

Preface

This is introduction to CCA -420 type cooling water circulation device Setting, operation, failure, solution , repair and maintenance, etc.

Before using this product, please read and fully understand this instruction manual carefully.

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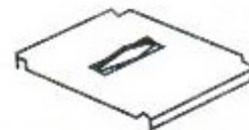
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Packing List

Before installation,please check the kinds of parts and quantity.

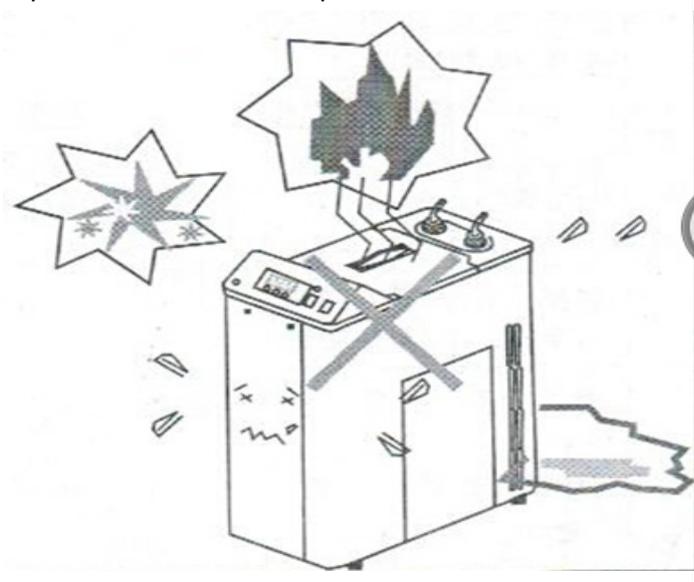
Packing contents		Qty
1.	Main Engine	1
2.	Flume cover	1
3.	Instruction Manual	1
4.	warranty card	1

Flume cover



1.Security considerations

This product is not explosion-proof structure, please be careful.

 <p>ALARM</p>	<p>Be careful when using flammable and combustible liquids.</p> <p>They are placed under the condition of room temperature above will be volatile, in case of fire, fire, it may cause a fire, explosion, etc.Please keep ventilation.</p> 
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2.Product profile

2.1 Usage

 <p>ALARM</p>
<p>Please don't modify this product.Please do not use it for other purposes but specification.</p> <p>Modification or use it for other purposes , it will cause electric shock accident or equipment failure.</p>

This product is the cooling water circulation device.

Working principle: Using the refrigerator to make the liquid cooling,and then through the circulation pump to operate external circulation.It is mainly used in the rotary evaporation (1 L, low boiling point solvent concentration)

2.2 Specifications

Name		Cooling water circulation device	
Model		CCA-420	
Circular mode		Closed circulation	
Circular temperature		5~35 °C ※ 1	
Performance	Temperature range ※ 2	-20 ~ +20 °C	
	precision of temperature controlling ※ 3	±2 °C	
	Cooling capacity ※ 4	Liquid temperature Condition	RT 20 °C
		At 10 °C	450W(about 385kcal/h)
		At 0 °C	350W(300kcal/h)
	Circulation Capacity ※ 5	At -10 °C	260W(220kcal/h)
		Maximum pumping height	4.2/5.6m(50/60Hz)
	Maximum flow	9/10L/min(50/60Hz)	
Components	Temperature control mode	Cooling machine control	
	Temperature setting and display	Membrane keys, digital setting LED digital display (minimum 0.1 °C) Setting temperature, temperature display alternately	
	Temperature controller	Electronic digital setting, digital display	
	Temperature sensor	Critesister	
	Cooler and refrigerant	Output power 350W(piston-type)·R22	
	Water tank	Total capacity is 4 L.Practical capacity is 3 L The material is SUS 304	
	Water tank cooling coil	Copper(chromium plated)	
	Diameter of cooling water nozzle	Outer diameter 11*inner diameter 7	
Specification	Overall dimensions (mm)	W220*D430*H600	
	Water tank dimensions (mm)	W130*D250*H130	
	Rated power	AC 220V 50Hz	
	Input power	3.7A 800VA	
	Weight	About 25kg	

※ 1 **Condition**

● Environment temperature range is 5~35°C under the temperature adjusting range from -50 °C to 50°C.

※ 2 **Condition**

● This machine have no built-in heater.

