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Welcome to use COOLSOON chillers. In order to operate the chiller correctly and efficiently, please read the following instructions carefully.

*Note: Pls Prevent the chilled medium from freezing in the equipment , otherwise the medium will freeze to damage the chiller*

### ● **Installation requirements:**

- **Location:** Pls choose the more convenient maintenance place to install the chiller, Never place the chiller unit in a location where excessive heat, moisture, inadequate ventilation, pollution, or have corrosive materials in site.
- **Water cooled chiller,** Pls choose the cooling tower according to the cooling capacity of the water cooled chiller. And install the plumping pipe according to the size of the chiller unit, smaller size pipe for connecting the tower and chiller is not allowed, that will cause the high pressure overload to affect the cooling efficiency and increase the energy consumption.
- **Air cooled chiller,** it must be installed above one meter space from the wall to avoid the lower heat dissipating , which will arouse the high pressure overload to affect the cooling efficiency and increase the energy consumption.

Note: 1. Pls follow the relevant laws and regulations to do the job of power supply load and ground connection of the chiller.

2. The insulation measures should be done to the chilled water pipeline for the new installed chiller.

## ● Preparation for startup




**For the first operation, please confirm the following issues:**

- Check and confirm the exactly electrical power supply voltage and phases with our name plate.(Note: Phase lines of three phases power supply including R. S. T, Neutral line N (Zero line) , and Earth line E(double color lines), Wrong phase lack protector installed in the electrical box, when you start up the chiller in the first time, there is a electrical alarm of the chiller, maybe it is the wrong phase lack protection, pls change and connect the any two of the phases and start the chiller again. For the single phase power supply, the phase line is L, Neutral line is N, and earth line is E.
- Make sure the pipeline connected well and keep the water valves open. (Refer to the installation sketch map.)
- Confirm the built-in storage tank with full of chilled medium before start the pump. (Note: please choose the chilled medium according to requirements.)
- Pay attention to the reversed running direction of the cooling water pump and the fan of the cooling tower. If pump is with 3phases and running reversed, please exchange any two phases' connection, problem can be solved.

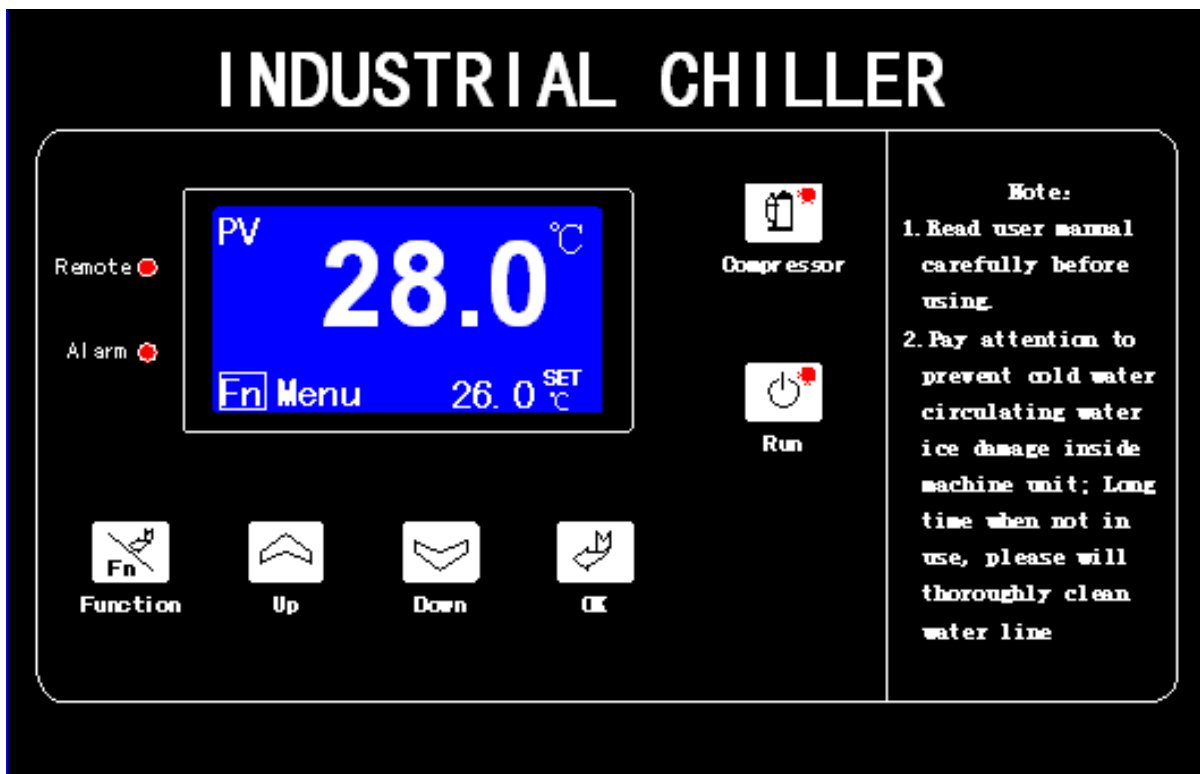
## ● Operation sequence

- Make sure the water system goes well by checking all the valve of the chilled and cooling pipeline.
- Turn on the switch of the General electric power supply.
- For the cooling tower and cooling water pump did not control by the water

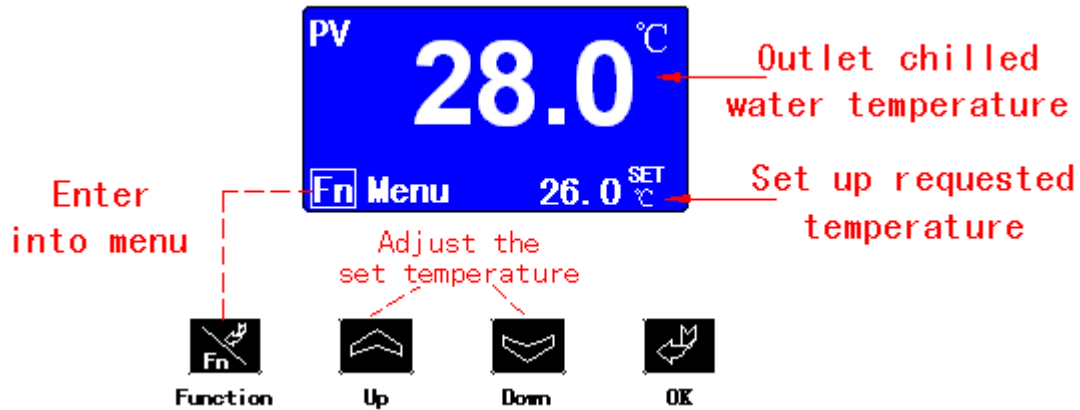
cooled chiller unit, pls first to start the cooling tower and cooling water pump to make sure the cooling water goes well.

- After checking the above steps, pls press the  button to start the chiller, and press  button to start the compressor, and turn off the chiller by press  button.

