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**SCREW TYPE HIGH TEMPERATURE  
HOT WATER UNIT**

A decorative graphic at the bottom of the page consists of a dark green curved background. It features several white water droplets of varying sizes and three white starburst shapes, all arranged in a curved pattern.

**RUIDONG GROUP**

[www.ruidonggroup.com](http://www.ruidonggroup.com)



**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.

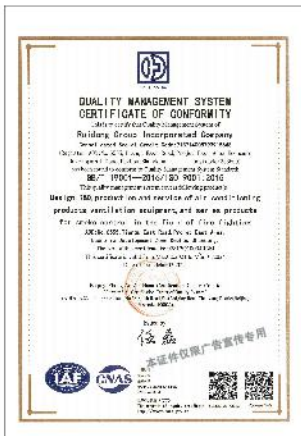
The R & D team composed of high-tech talents will continue to introduce new products, advanced production equipment and adopt the international ISO9001 quality management system as a strong guarantee for product quality. Precision testing equipment and rigorous testing methods are the fundamental insurance 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.



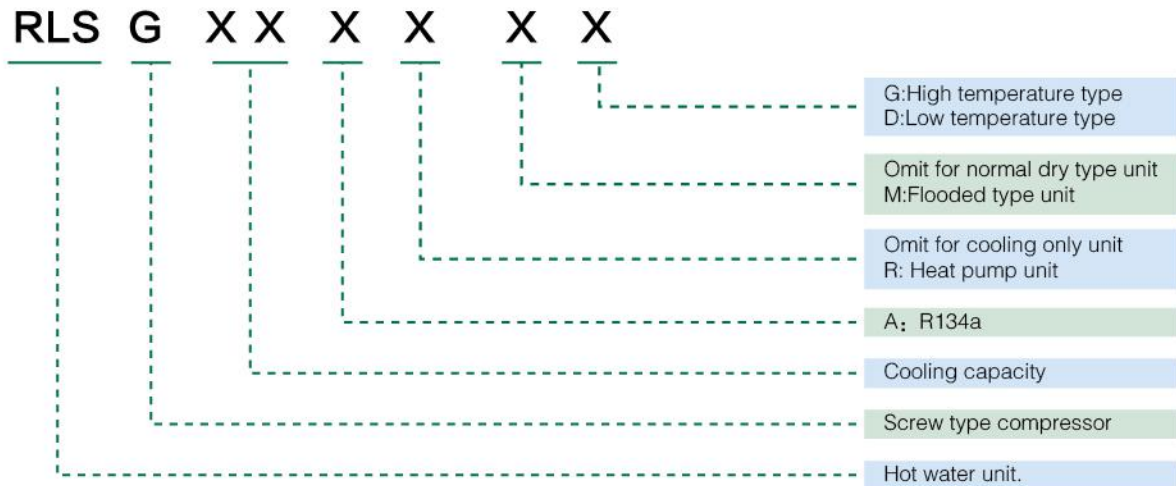
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## 1. NAMING SCHEME



## 2. BRIEF INTRODUCTION

This series of units are high temperature hot water units

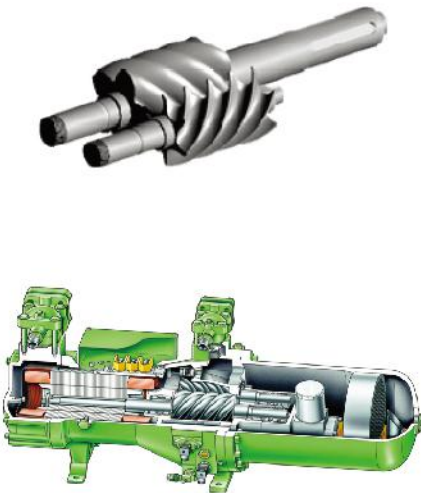
The unit adopts high-efficiency semi-hermetic twin-screw compressor with high efficiency, low noise and long life.

Use place: High temperature heat pump is to collect the heat in the low temperature waste water and waste gas discharged by industrial enterprises through the high humidity heat energy heat pump, and convert it into water or high temperature steam of  $\leq 150^{\circ}\text{C}$ , which can be directly used in industrial processes or heating. Replacing traditional coal-fired boilers is the best choice for realizing industrial energy saving, reducing consumption and improving efficiency.



