



Thank you for patronizing our products.

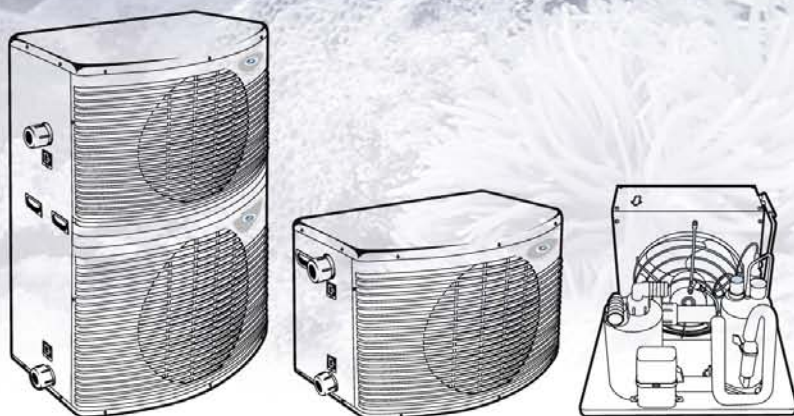
ARCTICA®

COMMERCIAL SERIES TITANIUM CHILLER

Installation, Operating and Maintenance Manual

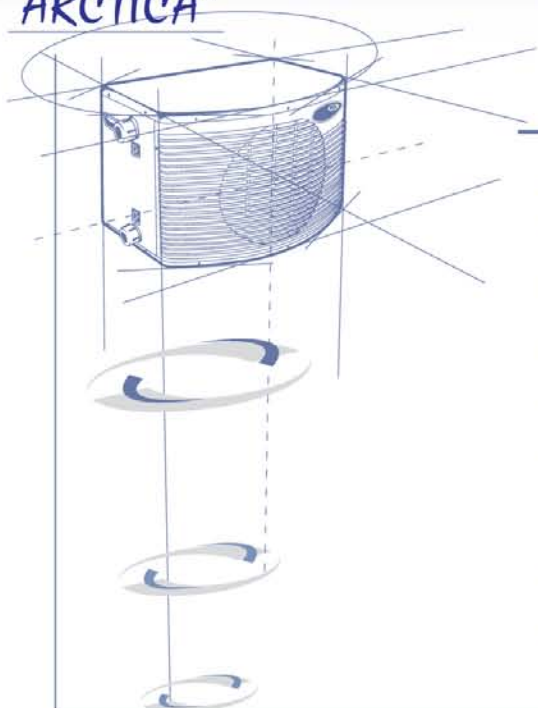
AQUARIUM COOLER

DA - 500 Series
DA - 700 Series
DA - 1000 Series
DA - 1500 Series
DA - 2000 Series
DA - 3000 Series



www.jbjlighting.com

Distributed by : TRANSWORLD AQUATIC ENTERPRISES, INC.
TEL : (310) 672-0480 FAX : (310) 672-7261

**ARCTICA®****JBJ Cooler Features**

- Thank you for patronizing our products.
- Please read this operating manual before using the cooler.
It will enable you to use it more safely and ensure it's long life.

- Proud of high cooling performance
- Designed exclusively for salt water tank
- Uses a special titanium heat-exchanger not detrimental to live fish
- Designed for convenient use
- Corrosion-resistant
- Accurate control of water temperature with remote-control operation of the temperature controller
- Protects from heat-exchanger crack by freezing with internal sensor
- Convenient installation

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Specifications

- User safety and protection of property
Please read all instructions for proper use.

- This manual describes the operation, installation and operating cautions of the cooler.
- Read this manual and have it handy so as to refer to it whenever you have a question.
- Do not operate beyond the instructions of the manual. It may cause a problem, and in such an event the user may take responsibility for the problem.
- For the best performance of the cooler please ensure you fully comprehend the instructions of the manual before using the cooler.

Indication

⚠ WARNING

Failing to follow the instructions may cause death or severe injury.

⚠ CAUTION

Failing to follow the instructions may cause injury or property damage.



Prohibition



Disassembly prohibited



Be sure to follow this.



Remove plug from outlet.



Ground to prevent electrocution.

Read "Safety Precautions" before use.

The instructions about danger, warning and caution described here are for the right use of the cooler and protecting human lives and property. Please be sure to follow the instructions.

⚠ WARNING



Do not set the cooler on the aquarium or in a damp place.

- It may cause fire, electric leakage or other problems.



Do not put fingers or other items in the cooler jet.

- In particular, take care to ensure that children do not put their fingers in it.



Do not pull out the line or touch the outlet with wet hands.

- It may cause electric shock or fire.



Do not disassemble or move the cooler while driving.

- It may cause electric shock or other problems.



Do not connect an electric heater to the cooler or take it apart, repair or modify it without specific instructions.

- It may cause trouble, electric shock or fire.
Contact the service center when a repair is needed.



Before cleaning the aquarium or renewing water, make sure you shut off the no-fuse breaker and circuit breaker for safety.

- It may cause electric leakage, electric shock or other problems.

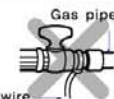


Circuit breaker



Do not connect the ground wire to a gas pipe, water pipe or telephone wire.

