R00

EYELA

Refrigerated Circulator **Cool Ace**

Instruction Manual

Model CCA-1112A

This instruction manual is designed to use the product efficiently and safely with keeping its best performance.

IMPORTANT

Be sure to read "Safety precautions" before use.

Please keep this manual in a place easily accessible to every user.

Tokyo Rikakikai Co., Ltd.

Safety precautions

1. **Signal word for warning**

Mishandling or inappropriate usage of this product may cause some trouble. However, if you know the proper information before
use, you can avoid almost all these troubles.

Therefore, this manual categorizes the level of Importance and danger as below with alert mark and signal word.
Please follow the instructions and use the product safely.

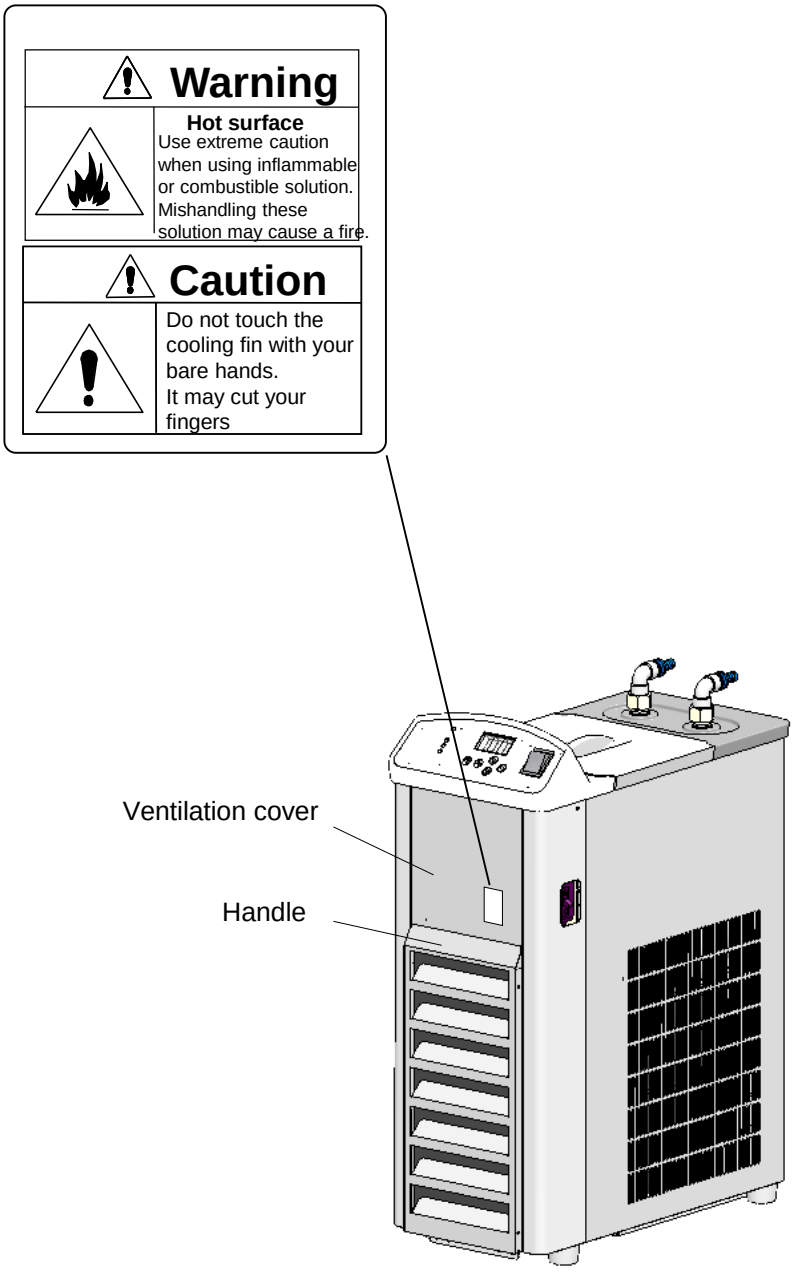
Alert mark Signal word	Definition
⚠ Danger	Mishandling the product will cause serious personal injury or loss of life.
⚠ Warning	Mishandling the product may cause serious personal injury or loss of life.
⚠ Caution	Mishandling the product may injure users or cause property damage.

Though we are trying to look into conceivable risk of using the product, it is very difficult for us to expect of all of it. It means that all the instructions in this manual do not cover all the types of risk that may caused by the product.
However, if you follow the instructions, you surely can handle and operate the product safely.
Please use extreme care when handling the product and to prevent all the potential accidents and mechanical failures.

2. **Warning display on the product**

For high priority danger, warning label is attached on the machine body.
The position of the label is as below.
Please read the instructions carefully whenever using the machine.

※ If you have any trouble reading the warning label because it is worn out and etc., please replace with new one. Do not hesitate in contacting us if you require new label.



Congratulations on your purchase of a EYELA product.

Introduction

This manual describes the procedure of installation, operation, troubleshooting, maintenance, check-up and disposal of Low Temperature Circulator, CCA-11112A (220V, 60Hz)

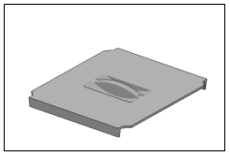
Table of contents

Items contained in your carton

Check the type and quantity of items before setting up.

No.	Name	QTY
1	Main unit	1
2	Tank cover	1
3	Instruction Manual	1
4		

Tank cover



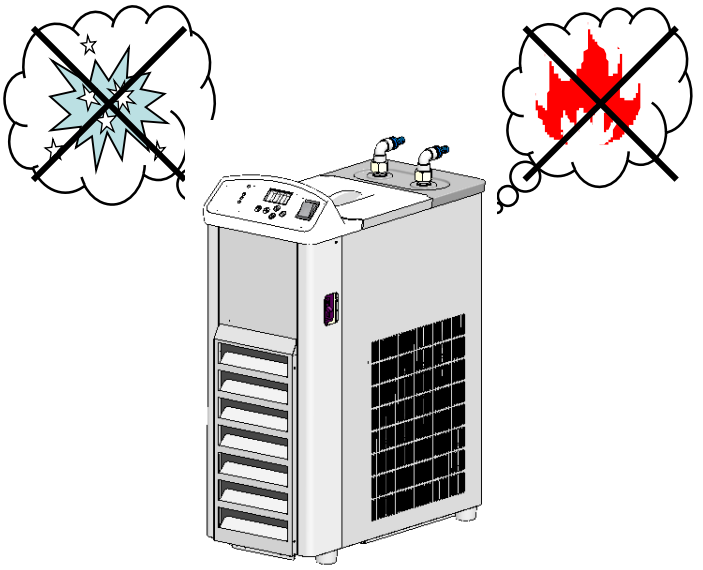
1 For safety use

This product is not designed with explosion-proof structure.
Use extreme caution when handling it.

⚠Warning

Use extreme caution when handling inflammable or combustible solution.

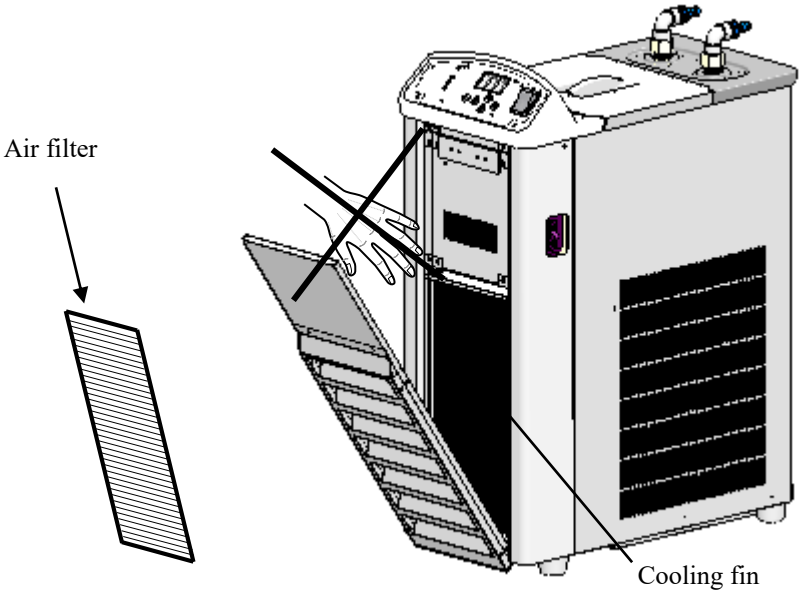
If you leave inflammable or combustible solution (ethanol and etc.) at room temperature or higher (lower for some solutions), it may evaporate and catch fire with some fire sources, and cause a fire and explode. Ventilate the space well before use.



⚠Caution

Do not touch cooling fin with bare hands.

Do not touch cooling fin with bare hands while performing maintenance work. Edgy fin may cut your fingers.



