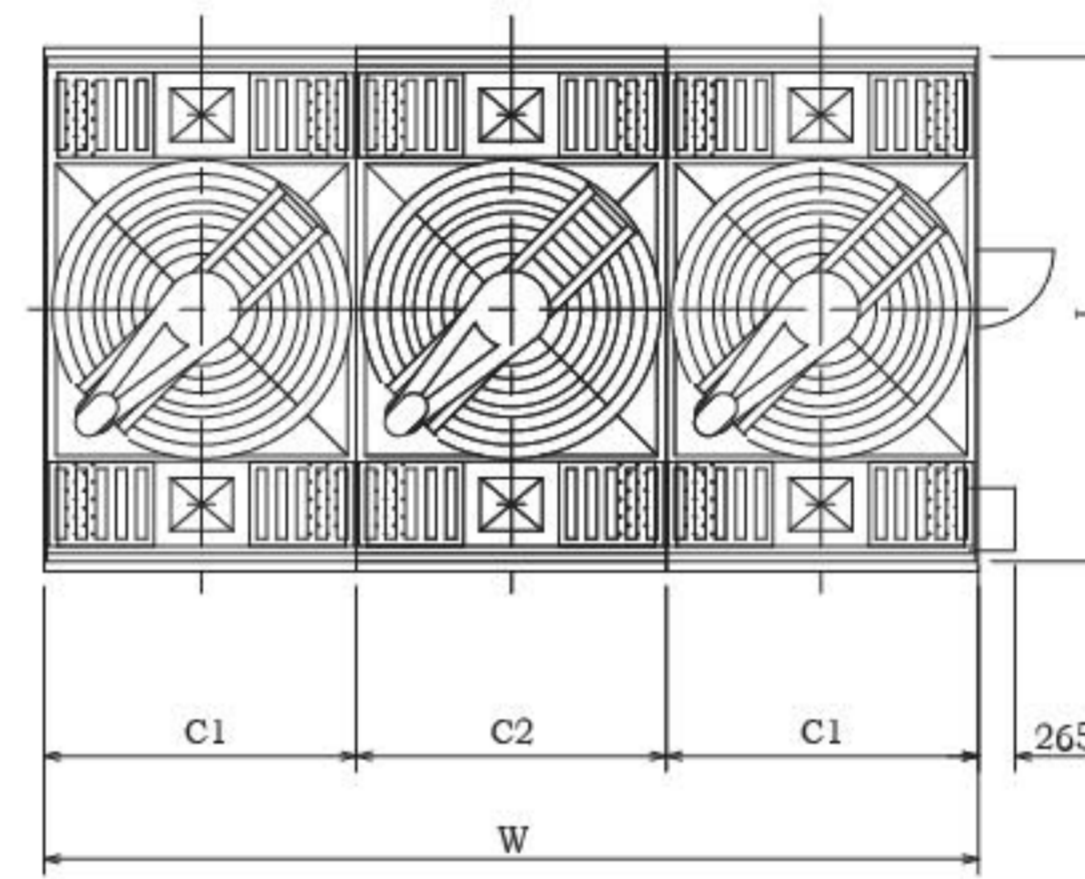
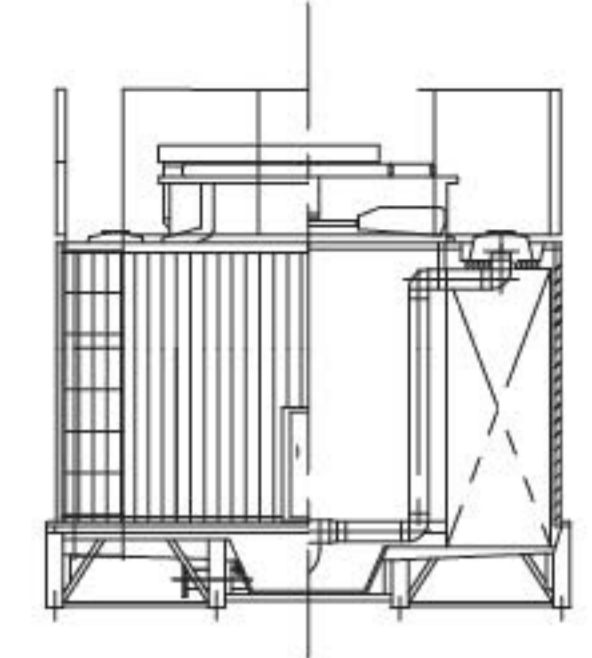
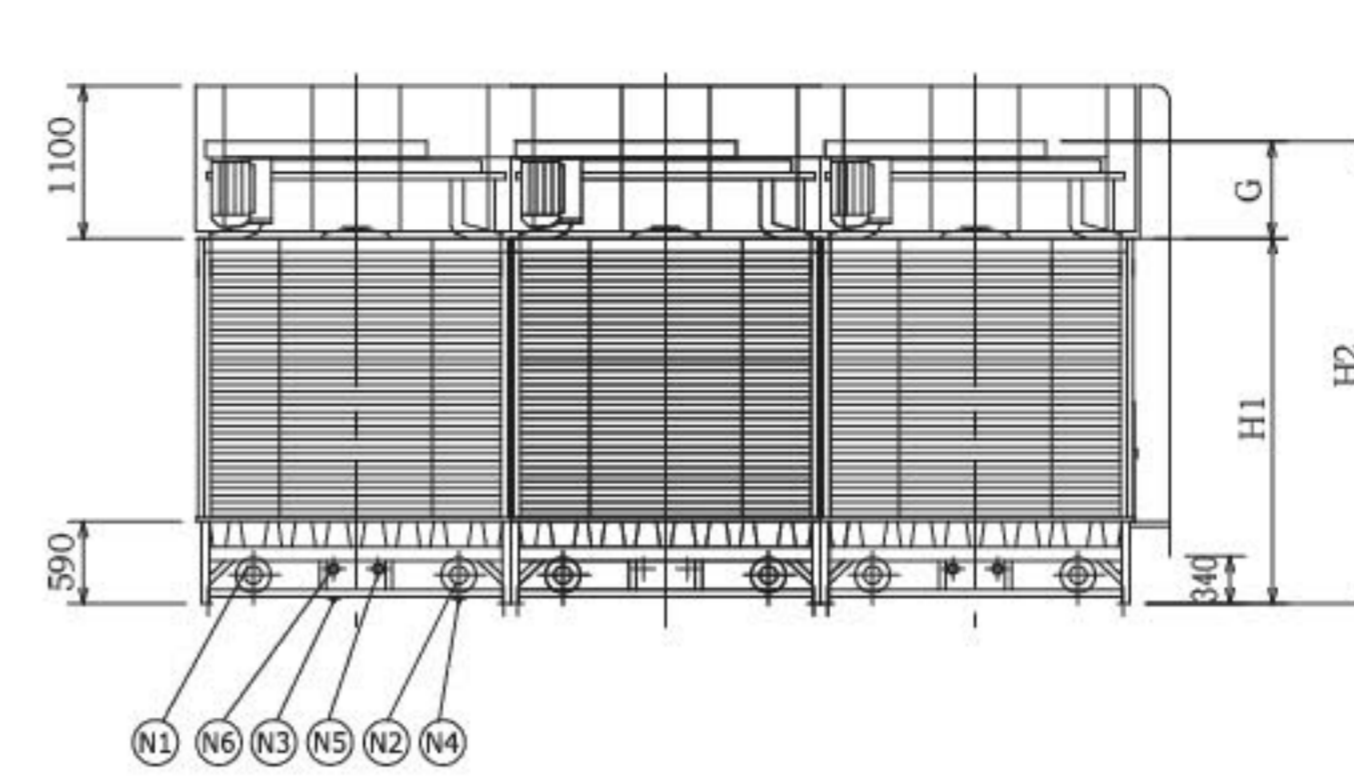
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R	3230	1870	2360	3200	570	930	2370	1600	4.0	1	1730	2230	965	3751	125	125	50	50	25	25
150	3230	1870	2360	3200	570	1080	2520	1600	5.5	1	1730	2230	965	3751	150	150	50	50	25	25
170	3230	1870	2360	3200	570	1080	2520	1600	5.5	1	1730	2230	965	3751	150	150	50	50	25	25
200	3430	2070	3130	3830	700	1210	2890	1800	5.5	1	1930	2430	1065	3950	150	150	50	50	25	25
225	3630	2270	2360	3330	700	1120	3030	2000	5.5	1	2130	2630	1165	4150	150	150	50	50	25	25
250	3630	2270	2360	3330	700	1130	3040	2000	7.5	1	2130	2630	1165	4150	150	150	50	50	32	32
280	3630	2270	3130	3830	700	1280	3190	2000	5.5	1	2130	2630	1165	4150	150	150	50	50	32	32
300	3630	2270	3130	3830	700	1300	3210	2000	7.5	1	2130	2630	1165	4150	150	150	50	50	32	32