- It may cause electric shock.



Ground wire



Be sure to ground when installing the cooler.

- Otherwise, there is a danger of electric shock.



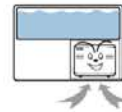
Use a single power source with an exclusive wiring system for the cooler.

- Otherwise, there is a danger of electric shock or fire.



▲ WARNING**Be sure to ventilate the cooler when installing it in the aquarium.**

- If poor ventilation does not allow warm air to escape, it may cause fire or trouble, including lowering the cooling performance.

**Install a thermostat on the floor of the aquarium when installing the cooler in the aquarium.**

- If water falls down on the floor of aquarium, it may cause fire, electric leakage or other problems.

**Install a no-fuse breaker and circuit breaker for the cooler.**

- Otherwise, there is a danger of electric shock or fire.
- In the case a circuit breaker is in common use, if the power source is cut off because of the cooler, the stoppage of devices for the cooler may kill the fish.



Circuit breaker

**Do not connect to the power source together with other devices.**

- It may cause fire, electric shock or loss of human lives or property.

**Do not put the cooler in a place with near of inflammable gas leak, direct sunlight or hot air.**

- Gas leakage around the cooler may cause explosion or fire.

**Do not put the thermostat controller in a damp place, on or around the aquarium.**

- It may show an abnormal sense of temperature or cause problems.

**Do not bend the electric wire by force or do not put heavy items on it.**

- It may cause electric shock or fire.

**Do not use a damaged power cord or plug, or loose outlet.**

- It may cause electric shock or fire.

**Do not use a cracked cord.**

- It may cause electric shock, electric leakage or fire.

**Do not install the cooler in an unstable place.**

- If the cooler falls down, a loss of human lives or property may arise.

**Do not spray insecticide or inflammable materials on the cooler.**

- Not only it is detrimental to your health, but also it may cause fire or other problems.

**In case the water temperature sensor is an external type, make sure you put it in the water of the aquarium.**

- Otherwise, malfunction or other problems may arise.

**Do not use the cooler in an area where input voltage is lower than 200V?**

- The cooler may not work and problems may arise.



200 - 230V

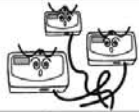
**Be careful that you do not get the cooler, thermostat controller connecting cords, or sensor cords wet.**


- It may cause electric leakage, fire or trouble.





⚠ WARNING


- ⊘ **In case of using plural coolers, be careful not to connect the thermostat to the wrong cooler.**
 • The cooler may not work.



- ⊘ **Do not place one cooler upon another cooler.**
 • It may cause noise, electric shock, fire or other problems.



- ⊘ **Check the operation of the circulating pump from time to time. Do not operate the cooler without water flow or when the circulating pump is out of order.**
 • It may lower the cooling performance and cause problems.



- ⊘ **Use seamless cord when connecting to the power source.**
 • Otherwise, it may cause a short circuit or a broken wire, which may result in fire, electric leakage or other problems.



- ! **Only use a fuse with a properly rated capacity.**
 • Especially, do not use wire or copper wire in place of the fuse. There is a risk of other problems including fire.
- ! **Shut off the breaker when connecting temperature sensor line, ensure wire colors correspond, and attach the water-proof tape to prevent water infiltration.**
 • Otherwise, it may show an abnormal sense of temperature or cause other problems.


- ! **In the case a strange noise, burning smell or smoke arises, immediately turn off the cooler, shut off the power source, and then refer to the service center.**
 • There is a danger of electric shock or fire.


- ! **For installing the cooler, make sure you refer to an exclusive JBJ cooler distributor or an exclusive JBJ cooler agent for installation.**
 • There is a danger of water leakage, electric shock, fire or other problems.
 • In particular, you must refer to the distributor at which you purchased the cooler or a service center when installing it at a factory area or any other special places such as a salty seaside area.
- ! **Make sure you ventilate the cooler from the front and rear. Leave a space of 8inch in the rear, and 4ft in both sides, and do not put other items within 5ft of the front side.**
 • It may lower the cooling performance and cause problems.



- ! **Do not install the cooler in a place where there is a fear of submergence.**
 • It may cause electric shock, electric leakage, fire or any other problems.



- ! **Be careful that you do not get the cooler wet when cleaning it or renewing the water.**
 • Make sure you unplug the cooler when cleaning it.



⚠ CAUTION

- ⊘ **Do not forget to use JBJ products for the thermostat controller. We take no responsibility for problems due to the use of other products.**


- ⊘ **Do not use the thermostat controller for other purposes than controlling the water temperature within the aquarium.**
 • Do not use it for precision devices, food, animals or plants. It may lower the cooling performance or cause problems.



⚠ CAUTION

⊘ Avoid water penetrating into the cooler.

- It may cause electric shock or fire.



⊘ Do not spray water on the cooler directly or clean it with benzene, alcohol or other thinners.

- It may cause electric shock or fire.



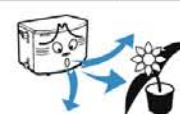
⊘ Do not install the cooler without grommet.

- Problems including noise due to vibration may arise.