2 Outline of the product

2-1 Application

⚠ Warning

Do not remodel.
Do not use out of applications.

Remodeling or inappropriate use of the Product may cause electric shock or malfunction.

This is a refrigerated circulator that cools down the liquid in the bath by refrigeration unit and circulates externally through circulation pump and cools it off the heating portion of evaporator(1L), reaction bath and various devices.

2-2 Specification

Product			Refrigerated Circulator
Model			CCA-1112A
Circulation			Closed loop
Circumstance temperature			5~ 35° C
Capacity	Temperature range ※1		-20 ~ + 30° C
	Control accuracy ※2		±1° C or ±2° C
	Cooling capacity ※3		Room temperature 20° C
		at 10° C	450W (about 385kcal/h)
		at 0° C	350W (about 300kcal/h)
		at -10° C	310W (about 266kcal/h)
	Circulation capacity ※4	Max. head	5.6m ±0.5
		Max. flow	10L/min.
Composition	Temperature control method		On-OFF control of refrigeration unit
	Temp. setting, display		Digital setting by membrane switch, LED digital display 1° C increment
	Safety feature		Ground fault excess current breaker, high pressure switch for compressor, over-load relay, protection timer for compressor, fuse for service ac outlet, self-diagnosis, thermal protector for circulation pump
	Temperature controller		Electronic digital setting and digital display
	Temperature sensor		Pt sensor
	Refrigeration unit		Output 450W, HFC R-404A
	Tank capacity		3.2L (Liquid capacity :2.7L) SUS 304
	Cooling coil		Copper (nickel plated)
	Circulation nozzle		OD 10 x ID 6.5 mm
Standard	Overall dimensions		205W x 445D x 545H mm
	Tank dimensions		130W x 230D x 115H mm
	Power source		AC220V 60Hz
	Electrical input		3.64A 800VA
	Net weight		28 kg

※1　Heater is not equipped.

・Temperature control not available when the ambient temperature is low , unloaded and high temperature setting.

※2　Condition

・Room temperature：20℃　・Circulation volume：Max.　・No Load　・Supply power and voltage：AC220V　60Hz

※In using CCA-1112A,　ambient temperature is 20℃ and unloaded, temperature setting at 30℃ is not available.

・Accuracy of temperature control doffers depending on circulation volume of liquid, type of refrigerant, heat load and room temperature and other use conditions.

・Displayed temperature may be higher than actual temperature depending on display accuracy of temperature controller.

Accuracy of temperature control is not the value that is displayed on temperature controller.

※3　Condition

・Room temperature：20℃・Circulation volume：Max.・Supply power and voltage：AC220V　60Hz

・Cooling capability is ±10% of displayed capability.

・Cooling capability differs depending on room temperature, supply power, voltage, type of refrigerant and stirring condition in the bath.

※4　Condition

・Room temperature：20℃　・Supply power, voltage：AC220V　60Hz

・Cooling capability is ±10% of displayed capability.

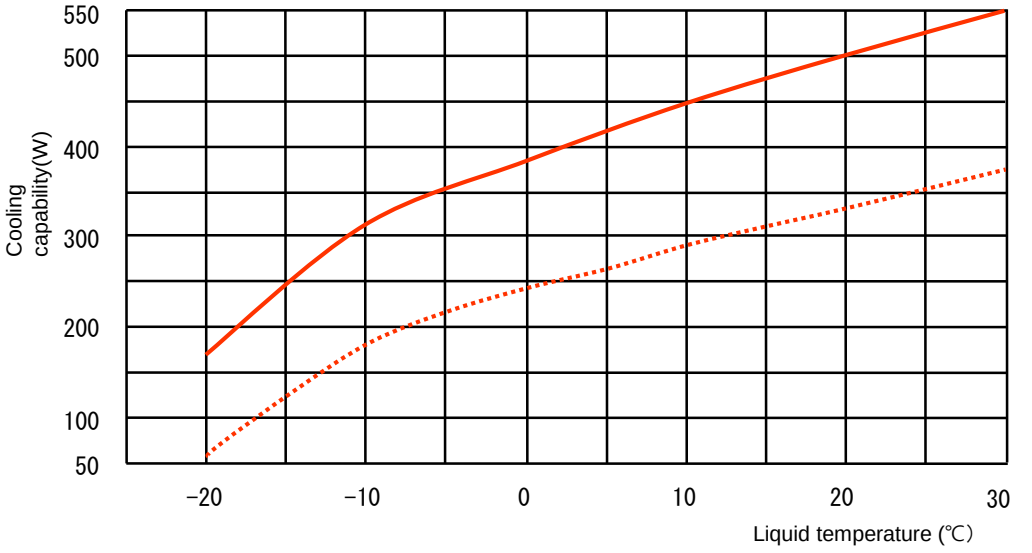
・Circulation capability differs depending on use conditions (type of the liquid, room temperature and etc.).

※5　External dimension does not include protrusion.

2-3 **Cooling capability curve**（Reference）

Condition ・Supply power, voltage：AC220V, 60Hz
・Circulation volume ：Max.

Room temperature is at 20℃
Room temperature is at 35℃

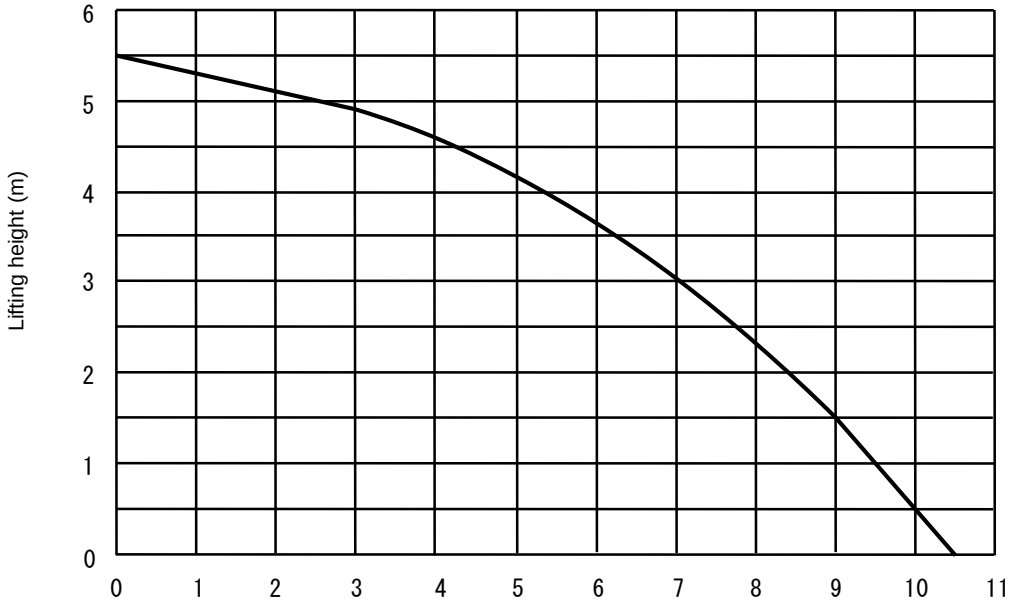


Caution

Cooling capability differs depending on room temperature, supply power, voltage, type of refrigerant, condition of stirring in the bath and etc.

