RUIDONG

AIR COOLED SCREW TYPE WATER CHILLER AND HEAT PUMP

RUIDONG GROUP

www.ruidonggroup.com

RUIDONG

Ruidong Group Co., Ltd is one modern large-scale enterprise integrating design, production, sales and installation of central air-conditioning products.

Ruidong is located in Dezhou City, Shandong Province. The Beijing-Shanghai High-speed Railway and Beijing-Shanghai Expressway passing through the city, make Dezhou become a key coordinate of the national economic artery. The registered capital of the group is one hundred fifty five and a half million yuan, covering an area of 300,000 square meters and construction area of 180,000 square meters.

Main business coverage:

1. Host series:

· Water cooled series: centrifugal cold (hot) water unit, screw type cold water unit, screw type water (ground) source cooling and heating unit, scroll type water (ground) source cooling and heating unit.

· Air cooled series: screw type cold (hot) water unit, modular type cold (hot) water unit, mini type cold (hot) water unit, VRV series unit.

· Packaged Unitary unit: constant temperature and humidity unit, air (water) cooled unitary unit, dehumidification unit.

2. Direct expansion series: Rooftop packaged unit, ducted split unit.

3. Terminal series: Purification air handling unit, combined air handling unit, fresh air unit, fan coil unit series.

ENTERPRISE PROFILE

4. Ventilation series: Fire exhaust fan, roof fan, axial fan, diagonal fan, centrifugal fan, etc.
5. Engine room equipment: cyclone sand remover, water separator (separator), decontamination device, demineralized water device, plate heat exchange unit, constant pressure equipment, etc.
6. Air conditioning accessories: All kinds of fire valves, regulating valves, tuyere series.
7. Other products: Low-temperature industrial chillers, air-conditioning equipment for planting and breeding industries.

The R & D team composed of high-tech talents will continue to introduce new products, advanced production equipment and adopt the international ISO9001 quality management system as a strong guarantee for product quality. Precision testing equipment and rigorous testing methods are the fundamental insurance of quality and are timely and thoughtful. After-sales service solves the problems that may arise in use for you.

The company has established a complete sales and service system. Set up offices in 18 cities including Beijing, Tianjin, Shanghai, Xi'an, Shenyang, Chengdu and other cities to provide users with timely, efficient and high-quality pre-sales, sales and after-sales services.

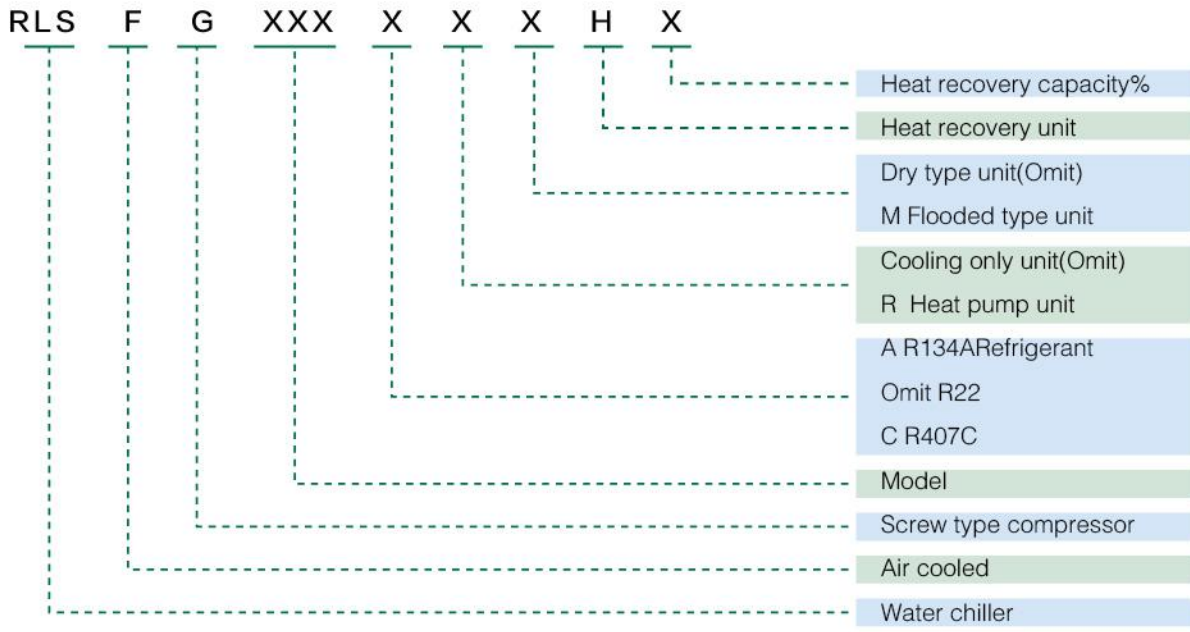
Ruidong Air Conditioning wishes you: Cooling air for propitious summer, spring returns with warm air from Ruidong.

CERTIFICATIONS

Ruidong group always takes "create first-class quality, offer sincere service" as the quality concept, builds customer-oriented quality management system, focuses on teamwork and insists on continuous innovation.

CONTENTS

1. NAMING SCHEME



2. BRIEF INTRODUCTION

The design and manufacturing process of the air cooled screw type water chiller and heat pump unit strictly follows the national and related industry standards. The unit adopts high-quality, high-efficiency semi-hermetic twin-screw compressor. Through optimized design, reasonable configuration and careful assembly, the unit has extremely high operational reliability.

This series of units uses air as the cold (heat) source and water as the refrigerant. They are divided into cooling only type and heat pump type according to their functions. The heat pump type unit is one unit that integrates cooling and heating functions. When the unit is equipped with a heat recovery device, it can also provide domestic hot water for users while cooling.

The unit has the characteristics of reasonable structure, simple operation, reliable operation, high energy efficiency, low noise and convenient installation and maintenance. It can be used as a comfortable air conditioning system for large and medium-sized shopping malls, high-end residential buildings, office buildings, commercial buildings, factory workshops, hotels, hospitals and other building facilities, as well as process air conditioning systems for industries such as electronics, pharmaceuticals, biological, chemical, power systems, and machinery manufacturing. system.

One unit with multiple functions is the main feature of the heat pump unit. Heat pump units are usually used in places with heating requirements but no heating facilities in winter. It can replace equipment that produces environmental pollution such as boilers, and does not need to build a site for storing coal and slag. It is a clean, safe, pollution-free energy-saving and environmentally-friendly product.

Configuration

Cooling range is wide. The unit adopts modular design and standardized production. All units have the same size except for different lengths. Through the combination of different modules, it can meet the needs of customers.
Each module adopts communication link, which is controlled by a microcomputer for unified command.