### Compressor

The unit adopts imported brand high-temperature special compressor, special technology and special refrigerant, so that the compressor can produce hot water at 75-85 degrees Celsius while maintaining good working conditions. The COP value can be greater than 3.0 under wet heating conditions, which provides a good energy-saving effect for industrial hot water. The capacity control system can easily realize partial load operation and realize 25%-100% segmental adjustment. It can also adopt stepless energy adjustment to fully match the use load.



## Shell and tube evaporator

Shell: special steel plate for pressure vessel, made and tested in accordance with the regulations of NB/T47012-2010 (pressure vessel for heating device). The outer surface is made of flame-retardant and waterproof thermal insulation materials. The evaporator baffle is made of PVC engineering plastics, which has strong corrosion resistance and tight sealing, so that the hot frozen water flows up and down along the partition board, which increases the turbulence effect. The heat exchange capacity of the evaporator is high. The heat medium inlet is equipped with a flow-sharing device. The heat medium is evenly distributed in each heat exchange copper tube, and the heat exchange efficiency of the integrated unit is improved.

Copper tube: High-efficiency DAC corrugated internally threaded heat exchange copper tube, which greatly strengthens the heat transfer capacity of the heat medium side and improves the heat transfer coefficient to ensure good heating effect of the unit.

## Shell and tube condenser

The high-efficiency DAC corrugated outer heat exchange copper tube greatly strengthens the heat exchange capacity of the refrigerant side and improves the heat estimation coefficient to ensure a good cooling effect of the unit.



## Expansion valve

The electronic expansion valve is in the control system and accurately controls the refrigerant flow according to the degree of suction superheat, so that the unit can always maintain 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. It has a complete automatic control function and is equipped with RS-232 and RS-485 standard communication interfaces to realize remote control.



## Microcomputer controller:

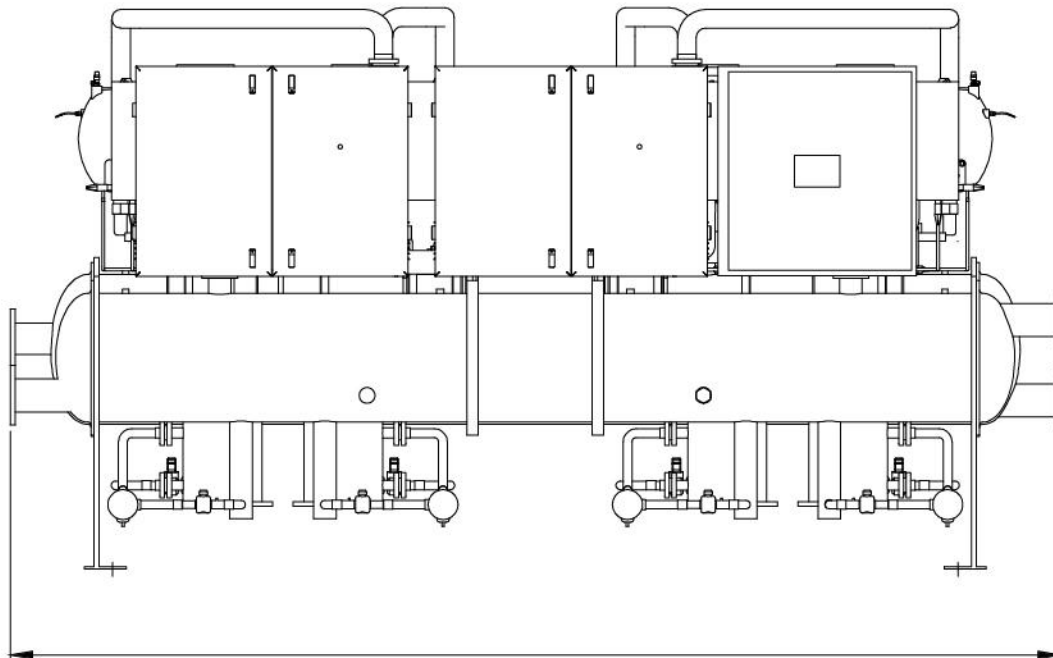
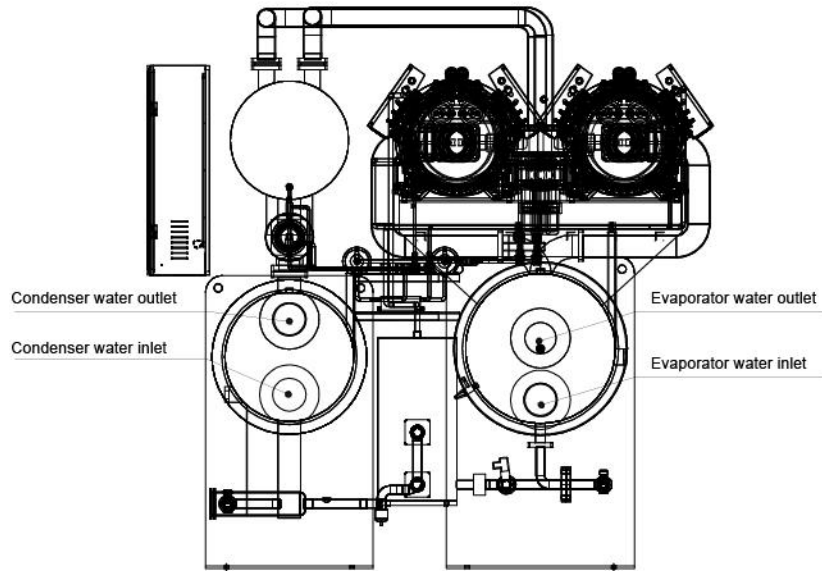
Hot water temperature setting and display. Full English touch screen. Electric current (optional), running status, alarm status, compressor operating hours, automatic energy control and start-stop function, can accept remote start and stop signals. If an external line fails, the unit can automatically resume operation after the power supply is restored. With password protection function.