⊘ Be careful that men, animals or plants are not directly exposed to the air from the cooler.

- It is detrimental to human body, and may have a bad impact on animals or plants.



⊘ Do not turn off the cooler by an auxiliary switch.

- It may cause problems including electric shock. Make sure you turn off the cooler by pressing the "POWER" button.



⊘ Do not climb up to the cooler or do not put heavy items on it.

- It may cause problems including electric shock, and the falling of such an item may cause injury.



⚠ To clean or repair the cooler, first shut off the power source and wait until the fan stops rotating.

- Otherwise, it may cause electric shock or injury.



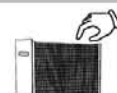
⚠ Contact the distributor at which you purchased the cooler or a service center, when a repair is needed.

- Disassembly or repair without specific instructions may cause electric shock or fire.



⚠ Be careful of the heat exchanger in the cooler when cleaning it since its surface is sharp.

- Put on thick cotton gloves to protect from finger cuts.



⚠ Do not install the cooler in a place with fear of direct sunlight or hot air, or in a damp place.

- It may lower the cooling performance and cause problems.



⚠ Do not install the cooler on sloping ground.

- It may cause vibration, noise or other problems.



⚠ Clean the condenser every month.

- Neglecting to clean it may lower the cooling performance and cause problems.



⚠ Do not move the cooler on it's side, drop it or impact it against anything.

- It may cause problems including safety problem.



⚠ In linking water pipes, use standard piping materials, and avoid water penetration into the cooler when fitting the connector.



⚠ In installing the cooler, choose a place without obstacles and with good ventilation, and where the noise arising out of operating the cooler has little impact on the neighborhood.

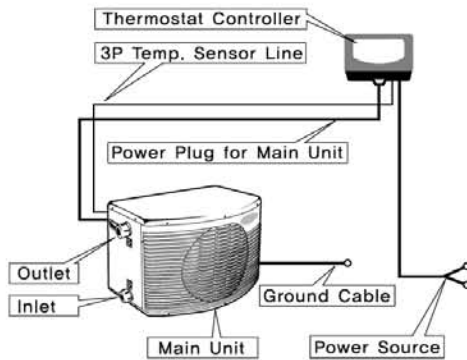
- Otherwise, problems may arise, and the noise may give inconvenience the neighbors.



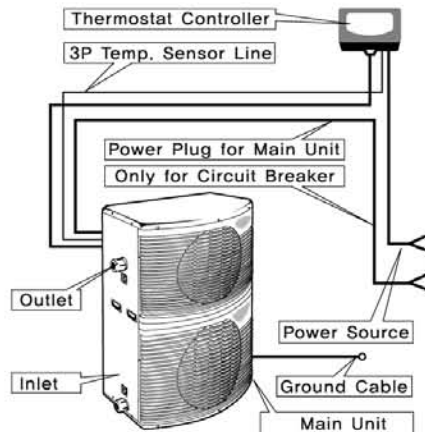
⚠ CAUTION

Do not install the cooler by suspending it on an external wall, outside veranda or any other unstable place.
If the cooler falls down, a loss of human lives or property may arise.

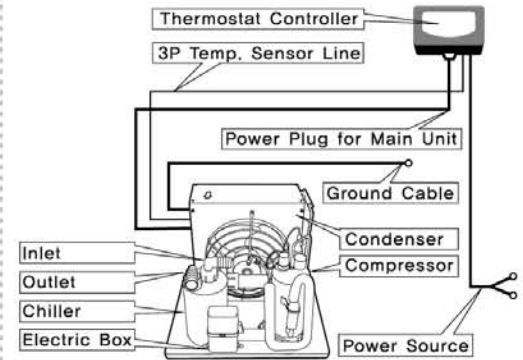
DA- 500B,L, DA-1000B,L
DA-1500B,L



DA-2000B,L,C,CL
DA-3000B,L,C,CL

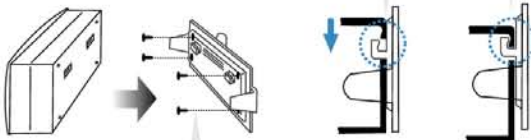


Internal Type DA- 500N,DA-1000N

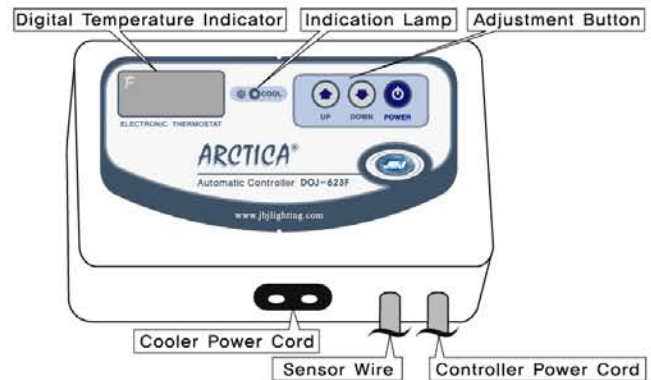
**Thermostat Controller Installation**

Correct fit will be indicated by a "tick" sound.

Insert the thermostat downward by pressing it.