※ 3 **Condition**

● RT : 20°C

● Circulation volume : maximum

● Voltage : AC220V 50Hz

● The temperature control precision depend on , liquid circulation volume, kinds of refrigerant, heat load and temperature etc. Because of other factors, It may not get the prescribed scope.

※4 **Condition**

● RT : 20°C

● Circulation volume : maximum

● Voltage : AC220V 50Hz

● Refrigeration capacity is ±5% by expressing ability

● The temperature control precision depend on , liquid circulation volume, kinds of refrigerant, heat load and temperature etc. Because of other factors, It may not get the prescribed scope.

※5 **Condition**

● RT : 20°C

● Circulation volume : maximum

● Voltage : AC220V 50Hz

● Circulating capacity is ±10% by expressing ability

● Circulation capacity depend on the two kinds of refrigerants conditions of use.

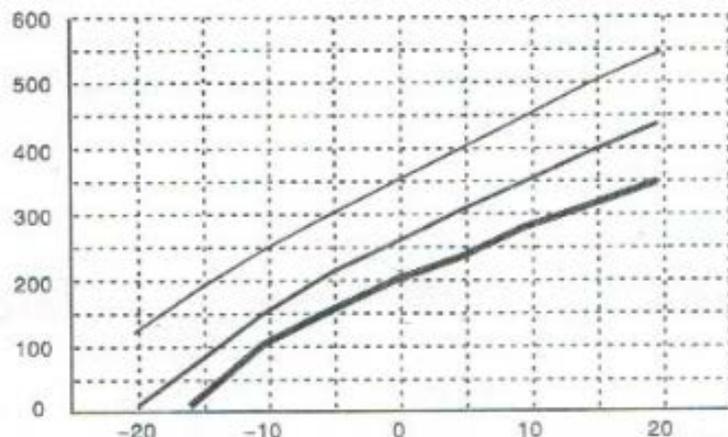
2-3 Cooling capacity curve

●Condition 220V 50Hz

●Circulation volume : maximum

— RT:20°C
 — RT:30°C
 — RT:35°C

Refrigerating Capacity(W)

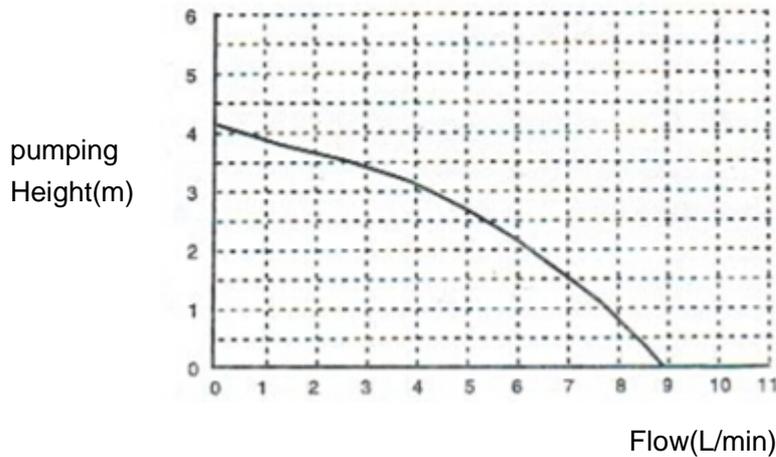


Liquid temperature(°C)

2.4 circulation capacity

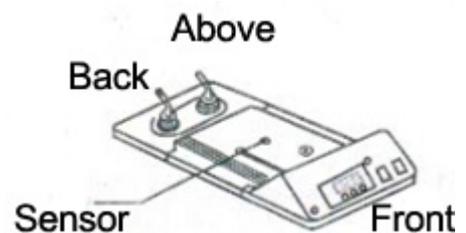
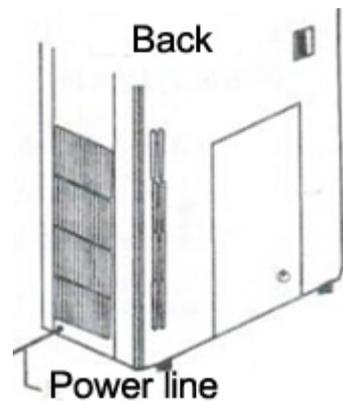
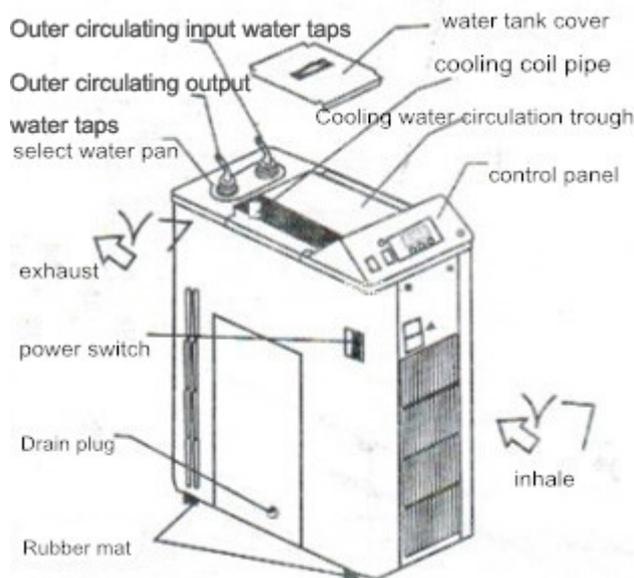
Condition