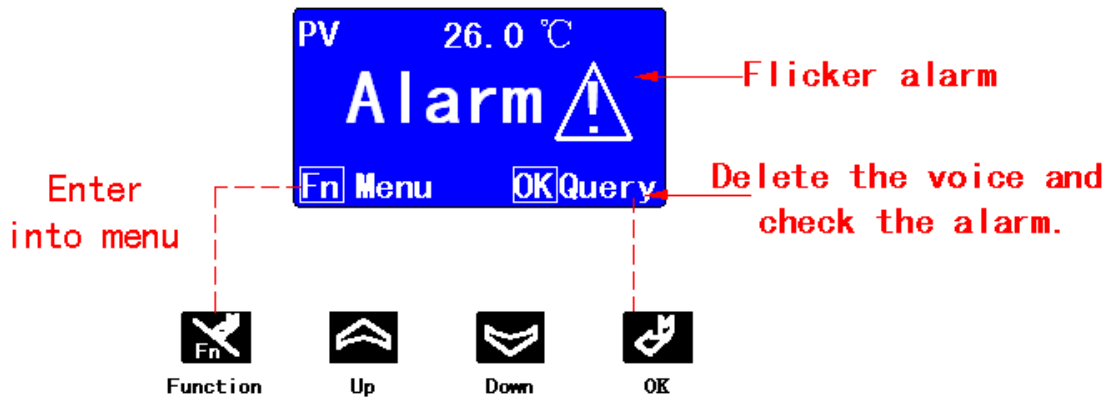
● **Operation panel sketch map and instructions.**



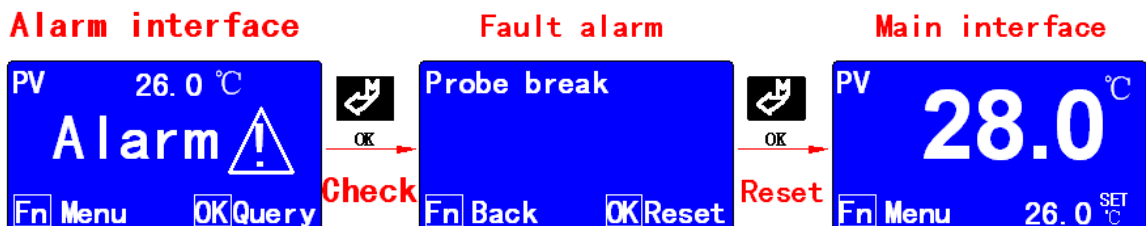
- **Common used interface.**
  - ◆ **Main interface**



◆ Alarm interface




◆ Fault checking and Reset

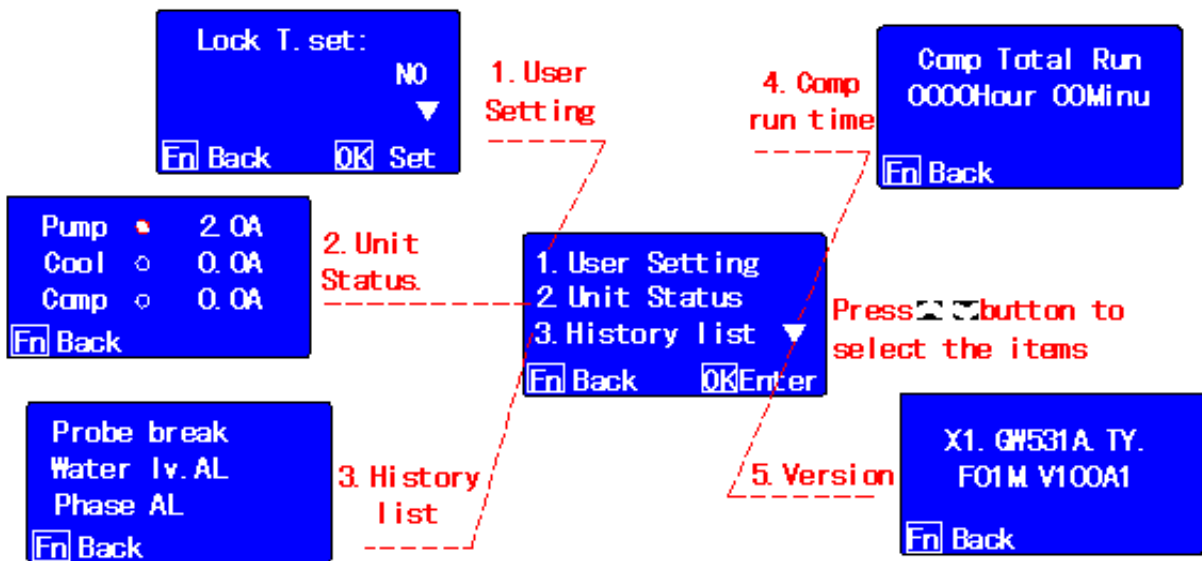


Note: After checking the fault, pls remove it first , then reset the chiller.






■ **Function menu**

- ◆ To press  button to enter into the menu in the main interface.




The function menu include five items as follow:








■ **Start up the chiller unit**

- ◆ Power on by switch on the air –break switch in the electrical box.
- ◆ Press  button, Cold water pump start to run, indicator light on () , then by press the  button to start the compressor( If the setting is one button operation, no need to do this step), the indicator light will on () , the system will in delay status, when the actual temperature  $\geq$  setting temperature+ temperature difference, the fan and cold water pump will run, after 10 seconds delay, the compressor will run, and indicator light  keeps on. Pls refer to the below temperature control theory.

### ■ Temperature setting

By Press  or  button in the main interface to set the temperature you need and confirm the data by press  button( or automatically confirm after 3 seconds).

### ■ Turn off the unit

By press  button, the indicator light on it will flicker, after 10 seconds system delay, the compressor will stop, the indicator light on this  button will flicker, delay more 10 seconds, the Fan or cold water pump will stop, after more 10 seconds, the cold water pump will stop, indicator light in this  button will off. Press  button, indicator light on it will off().

### ■ Temperature control theory of unit:

In the procedure of water temperature rise, when the actual temperature(PV)  $\geq$  set temperature (SET)+temperature difference, the compressor will automatically start , On the contrary, it will stop when the actual temperature(PV)  $<$  set temperature(SET) + temperature difference in the process of water temperature decrease.

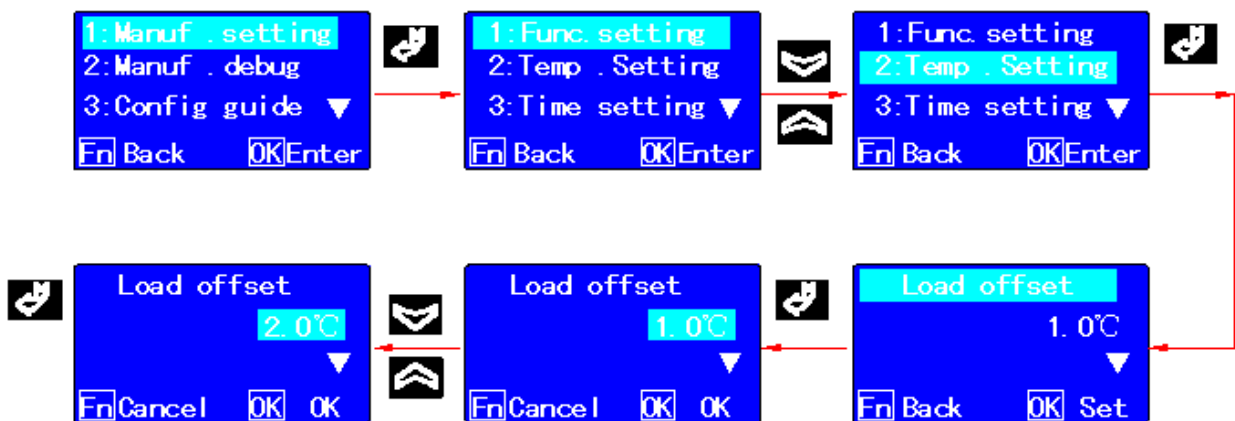
*Note: If reserve the chiller for a long time , pls turn off the general electrical power and drain out the chilled medium in the evaporator*