## Safety devices

High and low pressure switch, antifreeze temperature control, oil heater, high pressure exhaust check valve, replaceable filter drier, pressure gauge, emergency stop switch, overload protector, power protector, refrigerant injection device.

## 3. STRUCTURE DIAGRAM

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## 4. SPECIFICATION

### Flooded screw type high temperature hot water unit

Unit model	RLSG-ARG	130	320	340	540	620	940	1000	
Nominal heating capacity	kW	128.8	323	332	543	617	934	1032	
Evaporator cooling load	kW	85	219.1	225.6	373.5	425.7	646.7	717.9	
Input power of heating	kW	37.4	88	90.2	142.7	160.7	240.5	261.8	
Max.running current	A	68.4	162.0	166.7	263.8	297.2	443.0	484.2	
Cable diameter (copper wire distance ≤ 20 meters)	mm <sup>2</sup>	3*25+2*16	3*95+2*50	3*95+2*50	3*150+2*70	3*150+2*70	3*240+2*120	2*(3*150+2*70) 3*300+2*150	
Power voltage	380V-3-50HZ								
Starting mode	Y-Δ								
Refrigerant	R134a								
Refrigerant charge		31	79	81	134	153	233	258	
Refrigerant control device	Electronic expansion valve(EXV)								
Compressor	Type	Semi-hermetic screw							
	Qty	1	1	1	1	1	1	1	
Evaporator	Type	Shell & tube type							
	Water pressure drop	Kpa	70-90						
	Water pipe Dia.	DN	DN50	DN80	DN80	DN100	DN100	DN125	DN150
	Water flow	m <sup>3</sup> /h	15	38	39	64	73	111	123
Condenser type	Type	Shell & tube type							
	Water pressure drop	Kpa	70-90						
	Water pipe Dia.	DN	DN50	DN100	DN100	DN125	DN125	DN150	DN150
	Water flow	m <sup>3</sup> /h	22	56	57	93	106	161	178
Noise	dB(A)	73	79	79	83	84	87	87	
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								
Unit structure	Horizontal type								
Dimensions	L	2750	2750	2750	3350	3350	3350	3350	
	W	1650	1950	1950	1950	1950	2100	2150	
	H	2000	2100	2100	2200	2200	2250	2350	
Install dimension (mm)	L1	2230	2035	2035	2735	2735	2735	2735	
	W1	990	1350	1350	1350	1350	1520	1625	
Net weight	kg	1700	2370	2420	2700	2850	3700	4000	
Running weight	kg	2100	2670	2720	3220	3300	4200	4540	