● 220V ● Water temperature ● 20°C



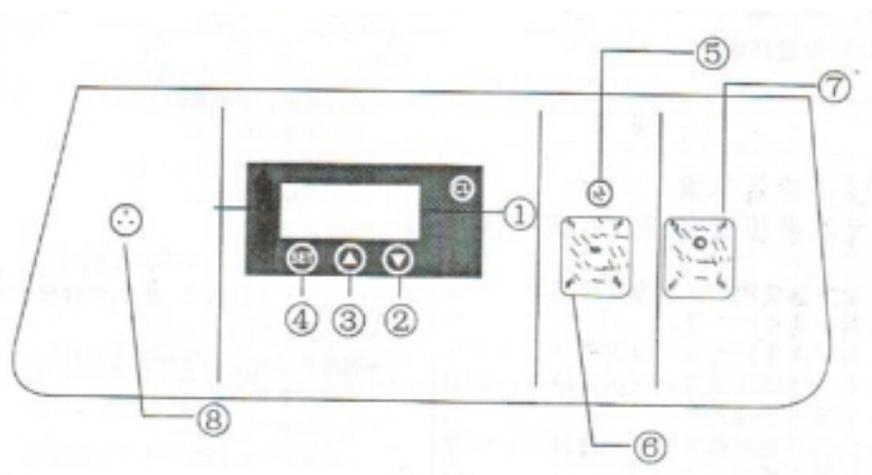
Circulation capacity depending on the state of piping, the kinds of refrigerant .
If the device no-load, it will lead to pump failure.

2.5 Names of whole product



Component part of the device adopted the nonmetallic material, compared with the metal, the plastic, rubber products will occur deformation, discoloration and broken easily within heated, the sun or contact solvent, circulation fluid, cleaning agents and so on.

3.The name of the operation panel and function



NO	Name	Function
1.	Display window	Display current temperature and parameters.
2.	Up key	Press this key, the setting value is increasing.
3.	Down key	Press this key, the setting value is decreasing.
4.	Setting key	Display the temperature and into the state of setting.
5.	Light of circulating pump	Display the information of circulating switch.
6.	Circulating pump switch	Control the circulating pump powered on/off switch.
7.	Refrigeration switch	Control the refrigeration powered on/off switch switch.
8.	Refrigeration lights	Display the information of Refrigeration switch.

4. Setting

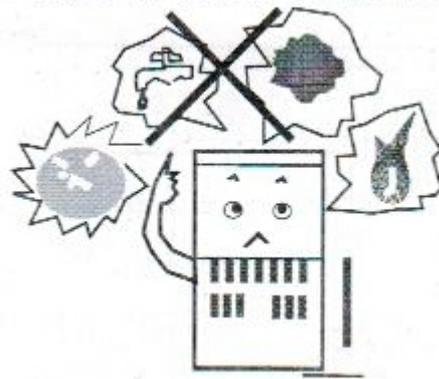
4.1 Setting environment

 ALARM
<p>Pay attention to the environment, especially the set place, air conditioning and ventilation.</p> <p>This product adopt air cooled type refrigerator, discharge heat from device. In order to avoid environmental temperature increased because the discharge quantity of heat, please select a well-ventilated place. Or there be equipped with air conditioning. Ambient temperature is too high that reduce the operation efficiency and affect the cooling capacity. Moreover, The malfunction occurred easily in refrigerator within high temperature and high pressure .</p>