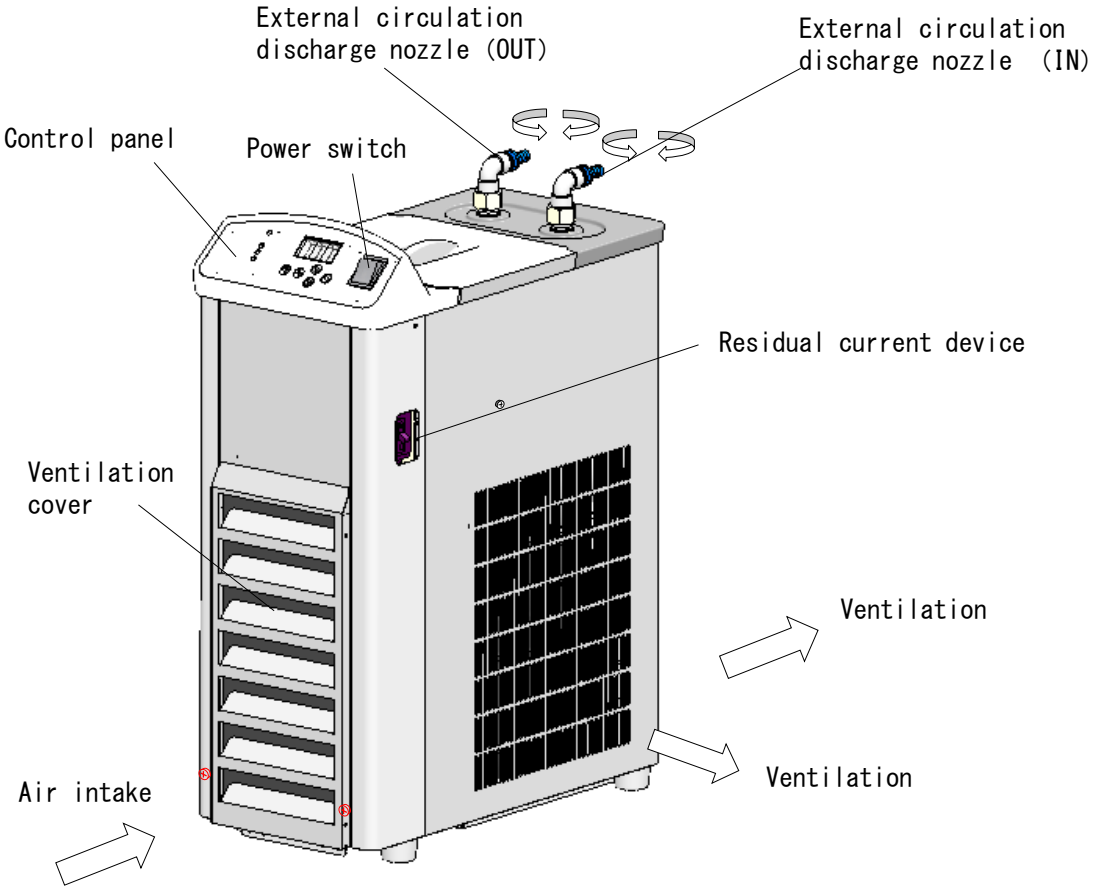
2-4 Circulation capability（Reference）

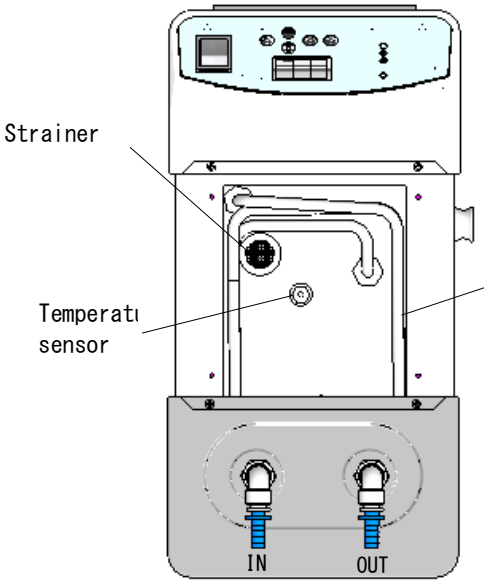
Condition ・Power source：AC220V, 60Hz
・Water temperature：20℃

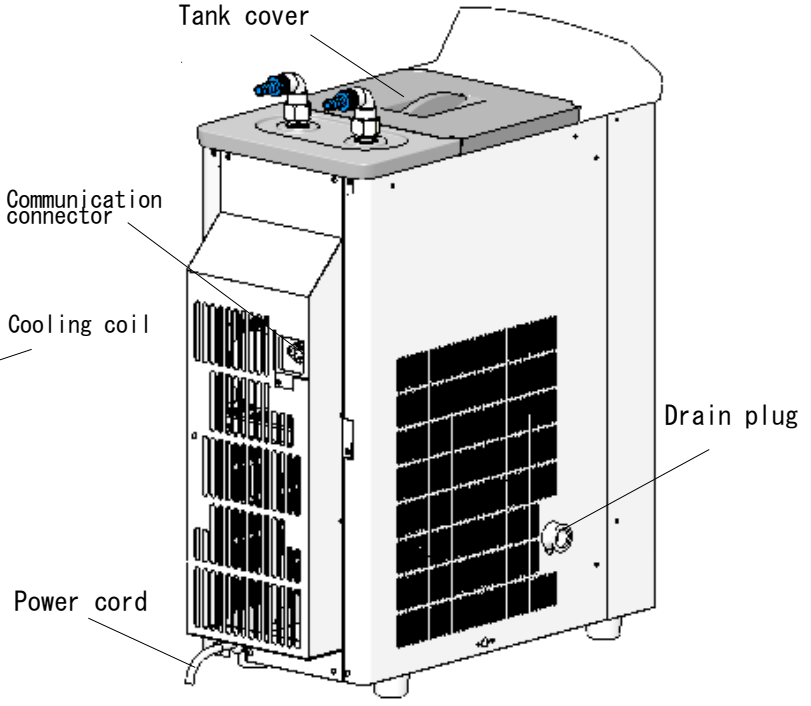


Caution
※Circulation capability differs depending on diameter of nozzle, piping, type of solvent and other conditions.
※If you conduct sealed operation for circulation pump, it may cause malfunction on the pump.

2-5 Description



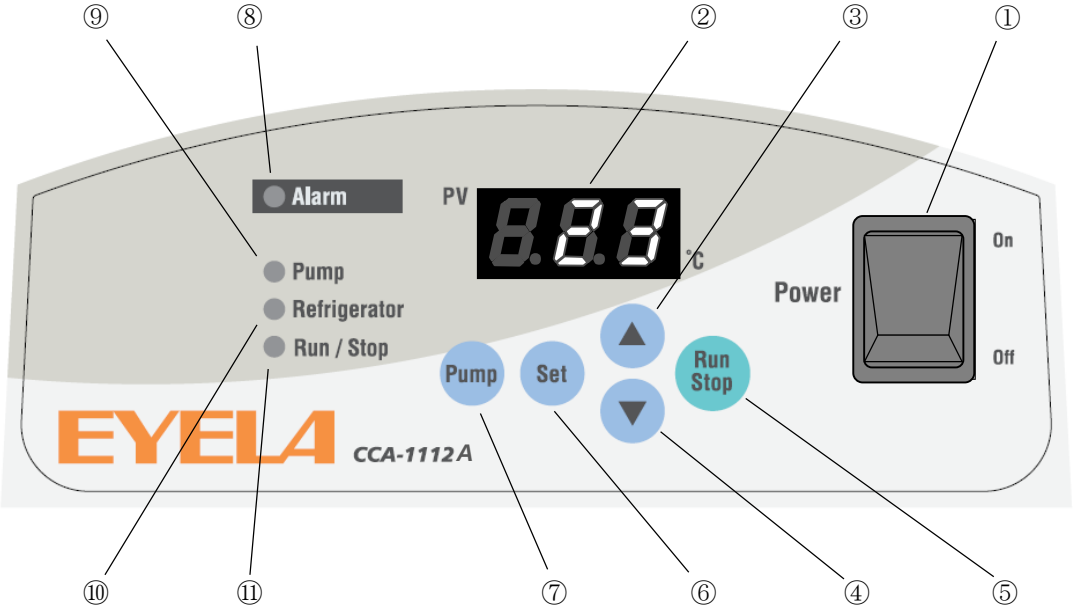




※The unit is coated with ABS (control panel), polyphenylene ether (bath cover), polyacetal (nozzle and drain plug) and nitrile rubber (tray). (These are nonferrous materials). Compared to metals, these plastics and rubbers can be easily discolored, deformed and damaged by heat, light (example: direct sun), solution (example: circulation liquid, cleanser) and forces (impact). So use caution when handling the unit.

3 Functions and names of operating portion

3-1 Control panel



No.	Name	Functions
①	Power switch	Turns on and off the power.
②	Indicator	Displays measured, setting temperature, alarm and characters.
③	Up key	Each time you press the key, the value increases by 1. Pressing and holding the key can increase the value continuously.
④	Down key	Each time you press the key, the value decreases by 1. Pressing and holding the key can decrease the value continuously
⑤	Run／Stop key	Starts and stops control.
⑥	Set／Clear key	Switches measured and setting temperature and determines the setting temperature. Clears alarm display when the alarm is activated.
⑦	Pump key	Runs and stops pump.
⑧	Alarm LED	Lights up when refrigeration unit or sensor is in abnormal condition, or upper or lower temperature limit alarm is activated.
⑨	Pump LED	Lights up when pump is controlled.
⑩	Refrigeration unit LED	Lights up when refrigeration unit is turned on.
⑪	Run/Stop LED	Lights up when the control is on.

3-2 Safety・alarm features

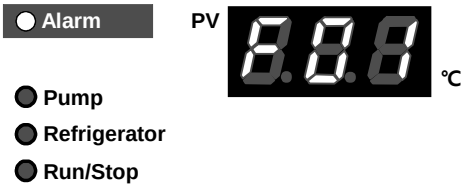
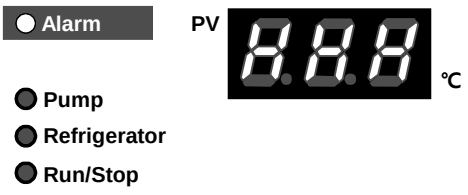
This product is equipped with the following safety features and alarm features.