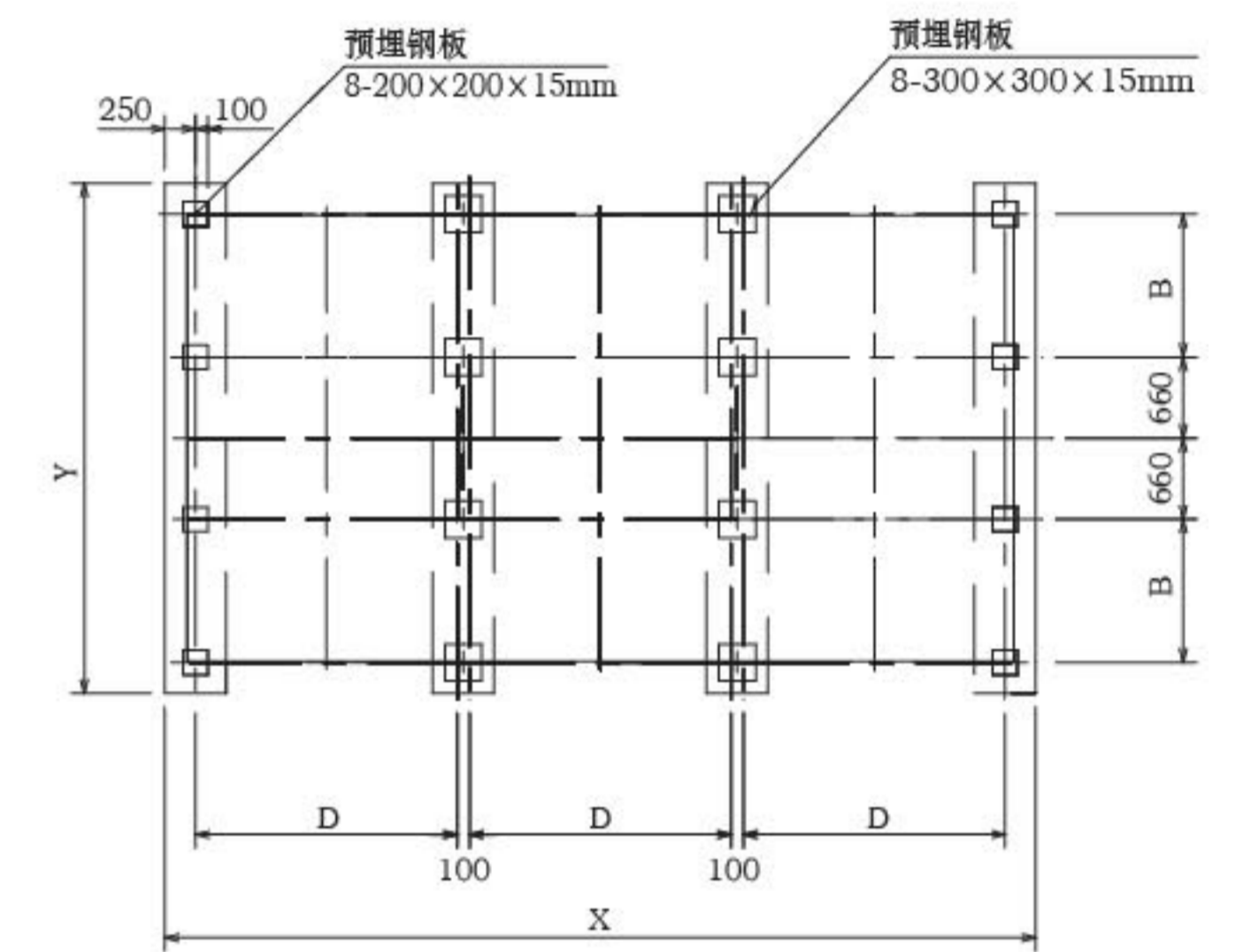
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	R	L	W	H1	H2	G	C1	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B	Y	N1	N2	N3	N4	N5	N6
350	3230	3700	2630	3200	570	1850	1880	1880	4760	1600	5.5	2	1730	4060	965	3750	125×2	125×2	50×2	50×2	32	32
380	3230	3700	3130	3700	570	1850	2120	5040	1600	4.0	2	1730	4060	965	3750	125×2	125×2	50×2	50×2	32	32	
400	3430	4100	2630	3330	700	2050	2110	5470	1800	5.5	2	1930	4460	1065	3950	150×2	150×2	50×2	50×2	32	32	
420	3230	3700	3130	3700	570	1850	2150	5050	1600	5.5	2	1730	4060	965	3751	150×2	150×2	50×2	50×2	32	32	
450	3630	4500	2630	3330	700	2250	2240	6060	2000	5.5	2	2130	4860	1165	4150	150×2	150×2	50×2	50×2	32	32	
480	3430	4100	3130	3830	700	2050	2400	5800	1800	5.5	2	1930	4460	1065	3950	150×2	150×2	50×2	50×2	32	32	
500	3630	4500	2630	3330	700	2250	2260	6080	2000	7.5	2	2130	4860	1165	4150	150×2	150×2	50×2	50×2	32×2	32×2	
550	3630	4500	3130	3830	700	2250	2430	6390	2000	5.5	2	2130	4860	1165	4150	150×2	150×2	50×2	50×2	32×2	32×2	
600	3630	4500	3130	3830	700	2250	2590	6430	2000	7.5	2	2130	4860	1165	4150	150×2	150×2	50×2	50×2	32×2	32×2	