Fasten the back board to the wall with screws.

Thermostat Controller**How To Use Cooler****Cooler Operation****Optimal temperature/moisture for cooler operation**

If you operate the cooler in excess of the optimal range of temperature and humidity, it may stop to operate due to the detection by the protection device.
In particular, do not operate the cooler when the outdoor temperature is below 50°F. It may cause problems.

- Controlled temperature and ambient temperature around the cooler: 70°F – 104°F
- Controlled temperature and ambient humidity around the cooler: Relative Humidity below 80% (High moisture may cause electric shock or fire due to poor insulation.)

Checkup before use

Be sure to check the following items before using the cooler:

1. Check if there is any obstacles around the cooler.

- Clear it away if any. It may lower the cooling efficiency due to poor ventilation, and cause problems.

2. Check if the no-fuse breaker or circuit breaker is switched on or not.

- If the no-fuse breaker or circuit breaker is switched off, the cooler will not work by simply pressing the "START/STOP" button.
- ▶ Our product does not include no-fuse breaker and circuit breaker. You need to purchase them separately.
- ▶ They are devices to prevent electric leakage due to overcurrent. Separately install them around the cooler or thermostat controller, and shut them off when cleaning the cooler or not operating it for a long-term.

3. Check the circulating pump and piping for water leakage and cooling water flow.

- A weak flow of cooling water may lower the cooling performance.
- Be careful not to switch or incorrectly fit the cooling water inlet (coming out of circulating motor) and the outlet (going out to aquarium).

4. Check the temperature sensor.

- In case the sensor is an external type, make sure you put it in the water of the aquarium. Be careful that the sensor does not come out of the water when taking out fish or cleaning the aquarium.

Cooler Operating Methods

1. Switch on the earth leakage circuit breaker and no-fuse breaker.
2. Press the thermostat "POWER" button. (operation of thermostat)
3. Check the desired water temperature of the aquarium by pressing the "UP" button.
4. If you want to change the preset temperature, adjust it according to the instructions on [page 8](#).
5. If the water temperature of the aquarium is higher than the preset temperature, the indication lamp will illuminate after flashing for 3 minutes. Then the cooler will start to work. Afterward, the cooler will automatically control the water temperature of the aquarium within $\pm 1^{\circ}\text{F}$ of the preset temperature.
6. Press the "POWER" button one time to turn the cooler off.
7. Switch off the earth leakage circuit breaker and no-fuse breaker when not using the cooler for a long-term.

Thermostat Controller Operating Method

- Use our thermostat controller as it is purposefully made for this use.
- A large-capacity power relay (15A/250V) is embedded.
- There is an error of $\pm 1^{\circ}\text{F}$ by IC temperature sensor.
- Since the water temperature at the time of product release is preset with 57°F , you may instantly use the thermostat controller without adjusting it if you want around 57°F water temperature.

Power On/Off



Press the "POWER" button one time.

- When the present water temperature is displayed on the Display Window, the thermostat auto control operation will start.



Press the "POWER" button once again.

- The Display Window will be deactivated and the thermostat will be in "wait" status.

⚠ CAUTION

In this status, the thermostat is not completely "turned-off", but just is in a suspended state. In case the operation is suspended for a long time, or the power source is shut off, switch off the safety circuit breaker.

Thermostat Controller Operating Method

Auto Operation

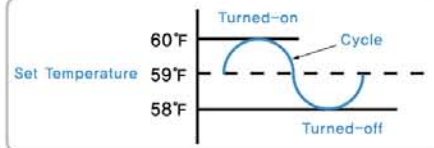
The thermostat maintains and controls the preset temperature, automatically oscillating "on" and "off" to maintain the preset temperature.

► Deviation of Turn-on and Turn-off

- The thermostat will "turn-on" 1°F higher than the preset temperature.
- The thermostat will "turn-off" 1°F lower than the preset temperature.

You have to wait for three (3) minutes at the "turned-on" temperature. It will normally start to work after three (3) minutes.

- The three-minutes' waiting time is to protect the compressor motor, which is an important part of the cooler, against the pressure change of refrigerants from the cooler. However, the deviation of "turn-on" and "turn-off" and the waiting time are not changed.



Adjusting the Preset Temperature

• Example

To change temperature from 59°F to 64°F.



Keep pressing the up button for about 3 seconds. The displayed value changed.

The decimal point blinks. Depress when the number blinks.

Adjust the value by pressing button sequentially.

The value renewed will be memorized into unit after 10 seconds.

► Indication of Abnormality

	Turned-off	The cooler is not in operation.
	Flashing	The cooler is preparing for operation. (It will flash for three minutes.)
	Turned-on	The cooler is in operation.