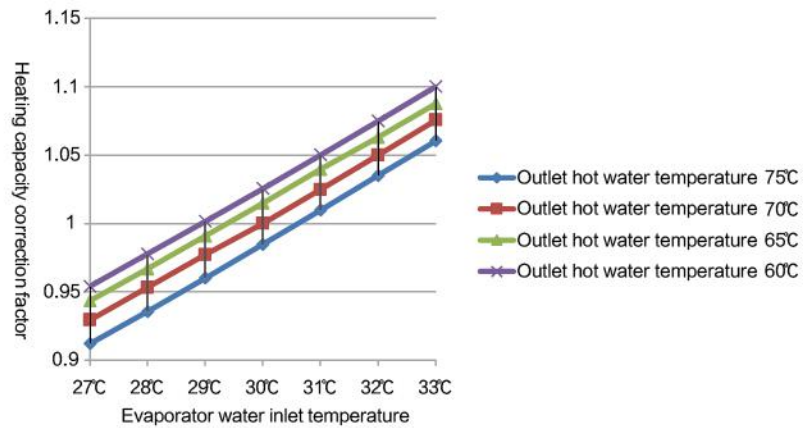
Note: Heating conditions: Condenser water inlet/outlet temperature 65°C/70°C.

Unit model	RLSG-ARG	260	640	880	1080	1200	1840	2000	
Nominal heating capacity	kW	257.6	646	664	1086	1234	1868	2064	
Evaporator cooling load	kW	170	438.2	451.2	747	851.4	1293.4	1435.8	
Input power of heating	kW	74.8	176	180.4	285.4	321.4	481	523.6	
Max.running current	A	136.8	324.0	333.4	527.6	594.4	886.0	968.4	
Cable diameter (copper wire distance ≤ 20 meters)	mm <sup>2</sup>	2*(3*25+2*16)	2*(3*95+2*50)	2*(3*95+2*50)	2*(3*150+2*70)	2*(3*150+2*70)	2*(3*240+2*120)	4*(3*150+2*70) 2*(3*300+2*150)	
Power voltage	380V-3-50HZ								
Starting mode	Y-Δ								
Refrigerant	R134a								
Refrigerant charge		27	63	65	103	116	173	188	
Refrigerant control device	Electronic expansion valve(EXV)								
Compressor	Type	Semi-hermetic screw							
	Qty	2	2	2	2	2	2	2	
Evaporator	Type	Shell & tube type							
	Water pressure drop	Kpa	70-90						
	Water pipe Dia.	DN	DN80	DN125	DN125	DN150	DN150	DN200	DN200
	Water flow	m <sup>3</sup> /h	29	75	78	128	146	222	247
Condenser type	Type	Shell & tube type							
	Water pressure drop	Kpa	70-90						
	Water pipe Dia.	DN	DN80	DN125	DN125	DN150	DN150	DN200	DN200
	Water flow	m <sup>3</sup> /h	44	111	114	187	212	321	355
Noise	dB(A)	73	79	79	83	84	87	87	
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								
Unit structure	Horizontal type								
Dimensions	L	4050	4050	4050	4050	4100	4300	4500	
	W	2200	2200	2200	2200	2200	2300	2300	
	H	2250	2250	2250	2250	2400	2450	2450	
Install dimension (mm)	L1	3435	3435	3435	3435	3435	3435	3435	
	W1	1520	1520	1520	1520	1625	1775	1775	
Net weight	kg	3200	4540	4640	4950	5230	6600	7500	
Running weight	kg	3670	5020	5130	5420	5820	7250	8300	

Note:Heating conditions: Evaporator water inlet outlet temperature 30° C/-25° C, condenser water inlet/outlet temperature 65° C/70° C.