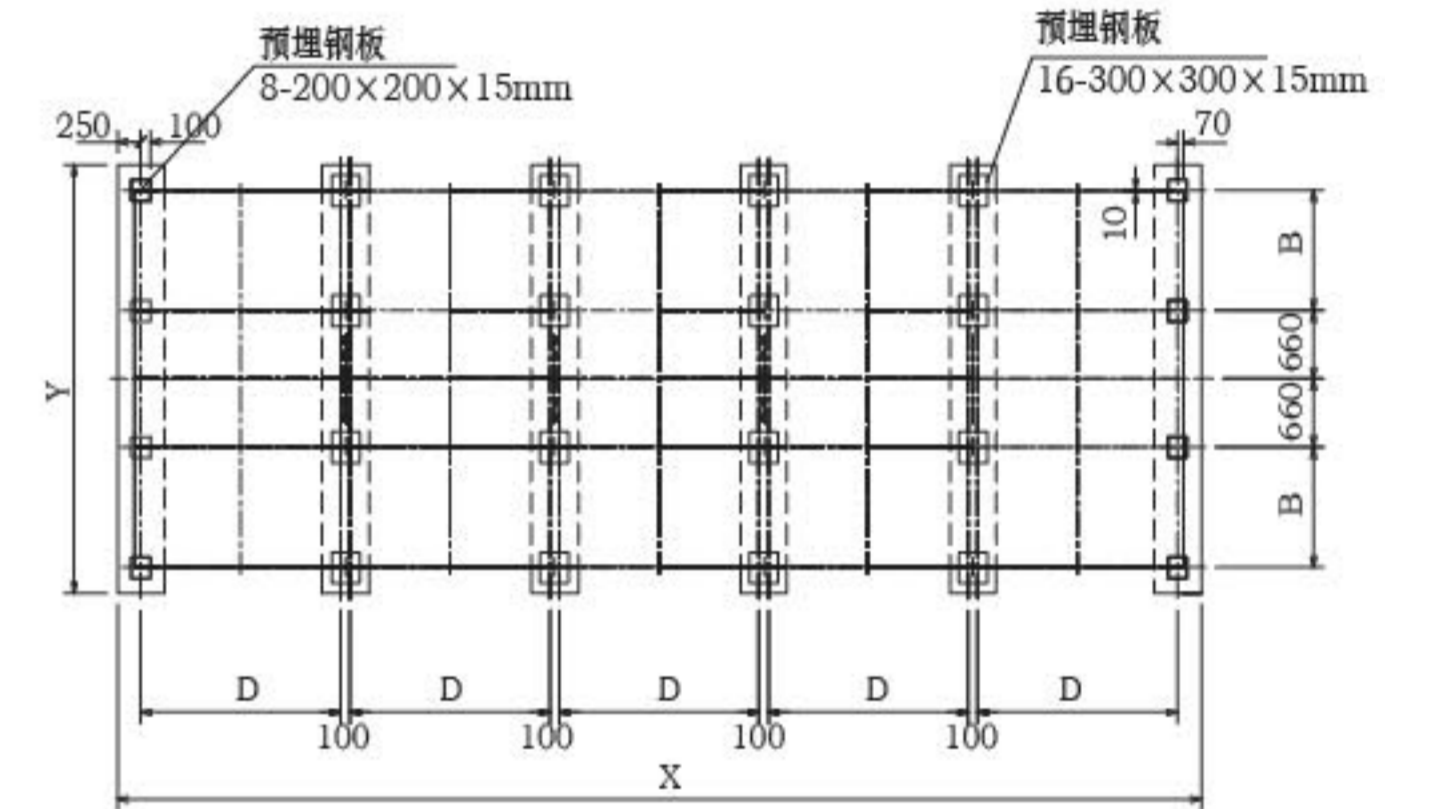
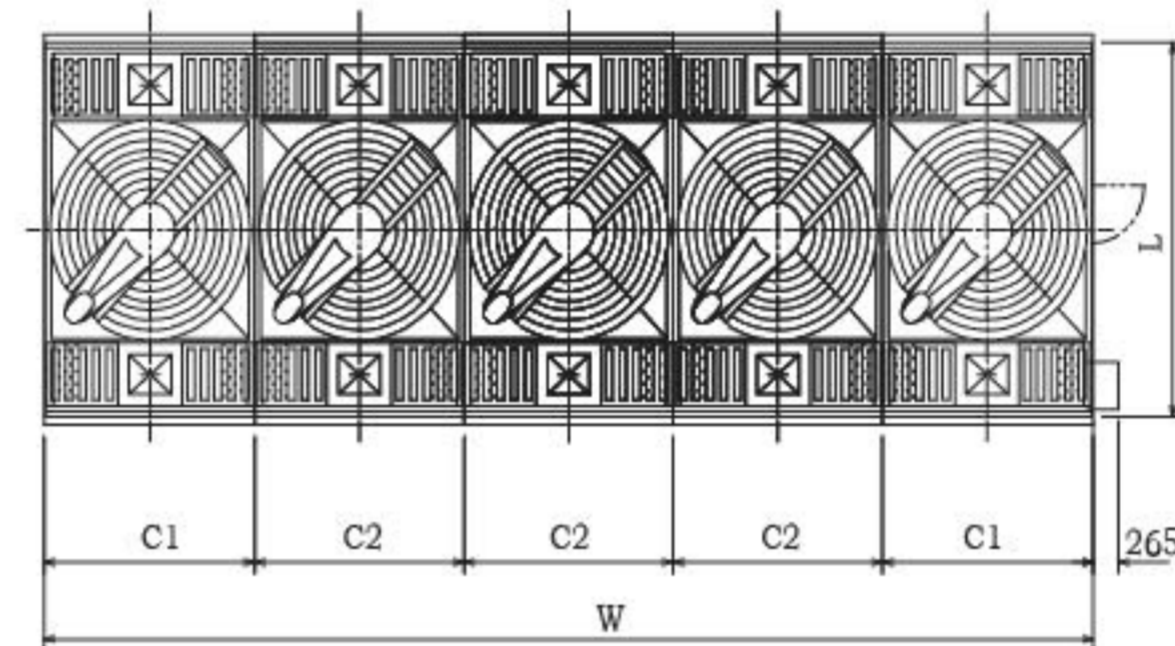
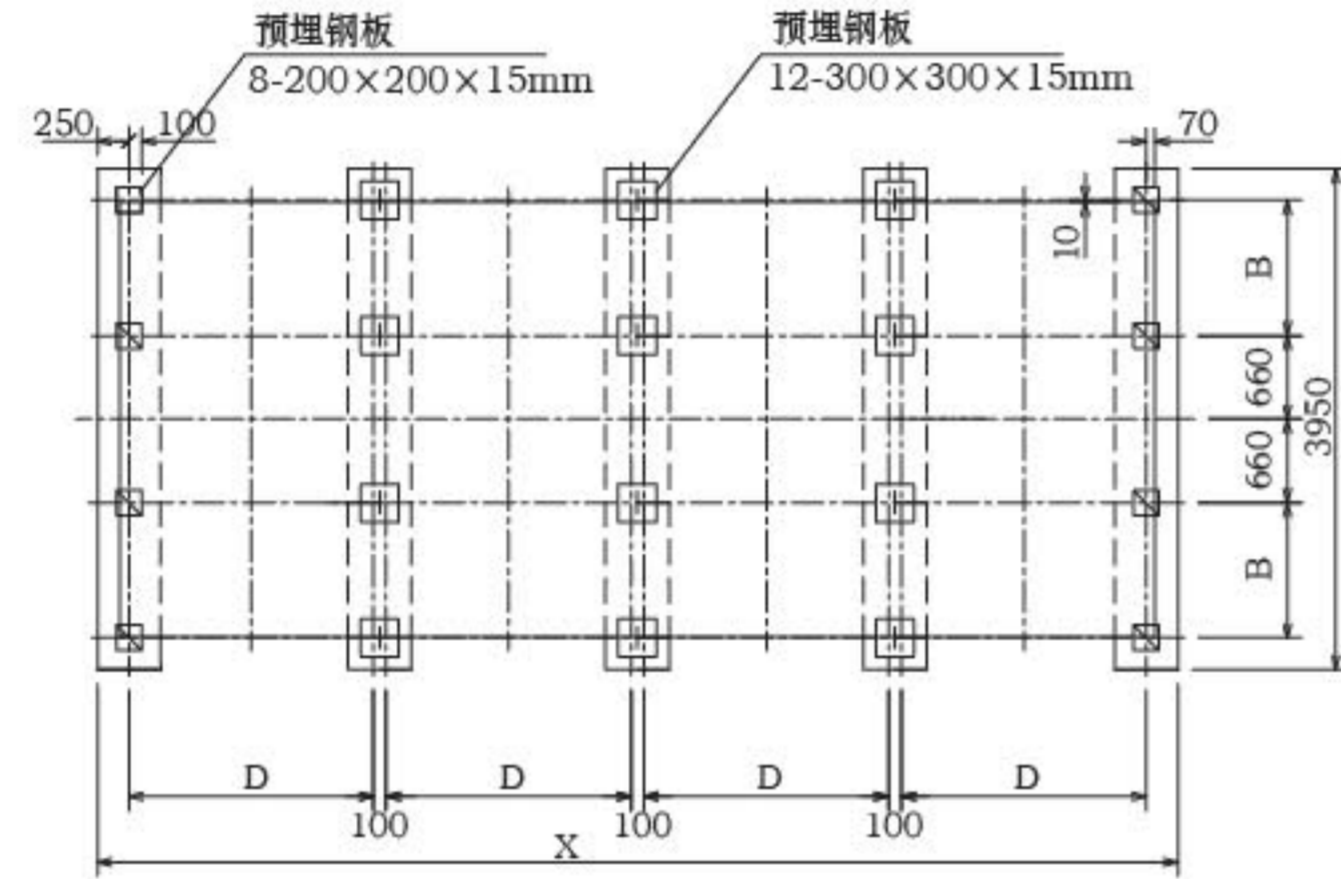
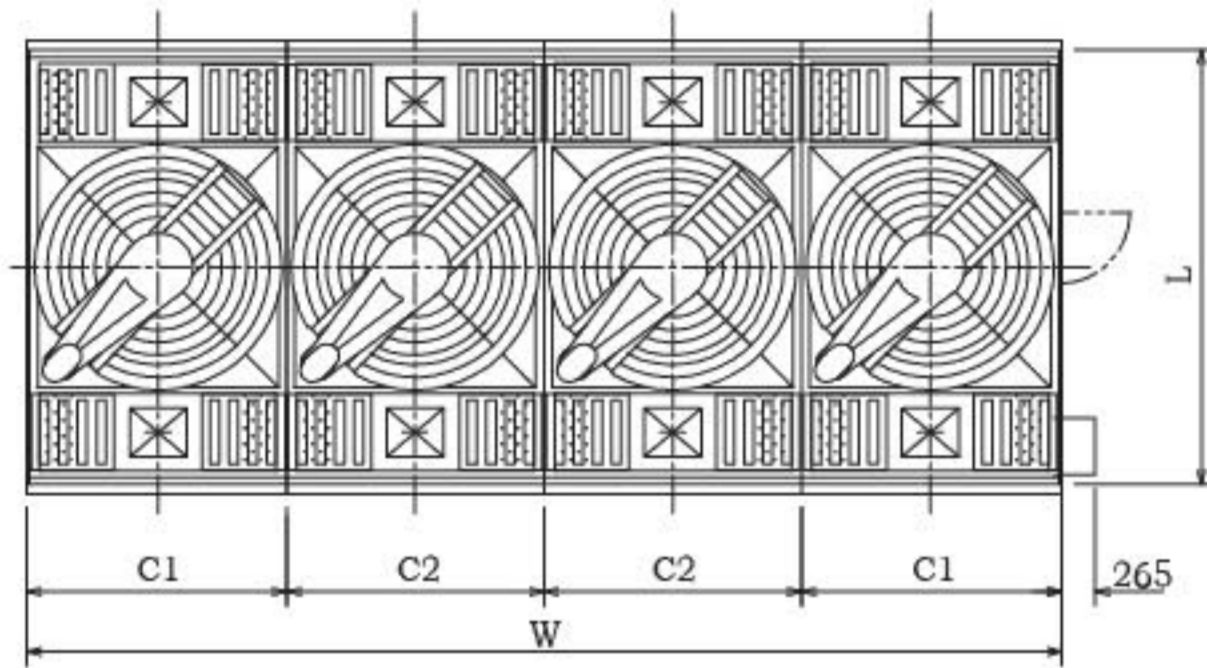
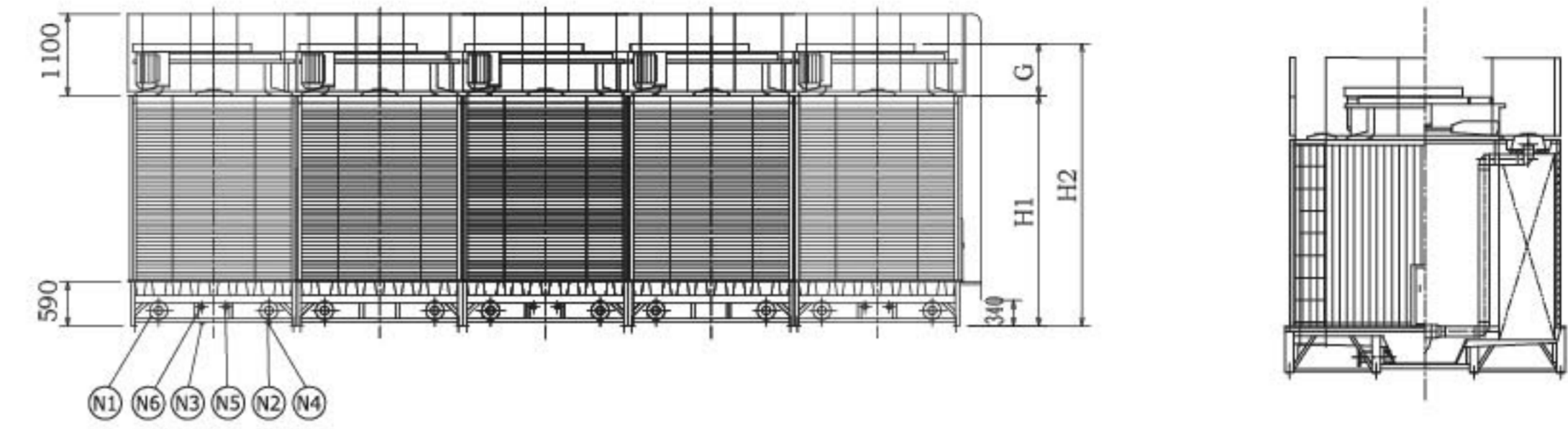
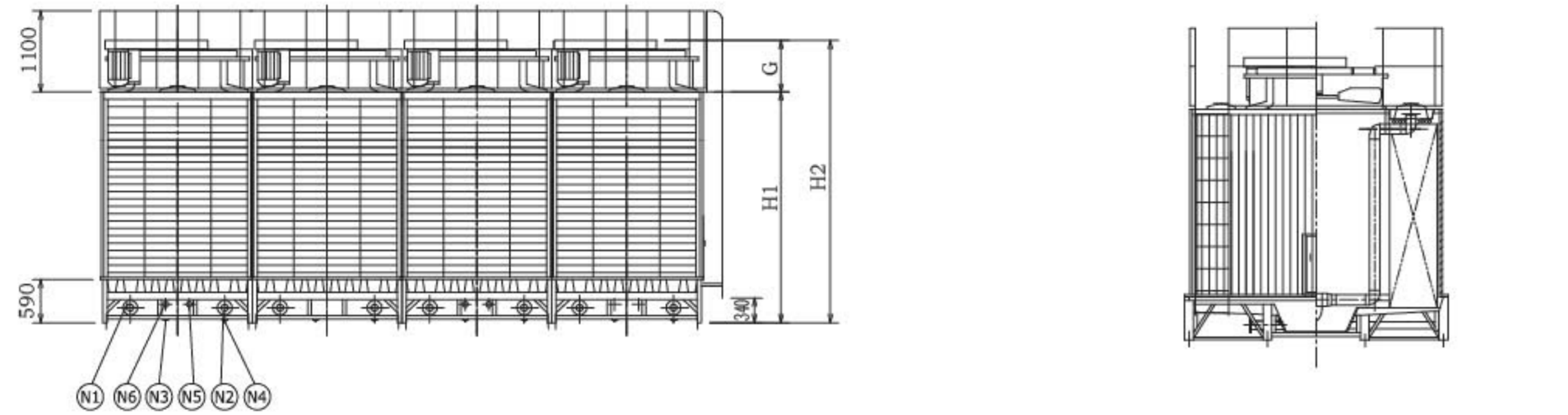
俯视图