Easy to install

All assembly is completed in the factory, and after rigorous testing and commissioning, the equipment can be operated only by connecting the power supply and water system pipelines at the installation site.

Save space

Adopts a waterproof design and can be directly installed on the roof, podium, courtyard or level ground of a building without the need to set up another computer room, which reduces the investment in the machine room.

No need cooling tower, save investment

Adopts air cooling method, which is convenient for management and maintenance, especially suitable for places with water shortage. There is no need material costs, installation costs, operation costs and maintenance costs for cooling towers, cooling system water pipes, cooling water pumps and other cooling supporting equipment.

Easy and simple operation

Controlled by microcomputer, and the unit can be controlled through the panel operation, and it can also be started by remote control. The computer controller has a simple interface, full Chinese/English display, and easy operation. The panel can display the unit's operating status, operating data, and fault alarm status. The controller has a time control function, and the user can set it on the panel to realize the automatic operation function of the unit, which greatly reduces the workload of the operator.

High energy efficiency and low noise

Adopts high-efficiency semi-hermetic twin-screw compressors, brand-name condensing fans and high-quality refrigeration accessories, optimized design, assembly and strict testing, make the unit have the characteristics of low operating noise, low vibration and high reliability. Provides the ability of the unit to work in harsh environments. The unit has an automatic temperature control system. When the chilled water (hot water) temperature is close to or reaches the set value, it will automatically adjust the load of the unit to save power.

Beautiful appearance, strong corrosion resistance

The casing of the unit is made of galvanized steel plate, and the outer surface is treated with electrostatic plastic spraying, which has strong resistance to severe weather and is durable.

Main Components

Screw Type Compressor

• Adopts internationally renowned brand, new type of high-efficiency screw compressor, which is 20% more energy efficient than ordinary compressors.

• High efficiency 5:6 patented asymmetric rotor tooth profile, the compressor compression part is composed of two mutually meshing spiral rotors. The male rotor drives the female rotor to rotate to form a pure rotation operation. The vibration of the whole machine is very small and the operation range is wide.

• Capacity control can adopt 4-stage (100%-75%-50%-25%) or 3-stage (100-66%-33%) and stepless control system.

• Adopts 11 bearings and a-type axial thrust balance meter, which greatly increases the bearing life by 2.5-3.5 times.

• Unique built-in oil pressure system, no oil pump is needed to ensure that the compressor maintains the best lubrication effect. The double-layer filter oil separator and the compressor are combined into one. An external oil separator can be installed under special operating conditions.

• High efficiency, low noise and low vibration.

• Can choose R134a, R407c and other environmentally friendly refrigerants.

• Full range of compressor capacity ratios (VI=2.2/2 .6/3.0/3.5) are available for selection, effectively avoiding additional energy consumption caused by over-compression or under-compression. The capacity adjustment system composed of solenoid valve group and slide valve adjustment mechanism can easily realize partial load operation. The compressor has only 25%-50%-75%-100% segmented adjustment function, and it can also adopt stepless energy adjustment. To fully match the load of the building.
Compared with the piston compressor, the screw compressor has fewer operating parts (about 1/3-1/4 of the piston compressor), simple structure, fewer wearing parts, high reliability and long life.

Finned condenser

The fin-type air-cooled condenser adopts seamless red copper tubes, secondary stamping and flanging technology and double corrugated sheet-shaped special aluminum fins. The copper tube and the fins are tightly combined by mechanical expansion tubes to achieve the best heat exchange effect. The condenser adopts an inverted M-shaped layout to improve the airflow organization and make full use of the area of the air-cooled condenser, which greatly improves the efficiency.

High-efficiency heat transfer tubes improves energy efficiency and saves installation space.

Shell and tube evaporator

The production and testing are in compliance with the regulations of NB/T47012-2010 (Pressure Vessel for Refrigeration). The outer surface is made of flame-retardant, waterproof and heat-insulating materials. The evaporating ink baffle is made of PVC engineering plastics, which has strong corrosion resistance, tight sealing, and refrigerant The inlet is specially equipped with a uniform flow rate, so that the refrigerant is evenly distributed in each heat exchange copper meeting, and the heat exchange efficiency of the entire unit is improved.

The high-efficiency DAC corrugated copper heat exchange tube with inner zard pattern greatly strengthens the heat exchange capacity of the refrigerant side and improves the heat transfer coefficient to ensure good cooling and heating effects of the unit.

Expansion valve

The electronic expansion valve control system can achieve a control accuracy of up to 2600 steps. According to the suction superheat and saturation pressure, the electronic control system can accurately control the refrigerant flow to keep the unit in the best operating state and maximize the capacity of the unit.

Distribution control box

Including compressor starter, power protector and microcomputer controller. Use well-known brand wide temperature electrical components.
The microcomputer controller operates stably and reliably at an ambient temperature of -15C to 65C, and is equipped with RS-232 and RS-485 standard communication interfaces. Accept remote start and stop signals.
Cold water temperature setting and display.
Bang Qu Automatic energy control and start-stop function.
The touch screen is operated in a variety of ways.
Display current (optional), operating status, alarm status, compressor operating hours.
If the power fails due to an external line failure, the unit can automatically resume operation after the power supply is restored, and it is equipped with a password protection function.