Please select follow place when setting device:

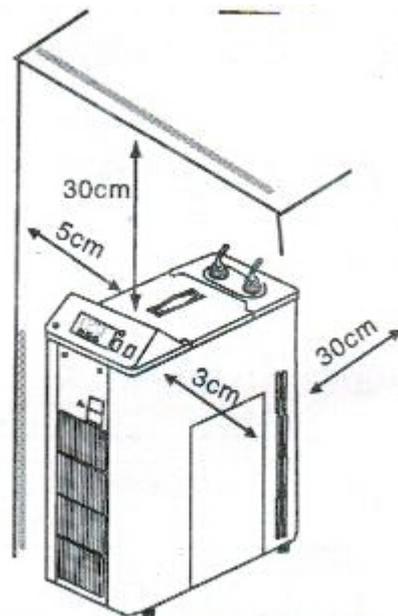
- There is no direct sunlight .
- Well ventilated, or where there is plenty of ventilation
- There is no combustible solid, liquid and gas nearby.
- No condensation
- Low humidity or not easily drop of water drops.
- Less dust
- Smooth place

(When handling, please confirm the weight of the product)



4.2 Setting conditions

 ALARM
<p>Make sure there is a certain space around equipment, in order to ensure product's performance, keep some space between the roof and wall, as shown as picture in the right..</p>
 ALARM
<p>Please do not put things on the instrument.</p>
 ALARM
<p>Products have a certain weight, please pay attention when handling. CCA-20 about 25kg</p>



4.3 Setting

 ALARM
<p>Main engine can not tilt exceed 15 ° . This device carries freezer. Don't be laid flat or tilted more than 15 ° .</p>

4.4 Connection of power

 ALARM
<p>Confirm the power supply voltage, number of phase and current are properly . connected.If the power supply connection is wrong, it will cause fire or get an electric shock accident.</p>

 ALARM
<p>Please connect ground wire correctly.</p> <p>In order to prevent electric shock accident, please do not connect the ground wire with the gas pipe or water pipe.</p>

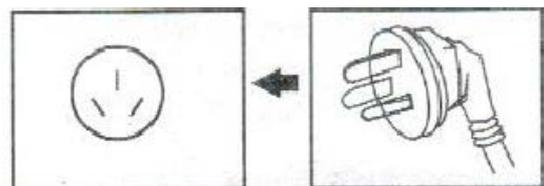
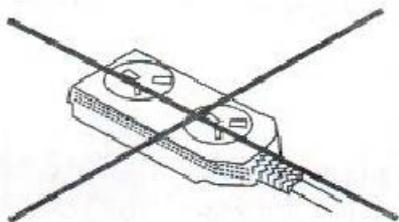
 ALARM
<p>Confirm the power supply voltage, number of phase and current are properly . connected.If the power supply connection is wrong, it will cause fire or get an electric shock accident.</p>

Model	Power supply	
	Voltage	Current
CCA-420	AC220V	10V

① Please confirm the product model and the connection with the supply voltage, phase number of phase and the electric current.

The required power supply as shown as the right picture.

② Please make sure the socket of the setting place. Two phase with ground wire
 At this time, do not let it powered on .



5.Operation

5.1 Preparing procedures

 ALARM
<p>Be careful when use the flammable combustible liquid.</p> <p>Some flammable combustible liquid will easily evaporate under the condition of above room temperature (individual is under room temperature) .In case of fire source.it may cause a fire, explosion, etc.Please ventilated well .</p>

 NOTES
<p>Hose should not be too long .</p> <p>Resistance of hose is large, It will reduce the circulation volume of water.Affect the cooling effect, cause uneven temperature distribution in circular groove.In addition to refrigerator, increase the extra load to circulating pump and easy to cause failure.</p>

 NOTES
<p>Do not use corrosive liquid to circulating line.</p> <p>Device internal circulating line material is copper (plating), stainless steel, brass (plating), ptfe, polyacetal, silicon rubber, polystyrene brace ether, polypropylene, ethylene propylene rubber, NBR.Please choose the no corrosive liquid to above material .When corrosion is serious, the circulation line components may be damaged.</p>

 NOTES
<p>Equipment can't no-load operate and interrupt the flow.</p> <p>It may cause circulation pump failure.</p>