*Instructions for modifying the setting parameters*

● **Setting of End -user**

Items	Factory setting	Setting range	Remarks
Lock the setting temp.	No	Yes or No	Lock the setting temperature
Set the temp.	12.0°C	-30 ~ 99.9°C	Follow the factory setting to the min./max . limit of the temperature.
Adjust the contrast	32	20 ~ 44	Adjust the contrast of the LCD screen
Control method	local	Local ~ Remote	Remote: it can control the unit by Remote controller.
Screensaver time	0	0 ~ 255 Minutes.	0: no screensaver

■ **Steps for the end- user to modify the parameters.**





● **Manufacturer setting**

Setting items	Parameter name	Factory data	Setting range	Remarks
Control	One button operate	forbidden	Forbidden ~ Use	Use: when press the "start" button, the compressor button will be invalid
	Power down memory	forbidden	Forbidden ~ Use	After power shut off, unit can return to the former working status.
	Method for the fault output	Fault occur, alarm will on	Fault come, and alarm ~ Delete the voice , no alarm output	The distinguish of it depend on the alarm in the relay or not.
	Low water level, pump stop	stop	stop ~ no stop	This alarm on, the pump will stop to run
	Electric current checking	Forbidden	Forbidden ~ Use	It depend on the unit with this module or not.
	Rated current for comp.	0.3A	0 ~ 35.0A	No parameters showed when the "Electric current checking " is Forbidden
	Rated current for chilled system	0.3A	0 ~ 25.0A	
	Rated current for cooling system.	0.3A	0 ~ 25.A	
	3 Phase Power supply checking	Forbidden	Forbidden ~ Use	Checking the Power phase lack and phase inversion fault
	Anti-freezing and cooling	Cooling overload	Anti-freezing ~ cooling overload	Switching value D1 output function selection



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	overload			
Temperature	Load bias	1.0°C	0 ~ 10.0°C	Temp. departure when compressor is running.
	Unload bias	1.0°C	0 ~ 10.0°C	Temp. departure when compressor stop to run
	Set temp. upper limit	50.0°C	12.0 ~ 100.0°C	Scope limitation for customer to set the temperature
	Set temp. lower limit	7.0°C	-30.0 ~ 12.0°C	
	Temp. compensation	0.0°C	-9.9 ~ 9.9°C	Compensation for the outlet water temp.
	Low temperature protect	4.0°C	-30.0 ~ 99.9°C	If the outlet water temp. lower than this setting data, the low temp. protection will arise the fault alarm.
	Overheat early warning	50.0°C	0 ~ 99.9°C	If the outlet water temp. is higher than this setting data, the overheat early warning will arise, no need to stop the unit, it will reset automatically.
	Overheat alarm	60.0°C	0 ~ 99.9°C	If the outlet water temp. is higher than the setting data, this alarm will be arise, and unit keep running
	Overheat return difference.	5.0°C	0 ~ 99.9°C	The return difference of reset for the overheat fault
Time	Delay for the start of cold	10 seconds	0 ~ 255 seconds	Unit stop, the cold water pump will delay to power









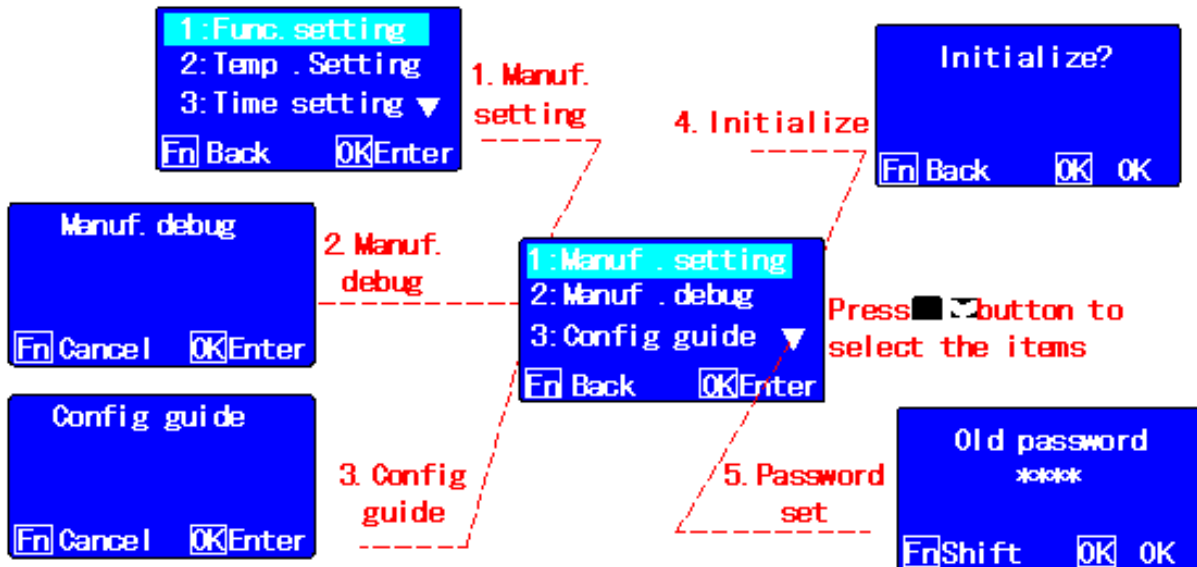
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	water pump			off.
	Delay for the cooling	10 seconds	0 ~ 255 seconds	Unit stop, the cooling system will delay to stop running.
	Capacity control period	5 seconds	0 ~ 255 seconds	
	Compressor protect	60 seconds	0 ~ 255 seconds	Delay time for the comp. start frequently , The time interval for the compressor start twice should be higher than this data
	Eliminate to the general faults	2 seconds	0 ~ 255 seconds	The fault will be considered valid when the general fault time keeps longer than the data.
	Eliminate to the fault of shortage of the water flow	10 seconds	0 ~ 255 seconds	The fault will be considered valid when this fault time keeps longer than the data.
	Eliminate to the fault of the water level	10 seconds	0 ~ 255 seconds	The fault is valid when this fault time keeps long than the data
	Delay time to check the low pressure	60 seconds	0 ~ 255 seconds	When the comp. running time reach to this data, the checking will be started.
	Eliminate to the fault of the low pressure	5 seconds	0 ~ 255 seconds	The fault is valid when the fault time keeps longer than the data.
	The service life of the comp.	0 hour	0 ~ 9999 hours	When the running time of the comp. is higher than