基础图

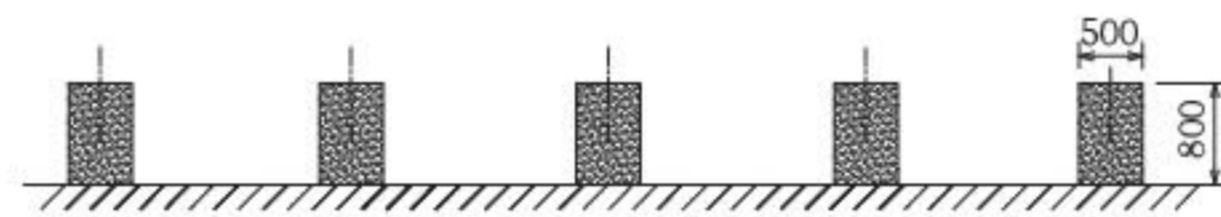
编号	配管名称
Pipe No.	Branch pipe
N1	进水管 Water inlet
N2	出水管 Water outlet
N3	溢水管 Overflow
N4	排污管 Drain
N5	自动给水管 Auto make-up
N6	手动给水管 Manual make-up

型号 Mode	塔体尺寸 (mm) Dimensions							重量 (kg) Weights		风机参数 Fan assembly			基础尺寸 (mm) Supporting dimensions				配管尺寸 (mm) Pipe dimensions					
	R	L	W	H1	H2	G	C1	C2	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B	Y	N1	N2	N3	N4	N5
650	3630	6730	2630	3330	700	2250	2230	3360	9090	2000	5.5	3	3130	7090	1165	4150	150×3	150×3	50×3	50×3	32×2	32×2
700	3430	6130	3130	3830	700	2050	2030	3590	8710	1800	5.5	3	1930	6490	1065	3950	150×3	150×3	50×3	50×3	32×2	32×2
800	3630	6730	3130	3830	700	2250	2230	3820	9590	2000	5.5	3	2130	7090	1165	4150	150×3	150×3	50×3	50×3	32×2	32×2
900	3630	6730	3130	3830	700	2250	2230	3880	9650	2000	7.5	3	2130	7090	1165	4150	150×3	150×3	50×3	50×3	32×2	32×2