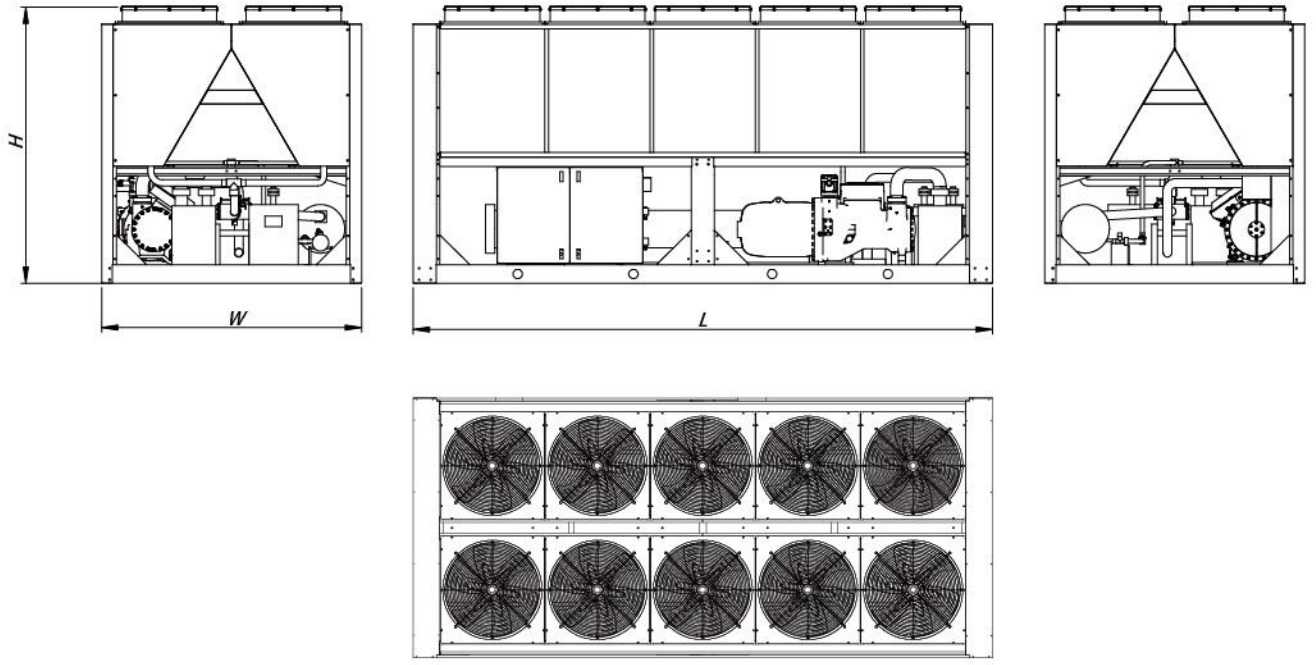
Four-way reversing valve

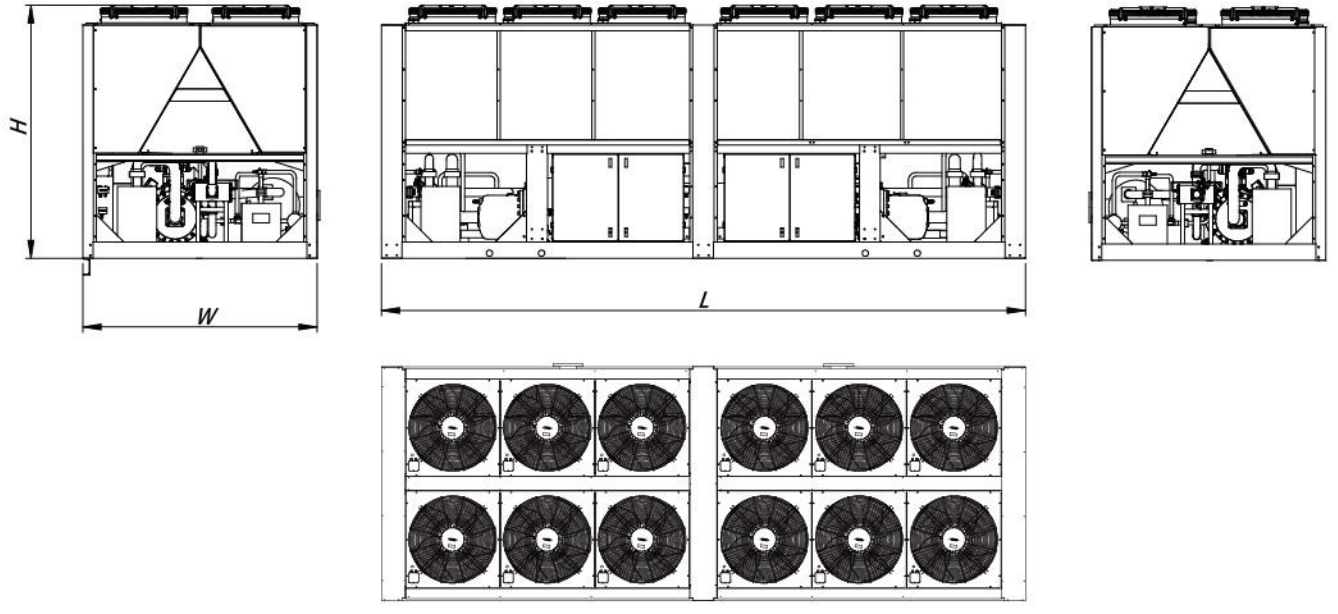
The imported four-way reversing valve ensures reliable reversing and low system resistance loss.

Safety equipment

High and low voltage switch, power supply undervoltage protection, power supply overvoltage protection, power supply phase loss protection, power supply reverse phase protection, antifreeze temperature control, refrigerant injection device, moisture indicator mirror, high pressure check valve, oil heater, overload protector, power supply Protector, antifreeze function, emergency stop switch, pressure gauge.

3.STRUCTURE DIAGRAM





4.SPECIFICATION

R22 & R407C Air Cooled Screw Type Water Chiller And Heat Pump(1)

Unit model	RLSFG-C / RLSFG-CR	280	320	360	460	500	560
Nominal cooling capacity	kW	270	308	365	458	502	545
Input power	kW	87	99	121	144	158	171
Running current	A	172	194	236	279	308	338
Nominal heating capacity	kW	271	318	374	470	522	563
Input power	kW	85	97	118	140	153	166
Running current	A	157	176	214	252	278	305
Max.running current	A	197	222	270	320	355	376
Cable diameter (copper wire distance ≤ 20 meters)	mm^2	3*95+2*50	3*120+2*50	3*150+2*70	3*185+2*95	3*185+2*95	3*240+2*120
Compressor type		Semi-hermetic screw					
Compressor qty		1					
Energy steps		25%-50%-75%-100%					
Power voltage		3N-380V-50HZ					
Starting mode		Y-△or by winding					
Refrigerant		R407C/R22					
Refrigerant charge		85	85	100	125	140	150
Refrigerant control device		Electronic expansion valve(EXV)					
Condenser type	Type	Internally threaded copper tube & hydrophilic aluminum fins					
	Fan type	Axial type fan					
	Qty	6	6	8	10	10	10
	Input power kW	2.2*6	2.2*6	2.2*8	2.2*10	2.2*10	2.2*10
Evaporator	Type	Shell & tube type					
	Water pressure drop kPa	70					
	Water pipe DiaDN	100	100	100	125	125	125
	Water flow m^3/h	46	53	63	79	86	94
Heat recovery device	Type	Shell & tube type					
	Qty	30%					
	Water pressure drop kPa	70					
	Water pipe DiaDN	65	65	80	80	80	80
	Water flow m^3/h	18	21	25	31	34	37
Heat recovery device	Type	Shell & tube type					
	QTY	100%					
	Water pressure drop kPa	70					
	Water pipe DiaDN	80	100	100	100	100	125
	Water flow m^3/h	37	42	50	62	68	74
Protection device		High and low voltage protection, antifreeze protection, temperature control, reverse phase and phase loss protection, high and low voltage protection, high pressure exhaust temperature protection, built-in motor overheat protection, overcurrent protection,check valve, safety valve					
Noise	dB(A)	79	79	79	81	81	82
Dimensions	L	3190	3190	4100	5010	5010	5310
	W	2250	2250	2250	2250	2250	2250
	H	2480	2480	2480	2480	2480	2480
Net weight	kg	2500	3000	3500	4700	5400	5800
Running weight	kg	3100	3500	4000	5100	5800	6200

Remarks
Cooling standard working conditions: ambient temperature 35℃ DB / 24℃ WB; cold water inlet temperature 12℃, outlet temperature 7℃.
Heating standard working conditions: ambient temperature 7℃ DB / 6 ℃ WB; hot water inlet temperature 40℃, outlet temperature 45℃.