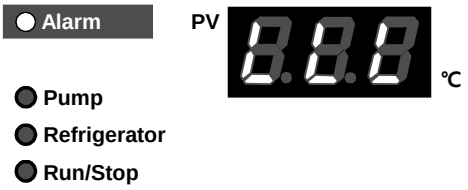
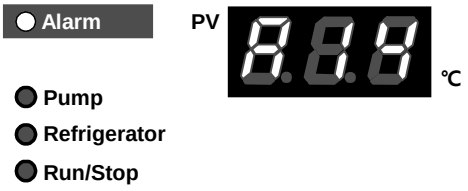
If you face any trouble, please refer to “Troubleshooting" on page 18 and follow the instruction.

Safety features

Safety device	Operations	Reasons why the device works.
Residual current device	Power is turned off.	・Electric leakage hazard occurs, or excess current flows.
Over load relay for refrigeration unit	Refrigeration unit runs over load (over heat) operation, which makes alarm lamp light up and 「A14」will be displayed on indicator to stop refrigeration unit and pump.	Refrigeration unit runs over load (over heat) operation (start-up). ・ Power and voltage variation exceeds the rated value（±10%）.
Impedance protector for circulation pump	Controls electric flow of pump while circulation pump runs over heat operation, and also controls temperature rise to prevent the burning of pump.	Constraint operation because of over load of circulation pump ・Viscosity of circulation liquid is high. ・Foreign substances are sucked in. ・Ambient temperature exceeds 35℃. ・Pipe resistance is too strong（Valve is too tightened and etc.）
Self-diagnosis function for control basal plate（Watch dog）	Control basal plate is in abnormal condition, which stops control.	・Ambient temperature exceeds 35℃. ・Influence of noise and etc.

Alarm functions

Alarm name	Alarm display and operations	Reasons why alarm is activated.
Temperature sensor alarm	・All the controls（for refrigeration unit and circulation pump output) gets stopped. ・［Alarm］LED lights up. ・Alarm description will be displayed on indicator. 	Operations ・Temperature sensor is disconnected. Releasing alarm ・Alarm can be released when turning the power switch on again.
Upper temperature limit alarm	・［Alarm］LED lights up. ・Indicator displays “Measured temperature” and “Setting temperature” alternately. 	Operation conditions ・Alarm is activated when the bath temperature is higher than 「Setting temperature＋setting temperature for upper temperature limit alarm」. Releasing alarm ・Alarm can be released by 「Set」key.

Alarm name	Alarm display and operations	Reasons why alarm is activated.
Lower temperature limit alarm	・All the controls （refrigeration unit・circulation pump output） get stopped. ・［Alarm］ LED lights up. ・Indicator displays the alarm description. 	Operation conditions ・Alarm is activated when the bath temperature is lower than 「Setting temperature-setting temperature for lower temperature limit alarm」. Releasing alarm ・Alarm can be released by 「Set」 key.
Refrigeration unit alarm	・All the controls （refrigeration unit・circulation pump output） get stopped. ・［Alarm］ LED lights up. ・Indicator displays the alarm description. 	Operation conditions ・Refrigeration unit protector （over load relay） works. Releasing alarm ・Alarm can be released by 「Set」 key.

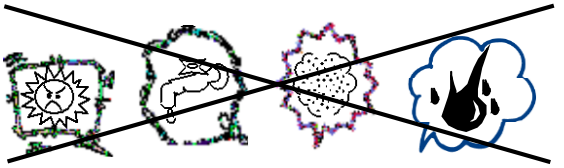
4 Installation

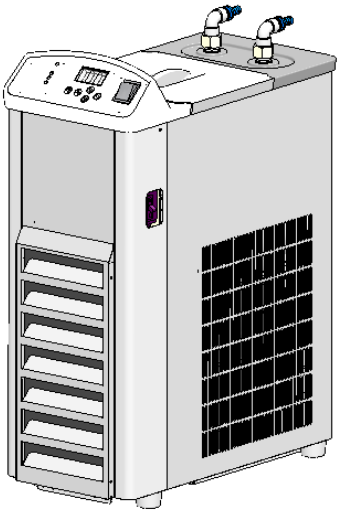
4-1 Installation condition

CAUTION

Select appropriate installation site that can be ventilated well.

Since air-cooled type refrigeration unit is equipped with this product, heat is exhausted from the unit.
Select the installation site that can be ventilated well so that the ambient temperature won't rise because of exhausted heat. Using the product in high ambient temperature may worsen the operation efficiency or cooling capability. Also, refrigeration unit will be hot and operate under high pressure, which may cause malfunction.





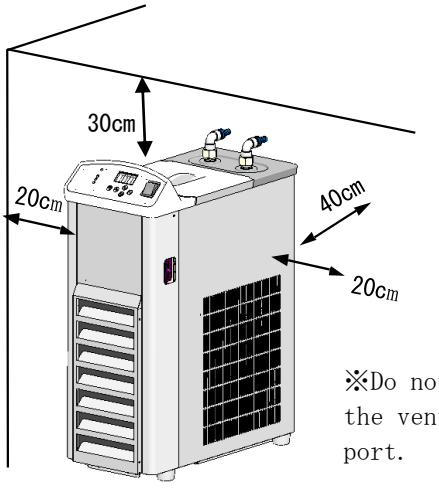
Select the installation site that meets the following conditions.
◎No inflammable solid or liquid or gas around the unit.
◎Ambient temperature must be from 5 to 35℃.
◎No dew condensation
◎Lesser humidity and no dripping on the unit.
◎Lesser dust
◎No direct sun light
◎Well-ventilated.
◎Level and stable
（Check the weight of the product during operation.）

4-2 Installation conditions

Caution

Keep enough space around the unit.

To keep the best performance of the product, leave the space between product and wall, ceiling plane. The distance between the product and wall, ceiling plane must be longer than the one mentioned in the right picture.



※Do not block the ventilation port.

Caution

Do not put on anything on this unit.

Caution

This product is a heavyweight product. Use caution when carrying the product

CCA-1112A：Approx. 28kg

Caution

Do not tilt the unit more than 15°.

This unit contains a refrigeration unit.
Do not tilt the unit more than 15° for moving.

4-3 Utility connection

⚠ Warning

Check the voltage, phase and capacity of power source before connecting.

Inappropriate connection may cause a fire or electric shock hazard.

⚠ Warning

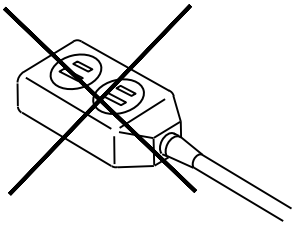
Ground the unit properly.

Without grounding the unit, the product may cause electric shock hazard.

⚠ Warning

Do not use branching socket.

Excess current may burn cable or cause a fire.



1. Check the voltage, phase and capacity of the power source. Required power source is as shown in right table.

Model	Required power source	
	Voltage	Capacity
CCA-1112A	AC-220V Single phase	15A

2. Check the type of outlet at the installation site. (Do not connect the mains connector yet.) If the outlet has earth terminal, mains connector can be connected.

If the earth terminal is not available, connect grounding adapter to power plug.
Connect earth wire of grounding adapter to earth terminal.

※Grounding adapter is not supplied with the product.

5 Operation

5-1 Preparation

Warning

Use extreme caution when using combustible or inflammable solution.

If you leave combustible or inflammable solution (methanol and etc.) out at room temperature or higher (lower for some solutions) , it may evaporate and catch fire with some ignition source, and cause explosion. Ventilate the space well while using these solutions.

Caution

Use circulation liquid that does not affect the material of circulation route inside the unit.

Materials used for the circulation route are copper, stainless, brass, fluorine resin, polyacetal, silicon rubber, polyphenylene ether, ethylene propylene rubber. Use circulation liquid that does not affect these materials. Or some parts in the circulation route may be damaged. Also, do not use extra-pure water or ion exchange water. These water may solve carbon dioxide in the air and generate acid solution, which may corrode the metal of circulation route.

Caution

Use the hose at appropriate length.

Use the hose at appropriate length.
When the piping resistance is strong, cooling capability or temperature distribution in the circulation bath will be worsen because of small quantity of circulation water.

Caution

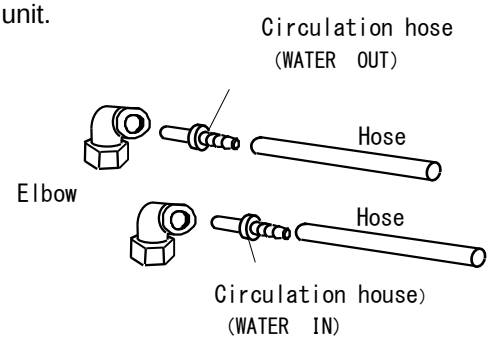
Do not conduct closed operation or idling of circulation pump.

These operation may cause malfunction.