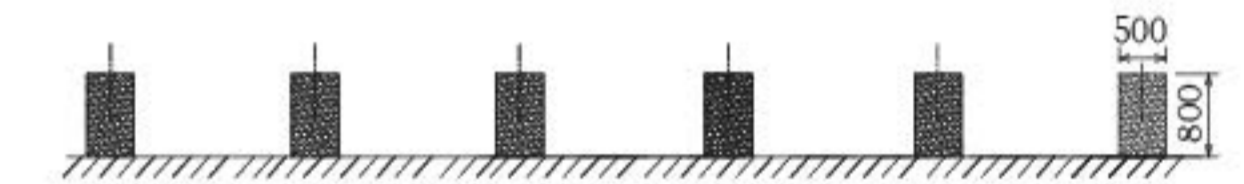


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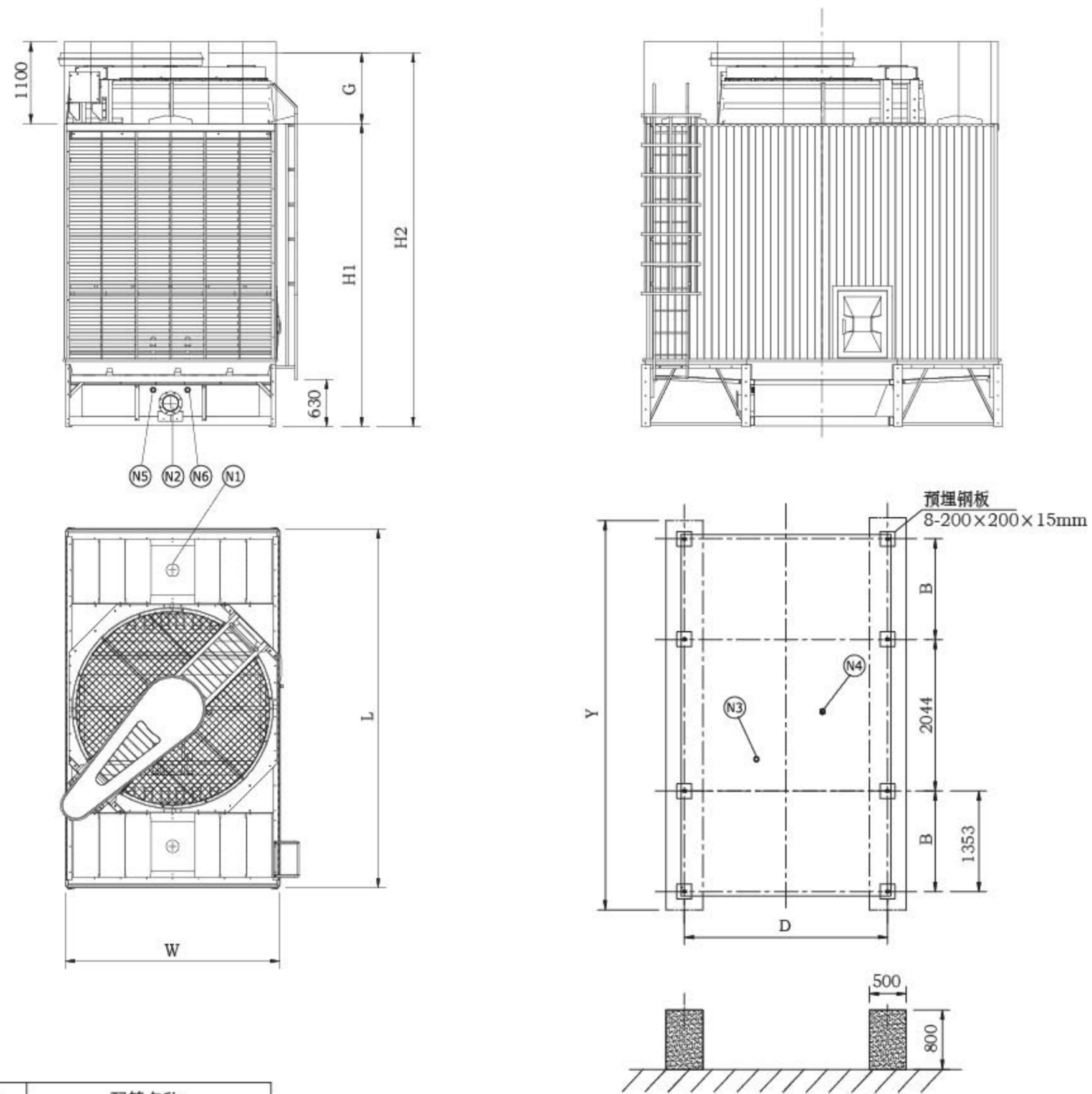
基础图



基础图

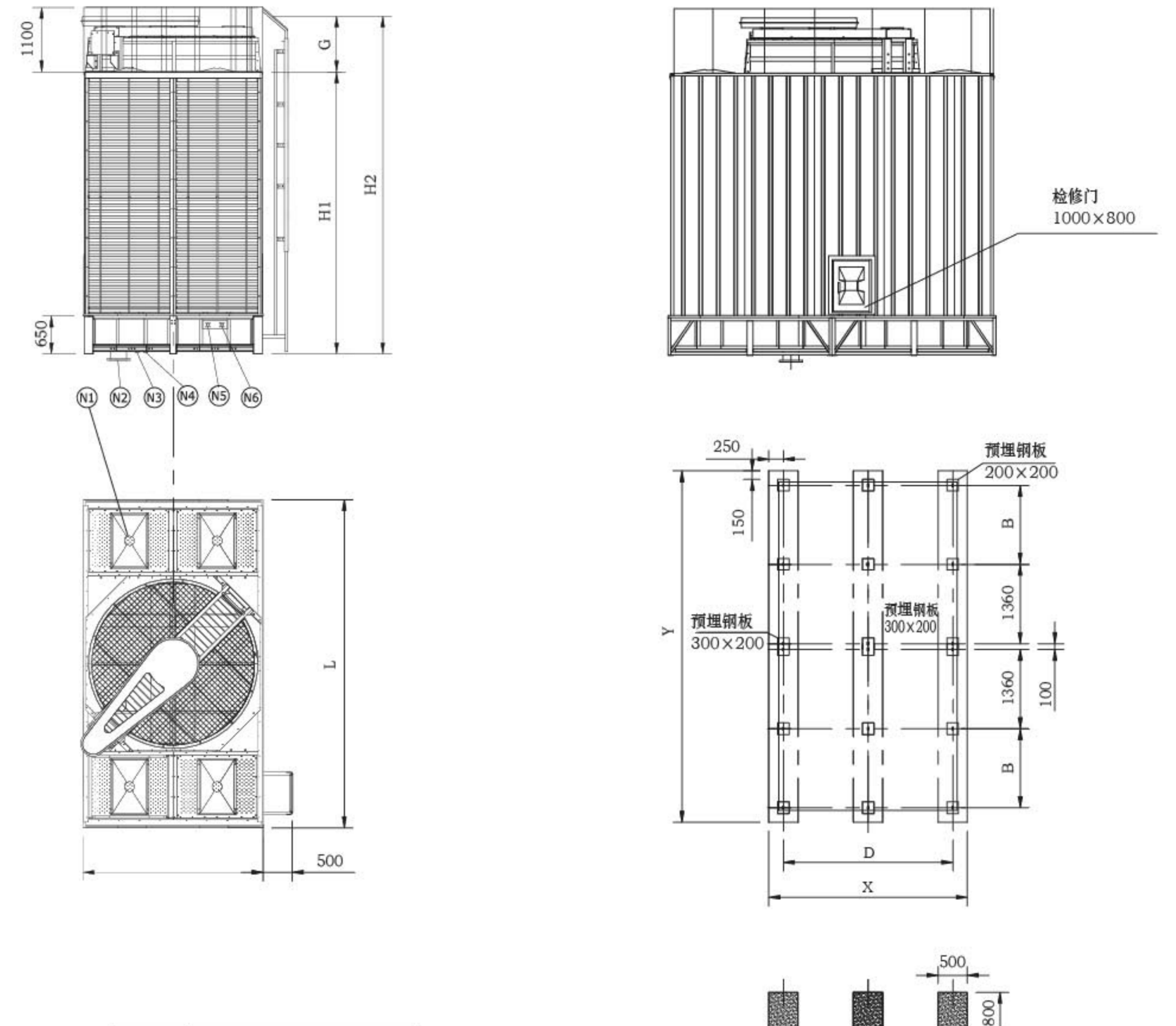
型号 Mode	塔体尺寸 (mm) Dimensions								重量 (kg) Weights		风机参数 Fan assembly			基础尺寸 (mm) Supporting dimensions				配管尺寸 (mm) Pipe dimensions					
	R	L	W	H1	H2	G	C1	C2	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B	Y	N1	N2	N3	N4	N5	N6
950	3430	8160	3130	3830	700	2050	2030	4780	11620	1800	5.5	4	1930	8520	1065	3950	150x4	150x4	50x4	50x4	32x2	32x2	
1000	3630	8960	3130	3830	700	2250	2230	5090	12790	2000	5.5	4	2130	9320	1165	4150	150x4	150x4	50x4	50x4	32x2	32x2	
1200	3630	8960	3130	3830	700	2250	2230	5170	12870	2000	7.5	4	2130	9320	1165	4150	150x4	150x4	50x4	50x4	32x2	32x2	