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R22 & R407C Air Cooled Screw Type Water Chiller And Heat Pump(2)

Unit model	RLSFG-C / RLSFG-CR		560	640	720	920	1000	1120
Nominal cooling capacity		kW	540	616	730	916	1004	1090
Input power		kW	174	199	242	288	316	342
Running current		A	344	366	427	535	593	631
Nominal heating capacity		kW	542	636	748	940	1044	1126
Input power		kW	169	193	235	280	307	332
Running current		A	314	353	427	504	555	610
Max.running current		A	393	445	539	640	709	751
Cable diameter (copper wire distance ≤ 20 meters)		mm^2	2*(3*95+2*50)	2*(3*120+2*50)	2*(3*150+2*70)	2(3*185+2*95)	2*(3*185+2*95)	2*(3*240+2*120)
Compressor type			Semi-hermetic screw					
Compressor qty			2					
Energy steps			25%-50%-75%-100%					
Power voltage			3N-380V-50HZ					
Starting mode			Y-△or by winding					
Refrigerant			R407C/R22					
Refrigerant charge			170	170	200	250	280	300
Refrigerant control device			Electronic expansion valve(EXV)					
Condenser type	Type		Internally threaded copper tube & hydrophilic aluminum fins					
	Fan type		Axial type fan					
	Qty		12	16	16	20	20	20
	Input power	kW	2.2*12	2.2*16	2.2*16	2.2*20	2.2*20	2.2*20
Evaporator	Type		Shell & tube type					
	Water pressure drop	kPa	70					
	Water pipe DiaDN		150	150	150	150	150	150
	Water flow	m^3/h	93	106	126	158	173	187
Heat recovery device	Type		Shell & tube type					
	Qty		30%					
	Water pressure drop	kPa	70					
	Water pipe DiaDN		80	80	100	100	100	125
	Water flow	m^3/h	37	42	50	62	68	74
Heat recovery device	Type		Shell & tube type					
	Qty		100%					
	Water pressure drop	kPa	70					
	Water pipe DiaDN		125	125	125	150	150	150
	Water flow	m^3/h	74	84	100	124	136	148
Protection device			High and low voltage protection, antifreeze protection, temperature control, reverse phase and phase loss protection, high and low voltage protection, high pressure exhaust temperature protection, built-in motor overheat protection, overcurrent protection,check valve, safety valve					
Noise	dB(A)		79	81	83	83	84	84
Dimensions	L		6186	8006	8006	9826	9826	10620
	W		2250	2250	2250	2250	2250	2250
	H		2480	2480	2480	2480	2480	2480
Net weight	kg		5400	6000	6600	9000	10000	11500
Running weight	kg		6000	6600	7200	9600	16000	12100

Remarks
Cooling standard working conditions: ambient temperature 35℃ DB / 24℃ WB; cold water inlet temperature 12℃, outlet temperature 7℃.
Heating standard working conditions: ambient temperature 7℃ DB / 6 ℃ WB; hot water inlet temperature 40℃, outlet temperature 45℃.

R134A Air Cooled Screw Type Water Chiller And Heat Pump(1)

Unit model	RLSFG-A / RLSFG-AR		260	280	320	360	460	500	560
Nominal cooling capacity		kW	252	280	321	356	458	496	562
Input power		kW	82	90	108	122	148	163	182
Running current		A	162	179	214	234	290	323	360
Nominal heating capacity		kW	246	280	328	368	465	503	583
Input power		kW	80	89	92	120	145	160	179
Running current		A	147	162	194	211	263	293	354
Max.running current		A	199	222	265	290	361	398	452
Cable diameter (copper wire distance ≤ 20 meters)		mm^2	3*95+2*50	3*120+2*50	3*150+2*70	3*150+2*70	3*185+2*95	3*240+2*120	3*240+2*120
Compressor type			Semi-hermetic screw						
Compressor qty			1						
Energy steps			25%-50%-75%-100%						
Power voltage			3N-380V-50HZ						
Starting mode			Y-△or by winding						
Refrigerant			R134a						
Refrigerant charge			70	80	95	110	135	150	170
Refrigerant control device			Electronic expansion valve(EXV)						
Condenser type	Type		Internally threaded copper tube & hydrophilic aluminum fins						
	Fan type		Axial type fan						
	Qty		6	6	8	10	10	10	10
	Input power	kW	2.2*6	2.2*6	2.2*8	2.2*10	2.2*10	2.2*12	2.2*12
Evaporator	Type		Shell & tube type						
	Water pressure drop	kPa	70						
	Water pipe DiaDN		100	100	100	125	125	125	150
	Water flow	m^3/h	43	48	55	61	79	85	97
Heat recovery device	Type		Shell & tube type						
	Qty		30%						
	Water pressure drop	kPa	70						
	Water pipe DiaDN		65	65	80	80	80	80	100
	Water flow	m^3/h	17	19	22	25	31	34	38
Heat recovery device	Type		Shell & tube type						
	Qty		100%						
	Water pressure drop	kPa	70						
	Water pipe DiaDN		80	100	100	100	125	125	125
	Water flow	m^3/h	34	38	44	49	63	68	77
Protection device			High and low voltage protection, antifreeze protection, temperature control, reverse phase and phase loss protection, high and low voltage protection, high pressure exhaust temperature protection, built-in motor overheat protection, overcurrent protection,check valve, safety valve						
Noise	dB(A)		79	79	79	79	81	83	83
Dimensions	L		4100	4100	4100	5010	5010	6186	6186
	W		2250	2250	2250	2250	2250	2250	2250
	H		2440	2440	2440	2440	2480	2480	2480
Net weight	kg		3600	3800	4200	4700	6000	6200	6400
Running weight	kg		4000	4300	4800	5300	6600	7000	7400

Remarks

Cooling standard working conditions: ambient temperature 35℃ DB / 24℃ WB; cold water inlet temperature 12℃, outlet temperature 7℃.
Heating standard working conditions: ambient temperature 7℃ DB / 6 ℃ WB; hot water inlet temperature 40℃, outlet temperature 45℃.