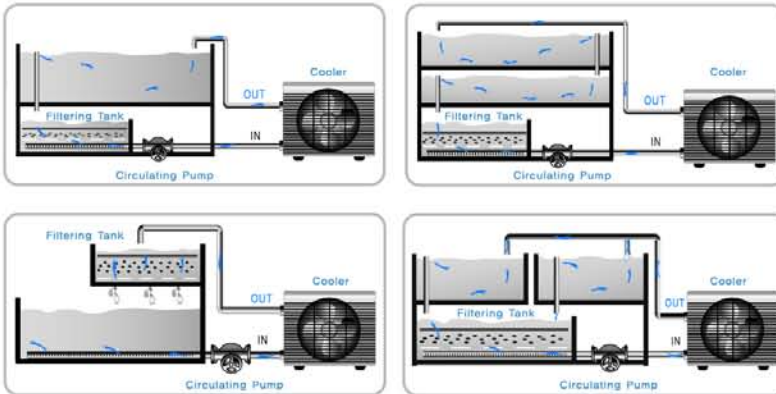
► Indication Lamp

Indication	Identity	Description	Remedy
Er.1	Abnormal signal of sensor	When the displayed temperature is over 122°F. When there is a broken wire or problem on wiring.	<ul style="list-style-type: none"> - Check if the wire got damp or there is a problem on wiring. - Check if the sensor wire is broken or bent intensely.
-r.1	Abnormal signal of sensor	When there is a broken wire or problem on wiring.	
Er.2	Abnormal signal of internal thermostat	When there is a problem on power compensation. When there is a problem on setting and operating memory.	<ul style="list-style-type: none"> - Unplug the power cord, and then plug it again after ten seconds.

Cooling Water Pipes Installation

⚠ CAUTION

Switching the water cooling inlet and the outlet may change the cooling performance and cause malfunction.



Cooler Setting

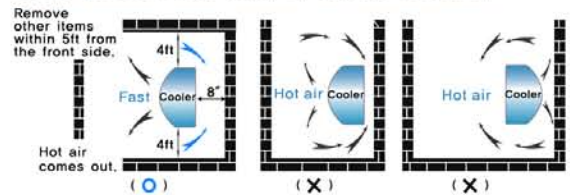
⚠ CAUTION

In installing the internal cooler type, be sure to use ventilating windows(louver) for air vents on the front side and backside. Poor ventilation may cause problems.



⚠ CAUTION

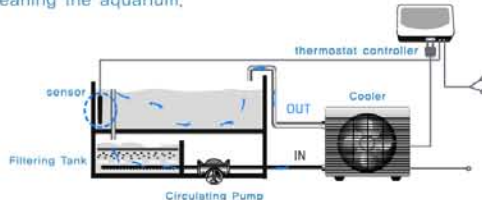
Leave a space of 8" in the rear, and some space in both sides. Do not put other items within 5ft from the front side.



Connecting to the power source and installing thermostat sensor

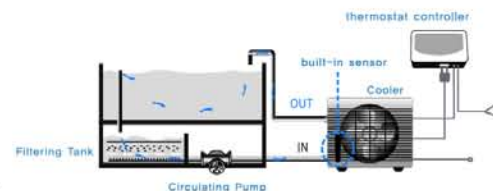
⚠ CAUTION External Sensor Type

- With this sensor type, abnormal motor function or water circulation can cause the chiller breakage.
- Fix the sensor not so as to come out of the water when taking out fish or cleaning the aquarium.



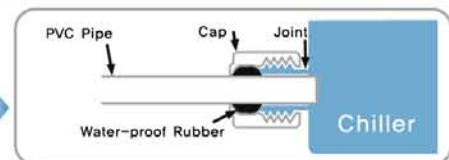
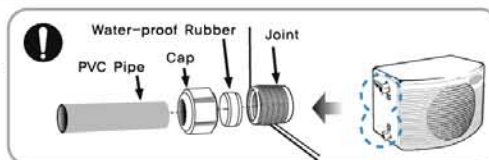
⚠ CAUTION Internal Sensor Type

- The sensor is built-in to the cooler. Switching the water cooling inlet and the outlet may lower temperature sensing.



Installing pipes

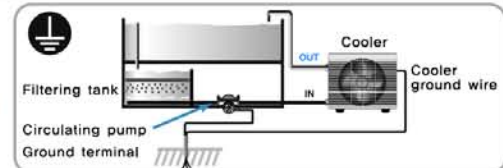
- In linking water pipes, use standard piping materials, and avoid water penetration into the cooler when fitting the connector.



Ground Installation

⚠ CAUTION Be sure to ground to prevent electric shock.

- Strip the covered wire and drive in the copper pipe around the aquarium, and then ground it. If there is any ironware around the bottom of the aquarium, ground to it. However, don't ground to a tap.



Thickness of power line and capabilities of circuit breaker

⚠ CAUTION Follow the instructions below to prevent fire and secure safety.

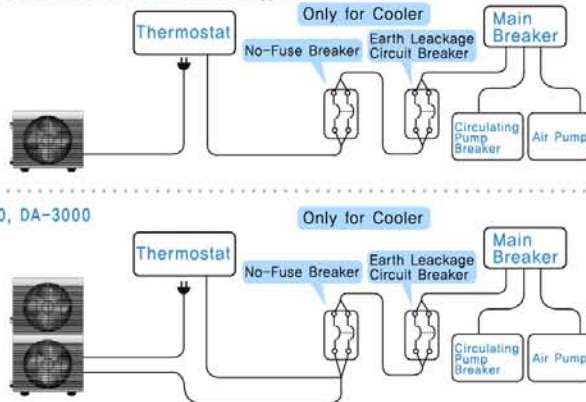
- Use thicker wires as the distance between the cooler and the main breaker is farther.
- Use seamless cord when connecting it to the power source.

