Refrigerant Chiller

PRODUCT USER MANUAL

For DC300, DC750, DC2200, DC4000

The Aquarium Solution

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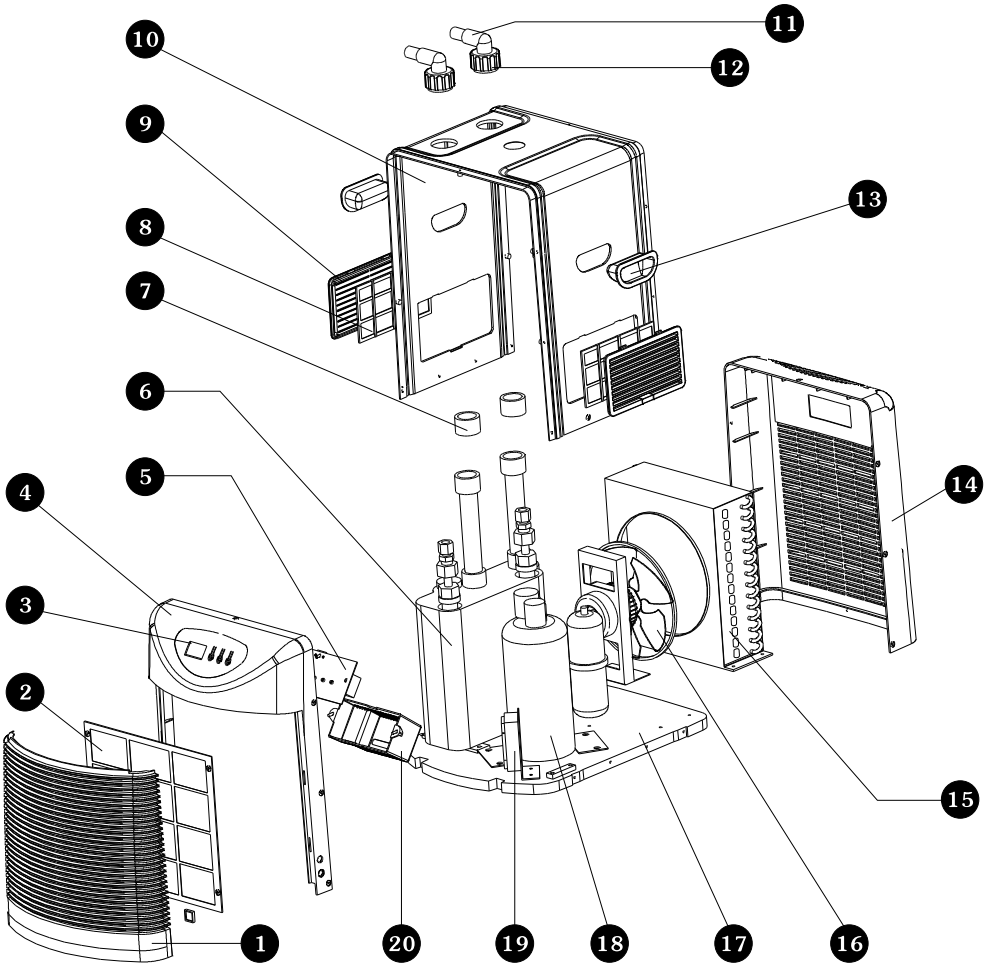


PARTS LIST

(1) Front filter cover (2) Filter (Front filter models only) (3) Control panel (4) Front cover (5) Circuit board (6) Tank (with evaporator) (7) Seal sleeve (8) Filter (side filter models only) (9) Side filter cover (10) Middle cover with power supply switch (DC300/DC750 only) (11) Water inlet and outlet adaptor (12) Nut (13) Handle where applicable (14) Back cover (15) Condenser (16) Fan (17) Base (18) Compressor (19) Junction box (20) Back cover of circuit board.

INTRODUCTION

Thank you for purchasing a D-D DC series aquarium chiller, which offers an economical and technologically advanced solution to the cooling of your aquarium.

Excessive temperatures in your aquarium can now be quickly and easily controlled by selecting the correct model from the D-D DC chiller range, which use a heat exchanger that is manufactured from high-grade pure titanium, making the chillers suitable for applications in fresh or salt water aquariums.

The system design and high efficiency compressor reduce the forces on the rotor, which results in significantly lower noise levels, whilst the digital temperature controller ensures that the selected temperature is maintained. Our chillers use the environmentally friendly R134a refrigerant.