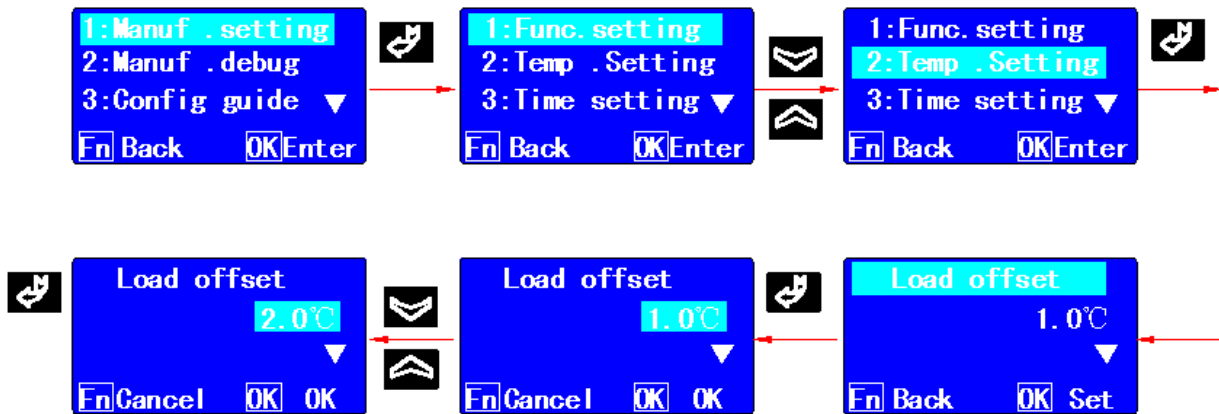
				this data, the comp. will out of service. <b>Note:</b> when setting data is "0" means this parameters is invalid.
Switch	High pressure of comp.	OFF	ON ~ OFF	Selection for the switching value output
	Low pressure of comp.	OFF	ON ~ OFF	
	Comp. overload	OFF	ON ~ OFF	
	Switch of water level	OFF	ON ~ OFF	
	Switch of water flow	ON	ON ~ OFF	
	Cold water overload	ON	ON ~ OFF	
	Cooling water overload	ON	ON ~ OFF	
	Remote control	ON	ON ~ OFF	

● **Function for the manufacturer menu**

Press the  and  buttons at the same time in the main interface, then enter into the **password input interface**, press  or  button to input the correct password( **4561**), then press  button to move the password location, after that , press  button to confirm and enter into the **function menu of manufacturer.**



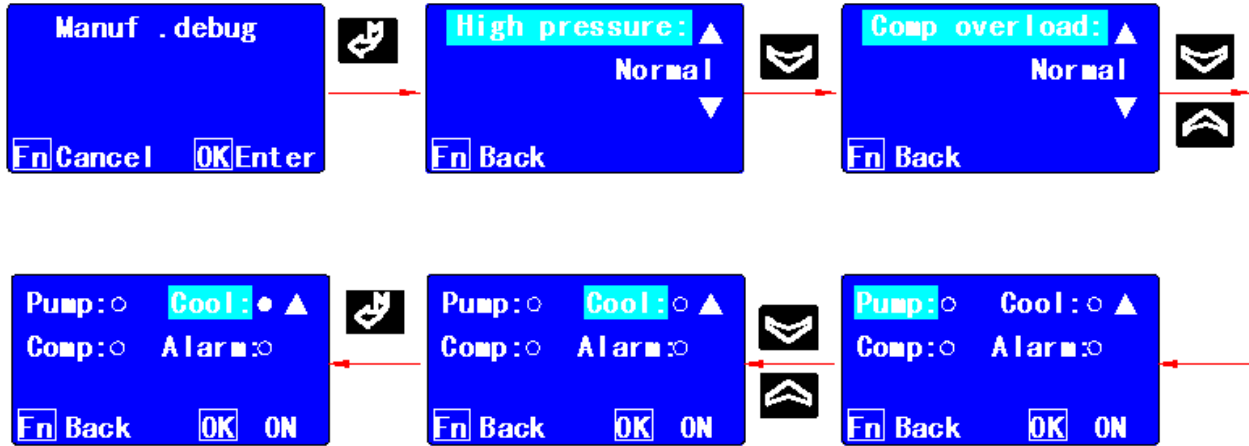
■ **Parameter setting for the Manufacturer**



● **Manufacturer debugging**

The manufacturer debugging can test the working status of three phase, seven alarm outputs and four relay outputs. If the above item is ok, it presents good line connection and correct setting. If it have a alarm, means there is a fault or bad line

connection and incoordinate setting. Debugging steps show as below:



■ **Configuration guidance.**

It can be done to the parameter setting of some common used customer. Details can refer to the Manufacturer setting table.

● **Fault code illustration**

Fault code	Detect items	Result from fault	Illustration
High pressure of comp.	Check the running condition of comp.	Comp. stop, then delay and stop to cool	Check the input whether accordance with the setting of the switching value.
Low pressure of comp.			
Comp. overload			Check the rated current of comp. setting is reasonable or not.
Electric current of comp. too high			
Electric current of comp. too low			Check the circuit connection of comp. is normal or not
Temp. too low	Running detecting	Outlet water temp. is lower than the setting data of low temp. protect.	



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Overheat alarm			Outlet water temp. is higher than the setting data of overheat alarm
Overheat early warning.		Only alarm	Outlet water temp. is higher than the setting data of overheat early warning.
Anti-freezing fault	Power on detection	Comp.stop then delay and stop cool	Check the input is accordance with the setting of switching value or not.
Probe off			Check the wire connection of the temp. prob.
Probe short circuit			
Cooling overload	Detecting for cooling running	Comp. and cold fan stop to run	Check the input is accordance with the setting of switching value or not.
Cooling current is too high			Check the rated current of cooling is reasonable or not.
Cooling current is too low			Check the wire connection of the cooling motor is normal or not
Cold water pump overload	Detecting for the running cold water pump.	Chiller unit power off	Check the input is accordance with the setting of switching value or not.
Electric current of cold water pump is too high			Check the rated current of cold water pump setting is reasonable or not
Electric current of cold water pump is too low			Check the wire connection of the cold water pump is normal or not
Power failure	Power on detecting	Chiller unit power off	Checking the Power phase lack and phase inversion fault
Water flow fault	Detecting for the	Chiller unit power off	check the input is accordance with the setting of switching value or not.



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	running cold water pump.		
Water level fault	Detecting for the running cold water pump.	Chiller unit power off, refer to "water pump stop for the low water level "	
Maintenance to unit	Running detecting	Power off and stop to run	The running time of comp. are over setting used time of comp.
Parameter abnormal	Power on detecting	Unit stop to run	Reset the parameters or contact the manufacturer

### ● Trouble removal

State	Reason	Solution
Power supply normal, unit can not be operated	①temperature controller is broken	①change the temperature controller.
Power switch trip out	①short circuit ②main circuit overload ③Breaker fault	①check the short circuit reason , solve it. ②check the overload reason and remove the overload operation like the rated current of breaker is too low, it can change the breaker., ③change the breaker
Three phase fault	①anti-phase: The pump, the compressor or the fan is running reversed ②default phase: The pump, the compressor	①Exchange any two phases of the power supply; ②Test the three-phase status with a multimeter for checking that the power supply is in good condition; ③ check the three phase detecting input whether can remove the fault and correct , if not, pls change a new one.