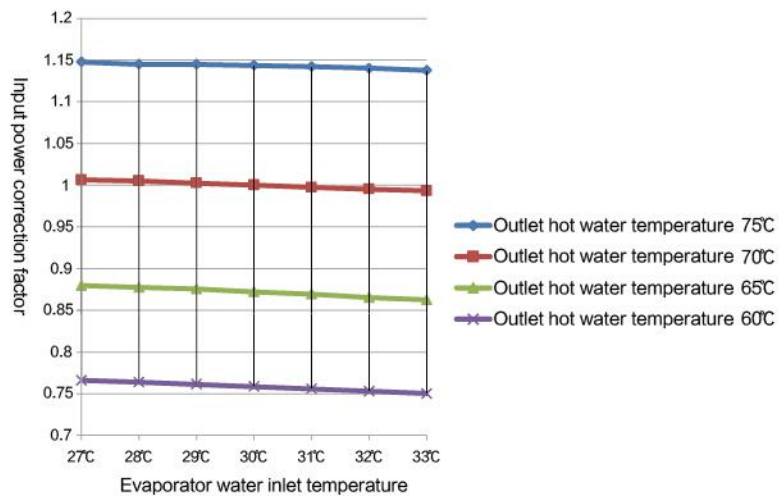
## 5. CORRECTION FACTOR

### Heating capacity correction factor



Outlet water temperature \ Evaporator water inlet temperature	27°C	28°C	29°C	30°C	31°C	32°C	33°C
Outlet hot water temperature 75°C	0.912	0.9355	0.9599	0.9846	1.0096	1.0349	1.0603
Outlet hot water temperature 70°C	0.9293	0.953	0.9771	1	1.0246	1.04988	1.07549
Outlet hot water temperature 65°C	0.9434	0.9667	0.9906	1.01483	1.03948	1.0628	1.0876
Outlet hot water temperature 60°C	0.954	0.9777	1.0014	1.02542	1.0499	1.0749	1.1001

### Input power correction factor



Outlet water temperature \ Evaporator water inlet temperature	27°C	28°C	29°C	30°C	31°C	32°C	33°C
Outlet hot water temperature 75°C	1.1477	1.145	1.145	1.14364	1.14228	1.14022	1.1375
Outlet hot water temperature 70°C	1.0062	1.0048	1.0024	1	0.9973	0.9952	0.9932
Outlet hot water temperature 65°C	0.8796	0.8776	0.8755	0.8721	0.8694	0.86525	0.86252
Outlet hot water temperature 60°C	0.7661	0.76402	0.7613	0.7585	0.7558	0.7531	0.7503

## 6. INSTALLATION

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### 6.1. Precautions before installation

#### 6.1.1 General requirements

● Installation site must be clean, dry, free of debris and well-lit to facilitate operation and maintenance.

#### 6.1.2 Space requirements

● Installation site should pay attention to whether there is enough space for the unit to enter and exit.

● Regardless of the type of machine, a maintenance space of at least 800-1000mm should be reserved on each side. In addition, it should be noted that there should be enough space at both ends of the unit to clean the condenser and evaporator copper pipes in the future.

#### 6.1.3 Ventilation

● Indoor machine room needs proper ventilation. Even if there are no relevant regulations in many areas, it is best to install ventilation equipment in poorly ventilated places, which is conducive to the safe operation and operation of machinery and equipment.

#### 6.1.4 Basics

● Foundation can be made of cement or steel plate, but it must be able to fully bear the operating weight of the unit, and the levelness must be within 3/1000.

#### 6.1.5 Anti-vibration

● Foundation of the unit must be solid to minimize vibration transmission.

● Unit should be equipped with shock absorbers when necessary to prevent noise and vibration from spreading to the building.

#### 6.1.6 Drainage

● When making the foundation, drainage ditch must be preset on the ground to discharge the water in the water pipes and equipment during the shutdown and maintenance.

6.1.7 The waterproof unit must not be installed under the condensation or water pipes, and where water may splash. Waterproofing is very important to the safety of electrical control equipment.

### 6.2. Goods receiving and handling

#### 6.2.1 Receiving

● After the equipment is delivered to the site, first check whether the goods are consistent with the order, whether the accessories are missing, and whether they are damaged during transportation. If there is any missing, damaged or inconsistent with the order, you should immediately contact the delivery person or our company.

#### 6.2.2 Moving

● Before installation, the less the unit is moved, the less chance it will be damaged. The accessories on the machine (such as electric control box, piping, pipe fittings, etc.) cannot be used to lift the machine or trample on it.

● When hoisting, the hoisting bar can be hoisted through the hoisting hole on the base of the unit. At the same time, pay attention to the electric control box, piping accessories and insulation materials, etc., not to be hurt. If it is a unit with a packing box, it should be lifted by the whole unit. When hoisting, it is necessary to avoid scratching or deformation of the unit's surface, and a protective pad should be placed on the contact surface of the steel cable and the body.

● When hoisting, the unit should be maintained in a vertical state, the inclination should be less than 300, collisions should be avoided, and sliding should be avoided. Personnel should not stand under or near the unit for safety.

● Pay attention to moving with care.

### 6.3. Water pipe piping of condenser and evaporator

● The water pipe can be assembled only after the unit has been leveled. An exhaust valve must be installed at the highest position of all pipelines. The water pipe piping of the evaporator should be insulated to prevent condensation. The water pipe piping of the condenser should be insulated according to local conditions and laws and regulations.