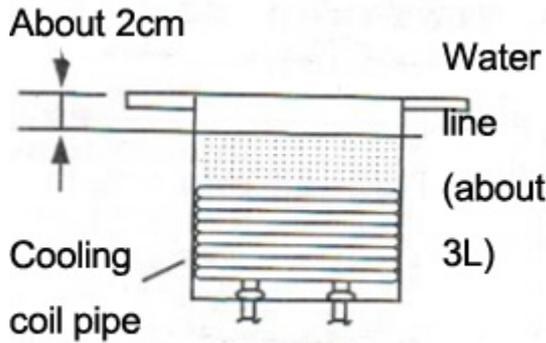
The connection of pipe, rubber hose.Loosen the fixed nut of water taps, check whether the sealing ring are put in the sealing ring grooves .Fasten the water taps, adjust water taps direction before fixed , tighten the nut to avoid leakage.

- Make the outer circulating output water taps, outer circulating input water taps and need to cooling equipment connect together with hose(inner diameter :9mm).
- Hose should be fixed with a clamp to prevent falling off.
(Hose and clamp are not accessories.)
- Please don't screw water taps too strong.
- In order to avoid leakage, breakage, please do not adjust the direction of the mouth taps when operating.
- Choose appropriate hose with compression and heat resistance, It's not easy to be corrode .

When pull the hose,Please do not bend or break it.

2. Injection of medium

- ① Confirm whether the drain cock fall off from the drain-pipe.
- ② Adding medium to the cooling circulating tank.(About 3L)



- Please use antifreeze when temperature is less than +7 °C.

But when using glycol and indirect refrigerants, it will be a higher viscosity under the condition of low operating temperature. And flow has decreases, There is uneven distribution of temperature in circular groove. please add some of water.(Different concentrations have different frozen temperature)

- Please do not use with the foreign body circulating fluid, it will cause the machine breakdown.

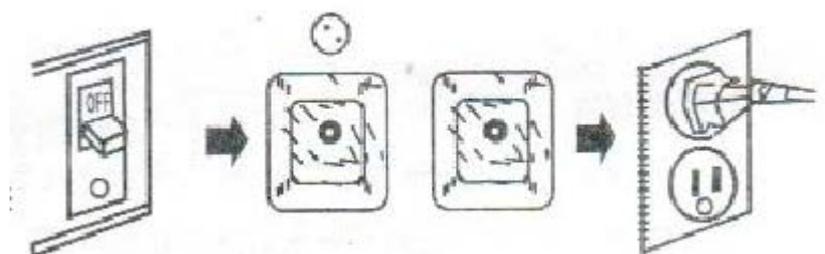
- ③Put the tank cover on the host

 NOTES
<p>Please do not drip water to the control panel. Do not drip water to the control panel when add water to the water tank. Otherwise, It will cause the malfunction of control panel and also getting an electric shock accident.</p>

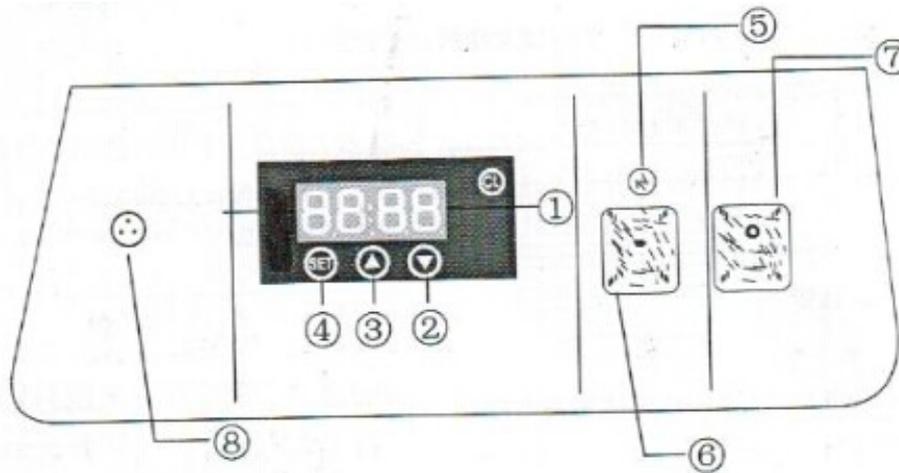
Component part of the device adopted the nonmetallic material, compared with the metal, the plastic, rubber products will occur deformation, discoloration and broken easily within heated, the sun or contact solvent, circulation fluid, cleaning agents and so on.