MODEL	Wire size (AWG)		Capabilities of Circuit Breaker (A)	Capabilities of No-fuse Breaker (A)
	Up to 50ft	Over 50ft		
DA - 500 Series	16	14	6	20
DA - 700 Series	14	12	10	20
DA -1000 Series	14	12	10	20
DA -1500 Series	14	12	15	25
DA -2000 Series	14	12	20	32
DA -3000 Series	12	10	30	50

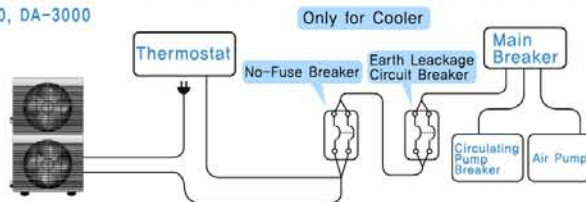
MODEL		Wire size (AWG)		Capabilities of Circuit Breaker (A)	Capabilities of No-fuse Breaker (A)
		Up to 50ft	Over 50ft		
DA - 500N		16	14	6	20
DA -1000N		14	12	10	20
DA -2000 3PH	208-230V	14	12	10	20
	460V	16	14	6	20
DA -3000 3PH	208-230V	14	12	15	25
	460V	14	12	10	20

Connecting Cooler and Thermostat to the Power Source

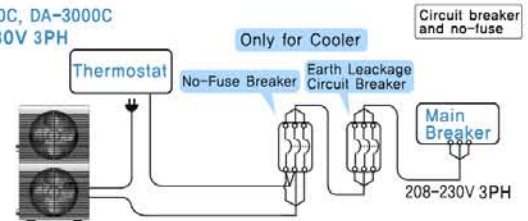
- DA-500, DA-700, DA-1000, DA-1500
DA-500N, DA-700N, DA-1000N (Internal Type)



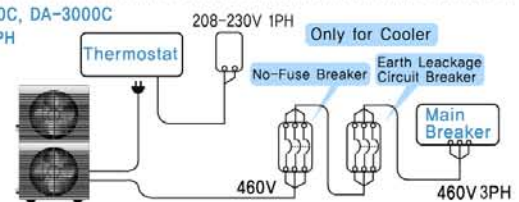
- DA-2000, DA-3000



- DA-2000C, DA-3000C
208-230V 3PH



- DA-2000C, DA-3000C
460V 3PH



How to Use Cooler

Checkup Before Requesting Service

Please be sure to confirm the following instructions before requesting service.

- Symptom** : The light on the thermostat is not lit.

What to Check

- Check 1 Are no-fuse breaker and circuit breaker shut off?
- Check 2 Is the power cord plugged into the outlet?
- Check 3 Is the thermostat controller turned on?

Remedy

- Switch on the no-fuse breaker and circuit breaker.
- Check the connection of the power cord.
- Try to press the thermostat "POWER" button.

- Symptom** : The light on the thermostat is lit, but the cooler does not work.

What to Check

- Check 1 Is the temperature setting correct?
- Check 2 Is the cooling lamp lit?
- Check 3 Is the cooler plug connected to the power port in the bottom of the cooler?

Remedy

- If the set temperature is higher than that in the aquarium, the cooler will not run.
- Confirm the set temperature, and re-set the temperature lower than that of aquarium.
- Connect the cooler and power port of the thermostat to each other properly.

- Symptom** : The cooler is working, but does not cool properly.

What to Check

- Check 1 Is the circulating pump connected properly?
- Check 2 Is the cooling water flowing enough?
- Check 3 Is the cooler ventilating properly?

Remedy

- Check the water piping to ensure water flow into the cooler is uninhibited.
- Since insufficient flow of water into the cooler may lower the cooling performance, ensure as much water flow as possible.
- Ensure the hot air escapes from the cooler effectively.

- Symptom** : The cooler is working, but its performance is weak.

What to Check

- Check 1 Is not the amount of water in the aquarium too great compared to the capacity of the cooler?
- Check 2 Is the heat loss of the aquarium too great?
- Check 3 Is the amount of circulating water too small?
- Check 4 Is the desired temperature too low compared to the capacity of the aquarium and cooler performance?

Remedy

- Lower the water level of the aquarium a little bit. In a hot summer, lessen the amount of water even more.
- Protect the aquarium from direct sunlight or hot air.
- Ensure the water flows well by replacing the circulating pump.
- Set an optimal temperature.
- If you desire lower temperature, lower the water level, otherwise, use a higher capacity cooler.

- Symptom** : The vibration and noise of the cooler is too great.