型号 Mode	塔体尺寸 (mm) Dimensions								重量 (kg) Weights		风机参数 Fan assembly			基础尺寸 (mm) Supporting dimensions				配管尺寸 (mm) Pipe dimensions					
	R	L	W	H1	H2	G	C1	C2	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B	Y	N1	N2	N3	N4	N5	N6
1300	3630	11190	3130	3830	700	2250	2230	6360	15990	2000	5.5	5	2130	11550	1165	4150	150x5	150x5	50x5	50x5	32x3	32x3	
1500	3630	11190	3130	3830	700	2250	2230	6460	16090	2000	7.5	5	2130	11550	1165	4150	150x5	150x5	50x5	50x5	32x3	32x3	



基础图

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	L	W	H1	H2	G	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B	Y	N1	N2	N3	N4	N5	N6
400	4840	2890	4080	5030	950	1848	5290	2600	11	1	2740	3240	1353	5250	150×2	200×1	50×1	50×1	32×1	32×1
450	4840	2890	4080	5030	950	1896	5340	2600	15	1	2740	3240	1353	5250	150×2	200×1	50×1	50×1	32×1	32×1

型号 Mode	塔体尺寸 (mm) Dimensions					重量 (kg) Weights		风机参数 Fan assembly			基础尺寸 (mm) Supporting dimensions				配管尺寸 (mm) Pipe dimensions					
	L	W	H1	H2	G	净重 Shipping	运行重量 Operating	直径(mm) Diameter	马达功率 (KW) Power	风机 套数 NO.	D	X	B	Y	N1	N2	N3	N4	N5	N6
600	5630	3080	4830	5790	960	3512	6850	2800	18.5	1	2900	3400	1355	6030	175	250	50	50	50	50

性能特点

Performance Features

设计特点

TCT开式冷却塔采用先进的引风——横流设计，是工业应用中不仅高效节能而且环保的设计方案，TCT冷却塔以其精湛的设计，使设备在运行和维护保养方面具有更优秀的品质。

换热性能佳

TCT冷却塔采用廷亚独特设计的填料，可使空气和水充分混合，进行高效率的热交换，填料由PVC制成，耐腐蚀，耐高温性能好，独特的连接技术使填料能紧密的粘在一起，且维护方便，易于取出清洗和安装。

外壳无锈蚀

采用PVC或玻璃钢外板，水盘采用高质量玻璃钢材质，一体式设计，避免出现水盘漏水和腐蚀问题。

低噪音

独特的风叶设计与横流式冷却塔的设计特点相结合，使TCT冷却塔噪音低，成为可靠的环保产品。

先进的驱动系统设计

1. 中空铝合金，具有强度高、重量轻、容易调平衡、风量等特点。
2. 风机电动机均采用重载荷型全封闭电动机，使用寿命长。
3. TCT中大型号机组采用多槽皮带传动系统，具有很高的侧向刚度，皮带由氯丁橡胶加聚酯线制成，经久耐用。皮带，驱动系统，皮带轮均被驱动保护盖保护，这样可使整个系统在更为安全的条件下运行，是驱动系统不受环境条件所影响，保证了机组使用寿命，降低了因故障而产生停机的几率。

Design Feature

TCT cooling towers with advance induced cross-flow design, not only efficient, energy saving but also eco-friendly in industrial applications, TCT cooling tower performs well especially in equipment operation and maintenance with advance design.

Excellent Heat-Exchange

Fill in unique design for TCT cooling tower, allows air and water mix fully and carry out a high efficient heat exchange. Filler is made from PVC, with corrosion-resistant, heat-resistant characteristic, also unique connection technology enables fill to stick close. Easy maintenance, convenient cleaning and installation.

Corrosion-resist Casing

PVC or glass fiber reinforced panel, high-quality FRP structure for water basin, and all-in-one design, avoid water leakage and corrosion problem.

Low Operating Sound

Unique blade design combined with cross-flow cooling design lower noise and make TCT cooling towers a reliable eco-friendly products.

Advanced driving system design

1. Blade wing-type hollow aluminum alloy has a high strength, light weight, easy to adjust the balance, large wind volume.
2. Fan motors adopt totally enclosed heavy-loading type motor, long service life.
3. TCT middle and large sized type cooling towers use multi-groove belt drive system, a high lateral rigidity, belts is made of neoprene reinforced polyester line, very durable. Belt, drive system, a drive pulley were protected by belt cover so that the whole system can be run in a more secure condition, drive systems would not be impacted by environmental conditions to ensure the unit service life, reduce the chance of downtime due to failures.

节能

相对于逆流塔来说，横流式冷却塔克服风阻更小，因此配置的风机电动机功率更小、更节能。

维护简单

TCT冷却塔集水盘为倾斜式设计，使水能够完全排出，受重力作用，水盘中冷却水由水盘高处流向低处，同时脏物和杂质也随着排水轻易地被冲出，该设计有助于防止沉积物和微生物滋生，减少死水。TCT配有宽敞的检修门、扶梯和塔顶围栏，使现场维护更方便更安全。

模块式生产

为了适应不同流量的情况，以及缩短生产工期，我们采用模块化的组装生产，不但可以满足客户大流量的生产工况，而且大幅度的缩短了现场作业、搬运、安装时间。

Energy Saving

Compared with the counter-flow tower, cross-flow cooling towers overcome less wind-resistance and more energy-saving.

Easy Maintenance

TCT cooling tower water basin in the tilting design helps water be completely drained by gravity, cooling water flow from high to low of the water basin, dirt and debris rushed out easily while draining. The design helps to prevent sediment accumulation and micro-organisms breeding to reduce the stagnant water. TCT is equipped with a wide maintenance doors, ladders and the top fence so that the site maintenance more convenient and safer.

Modular Production

In order to adapt to the different flow application, as well as to shorten the production period, we have adopted a modular assembly production, aim to meet the customers large flow requirement in production conditions, and significantly shorten the time of field operation, transportation, installation.



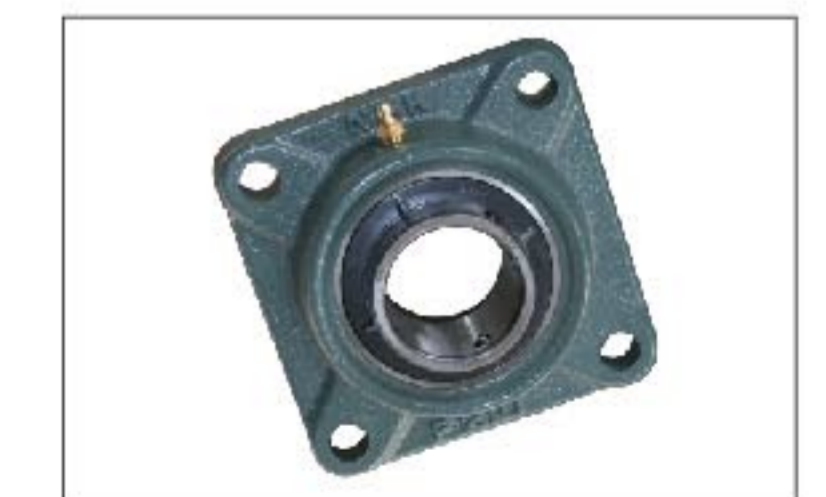
风叶 Fan Blade



检修通道 Inspection Gallery



皮带轮 Belt Pulley



轴承 Bearing

工程设计中的注意事项

Attention of Engineering Design

运行环境

应避免酸性排气、爆炸性粉尘、严重煤烟、超量水蒸汽的场所；特别是大量的煤烟会造成冷却塔及其配管和其他设备的腐蚀。

请在通风良好、清洁的场所安装。注意不要使从冷却塔内排出的空气再次被吸入塔内，发生回流现象。在近靠围墙的场合，以及多台塔不同高度的场合，推荐安装引风装置或增加基础高度，以确保进风口处有充足的新空气吸入。

容量控制

对于多台运行开式冷却塔，最简单的方法是变化塔的运行台数来控制容量。

装有变频驱动装置的设备，可按变频等级调节风机运转达到容量控制目的，需注意避免在接近风机“临界速度”时运行。

噪音控制

当运行环境对噪音有严格要求时，需采取合理的消声装置来达到降低噪音的目的。

系统共振

当冷却塔下部装有减震器时，可能会出现系统共振现象，这种共振频率是无法预期的，因此为风机驱动装置配备震动切断开关，可预防冷却塔运行中的问题。

水处理

为控制补充水中潜在的污染物，定期进行水处理是必要的。详见水处理方案。

Operating Environment

Avoid the dusty or acidic location, especially heavy soot can cause corrosion of the tower and others.