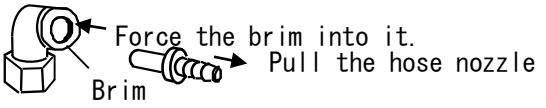
1 Connecting pipes and hose

1)Loosen nut for fixing nozzle and make sure that o ring is fixed at the slot for fixing o ring.
2)With holding nozzle with your hands, tighten the nut so that the water won't be leaked.
3)Connect hose (Diameter: 9mm) to external circulation nozzle (IN & OUT) and the device to be cooled down. Attach hose band to fix the hose (hose and hose band are not supplied with the product).

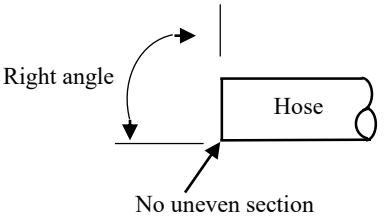
※Do not jack up the nozzle too much.
※Do not change the direction of nozzle during operation to prevent damage or leak.
※Material of the hose must have appropriate pressure and fever-resistance and it must not be affected by any solutions. Also, make sure that hose is not bended or crashed when using the unit.



When removing one touch hose nozzle, a hose nozzle is pulled out while forcing the brim of a revolving elbow as the arrow shows.



The end of a hose cuts perpendicularly and check there is no uneven section or there is no foreign substance around a hose.
The uneven section of a hose may be a cause of water leakage.

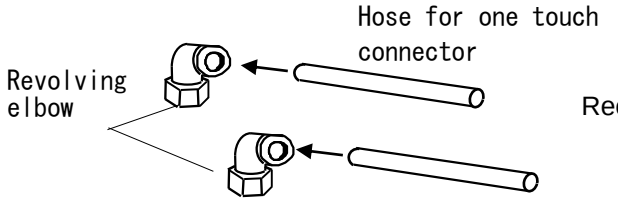


■In case of direct insertion of hose to revolving elbow

Insert the hose to the revolving elbow directly

(Insert the hose to the revolving elbow firmly

until it touches the inside of elbow.)



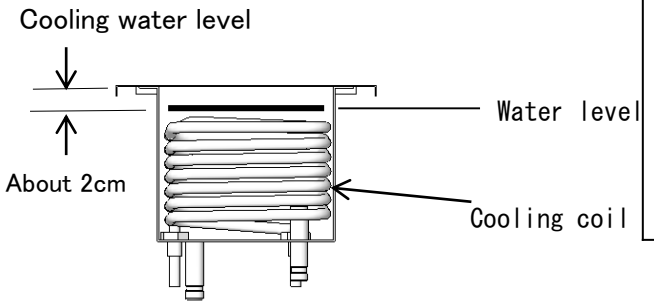
Recommended hose: Nitta Co., Ltd.

- PL Tube PL-4-10
- PN Tube PN-4-10

2. Filling cooling water

1)Make sure that drain plug is connected to drain hose.

2)Fill the water in the bath up to the position where cooling coil is fully filled (CCA-1112A : Approx. 2.7L).



Do not use pure water

Use tap water or softened tap water.

Do not use pure water or ion exchange water. These types of water solve carbon dioxide in the air into acid solution, which could corrode the metal of circulation route.
Also, pin hole of cooling coil or circulation pump may be impaired because of the use of these water.

※Use anti-freeze liquid, if you use the unit at ＋7℃ or lower. However, if you use ethylene glycol or Nybrine, the viscosity will be higher in low temperature, which makes temperature distribution in the bath worse.
In such a case, mix the moderate amount of water (Make sure the freezing temperature when the liquid is concentrated.)

※Make sure that there's no foreign substance in circulation liquid, which will cause malfunction.

3) Set the bath cover on the main unit.

3.Connecting power plug

Make sure that residual current device and power switch are turned off before connecting power plug to outlet.

⚠ Caution

Do not get control panel wet.

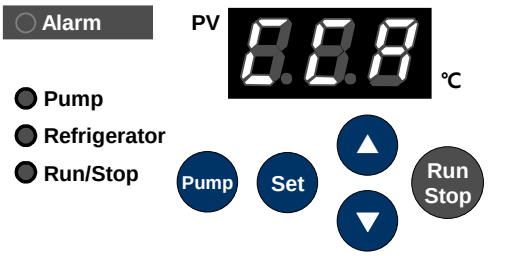
When filling water into the bath, do not get control panel wet. It will cause malfunction in controlling portion or electric shock hazard because of electric leakage.

※The unit is coated with ABS (control panel), polyphenylene ether (bath cover), polyacetal (nozzle and drain plug) and nitrile rubber (tray). (These are nonferrous materials). Compared to metals, these plastics and rubbers can be easily discolored, deformed and damaged by heat, light (example: direct sun), solution (example: circulation liquid, cleanser) and forces (impact). So use caution when handling the unit.

5-2 How to operate the unit

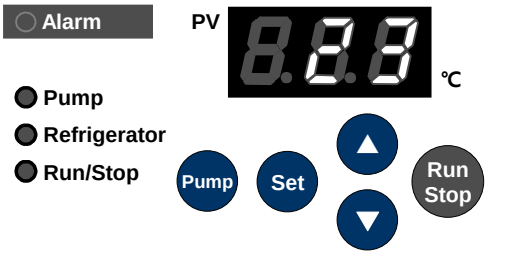
Turn on residual current device, excess current breaker and power switch.
In about 1 seconds after displaying initial display, measured temperature of cool water circulating bath will be displayed（measuring mode）
※On「8888」, the specific value or alphabet will be displayed.

Initial screen



After approx. 1 sec.

Measure temperature display

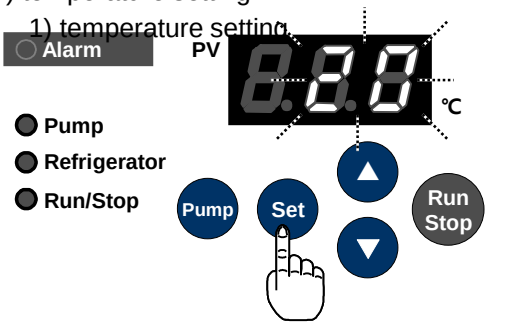


1.Setting temperature
Setting temperature can be changed regardless of the status of the unit.

1) Setting temperature（setting mode）
Press［Set］key. Indicator changes to display setting temperature (blinking) and you can set the temperature.

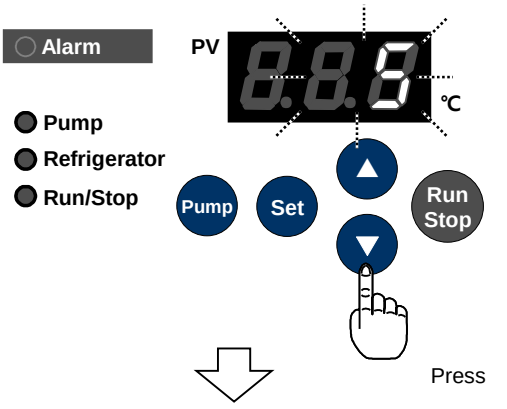
※Setting temperature is the value you used previous time. Factory default is 「20℃」.

1) temperature setting



2) Changing setting temperature
Press［▲］or［▼］key to input setting temperature
※ Each time you press［▲］or［▼］key, the temperature changes by 1℃ and holding down the key for longer can change the value continuously.

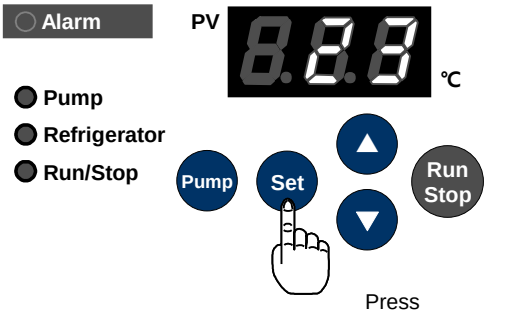
2) Changing setting temperature



3) Determining setting temperature
Press［Set］key. Displayed setting temperature (blinking) is determined and indicator changes to display measured temperature (measuring mode) .

※If no key operation is done for longer than 5 seconds, changed preset temperature can not be determined and indicator changes to display measured temperature (measuring mode). In such a case, please reset from 1).

3) Detemining setting temperature



※Status of LED

「●」、「8888」Turns off a light
「○」、「8888」Lights up
「○」、「8888」Blinks

2. Starting operation

1) Running circulation pump
Press［Pump］key. Circulation pump starts working and circulating externally.

・「Pump LED（Pump）」lights up.

※Make sure that connecting part of hose and nozzle have no leak.
※If the liquid does not circulate, the air may be sucked in the pump. So release the air.
※Pressing [Run/Stop] key does not work on circulation pump.

2) Filling cool water
Since filling the water in circulation system makes the water level lower, refill the cool water.
※Refill the cool water up to the level mentioned in the section 「3. Filling cool water」on page 20.
※Cooling capability will be worsened when cooling coil is exposed.