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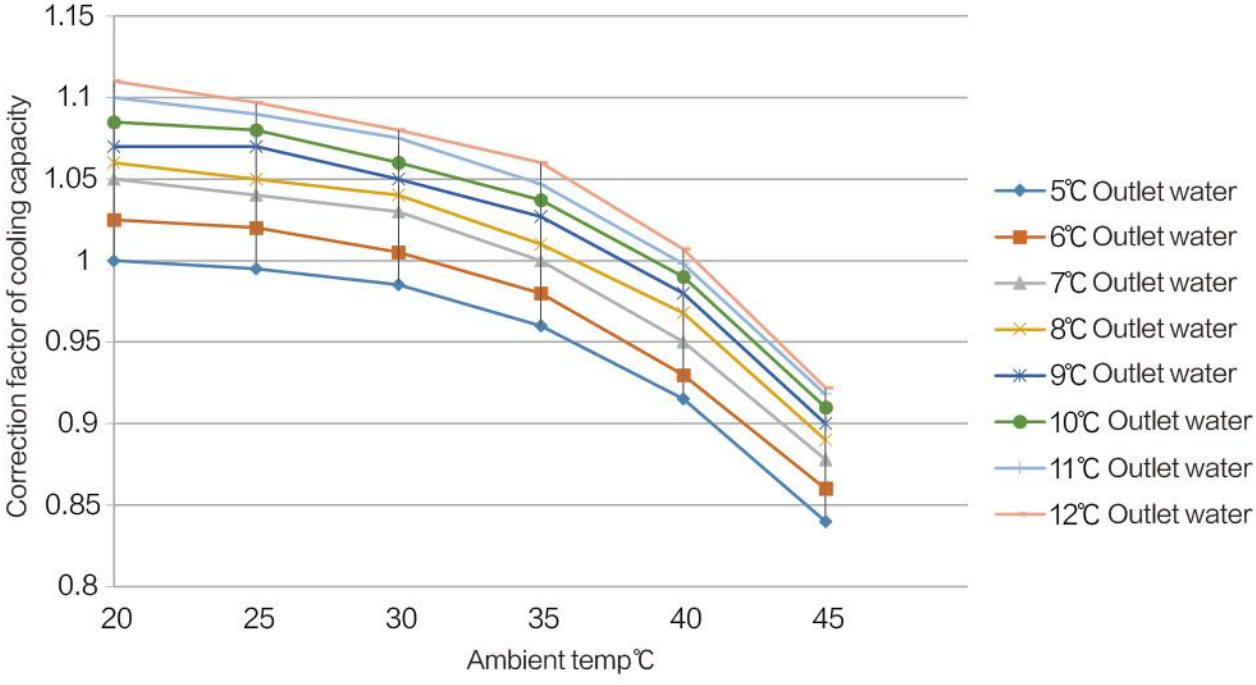
R134A Air Cooled Screw Type Water Chiller And Heat Pump(2)

Unit model	RLSFG-A / RLSFG-AR		520	560	640	720	920	1000	1120
Nominal cooling capacity		kW	504	560	642	712	916	992	1124
Input power		kW	163	181	215	245	295	325	364
Running current		A	324	358	428	467	579	646	720
Nominal heating capacity		kW	492	560	656	736	930	1006	1166
Input power		kW	160	177	185	240	290	320	357
Running current		A	293	323	387	422	526	586	708
Max.running current		A	399	445	530	579	723	796	904
Cable diameter (copper wire distance ≤ 20 meters)		mm^2	2*(3*95+2*50)	2*(3*120+2*50)	2*(3*150+2*70)	2*(3*150+2*70)	2*(3*185+2*95)	2*(3*240+2*120)	2*(3*240+2*120)
Compressor type			Semi-hermetic screw						
Compressor qty			2						
Energy steps			25%-50%-75%-100%						
Power voltage			3N-380V-50HZ						
Starting mode			Y-△or by winding						
Refrigerant			R134a						
Refrigerant charge			140	160	190	220	270	300	340
Refrigerant control device			Electronic expansion valve(EXV)						
Condenser type	Type		Internally threaded copper tube & hydrophilic aluminum fins						
	Fan type		Axial type fan						
	Qty		12	12	16	16	20	24	24
	Input power	kW	2.2*12	2.2*12	2.2*16	2.2*16	2.2*20	2.2*24	2.2*24
Evaporator	Type		Shell & tube type						
	Water pressure drop	kPa	70						
	Water pipe DiaDN		125	150	150	150	150	150	200
	Water flow	m^3/h	87	96	110	122	158	171	193
Heat recovery device	Type		Shell & tube type						
	Qty		30%						
	Water pressure drop	kPa	70						
	Water pipe DiaDN		80	80	100	100	100	125	125
	Water flow	m^3/h	34	38	44	49	63	68	77
Heat recovery device	Type		Shell & tube type						
	Qty		100%						
	Water pressure drop	kPa	70						
	Water pipe DiaDN		100	100	100	100	125	125	125
	Water flow	m^3/h	69	76	88	99	125	136	154
Protection device			High and low voltage protection, antifreeze protection, temperature control, reverse phase and phase loss protection, high and low voltage protection, high pressure exhaust temperature protection, built-in motor overheat protection, overcurrent protection,check valve, safety valve						
Noise	dB(A)		79	79	81	83	83	84	84
Dimensions	L		6186	6186	8006	8006	9830	9830	12372
	W		2250	2250	2250	2250	2250	2250	2250
	H		2480	2480	2480	2480	2580	2580	2580
Net weight	kg		5400	6000	7600	9980	10200	11080	12500
Running weight	kg		6000	6600	8200	10600	11000	11900	13600

Remarks
Cooling standard working conditions: ambient temperature 35℃ DB / 24℃ WB; cold water inlet temperature 12℃, outlet temperature 7℃.
Heating standard working conditions: ambient temperature 7℃ DB / 6 ℃ WB; hot water inlet temperature 40℃, outlet temperature 45℃.