	<p>or the fan can't normally work</p> <p>③the three phase input detecting is abnormal</p>	
High pressure alarm	<p>①bad heat dissipation</p> <p>②Switch of the high pressure is damaged;</p> <p>③line fault of input quantity</p>	<p>① pls follow the footnote( 1 )to solve the problem</p> <p>②change for a new pressure switch</p> <p>③check the input quantity and remove the line fault</p>
Low pressure alarm	<p>① short of refrigerant, low pressure is too low and protection switch is trip out</p> <p>②the temp of outlet water and evaporator is too low.</p> <p>③line fault of input quantity.</p>	<p>① Follow the footnote (2)to solve the problem</p> <p>②Check whether the water tank is lacking water and the circulating pump is running or not; While everything goes well, the chiller should be restarted or reset the low-pressure switch by hand, if evaporator freezed , pls drain out the iced water and added some hot water .</p> <p>③check the input quantity and remove the line fault</p> <p>Note: Don' t take the hard objects to knock the ice, otherwise the copper pipe will be damaged and lack of refrigerant or water will enter into the refrigerating system and damage to compressor.</p>
Overload alarm	<p>①The voltage is abnormal;</p> <p>②bad heat dissipation</p> <p>③pressure and water flow of water pump or is too high</p> <p>④The bearing of compressor, the motor, or the pump is</p>	<p>①The voltage of the three-phase source is decreasing or the voltage is not stable. Please adjust the voltage and check the reason of the missing phase, pls adjust the pressure and find the reason</p> <p>②pls follow the footnote (1)to solve this problem</p> <p>③Check the water system, adjust the water flow to the scope of the rated water flow.</p> <p>④change the new bearing.</p> <p>⑤change a big new thermal overload relay or adjust higher than normal data.</p> <p>⑥Lock the joint point of line circuit</p>



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	<p>damaged;</p> <p>;</p> <p>⑤The overload relay is too small or its regulating value is too low;</p> <p>⑥The joint of the circuit is not good or flexible;</p>	
<p>fault indicator not on and comp. can't run</p>	<p>The protection device is shut off by itself</p>	<p>Please deal with the problem according to Footnote(4)</p>
<p>water in the water sink is not cold or trip out for low pressure</p>	<p>①The capacity is not enough;</p> <p>②The refrigerant is not enough;</p> <p>③The water tank is choked by the refrigerating medium;</p> <p>④The valve block is broken;</p> <p>⑤The temperature setting data is too high;</p>	<p>①Expanding the capacity of the major machine;</p> <p>②Deal with the problem according to the Footnote(3);</p> <p>③Change the choked part, and fill refrigerating medium after dealt with the problem with drying agent or expansion valve in the state of vacuum;</p> <p>④Change the compressor, confirm it according to Footnote(3)</p> <p>⑤Adjust the temperature more lower;</p> <p>⑥Change for a new switch;</p> <p>⑦If the efficiency is low, it can be dealt according to Footnote(1);</p> <p>⑧Change for a new sensor;</p>



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	⑥The temperature switch does not work; ⑦Bad heat dissipation ⑧The sensor does not work;	
Short of water and shortage of water flow	①Water is not enough in the water tank; ②little water flow;	①Add water into the water tank; ②Check that whether each valve is fully open;

● **Notes for operation**

- The refrigerating water pump should not work if there is no water in the water tank; (For the chiller unit above 7.5 HP, there is a built-in water level protector in the water tank. While the water level is too low or the tank is empty, the water pump will be stopped automatically, and it displays the water-level fault code and alarm.)
- The operating switches should be avoided frequently switching over.
- While the refrigerated-water temperature reaches to the set temperature, the compressor will stop.
- In order to prevent the evaporator freezing, do not set temperature below 5°C;( except the low temperature chillers)
- To make sure the best refrigerating effect and best state, please clean the condenser, evaporator and the water filter regularly.

Note: Please turn off chiller as long as if it is alarming. And start chiller after the

failures are removed according to the way stated as item 7 and item 10. Or you can contact with our after-sale service staff shortly.

*Note (1) :*

*Bad heat dissipation and the solution*

While the condenser cooling bad, the compressor will be inefficient, the operating current creased; While high pressure of the air cooled chiller reaches 24kg/cm<sup>2</sup>, and high pressure of the water cooled chiller is up to 20 kg/cm<sup>2</sup>, the compressor can be trip-out under the protection of the high pressure switch, it will stop running because of bad cooling, high pressure overload, and it will display fault code or fault indication, then please check that the circulating water in the cooling tower is running well, the temperature of cooling water is not overhigh, the fan of the cooling tower and the water pump are running, and the cooling water valve is fully open (If it is an air cooled chiller, please confirm that the radiator is not dirty or choked.). All the stated come back to normal, the chiller can be running well after restarting by pressing "REST" . If the high pressure overload state is a frequent problem, please clean the condenser as soon as possible.

*Note (2)*

*Solution to low pressure for the shortage of refrigerant:*

1. While water temperature is over 5°C and the pressure displays by the low pressure gauge is below 2 kg/cm<sup>2</sup>, indicates shortage of refrigerant , firstly the leak should be filled, the dryer filter should be changed, and it should be drawing vacuum again, and incharge refrigerant with proper volume.

2. While leaking part in water, please stop the chiller immediately, and discharge water of the water tank quickly. In order to avoid that the chiller is damaged badly for the compressor suck water, please notify the after-sale service for dealing with the problem.

*Note (3)*

*Check the condition of low and high pressure:*

If the compressor of the water cooled chiller is running well, it is the best state while it displays high pressure within the scope of 12.5 kg/cm<sup>2</sup> to 15 kg/cm<sup>2</sup> (while for the air cooled chiller, it is best within the scope of 14 ~ 17 kg/cm<sup>2</sup>), but it should not be above 19.5 kg/cm<sup>2</sup>. If the pressure of the water cooled chiller is above 19.5 kg/cm<sup>2</sup>, or the pressure of the air cooled chiller is above 24 kg/cm<sup>2</sup>, the high pressure switch will turn off by itself, then please deal with it according to Footnote(1). It is the best state when the low pressure is within the scope of 3.1 kg/cm<sup>2</sup> to 4.5 kg/cm<sup>2</sup>, but it could not be lower than 2 kg/cm<sup>2</sup>. If the low pressure is below 2 kg/cm<sup>2</sup>, the switch of the low pressure will turn off by itself, please deal with it according to Footnote (2).

If the difference between high pressure and low pressure is little or they are equal, while the compressor is running, that means the valve of the compressor damaged or broken up, then the machine should be stopped immediately and notify the company to deal with the problem. Please be aware that the stated conditions would happen when the compressor is running. If the compressor is not operating, it is normal while the high pressure and the low pressure come into equilibrium.