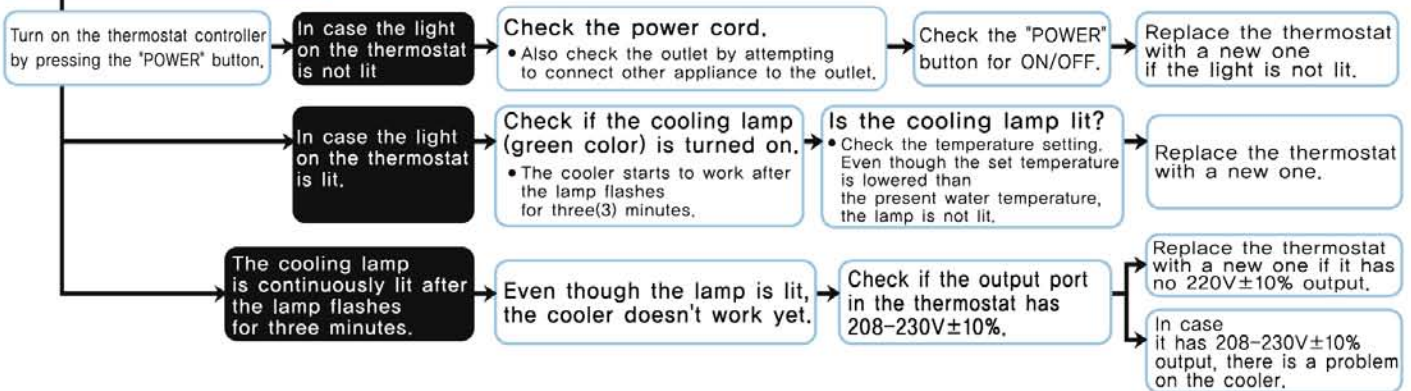
What to Check

- Check 1 Is the floor where the cooler is fixed sloping or uneven?

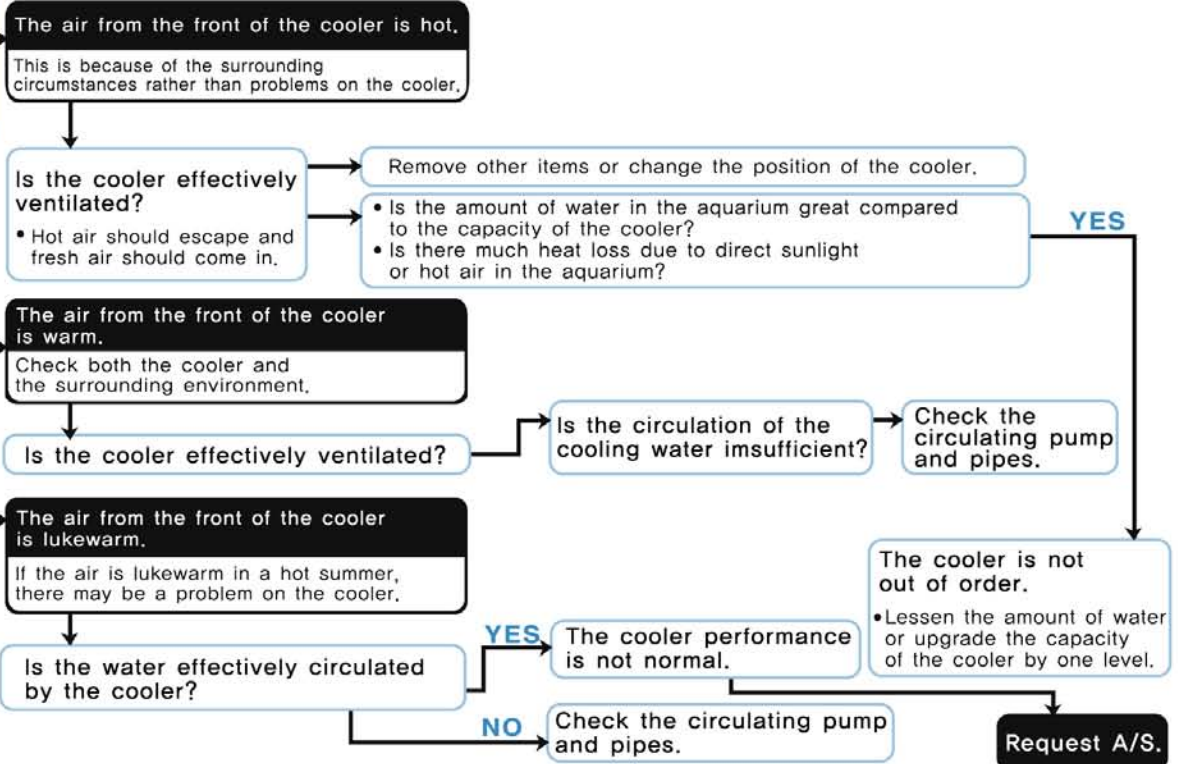
Remedy

- Move the cooler to an even floor.