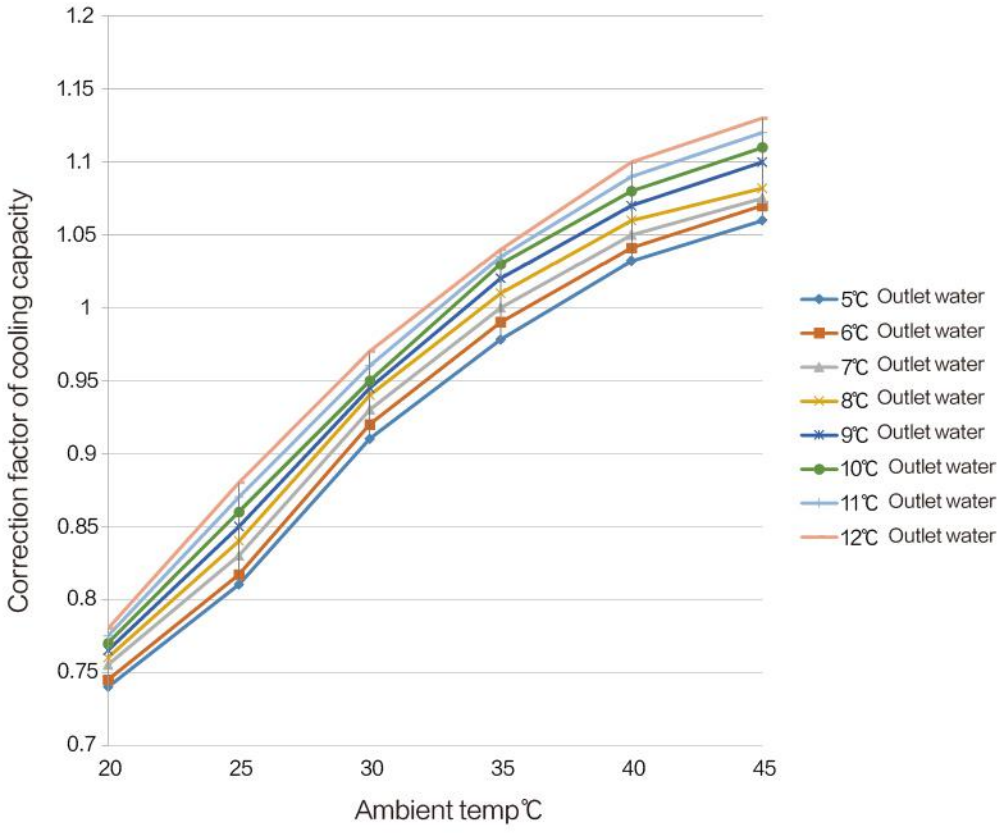
5.CORRECTION FACTOR

Correction factor curve of cooling capacity



Ambient temp / Outlet water temp	20℃	25℃	30℃	35℃	40℃	45℃
5℃	1	0.995	0.985	0.96	0.915	0.84
6℃	1.025	1.02	1.005	0.98	0.93	0.86
7℃	1.05	1.04	1.03	1	0.95	0.878
8℃	1.06	1.05	1.04	1.01	0.968	0.89
9℃	1.07	1.07	1.05	1.027	0.98	0.9
10℃	1.085	1.08	1.06	1.037	0.99	0.91
11℃	1.1	1.09	1.075	1.047	0.998	0.918
12℃	1.11	1.097	1.08	1.06	1.007	0.922

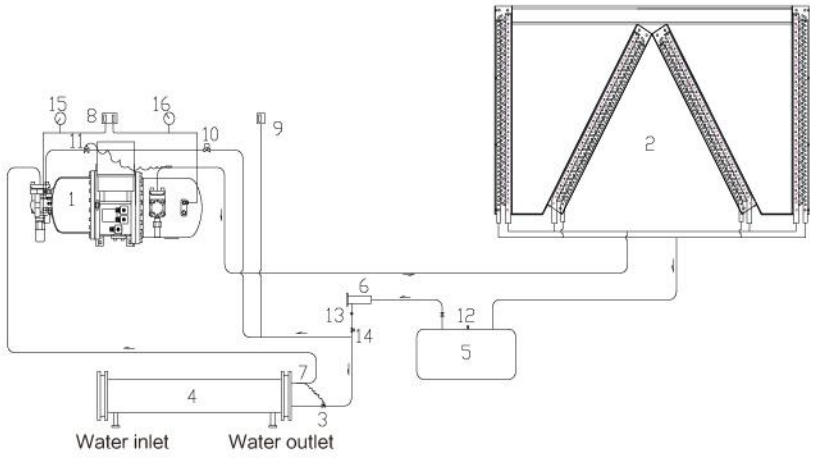
Correction factor curve of input power of cooling



Ambient temp / Outlet water temp	20℃	25℃	30℃	35℃	40℃	45℃
5℃	0.74	0.81	0.91	0.978	1.032	1.06
6℃	0.745	0.817	0.92	0.99	1.041	1.07
7℃	0.755	0.83	0.93	1	1.05	1.075
8℃	0.76	0.84	0.94	1.01	1.06	1.082
9℃	0.765	0.85	0.945	1.02	1.07	1.1
10℃	0.77	0.86	0.95	1.03	1.08	1.11
11℃	0.775	0.87	0.96	1.035	1.09	1.12
12℃	0.78	0.88	0.97	1.04	1.1	1.13

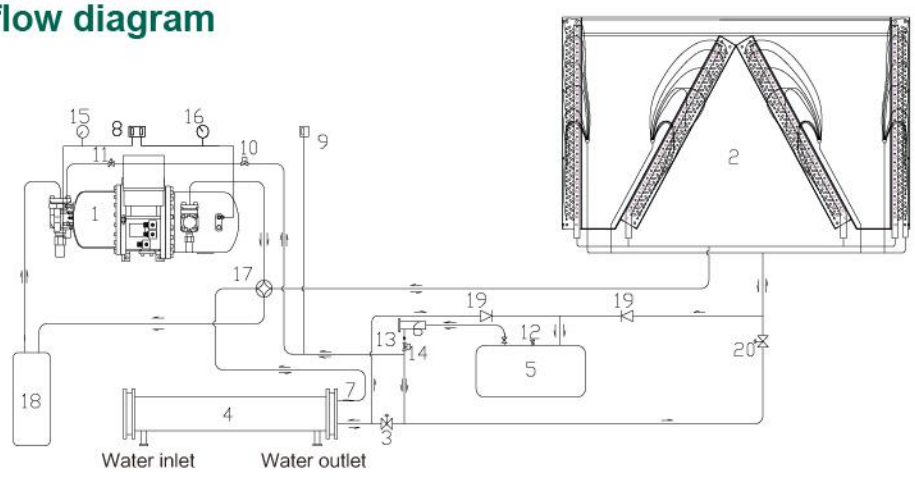
6. FLOW DIAGRAM

Cooling flow diagram



1. Screw compressor
2. Fins condenser
3. Cooling expansion valve
4. Dry type evaporator
5. Horizontal liquid accumulator
6. Detachable dry filter
7. Thermal bulb
8. Pressure controller
9. Condensing pressure controller expansion valve
10. Spray solenoid valve
11. In jection expansion valve
12. Safety valve
13. Sight glass
14. Solenoid valve
15. Low pressure gauge
16. High pressure gauge