Select well-ventilated and clean area for installation. Exercise care to prevent discharged air from being re-circulated and sucked into the tower. If the wall is higher than towers or more than one different height towers, use fan hood or add foundation height are recommended for most installations. Please ask your Tyacht sales representative for the detail.

Capacity Control

For multiple cell units, it is a simple and cheap means of controlling unit capacity to change the numbers of running fans.

Inverter duty fan motors are available for condenser applications which use variable frequency drive systems for capacity control. But it should avoid running approach critical speed.

Noise Control

When environment requires strict sound level, adopting silencer can reduce the noise.

Resonance System

Probable resonance phenomenon by shock absorber is unforeseen, so vibration cut-off switch is necessary to meet an emergency.

Water Treatment

To control potential contaminates of the make-up water, periodic water treatment is necessary, meet the Water Treatment Case.

技术方案

Engineering Consideration

安装环境

1. 请将冷却塔安装在通风良好的且远离墙壁和有障碍物的场所。
2. 请尽量避免灰尘、酸性气体排放多的场所。
3. 请避开有烟囱，及其它热源机器的场所，防止受排气热、辐射热的影响。
4. 冷却塔需要非常大的空气流量，因此设备周围留有充分的空间以保证设备获得良好的运行性能是非常重要的。
5. 冷却塔安装高度务必高于周围外墙高度，不要使从冷却塔排出的空气在循环后再次吸入塔内，发生回流现象。

冬季防冻

防冻原因

冬季运行(尤其在寒冷地区)，当环境温度低于0℃时，循环水、喷淋水易发生冻结引起配管、塔内部的破裂，因此冬季需要对冷却塔进行必要的防冻。

防冻措施

外冷却水的防冻

在水盘内设置电加热器，电加热器受温控器控制。

冬季停运时的防冻措施

当冷却塔在冬季停运时，需要排空水槽里的循环水，防止冻坏、冻裂配管及填料等部件。

循环水系统保养

冷却塔里通过蒸发一部分用于喷淋的循环水从而带走热量，水蒸发后会剩下一些矿物质和其它杂质，因此必须通过排放相当于蒸发水量的水来防止杂质浓度的增加，否则沉淀在冷却塔内的矿物质逐渐增多会产生严重的结垢现象。冷却水的水质可参考一下标准。

Installation Environment

1. Select well-ventilated and clean area for installation.
2. Avoid the dusty or acidic location.
3. Avoid any location close to a chimney or any other heat source to avoid discharge heat and radiant heat influence..
4. Cooling tower needs a large quantity of air flow, so sufficient space is required around the equipment to ensure the excellent operation.
5. The height of the tower must higher than the walls around to prevent discharged air from sucking into the tower (short-circuit).

Winter Anti-freeze

Reason for Anti-freeze

Circulating water and spray water tend to freeze during cold winter months, which will bring to crack of pipes and components in tower. So winter care for cooling tower is necessary.

Anti-freeze measures

Outer Circulating Water Anti-freeze

Electric heater is equipped in the water basin and controlled by the temperature control device.

Antifreeze Measures for Outage in Winter

Empty the circulating water in the water basins to prevent components like pipes and fill etc. from freezing and bursting while its outage in winter.

Circulating water system maintenance

Heat taking away by evaporation of part of spaying circulating water, some minerals and other impurities will leave after evaporation. It is necessary to discharge water equivalent of evaporative water to prevent the increase of the impurity concentration, otherwise precipitation of minerals in the cooling tower should gradually increased to produce serious scaling. Cooling water quality may refer to the following standards.

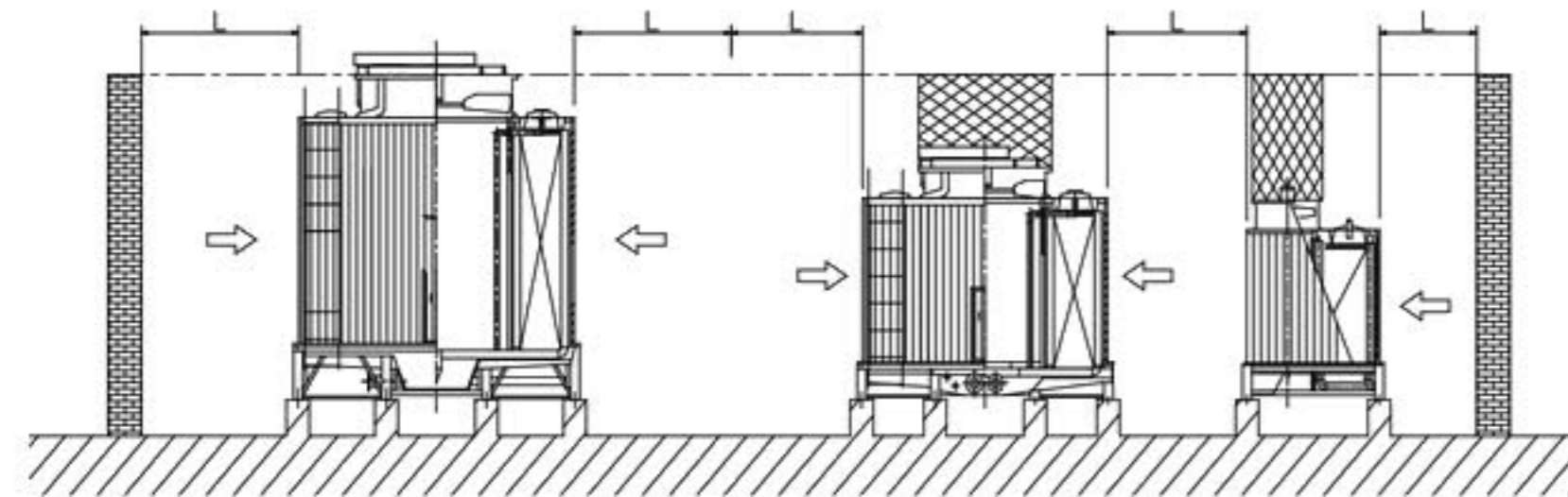
项目 Item	水质标准 Water Quality Standard
PH(25℃)	6.5~8
氯离子 (mg Cl ⁻ / l) chloridion	< 500
硫酸离子 (mg SO ₄ ²⁻ / l) sulfate ion	< 250
钙硬度(mg CaCO ₃ / l)calcium hardness	50~300
总碱度 (mmol/L) Total Alkalinity	50~300
悬浮颗粒 (mg/l) Suspended Particle	< 25