● The inlet and outlet water pipe piping connecting the condenser and evaporator of the chiller should be installed according to the unit's mark and cannot be connected incorrectly.

● In order to record the operation of the unit, thermometers and pressure gauges should be installed on the inlet and outlet pipes of the condenser and evaporator.

● The inlet side of the water pipe piping of the cooling water and chilled water pumps needs to be equipped with a filter, because during the construction of the water pipe piping, there may be debris left in the water pipe and cannot be cleaned up. These debris may enter the water pump, The condenser and evaporator cause internal damage or block the heat transfer tube. After piping, the equipment can be operated in accordance with the requirements of the construction specification and

the cleaning is completed.

- The lowest point of the inlet and outlet water pipes of the condenser and evaporator must be equipped with a drain valve, so that the water in the condenser and evaporator can be removed during shutdown and maintenance.
  - The inlet and outlet water pipes of the condenser and evaporator must be equipped with flexible shockproof hoses to reduce vibration transmission and prevent the unit from bearing the weight of the pipeline.
  - The inlet water pipe piping of the condenser should be equipped with a flow control valve to control the water volume, so that the condensing pressure of the unit can be maintained in a proper condition.
  - The outlet of the condenser and evaporator must be correctly equipped with a flow switch to ensure that the unit has the water volume that meets the operating requirements when the unit is running. If it is not installed, once the water flow is interrupted, it may cause serious damage to the unit.
- The circulating water pump should be installed at the inlet of the condenser and evaporator, or at the outlet side if space is limited.
- Before starting the chiller, please confirm that the air in the pipeline has been completely removed from the water pipeline to avoid damage caused by running without water.
  - When the unit is not used in cold areas in winter, all water in the condenser and evaporator must be drained to avoid damage to the internal copper pipes after the water freezes.

## 6.4 Principles and requirements of water system

- Water quality: clean water or water that has been treated and meets engineering requirements.
- Water temperature: The water temperature of the water source should be moderate.
- Water volume: The water volume should be able to meet the needs of the user's cooling load.

## 6.5 Power distribution

- Electric engineering must comply with relevant laws and regulations.
- Wire size, electromagnetic switch, non-fuse switch and other specifications must comply with relevant laws and regulations. The phase sequence of the power supply must match the direction of rotation of the compressor.
- All wiring terminals must be uniform and appropriate, and screws must be tightened.
- After the line is connected, mark it for later maintenance.

## 6.6 Control circuit

- The external interlock circuit in the control circuit should be connected properly to prevent the compressor from starting before the pump is still running.
- When the oil heater circuit is stopped, do not cut off the power. If the power is cut off, before restarting, make sure that the oil heater has been heated for 8 hours or the oil temperature is above 23C.

## 6.7 Operation precautions

Before operating the unit, make sure that all valves that must be opened have been opened.

The condenser has good heat dissipation, otherwise the chiller will alarm and shut down due to the high condensing temperature and corresponding condensing pressure.

The cold water in the evaporator should be circulated normally, otherwise the cold water temperature will be too low and the cold water evaporation temperature and the corresponding evaporation pressure will be too low, causing the low-pressure protection device to alarm and stop or cause the cold water in the evaporator to freeze and damage the equipment.

### The starting sequence of the chiller:

cooling water pump on--Chilled water pump on--Water chiller on--Cooling tower fan on

### The shutdown sequence of the chiller:

Water chiller off--Cooling tower fan off--Cooling water pump off--Chilled water pump off

## 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, purifying air conditioning unit, water loop heat unit, air-cooled module chiller and air-cooled screw chiller.

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# MAIN PROJECTS

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High school building in Brazil



Presidential palace of Kazakhstan



Shanxi Dingxiang County People's Court



Shanxi Yuncheng odd Star Technology Co., Ltd



Beijing Grand Oriental Hotel



Shanxi Linfen High Speed Rail Station



Beijing Sihui building materials city



Shanxi Tongmei Group Zhangze Power Puzhou Power Generation Branch



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**Export Office Add: No.129, Yingxiongshan Road, Jinan, Shandong, China**

**Factory Add: No.6555 Tianqu East Road, Economic Development Zone, Dezhou, Shandong, China**

**Tel: 0086-531-83199577 Mobile: 0086-15505347651 Mail: [sales@ruidonggroup.com](mailto:sales@ruidonggroup.com)**

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The contents will be changed due to product updates without prior notice, please refer to the actual product.

This document has been proofread many times, but there may still be errors or omissions, please understand.