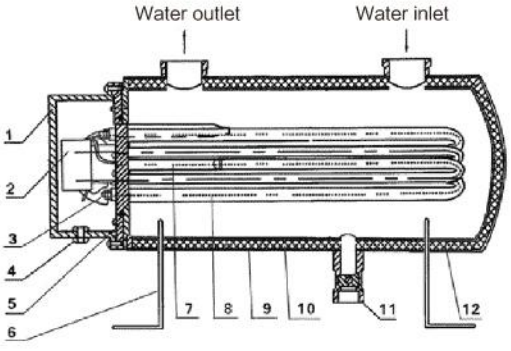
Heating flow diagram



1. Screw compressor
2. Fins condenser
3. Cooling expansion valve
4. Dry type evaporator
5. Horizontal liquid accumulator
6. Detachable dry filter
7. Thermal bulb
8. Pressure controller
9. Condensing pressure controller expansion valve
10. Spray solenoid valve
11. In jection expansion valve
12. Safety valve
13. Sight glass
14. Solenoid valve
15. Low pressure gauge
16. High pressure gauge
17. Four-way valve
18. Gas-liquid separator
19. One-way valve
20. Heating expansion valve

The role of auxiliary electric heater

The heating capacity of the air-cooled heat pump unit decreases with the drops of the ambient temperature, but the heat demand of the air-conditioned room is increasing at this time. At this time, insufficient heating of the air-conditioning system will occur, which will affect the temperature of the air-conditioned room. The standard thermal operating condition of the heat pump unit is 7C. When the temperature drops below -5C, the heat provided by the heat pump unit at this time will be greatly attenuated, which cannot meet the demand of the air conditioning system. On the other hand, due to the low outdoor temperature in winter, the circulating water temperature of the heat pump unit is too low when it is turned on, making it difficult to start the unit. If it is forced to start, before the unit enters the normal state, there will be a long time for the compressor to work under severe working conditions. Since the compressor's lubrication depends on the pressure difference to supply oil, the pressure difference will be too small at this time. The poor lubrication of the compressor and the occurrence of liquid compression will cause damage to the compressor or reduce the service life of the compressor. Equipped with an auxiliary electric heater, preheat the circulating water before the unit is officially operated, and turn on the unit when the water temperature rises to the normal start-up temperature to avoid the above phenomenon. The auxiliary electric heater does not require any other auxiliary equipment. Compared with other equipment such as small boilers, it has the advantages of less investment, simple installation and operation, and convenient maintenance in terms of installation, operation and maintenance. As an auxiliary heating facility in winter, auxiliary electric heating needs to be interlocked with the host microcomputer controller to ensure safe and reliable operation.



1. Seal cover
2. Thermostat, overheat protector
3. Wiring board
4. Lead coil
5. Flange
6. Heater base
7. Temperature control tube
8. U-shaped electric heating tube
9. Shell
10. Insulation layer
11. Drain valve
12 Liner

Main functions of auxiliary electric heater

Preheat the circulating water to maintain and ensure the normal temperature before the unit is started, to ensure a smooth start-up, to prevent hydraulic shock and poor compressor lubrication, and to protect the unit. It can be used as an antifreeze protection device when the unit is shut down in winter to maintain the temperature of the water system ≥3°C. Prevent system damage caused by freezing of circulating water due to low temperature. Compensate the lack of heat caused by the low temperature environment of the unit.

Structure of auxiliary electric heater

Auxiliary electric heater adopts stainless steel structure as a whole, which is small in size, small in area, easy to install, and has a waterproof design, which has strong corrosion resistance. A high-density thick insulation layer is used between the stainless steel inner tank and the stainless steel shell to maintain the hot water temperature and save electricity.

Main components of the high-quality stainless steel electric heating tube adopt imported materials, and the advanced production equipment and technology are used in the processing process to match the voltage of different regions to achieve the highest efficiency. Its insulation performance, pressure resistance, and moisture resistance are better than national standards, and it is safe and reliable to use.

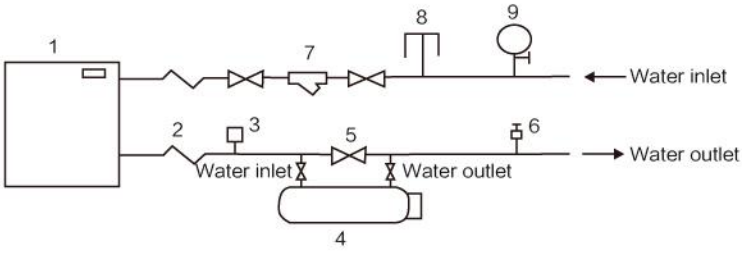
The design of the water flow direction is reasonable, the heating is uniform, there is no high and low temperature dead angle, and the thermal efficiency is high.

Auxiliary electric heater is equipped with a thermostat of a well-known domestic brand, and the user can freely set the temperature. All are equipped with overheating protectors to control the water temperature and over-temperature protection of water shortage to avoid damage to components and systems. Repair and maintenance are very convenient, as long as the sealing end cover is removed and the stainless steel nut on the flange is unscrewed, the electric heating tube can be drawn out. The auxiliary electric heater can adopt two or more heating methods according to customer requirements, which is safe and reliable to achieve the purpose of energy saving.

Selection instructions:

1. The table below shows the power coefficient of the auxiliary electric heater that needs to be selected for each kW of heating capacity under the corresponding indoor and outdoor temperature conditions.
2. From the perspective of energy balance theory, the auxiliary electric heater is not required for the conditions in the left space in the table; but in order to ensure the smooth operation of the host and increase the service life of the host, it is recommended that the outdoor temperature ≤ 3 °C, all must be configured Auxiliary electric heater.
3. When the auxiliary electric heater is selected, the specification should not be less than 0.2kWIkW, and the heat loss of the water system may be large enough to offset the heat of the heater, causing the heater to fail to achieve the expected effect.
4. The heater power should be selected according to the operating conditions according to the coefficients in the table below.

Outdoor temperature ≤3℃ Indoor required temperature	8	6	4	2	0	−2	−4	−6	−8
20					0.2	0.25	0.35		
18						0.2	0.25	0.35	
16							0.2	0.25	0.35
14								0.2	0.25



1. Chiller
2. Soft connection
3. Water flow switch
4. Auxiliary electric heater
5. Check valve
6. Automatic exhaust valve
7. Y type water filter
8. Thermometer
9. Pressure gauge

During the engineering installation, the auxiliary electric heater is installed in parallel on the pipe on the outlet side of the unit. During the cooling operation in summer, the chilled water does not flow through the auxiliary electric heater; during the heating operation in winter, the hot water from the unit flows through the auxiliary electric heater. Electric heater, the auxiliary electric heater supplements heat to the hot water and heats it up, and then sends it to the end of the user. The power cord of the auxiliary electric heater should be directly introduced from the corresponding AC contactor in the main power control cabinet of the unit , The user actually needs to design a circuit to control it.