3.Connection of power plug

Before connect the power plug with the socked please confirm power switch,host switch and circulating pump switch are closed.



5-2 Method of operation
Control panel



- | | |
|-----------------------------|------------------------------|
| 1.Instrument display window | 5.Circulating pump indicator |
| 2.Going up key | 6.Circulating pump switch |
| 3.Going down key | 7.Refrigeration switch |
| 4.Set key | 8.Refrigeration indicator |

1.Please open the main engine switch

Open the switch of refrigerator , the display will show the current temperature

*When the liquid temperature setting value is high water, frozen the opportunity to start automatically, do not start .Set the desired temperature.

2.Operation

After energization,show “888...” 4S step into running state,PV window displays the current temperature ,press SET key,show“-SP-” two seconds,SP light,indicate the temperature setting number,Press the SET key again,log off setting condition

When the controller of the sensor is broken,PV upper part display window show“□□□□”,When the sensor short,PV bottom display window show“□□□□”,Please carefully check the sensor like the above situation , or directly replace the sensor .

3.Inter parameter

In the normal state long press SET key for 4 seconds,display“- LC-” two seconds,display parameters “0000” ,input the correct password 3. Click the SET button to enter the internal parameters,in the internal parameters of state, press the button for 4 seconds.

Exit the internal parameters.click the SET button to set the various parameters, two seconds, after the display parameters, display parameters are as follows:

Character parameter	Parameter name	Function description	Range (factory parameters)
cL	Refrigeration return difference	When the measured temperature > (SP+cL) protection time > = cT,open compressor,when the measured temperature < (sp-cL) compressor	0.0~rH(2.0) °C
ct	Delay Time	Compressor delay time,twice starting time≥cT minute	0~600S (180)
rt	Display correction	The actual temperature measurements (mercury thermometer readings) = the current display value +Pb	-99.9~100.0(0.0) °C

4.Refrigeration operation

Determination of temperature is higher than the set temperature, the freezer started. When the temperature drops below the set temperature, the freezer stop running.

*In the beginning because of environmental temperature conditions of use run-time, chiller start up sound is higher, it is not unusual.

Freezer refrigerator after starting, the refrigerating capacity is low, with the refrigerator temperature will reach refrigerating capacity usually. Then, before suspected failure, firstly run 30 minutes see below the cooling

5.Please connect the pump switch

Circulating pump indicator lights, pump start circulating liquid

At this time, please confirm the connection hose, if the faucet installation leak

*If don't liquid,the pump inlet air,please exhaust air

The exhaust operation

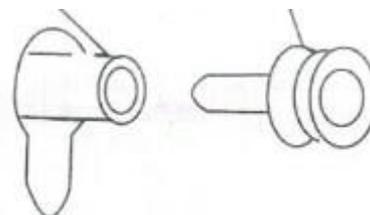
*Unplug the drainage pipe embolism ,ensure the cooling fluid from the drain outflow after embolization, then plug in.

*Next, switch off repeated circulation pump 2-3 times, which will air out

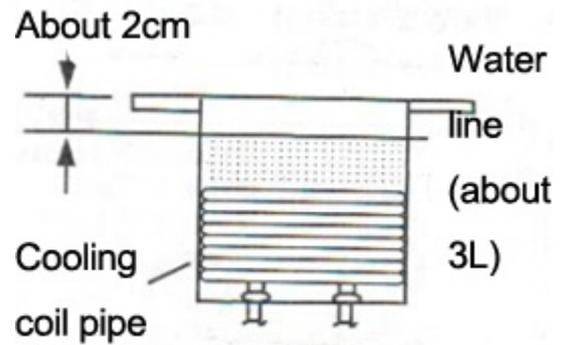
*In addition to pump out of the air outside, other operations do not open and close the switches in a short period of time, so as to avoid the fault switch and equipment, accidents happen

pipe weep embolism

Drainage pipe



6. Circulatory system started to send liquid, water levels will decline, so you need to supplement the amount of cooling water. Replenish water, please refer to the picture in the right. adding water to water line position. If the cooling coil pipe above the water, it will affect refrigeration capacity .



7. In the end of work, firstly closed the pump switch, and then closed the host switch, at last turn off the power.

If the machine be not used for long time, closed the power switch and pull up the plug.

In addition, discharge water from water tank and pipeline. (Notes: Freeze-proofing in winter.)