*Note (4)*

*If the fault indicator and the protecting switch are both normal, but the compressor can not start, please check the following:*

1. The set temperature is too high or the temperature switch is damaged;
2. The switch is damaged;
3. The anti-freezing switch is damaged;
4. The pressure switch is shut off by itself or damaged;
5. The overload protector of the compressor is damaged or turn off by itself;
6. The electromagnetic relay is damaged or the overload protector is damaged;
7. The level of the water tank is too low;
8. The refrigerating water protecting switch is damaged;

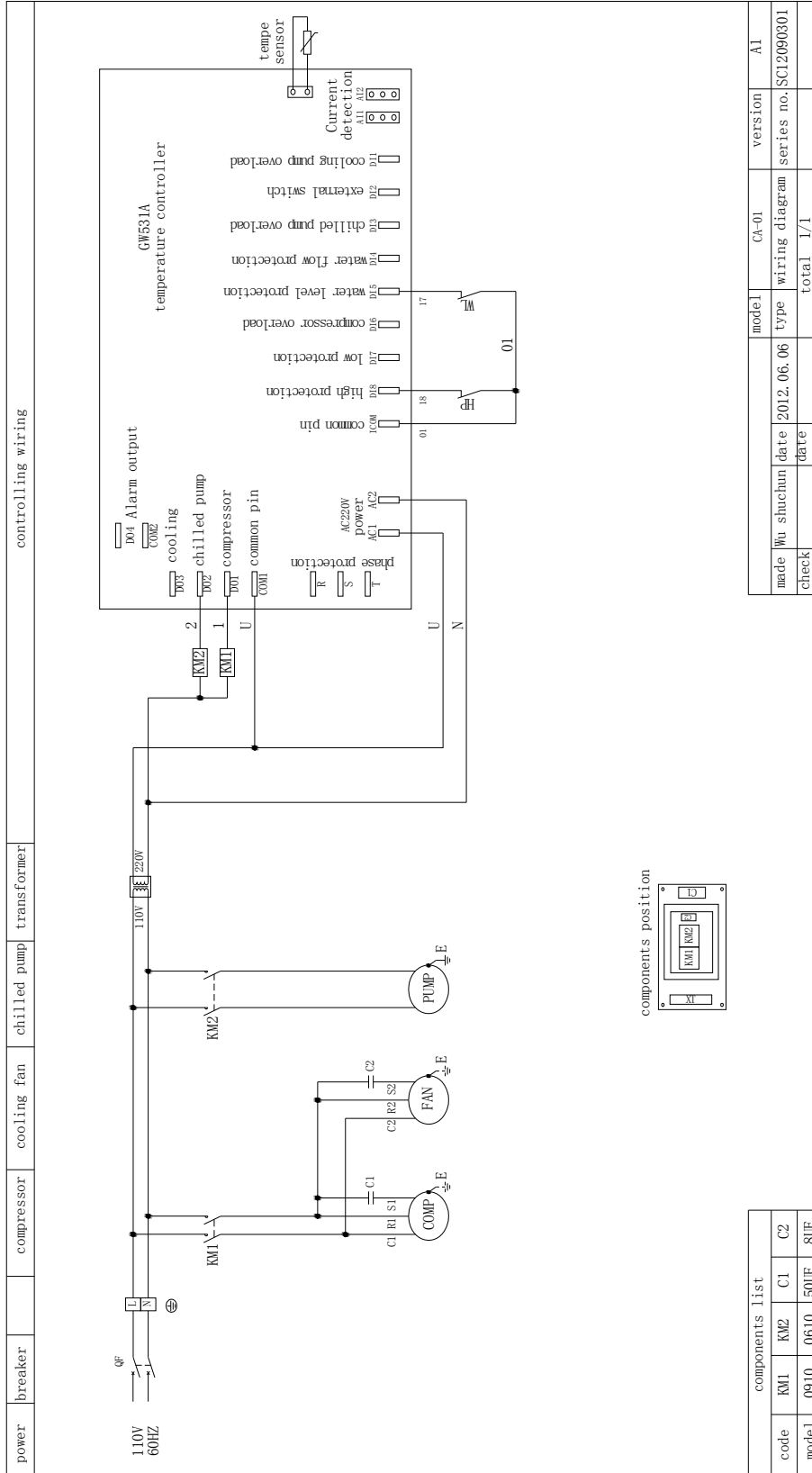
Note: The compressor can not be operated if the stated controlling switch or the circuit is faulty;

### ● **Maintenance**

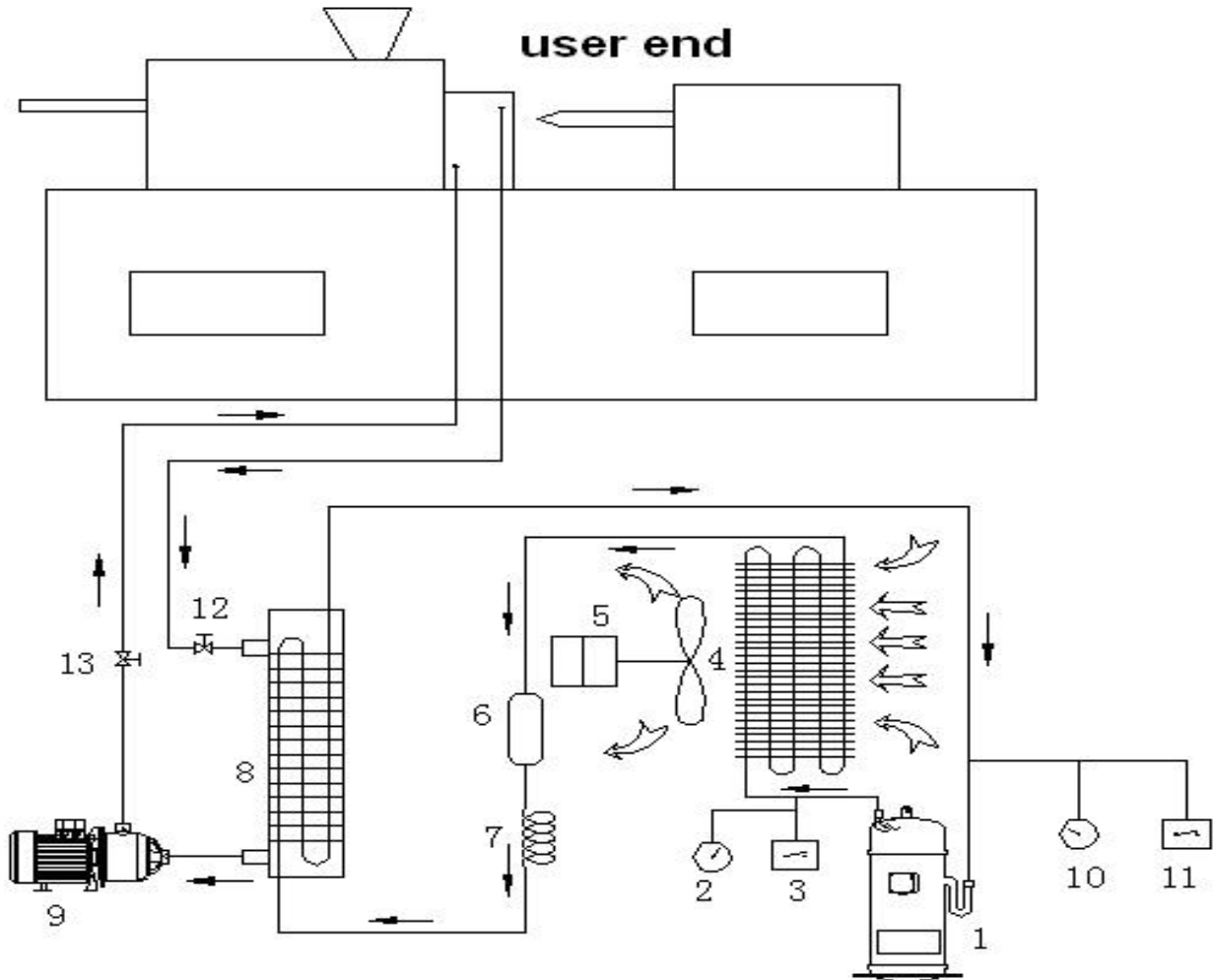
Please clean the condenser and the evaporator regularly for keeping the unit running well;