※As protective timer for refrigeration unit is equipped, refrigeration unit won't start up until the timer stops after turning the power switch on or the refrigeration units stops working temporarily.
CCA-1112A：Approx. 70seconds

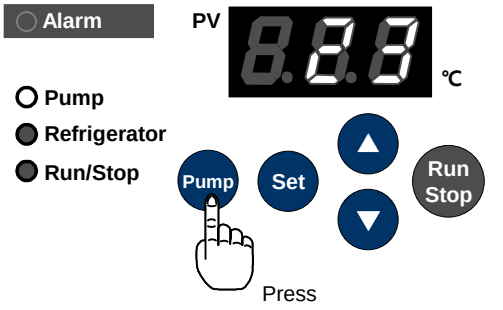
3. Stopping operation
1) Stopping temperature control
Press［Run/Stop］key to stop temperature control.

・「Temperature LED（℃）」starts lighting up.
・「Refrigerator LED（Refrigerator）」turns off a light.

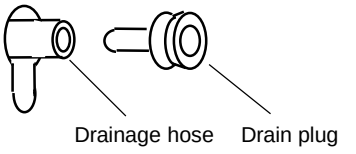
2) Stopping circulation pump
Press［Pump］key to stop circulation pump.
・「Pump LED（Pump）」turns off a light.

※To stop operation, stop the operation before turning the power switch off. Turning the switch off without stopping operation will activate power failure alarm next time.
※If you do not use the unit for a long time, turn off the power switch, residual current device, excess current beaker and disconnect power plug from outlet.
Also, drain the water from bath and pipe (check the bath and pipe regularly in winter time so that water won' be frozen).

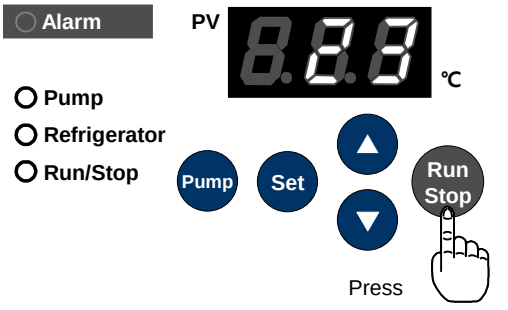
1) Running circulation pump



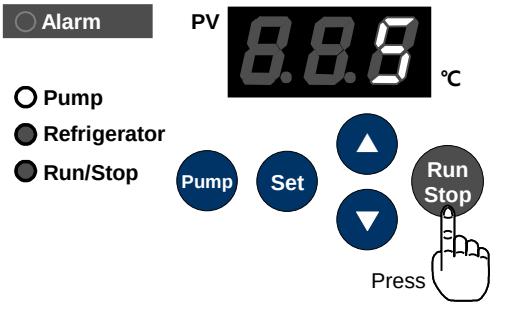
※Releasing air
Remove drain plug and make sure that coolant is drained from drainage plug and put the plug on. Then, turn circulation pump on and off repeatedly for twice or 3 times to release air from the pump



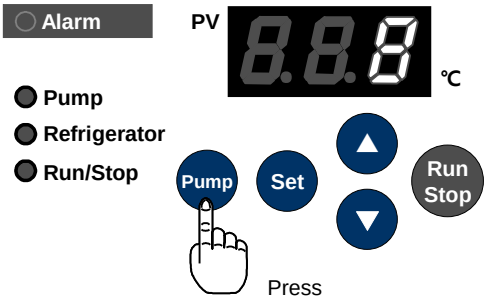
3) Starting temperature control



1) Stopping temperature control



2) Stopping circulation pump



5-3 How to use optional accessories

5-3-1. How to use stop valve

If the flow volume is not enough, use the bigger diameter nozzle (Optional accessory) to reduce the load in circulation pipes.
Please use the insulated hose set (Optional accessory) in order to avoid the condensation of water on the surface of pipes.
* Use the hose at appropriate length and diameter.
* The material of hose is Polychloroprene.

⚠ Caution

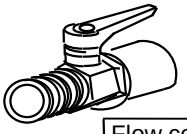
Use the hose at appropriate length.

Use the hose at appropriate length.
When the piping resistance is strong, cooling capability or temperature distribution in the circulation bath will be worsen because of small volume of circulation water.

The insulated hose is a consumable part.

The degradation and the aging of a hose are different depending on conditions for use, so please exchange it by check.

■Flow Control Valve

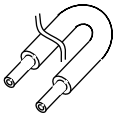


Flow control valve	3/8× 3/8
Cat. No.	247190

■Metal Nozzle set

Model	AL-1	AL-2	AL-6	AL-8
Nozzle OD (material)	10.5(brass)	13.5(brass)	10.5 (SUS)	13.5 (SUS)
Cat. No.	242420	243950	243970	243980

■Insulated hose set

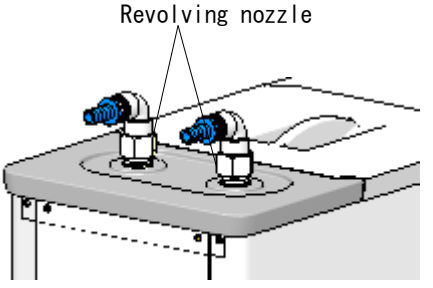


Tube Diameter	φ9			φ12		
Length	1m	2m	5m	1m	2m	5m
Cat.No.	112690	112700	174420	113280	143330	174440

(1) Remove a revolving nozzle of IN OUT using a wrench of opposite side 22mm.

(2) Apply the sealing tape 4~5 times around the threaded part and force 90° elbow to it.(In and Out)

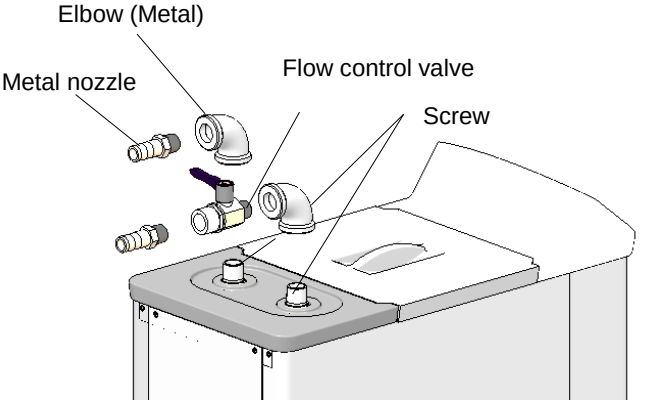
(3) Force the flow control valve and metal nozzle to outlet nozzle and force the metal nozzle to inlet nozzle.
Apply the sealing tape 4~5 times around the threaded parts.



5-3-2. Stainless steel tank lid.

When circulating volatile liquid such as methanol as circulation liquid, it should be used. The tank lid attached as standard accessory is a plastic and the condition becomes bad for a solvent-resistance and the weather resistance compared with metal tank lid.
* The material is SUS304.

Stainless steel lid	For CCA-1112A
Cat. No.	188060



5-3-5. Carriage

By setting carriage, CCA-1112A can be moved and installed smoothly on the floor.

1. Position of the carriage
   1) Lower the stop lever (for 4 wheels) to lock the caster so that carriage won't move.

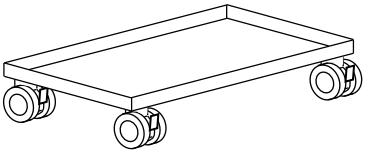
   2) Set the 4 rubber supporters on the carriage.
   ※Since the weight of the main unit is about 29kg, handle it with two persons.
   ※Since there's no space between carriage and main unit, use caution not to jam your fingers.

2. Carrying and installing the unit
   1) Raise the 4 stop levers to unlock and move it to the installation site.
   ※Moving the unit on bumpy place will damage the casters. In such a case, carry the unit.

   2)At installation site, lower the stop levers of casters to lock.

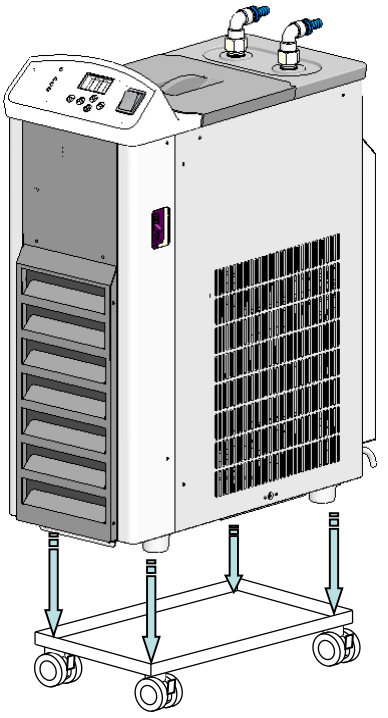
   3)Insert supplied 4 caster holders into the caster to fix.