Relationship table between cross-sectional area of conductor and safe current

Rated current		6	8	10	12	16	20	25	32	40	63	80	100	125	160	200	250	315
Conductor cross-sectional area	Min	1	1.5	1.5	1.5	2.5	2.5	4	6	10	10	16	25	35	50	75	95	120
	Max	1.5	2.5	2.5	2.5	4	6	6	10	16	25	35	50	70	95	120	150	240

Example: When the running current is 32A, the minimum cross-sectional area of the wire is 6mm², and the maximum cross-sectional area is 10mm².

When the running current is 160A, the minimum cross-sectional area of the wire is 50mm², and the maximum cross-sectional area is 95mm². You can also choose 70mm² in the middle.

Note: The selection of the above conductor cross-sectional area is based on the national standard line.

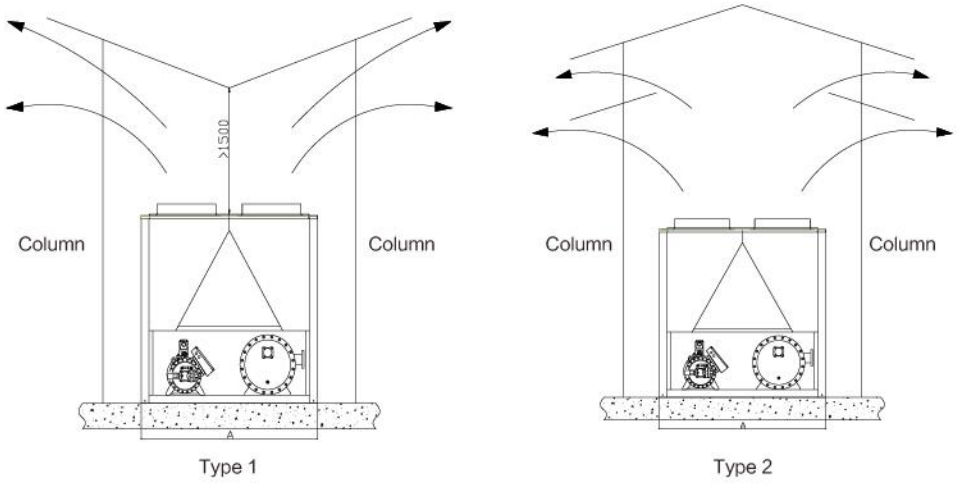
7. INSTALLATION REQUIREMENTS

The installation should be carried out by professionals. Pay attention to the following matters during installation:

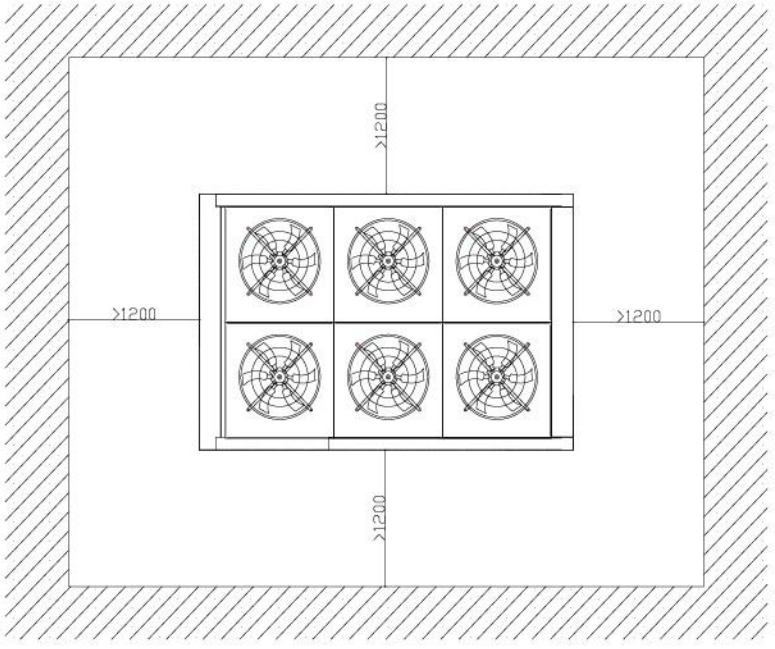
1. Choice of installation location:

The unit should be installed outdoors in a well-ventilated and open place. The air intake and maintenance space should be left around the unit (see picture). When the installation position of the unit is higher than the parapet or wall of the unit, the spacing should be increased appropriately. The discharged air should be guaranteed not to be sucked in by the unit itself or other units, so as not to affect the normal operation of the unit. When the unit is installed on the top of a building, the load-bearing capacity of the building should fully consider the weight of the unit during operation and the additional stress caused by other reasons. The unit itself does not need a computer room, but if it is necessary to add shading facilities, the above precautions must be fully considered. The chilled water of the unit should be clean and free of oil and corrosive substances. When the water quality is too hard, you should consider installing a softening device to avoid scaling inside the unit and affecting the use of the unit. The inlet side of the air-cooled heat exchanger should be considered to avoid the direction of the monsoon. The bottom foundation of the unit can be a cement foundation or a steel structure foundation. The foundation should be level, firm, and strong enough to bear the weight of the unit. When the unit is placed on the foundation, the unit should be fixed so that the unit is firmly connected to the foundation. In order to prevent the vibration of the unit from being transmitted through the building structure, damping materials should be placed under the unit. Drainage ditch shall be left around the foundation of the unit, the slope of the groove shall be greater than 5%, and the slope shall be towards the drainage outlet.

2. Installation space diagram



Unit with above rain shed



Space around the unit

TESTING CENTER

Testing center covers an area of 6500 square meters; total investment of 50 million RMB, is the largest and most complete detection device in the north of China , the testing range is from household air conditioner to the centrifuge chillers.

Testing center adopt internationally renowned brand measuring instruments, including the United States Agilent data acquisition, Japan Yokogawa power meter, Saibi Ling platinum thermal resistance, to ensure the test accuracy.

Testing center can test multi-unit, air-cooled unit, fan coil unit, ceiling air handling unit, modular air handling unit,purifyiing air conditioning unit, water loop heat unit, air-cooled module chiller and air-cooled screw chiller.

MAIN PROJECTS

High school building in Brazil

Presidential palace of Kazakhstan

Stadium in Tel Aviv

Planting base is in Beijing

Office building in America

Shanxi Linfen High Speed Rail Station

Hotel in Iraq

Shanxi Tongmei Group Zhangze Power Puzhou Power Generation Branch

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