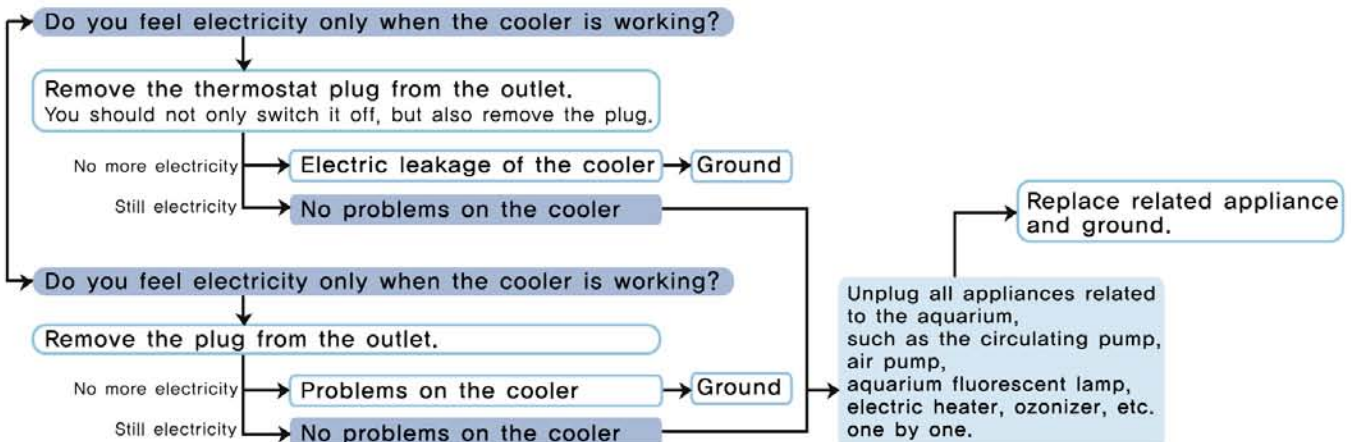
The cooler does not cool.



The cooler is working, but its performance is weak and accordingly the temperature is not going down effectively.



Do you feel electricity when you touch the aquarium? (Electric leakage)



When installing

► Aquarium

When installing the aquarium, avoid sunlight or heating appliances.

- Draw the curtain when sunlight comes in.
- Do not put the aquarium around heating appliances.
- The temperature of the aquarium does not go down, but the consumption of electricity becomes increasing, and the cooler gets overloaded.

► Cooler

When installing the cooler, choose a place with good ventilation and without direct sunlight.

When sunlight comes in, hang a cover over it.

- Do not put the cooler in a place exposed to heat from the kitchen, etc. It will lower the cooling performance.

► Circulating Pump

Using a circulating pump with large capacity will enable as much water as possible to circulate in the cooler, which will result in increasing the cooling performance and decreasing electric consumption.

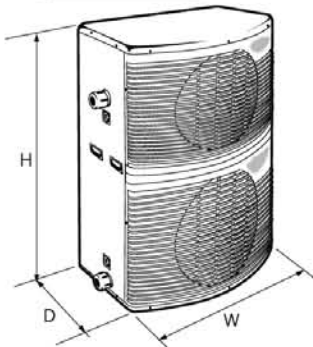
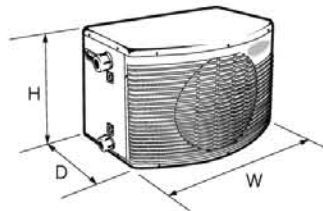
When Using

- Set the aquarium temperature properly.
- Since too low set temperature increases electric consumption, set an optimal temperature depending on fish.
- Good filtering device will enable purifying the aquarium water and recycling it.

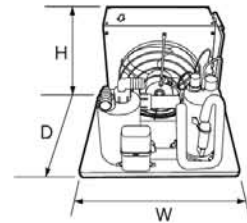
Others

- Too much dust on the condenser will lower the cooling performance. Clean it every month.

Specifications

DA-2000B, C
DA-3000B, CDA- 500B, DA-1000B
DA-1500B, C

Internal Type DA- 500N, DA-1000N



Model	DA-500B	DA-700B	DA-1000B	DA-1500B	DA-2000B	DA-3000B	DA-500N	DA-700N	DA-1000N	DA-2000C	DA-3000C
Power	AC 208-230V 1PH 60Hz									AC 208-230V/460V 3PH 60Hz	
Cooling Capacity (Btu/hr)	6,000	9,000	12,000	18,000	24,000	34,000	6,000	9,000	12,000	24,000	34,000
Compressor (HP)	0.5	3/4	1	1.5	2	3	0.5	3/4	1	2	3
Fan motor (W)	16	66	66	100	66×2EA	100×2EA	16	66	66	66×2EA	100×2EA
Refrigerants	R - 22										
Controller	Thermostat Controller										
IN/OUT Connection	1" × 1"				1¼" × 1¼"		1" × 1"			1¼" × 1¼"	
Weight (LBS)	55	77	79	84	126	137	44	58	60	132	143
Size (W×D×H)	21"×14"×15"	26"×15"×19"			26"×15"×36"		15"×17"×13"	18"×18"×16"		26"×15"×36"	

• The specification is subject to change for enhancement of quality and performance without prior notice.

- ① The internal type cooler is specially designed and manufactured to be installed in the aquarium according to requests from customers.
- ② Free service will not be provided for such an occasion where a distributor not authorized by Daeil installed the cooler or provided service.
- ③ The expenses for additional works such as wiring extension or auxiliary switch setting will be for the account of customers.