■ Carriage

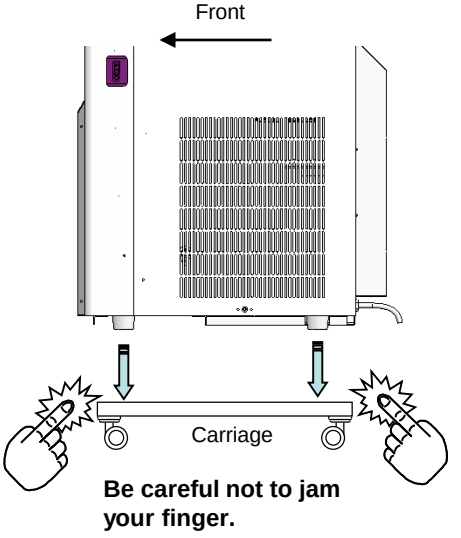


Carriage	For CCA-1112A
Cat. No.	260460

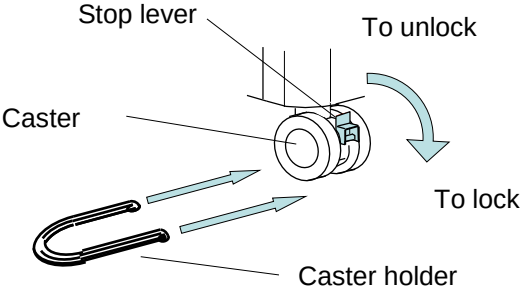
Setting carriage



Set the rubber supporters (4 points) of the main unit on the carriage as shown above.



Locking and unlocking the caster



5-3-4. External input terminal connector

■Communication cable A for cooling

■Communication cable A for cooling
CC-2M (Between CCA-1112A and N-1200B)

Communication cable for cooling	CC-2M
Cat.No.	252200

Co-related operation of N-1200B and CCA-1112A

Model N-1200B
On operation
Power ON
STOP→RUN
RUN→STOP
N-1200 Alarm
Power OFF

On operation of CCA-1112A pump		
CCA Temp.control ON	CCA Temp.control OFF	CCA Alarm
Initial condition	Initial condition	Pump OFF
Pump ON	Pump ON	Pump OFF
Pump OFF	Pump OFF	Pump OFF
Pump OFF	Pump OFF	Pump OFF
Pump OFF	Pump OFF	Pump OFF

- When operating the pump switch of CCA-1112A, ON/OFF of pump by N-1200B has priority over switching operation on the CCA side.

* There is no signaling to N-1200 B from CCA-1112A.

In case of co-related operation

● Although a circulation stops, the refrigeration unit is working, therefore, we recommend you use of anti-freeze. (If using water, water around the cooling coil freezes.)

● When a pump key is pressed during a circulating pump stop, circulation is begun.

● Please be sure to turn off a power supply of N-1200B and CCA-1112A after the work.

6 Troubleshooting

Trouble	Cause of trouble	Countermeasures
Residual current device can not be turned on.	Electric leakage occurs.	Stop running the product and contact your local dealer or closest customer service center.
	Excess current flows.	
No display is shown when turning on power switch.	Power plug is disconnected to outlet, or not connected to outlet completely.	Turn off residual current device and power switch, and connect power plug to outlet.
	Power source is not supplied.	Turn on the breaker on distribution board.
	Residual current device is not turned on.	Turn the device on.
	Residual current device is broken.	Stop running the product immediately and contact your local dealer or closest customer service center.
	Power switch is broken.	
	Temperature controller is broken.	
Refrigeration unit does not work.	Refrigeration unit is broke.	
	SSR is broken.	
	Over-load relay protective circuit of the refrigeration unit works. (Refrigeration unit alarm is activated.)	Since heat load is too heavy for refrigeration unit, reduce the load.
		If the ambient temperature is too high, set the temperature at 35℃ or lower.
	Protective timer for refrigeration unit works.	After passing the time, make sure that refrigeration unit works.
The unit is not cooled down.	Refrigeration unit does not work.	Stop running the product immediately and contact your local dealer or closest customer service center.
	Fan of refrigeration unit does not work.	
	Gas leaks.	
The unit is cooled down poorly.	Gas leaks.	
	Fan for refrigeration unit does not work.	
	Ambient temperature is higher than 35℃.	Set the temperature lower than 35℃.
	Heat load is too heavy.	Reduce the load to the value that is within specified range.
	Obstacle closer to the main units prevents emission and exhaust heat.	Set enough space around the unit. (Refer to 「4-2. Condition 」 on page 9.
Cool water does not circulate.	Strainer in the cool water circulation bath has some dust.	Remove the dust.
	Air is sucked in.	Remove drainage plug and make sure that cool water flows from drainage port, and put drainage plug again. Turn on and off the circulation pump for 2-3- times repeatedly to release the air. (Refer to 「5.2. Starting operation」 on page 14.
	Stop valve is closed. (In case that any option is attached.)	Open the valve. (In case that any option is attached.)
Circulation volume is small.	Hose is crushed.	Fix the hose.
	Pressure loss of circulation system is too big.	Reduce pressure loss.
	External circulating point is too high.	Adjust the position.
Bath is frozen at 7℃ or higher (setting temperature).	Due to pressure loss of pipe, circulation volume is small and bath can not be stirred sufficiently.	Open stop valve. Use antifreeze.
	Temperature controller is broken or refrigeration unit does not stop.	Stop running the product immediately and contact your local dealer or closest customer service center.

	Trouble	Cause of trouble	Countermeasures
Alarm is activated.	Refrigeration unit alarm is activated. Protective circuit for over load relay works. - Alarm LED light on - [A14] brinks ※1	Ambient temperature exceeds35℃.	Set the temperature lower than 35℃.
		Heat load is out of the capacity of cooling capability.	Set the heat medium within specified range.
		Dirt adheres to air filter.	Clean the filter.
		Fan in the refrigeration unit does not work.	Check the status of the fan.
		Voltage is too low.	Check the voltage.
		Refrigeration unit is broken.	Reboot the unit after about 10 minutes.
	Sensor alarm is activated - Alarm LED light on - [F01] brinks.	Sensor is disconnected.	Stop running the product immediately and contact your local dealer or closest customer service center.
	Upper temperature limit alarm is activated. - Alarm LED light on - [HHH] brinks.	The measured temperature exceeds the upper limit temperature.	After the temperature becomes the measurable range, clear the alarm by pressing [Set] key. * Measurable temperature : -50~+80℃
	Lower temperature limit alarm is activated. - Alarm LED light on - [LLL] brinks.	The measured temperature exceeds the lower limit temperature.	After the temperature becomes the measurable range, clear the alarm by pressing [Set] key. * Measurable temperature : -50~+80℃
	Control gets stopped without activating alarm. Description of indicator is uncertain.	Due to power source noise and etc, watch dog of control board worked.	Change the power source and reboot the unit. If that failure mode still remains, stop running the unit immediately and contact your local dealer or closest customer service center.

※1 - Refrigeration unit alarm may be activated depending on use conditions.
It’s effective to keep enough space around the unit and change the use condition (room temperature power source and etc).
- The heat-load should be less than the cooling capacity.
- The temperature control by turning on-off the refrigeration unit is ideal.

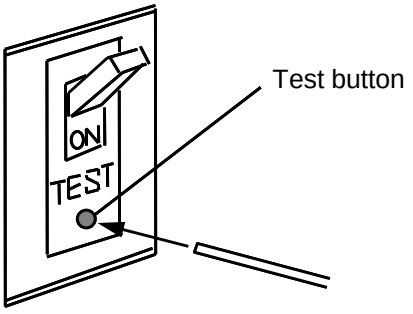
7 Maintenance・checkup

7-1 Operation test of residual current device

Caution

Conduct operation test for residual current device.

If residual current device does not work properly, electric shock hazard occurs when a short is caused. So please conduct the test more than once in a month.



Connect power plug and push the test button of the device with thin stick while the residual current device is turned on.
The condition is normal if the device works and the mains switch is turned off.

7-2 Cleaning and caring the product

Warning

Do not disassemble the unit.

Some parts in the unit are under electric pressure and high pressure. So disassembling the unit may cause electric shock or cause users physical injury.

Caution

Do not touch cooling fin with bare hands.

Do not touch cooling fin with bare hands when conducting maintenance work.
Edgy fin may cut your hands.

Caution

Use appropriate product for cleaning and caring the product in proper way.

When cleaning and caring the product, do not pour water directly on the external and internal part of the unit, and also do not use cleanser, thinner, petrol, lamp oil, acid and related products. These products may cause Electric shock or damage the unit.

Caution

Disconnect mains connector when cleaning and caring the product.

When cleaning and caring the product, turn off the power switch and residual current device and disconnect mains connector from outlet for preventing electric shock hazard or damage on the product.