1. Keep the cooling tower neat and clean, and clean it regularly, and confirm there are no adulterant and other obstruction;
2. Please clean the surface of the cooler of the air refrigerating chiller regularly and keep the functional performance of the machine well.

● **Electrical circuit diagram. ( pls see attached )**



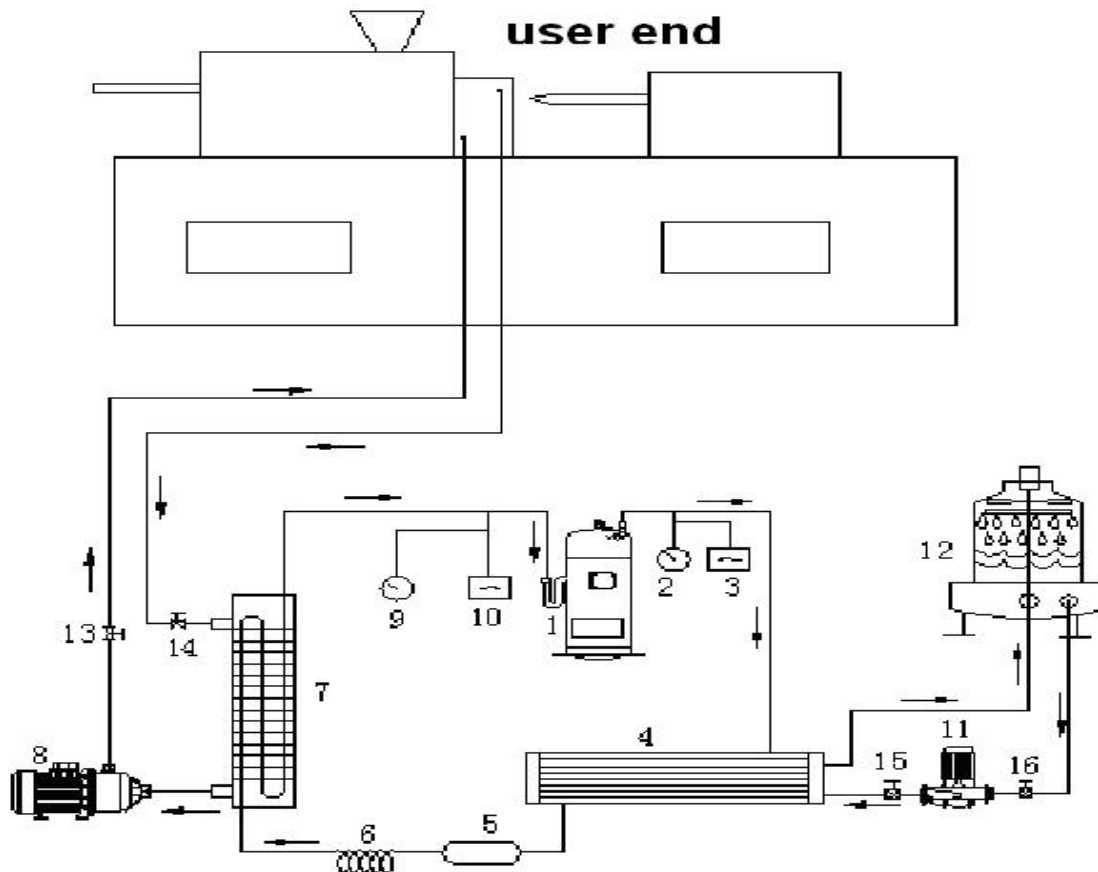
● **Internal structure schematic diagram of the air cooled chiller**



1 . Compressor	7 . Capillary ( Expansion valve )
2 . High pressure gauge	8 . Evaporator
3 . High pressure protector	9 . Refrigerating water pump
4 . Condenser	10 . Low pressure gauge
5 . Cooling fan	11 . Low pressure protector
6 . Drier Filter	12.13 . Water flow switch