安装注意事项

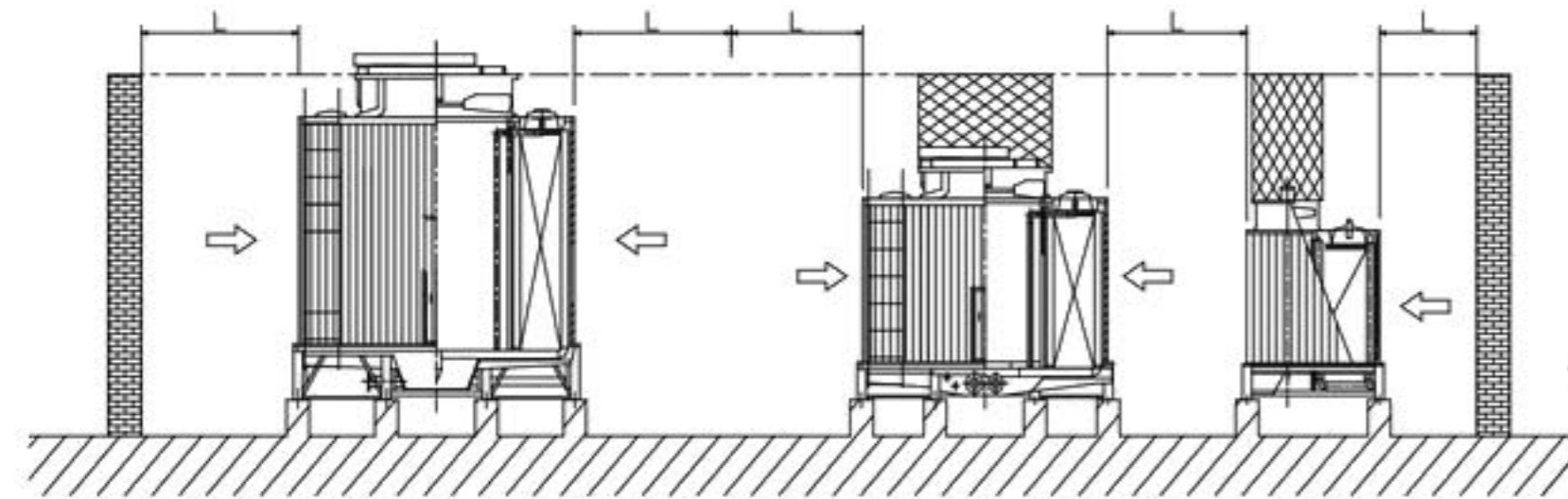
Precaution in Installation

1. 请在通风良好、清洁的场所安装。
2. 请避开灰尘、酸性气体排放多的场所。
3. 请避开有烟囱及其他热源机器的场所，防止受排气热、辐射热的影响。
4. 请把塔体水平放置，并用固定螺栓牢固固定基础。
5. 因为空气从百叶窗处吸入，请将冷却塔和墙壁等其他障碍物间的距离如下图放置。如果吸入空气量比设计值低，会导致能力不足。
6. 请注意不要使从冷却塔内排出的空气在循环后再次吸入塔内，发生短路现象。在外墙的高度比塔体高的场合，推荐安装直角配管；容易受外风影响的场合，推荐安装直角配管或弯管等对策。

1. Select well-ventilated and clean area for the erection.
2. Avoid a dusty or acidic location.
3. Also avoid any location close to a chimney or exposed to radiant heat from any other heat source.
4. Erect the tower vertically to the ground level and fix it with anchor bolts.
5. Keep distance between the tower and the obstacle as per the table below. Air volume to the cooling tower may be insufficient if the distance is not secured.
6. Exercise care to prevent discharged air from being re-circulated and sucked into the tower(Short-circuit).



冷却能力 (冷吨)	推荐L尺寸
5~15	0.5m以上
15~8	1.5m以上
80~100	2.0m以上
100~200	2.5m以上
200~400	3.0m以上
400以上	3.5m以上



Cooling Capacity (RT)	Recommend Size of L
5~15	0.5m or more
15~8	1.5m or more
80~100	2.0m or more
100~200	2.5m or more
200~400	3.0m or more
400 or more	3.5m or more

可选部件

Optional Accessories

电子水位控制器

TCT冷却塔提供电子水位控制器，在运行工况变化时得到更精确的水位控制而不需要现场调节。

Electronic Water Level Controller

Cooling tower can be equipped with electronic water level control to replace the standard mechanical float ball devices. This provides accurate control of water level without field adjustment.

玻璃钢外板

可根据客户要求选配玻璃钢外板，坚固耐用，耐腐蚀美观。

FRP Panel

We can provide FRP panel which is firm and corrosion-resist according to different needs.

减震器

冷却塔的送风机是旋转部分，多少会有些震动。这个震动可能会传至基础或建筑物，为了最大限度减少震动，我们提供多种减震方案。

Vibration Isolator

Ventilator is the whirling part of the tower will more or less cause some vibration.

This vibration may be transmitted to the foundation and building, in order to minimize vibration, we provide a wide range of shock absorption programs.

1. 冷却塔专用弹簧减震座
2. 冷却塔专用橡胶减震座

1. cooling tower specialized spring damper
2. cooling tower specialized rubber cushion

电加热器

在寒冷地区的冬季使用冷却塔的场合，循环水、散布水易冻结，因而引起配管、塔内部件的破裂。为了防止这一类事故的发生，我们推荐使用防冻部件，如电加热器。

Electric Heater

Circulating water and spray water tend to freeze during winter months in cold districts, which will damage the coils and other components. We recommend electric heater to prevent fracture accident.



水位控制器
Electric Water Level Control Package



玻璃钢冷却塔 FRP Cooling tower



电加热器 Electric Heaters



减振器 Absorber

电机

我们提供单速、双速、变频、防爆电机供客户选择，满足客户的不同需求。

电控箱

可以对水泵，电机，电加热器等需要控制的设备进行集中管理和控制，方便安全，并且能实现远程控制。

补水水箱

系统的补水水箱供客户选择。

加药水箱

为满足客户对水质的不同要求，我们同时提供加药水箱。

Motor

We can supply single-speed, two-speed motor, inverter duty fan motor and explosion-proof motor per various requirements.

Electric Control Cabinet

The electronic control board can conduct centralized management and control to pumps, motors, electric heaters and other equipment safely and convenient with function of remote control.

Water Tank

We can provide the make-up water tank for option.

Medicine Water Tank

We supply medicine water tank for high quality water requirements.



水箱 Water tank



加药水箱 The Dosing Tank



电控箱 Electric Cabinet

工程案例

Engineering Case

行业	部分客户	配套设备
石油化工	中石化 河南中原绿能高科有限责任公司 中国石油天然气股份有限公司西气东输管道分公司 AIR LIQUIDE 液化空气(上海)气体有限公司	压缩机 空压机 变频器
电力行业	泰山核电联营有限公司 中核集团福建福清核电有限公司 华能上海石洞口第一电厂 中国华电集团湖南分公司	空调系统
冶金机械	泰山核电联营有限公司 INDUCTOTHERM 应达工业(上海)有限公司 上海电气 上海机床制造一厂(苏州)有限公司 科勒 KOHLER 科勒(中国)投资有限公司 中国第二重型机械集团 BAOSTEEL 上海宝钢集团宁波钢铁有限公司 富士电机 FUJIELECTRIC 富士电机(珠海)有限公司 DEC 东方电气集团东方电机有限公司 ABP 埃博普感应炉(上海)有限公司 东北特钢集团有限责任公司	加热炉 铸造 结晶器 炼钢厂
汽车行业	广州本田汽车有限公司 中国第一汽车集团公司 重庆长安汽车股份有限公司 潍柴动力 WEICHAI POWER 潍柴动力股份有限公司 TOYOTA 丰田(昆山)有限公司 CSR 南车威亚机车有限公司	空压机 焊接机 涂装设备 注塑机 铸造设备
玻璃纤维	云天化集团 重庆国际复合材料有限公司 北玻 洛阳北方玻璃技术股份有限公司 山东耀华玻璃有限公司 福建福耀浮法玻璃有限公司 XUYI 信义玻璃控股有限公司	玻璃熔化炉 空压机
食品行业	娃哈哈 杭州娃哈哈集团有限公司 广东健力宝塑料制品有限公司 SUNTORY 三得利食品(上海)有限公司	空压机 制瓶机 冷冻机 杀菌机 冷瓶机
光伏行业	ReneSola 浙江昱辉阳光能源有限公司 CanadianSolar 阿特斯(中国)投资有限公司 FeroTea 上海申和热磁电子有限公司 Youser 陕西天宏硅材料有限责任公司	单晶炉 多晶炉 层压机
其他行业	中钞油墨有限公司 罗兰石墨工业(重庆)有限公司	注塑机 水源热泵 真空炉 液压机
海外业绩	KORECO KOREA EVAP COOLING CO.,LTD SAINT-GOBAIN SAINT GOBAIN GLASS Colombia SINOSTEEL JILIN ELECTRO-MECHANICAL EQUIPMENT CO.,LTD Castec Korea Co.,Ltd.	