※The unit is coated with ABS (control panel), polyphenylene ether (bath cover), polyacetal (nozzle and drain plug) and nitrile rubber (tray). (These are nonferrous materials). Compared to metals, these plastics and rubbers can be easily discolored, deformed and damaged by heat, light (example: direct sun), solution (example: circulation liquid, cleanser) and forces (impact). So use caution when handling the unit.

1. Cleaning air filter

※Be sure to turn off residual current device and power switch, and disconnect power plug from outlet.

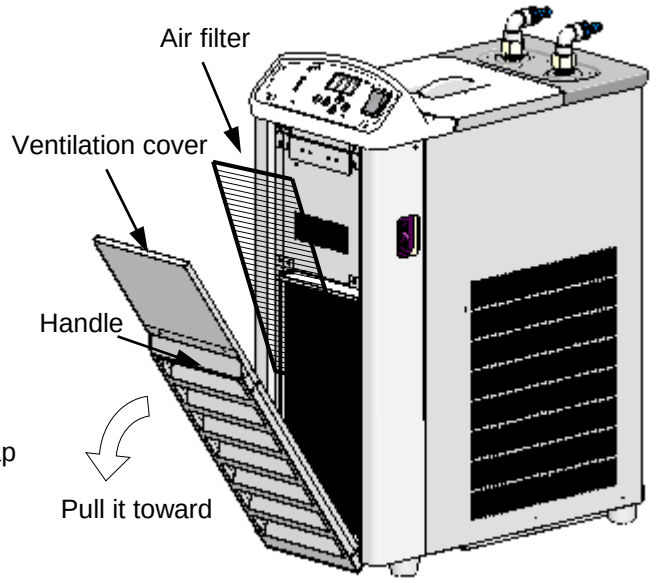
※ Clogged filter worsens cooling capability, and may cause malfunction.

※Condition of the filter differs depending on the environment and operating time, therefore, check and clean the filter regularly.

(1)Pull the top of the ventilation cover toward and open the cover.

(2)Take the air filter out and wash it with water or mild detergent.

(3) After washing, dry it well and attach it to the designated position again.



2. Cleaning strainer

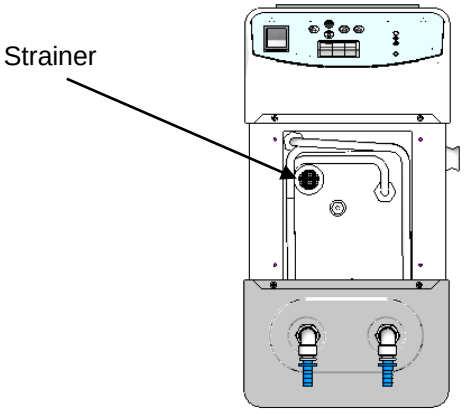
The strainer is placed at the drain outlet in the trap bath to catch dust. Clean the strainer regularly. When cleaning, drain the water from the bath.

3. Cleaning the product

※Be sure to turn off residual current device, power switch and disconnect power plug from outlet before cleaning the product.

For cleaning main unit, use squeezed wet soft cloth after using mild detergent.

For greasy dirt, use mild detergent and wipe it off with soft cloth.



4 Checking pipe

Check whether the pipe has slack or water leak, and also make sure that hose is not deteriorated before and after use. The progress of the deterioration for the circulation hose and nozzle's o ring differ depending on the use condition, therefore, check the hose regularly and replace it with new one if needed.

5.Tray and cover

Tray and cover may have dew condensation depending on setting and ambient temperature. In such a case, wipe the dew off with a soft cloth.

※Insulation hose and nozzle's o ring (both are optional accessories) are consumables.

※The progress of deterioration of plastic parts such as circulation nozzle, bath cover and drainage plug differ depending on use condition. So please check the conditions regularly.

If the unit runs at low setting temperature (lower than 5℃), and the ambient temperature is high and installation site has high humidity, dew condensation may form on the unit. It does not influence the capability, however, select the installation site that has lesser humidity when using the unit in lower temperature.

9 Disposal of the product

When disposing the product, please follow the instructions as below.

Main components and disposal instructions

Component	Specification	Total weight	Dimension（mm）	Method for disposing the part
Main unit	CCA-1112A	28kg	205(W)×445(D)×545(H)	Contact waste disposer and ask for the disposal of the unit.
	Refrigerant in refrigeration unit Freon gas R404A	Approx.150g	—	Contact waste disposer to ask for the disposal of Freon gas R404A.

※Please separate packing materials before disposal.

Material of main parts

Main component	Main part	Main component part	Main material
Main unit	Cabinet	Cabinet plate	Zinc electroplating metal plate（SECC,SEHC）
		Bath	Stainless （SUS304）
		Cabinet cover	Zinc electroplating metal plate（SECC)
		Control panel frame	Polystyrene series resin（ABS）
		Control panel sheet	Polyethylene（PE）
		Castor (Optional accessory)	Steel plate (SPCC), Nylon
		Screws	Stainless
	Cooling cycle part	Refrigeration unit	Iron（Fe）、Copper（Cu）、Electromagnetic steel plate
		Condenser	Aluminum（Al）、copper pipe for air conditioning refrigerant（CUT）、Zinc electroplating metal plate (SECC, SPGC)
		Evaporator（Cooling coil）	copper pipe for air conditioning refrigerant (CUT)
		Pipes	copper pipe for air conditioning refrigerant (CUT)
		Insulation material for pipe	Ethylene ・Propylene rubber（EPDM）
	Water circulating system	Circulation pump	Polyphenylene ether（PPO）、ceramic、high density carbon, isotropic ferrite
		Pipes	Silicon（tube）、POM（joint）
		Insulation material for pipe	Ethylene・Propylene rubber（EPDM）
	Heat insulator for bath		Styrene foam
	Electrical part	Electric board, condenser, relay	Glass epoxy resin, iron, copper
		Switch, residual current device	Polyester resin, iron, copper
		Power cord, wires	Vinyl, soft copper
		Fan for refrigeration unit	Aluminum（Al）
		Motor	Zinc alloy（ZDC）, brass
Bath cover			Polyphenylene ether（PPO)
Nozzle’s tray			Acrylonitrile-Butadiene Rubber（NBR）
Circulating nozzle			Polyacetal（POM）, Polybutylene Terephthalate(PBT)
Air filter			Polypropylene （PP）,soft vinyl
Drainage plug			Polyacetal（POM）

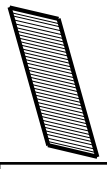
9 After-sales service

1. When the unit does not work properly, please check and see whether it has malfunction or not by referring to pages of troubleshooting.

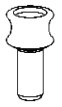
2. If that failure mode still remains, please contact your local dealer or customer service center mentioned on the manual.

10 Consumable・Replacement parts/Optional accessories

①Filter



②Drain plug



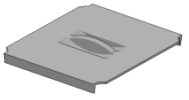
③Revolving elbow

④ One touch hose nozzle

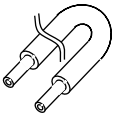
Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty
260480	For CCA-1112A	1	148850	For CA,NCB	1	247180	3/8×φ10	2	247210	Φ10×φ7	2

⑤Flow control valve

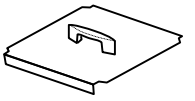
⑥Tank cover



⑦Insulated hose set



⑧Stainless steel tank lid



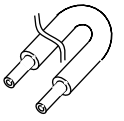
Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty
247190	3/8×3/8	1	188340	For CCA-1112A	1	See below	–	1	188060	For CCA-1112A	1

⑨Metal nozzle set

⑩Circulation nozzle A

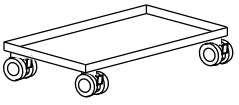
⑪Silicone hose

⑫Insulated hose for one touch connector

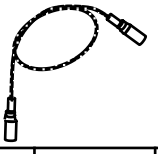


Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty
See below	-	2	See below	-	1	112720	ID φ9	5m	244940	OD φ10	2m
						144170	ID φ12	5m	244950	OD φ10	5m

⑬Carriage



⑭Communication cable A for cooling



Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty	Cat.No.	Norm	Q'ty
260460	For CCA-1112A	1	252200	CC-2M	1						

■ ⑧Metal nozzle set

Model	AL-1	AL-2	AL-6	AL-8
Nozzle OD (Material)	φ10.5(brass)	φ13.5(brass)	φ10.5(SUS)	φ13.5(SUS)
Cat.No.	242420	243950	243970	243980

■ ⑨Circulation nozzle A

Model	A-1	A-2
Nozzle OD (Material)	φ10.5R3/8(brass)	φ13.5R3/8 (brass)
Cat.No.	113110	113120

■ ⑦Insulated hose set

Tube ID	φ9			φ12		
Length	1m	2m	5m	1m	2m	5m
Cat.No.	112690	112700	174420	113280	143330	174440