Other product

Select protection suite to prevent get water in the surface.

The material of hose is chloroprene rubber.

Protection suite for cold hose

Length	1m		
Inner diameter	9.0mm	12.0m m	15.0m m

As the circulation liquid, sometimes we will use high volatile liquid, such as methanol . But water cover is plastic products, it compared with the corrosion resistance, ageing resistance performance of metal is worse.

Some flammable combustible liquid will easily evaporate under the condition of above room temperature (individual is under room temperature) .In case of fire source.it may cause a fire, explosion, etc.Please ventilated well .

Stainless steal:SUS304

6.Cause of failure and treatment

Malfunction phenomenon	Reason	Exclusion methods
Turn on the host and refrigeration switch , it don't display.	The plug have been pulled or not plug tight.	Pull the power plug to socket again.
	There is no power supply or fuse.	Close the panel circuit breakers and mount fuse.
	The host switch occur malfunction.	Replace new host switch.
	Temperature regulator occur malfunction .	Contact to seller.
	Do not fold the protector.	Fold protector.
Refrigeration do not work	Refrigerating machine occur malfunction.	Check whether the compressor is work and the fan is rotating.
	Refrigerator overload and relay starting holding circuit.	Refrigerator heat load is big and environment temperature is high, reduce load and adjust room temperature less than 35 degrees.
	Water level is low, condenser pipe has leakage and overload operation	Adding circulating liquid to the cooling circulating tank.
It cannot refrigerate	The setting temperature is not appropriate.	Confirm the setting temperature.
	Refrigerator do not work	Check the power supply.
	Refrigerator's fan do not rotate.	Whether the fans are powered-on or get struck.
Refrigeration is not good	Refrigerant has leakage	Contact to the seller
	Environment temperature rises to more than 35 °	Control the Environment temperature less than 30°
	Heat load is too large	Control the heat load within the range.
Cooling liquid can not circulate	There is gas in the pump.	Pull the release switch, so that the cooling fluid release from the hole, and then plug the discharge switch, turn on and off 2-3 times to discharge the air.
Circulation volume is small	Water pipe burst	Replace the new water pipe

7.Maintenance and repair

 ALARM
<p>Please do not disassemble the device</p> <p>With internal voltage or high temperature parts in device, Disassemble the device will get an electric shock or injuries.</p>
 NOTES
<p>Please use the right method and appliance to clean and maintenance.</p> <p>During the cleaning and maintenance to our product.. please don't splash water to outer or inner of equipment directly, or use household cleanser, diluent, oil, kerosene, acid and similar products to clean it. It will get an electric shock or damage to equipment.</p>

 NOTES
<p>Do not touch the heat sink</p> <p>In the maintenance, please don't touch heat sink with.</p> <p>Due to the heat sink is very too sharp .easily to scratch hand .</p>

 NOTES
<p>Please turn off the power when clean and maintenance.</p> <p>During the cleaning and maintenance to our product.. please turn off the power and pull the plug. Otherwise it will get an electric shock or damage to equipment.</p>

1.Cleaning

Cleaning of the product

When cleaning the host, please use a soft cloth with less water to clean it.

please use neutral detergent to clean stubborn stain. and then wipe up with cloth.

2.Before and after use, please check whether the pipe is leaking, relaxation, conduit ageing.

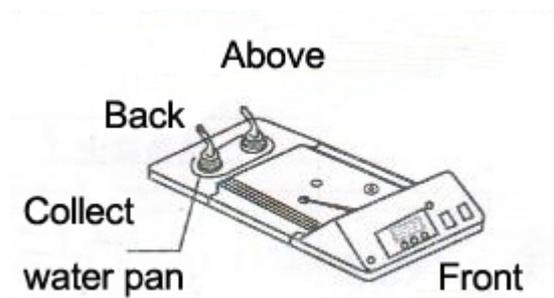
the ageing of water pipe and water cycle are depending on the conditions of use.

According to the inspection situation, please be replaced.

The cold tube, water mouth sealing is expendable.

The status of circulating water mouth, tank cover, the discharge switch and other plastic products based on the different conditions of use, please change according to the maintenance situation.

Component part of the device adopted the nonmetallic material, compared with the metal, the plastic, rubber products will occur deformation, discoloration and broken easily within heated, the sun or contact solvent, circulation fluid, cleaning agents and so on.



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