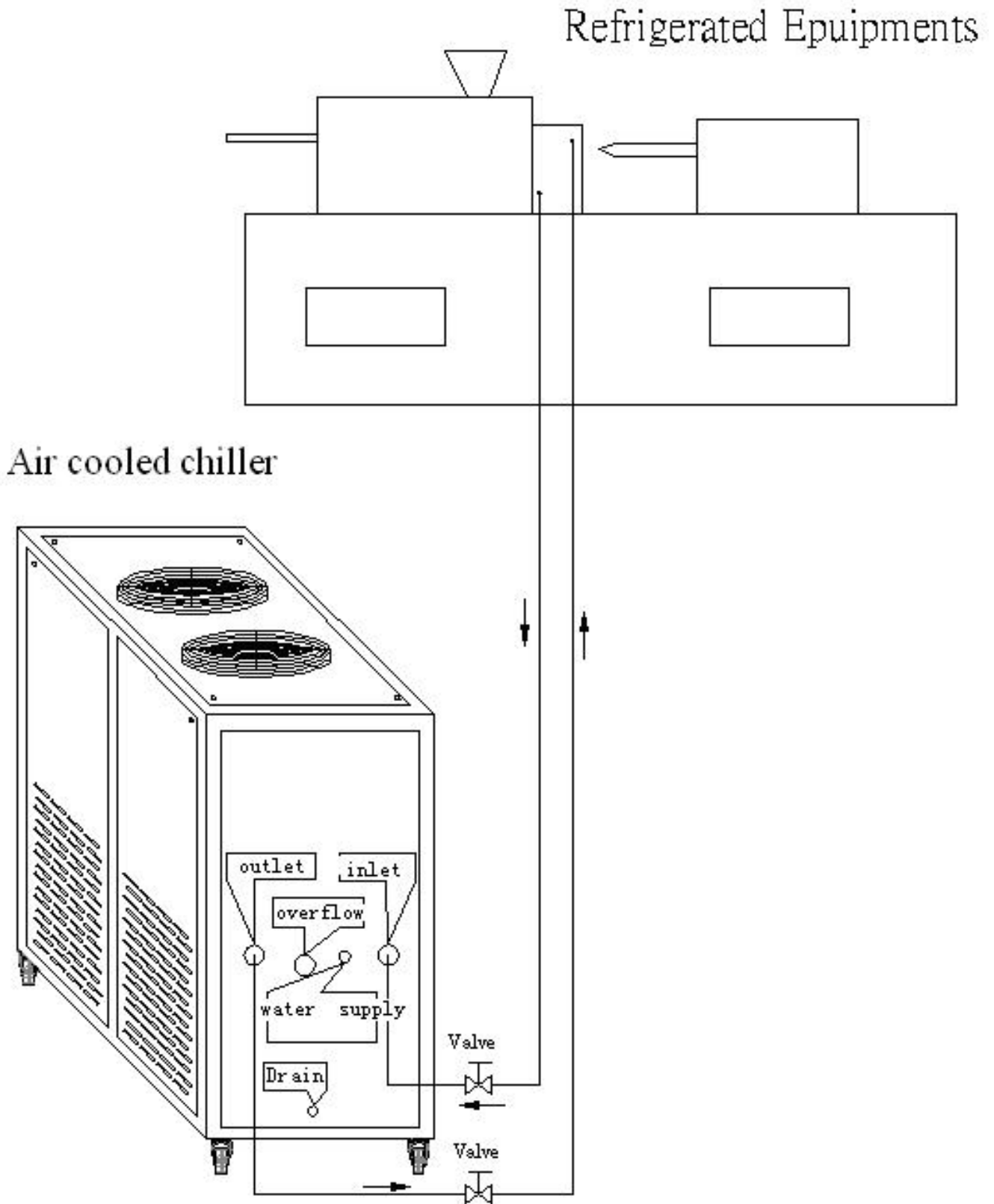


- **Internal structure schematic diagram of the water cooled chiller**

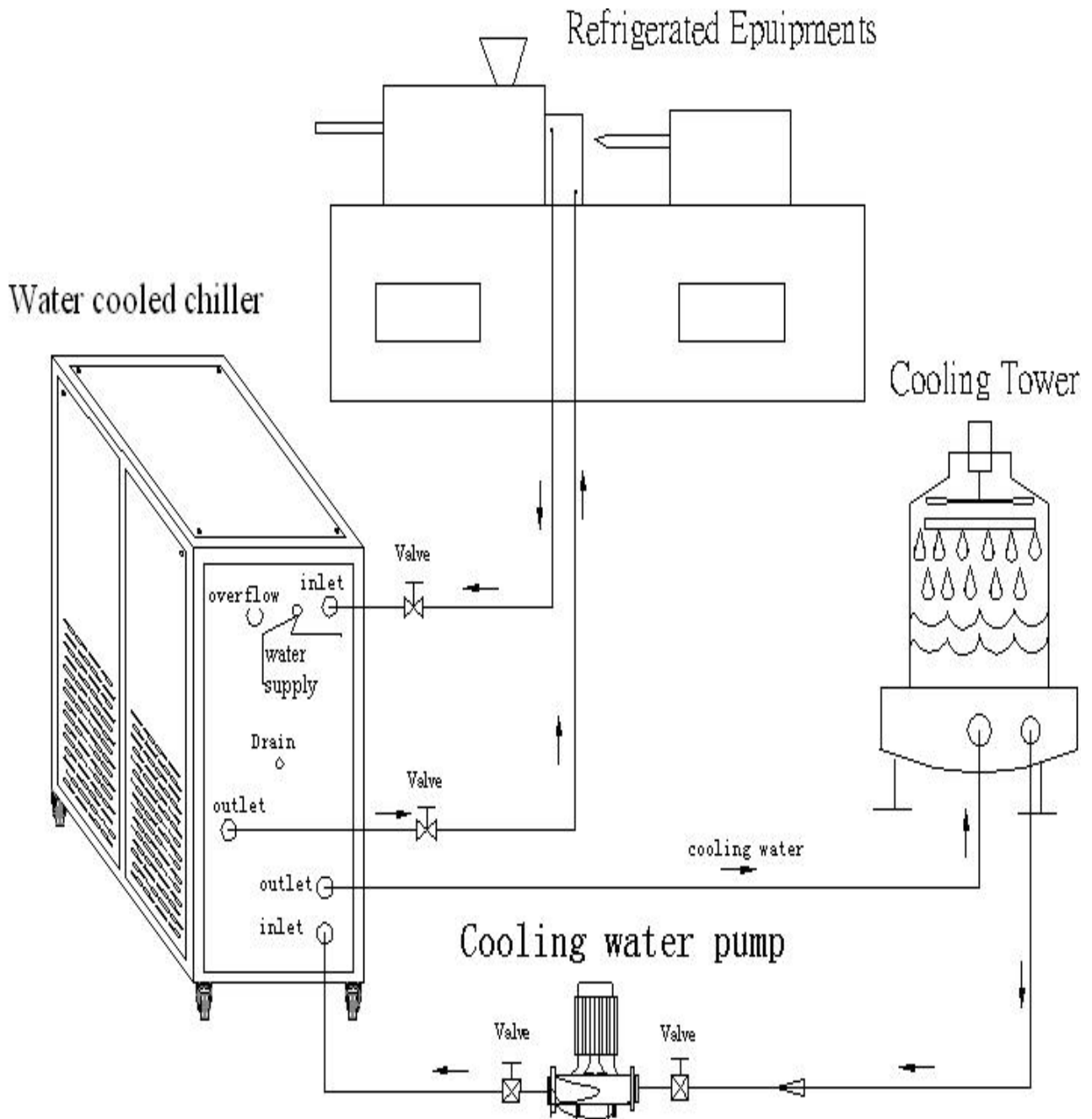


1 . Compressor	8 . Refrigerating water pump
2 . High pressure gauge	9 . Low pressure gauge
3 . High pressure protector	10 . Low pressure protector
4 . Condenser	11 . Cooling water pump
5 . Drier filter	12 . Cooling tower
6 . Capillary ( Expansion valve )	13、 14、 15、 16 . Water flow switch
7 . Evaporator	

- **Installation sketch map of Air cooled chiller**



- **Installation sketch map of Water cooled chiller**





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## WARRANTY SERVICE

Shenzhen Coolsoon Refrigeration Co., Ltd will offer guidance for installation and testing after the customer bought the chiller unit.

Warranty started from the date the chiller shipped out of the factory of Shenzhen Coolsoon Refrigeration Co., Ltd. Under warranty, Coolsoon will provide one year (screw type chiller offer two years warranty) free service at the circumstances of normal installation, use, repair and maintenance (except human factor and force majeure).

Coolsoon will offer 24 hours customer service. If any problem of the chiller unit, you can make a call at any time, and we will offer the telephone guidance in time

Under warranty, if any part of the chiller is broken on account of quality problem, after confirmed by both parties, customer can buy the replacement themselves, and Coolsoon will pay accordingly; or Coolsoon send a replacement after received the broken one.

If the problem is caused by human factor, or the chiller is not under warranty, Coolsoon will offer payable service.

Note: Customer should not do any change for the internal parts or the appearance of the machine without the permission of the Manufacturer. Otherwise Manufacturer will be irresponsible for the follow-up related matters of the sold machine.

Any question about the above content, welcome to consult with us.

### COOLSOON AUSTRALIA GROUP

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