D-D DC series chillers are robust, with a strong chassis and aesthetic, non-corrosive, ABS plastic housing which ensures that the chiller does not look out of place in any surroundings.

Please read this installation and maintenance manual carefully before operating the chiller to prevent errors or improper use. Failure to do so may result in loss of fish or damage to this unit.

FEATURES

1. Micro-computer control system for accuracy and ease of operation.
2. Large refrigeration capacity, aquarium water can be refrigerated to any temperature above 4°C in a short period of time.
3. Uses environmentally friendly R134a Freon-free refrigerant.
4. Anti-corrosive pure titanium evaporator for both fresh & salt water use.
5. Over-current protection device system.
6. Temperature memory system, automatically returning to the previously set temperature following a power failure to protect the fish in the aquarium.

ADDITIONAL FEATURES DC4000

1. Integrated heating and cooling system. Unit can be used for heating in the winter and cooling in the summer but do not operate at the same time.
2. Super silent revolving compressor from Mitsubushi/Panasonic/Hitachi from Japan for extra efficiency and lower power consumption.
3. Cools down to 3°C
4. Built in auto-defrosting system and drain for heating cycle.

SUGGESTIONS FOR SAFE OPERATION

Several symbols are used in this manual and on the product itself to ensure safe and proper operation to prevent injury to yourself or others or damage to the chiller. The meanings of these symbols are explained below. Please be sure you understand their meanings before you read this manual.

EXPRESSIONS (TERMS AND SYMBOLS)

The degree of danger will be indicated by the terms or shown by pictures. The symbols on the left are a general indication but specific details of the action which must be taken will be shown by a picture or explanatory text beside the symbol.

This symbol advises you of an item which should be noted (including danger and warning).

This term indicates the possibility that ignoring this notification, or working incorrectly without full understanding, may cause personal injury or physical damage.

This symbol advises you of an action which must be taken (is mandatory) in order to avoid danger.

This symbol advises you of an action which must not be taken (is prohibited) in order to avoid danger.

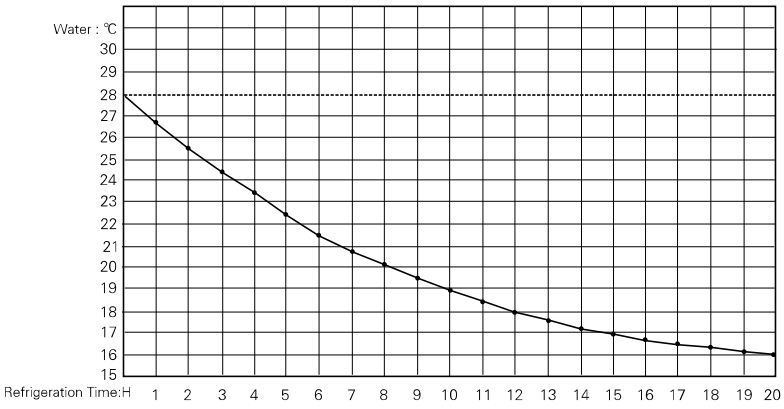
SPECIFICATIONS

	DC300	DC750	DC2200	DC4000
Voltage	220-240V	220-240V	220-240V	220-240V
Frequency	50Hz	50Hz	50Hz	50Hz
Working Current	0.8 A	1.8 A (3.0A)	3.2 A	7A
Power	1/15HP	1/4HP	1HP	2HP
Cooling Wattage	300W	750W	2200W	4000W
Water Flow Rate	200-1000L/h	1000-2500L/h	1000-2500L/h	3000-6000L/h
Refrigerant	R134a	R134a	R134a	R407C
Refrigerant Weight	120g	170g	600-650g	800-1000g
Weight	9.5Kg	18.6Kg	31.3Kg	47Kg
Dimensions (mm)	338x218x325	448x330x440	520x400x480	634x4680x590
Water Volume Cooling Examples				
Ambient Room Temperature	30°C	30°C	30°C	30°C
Water Temperature Before Refrigeration	28°C	28°C	28°C	28°C
Refrigeration Time	20h	20h	20h	20h
Water Volume Refrigerated (Example A)	150L	300L	1000L	2000L
Water Temperature After Refrigeration	18°C	18°C	16°C	16°C
Water Volume Refrigerated (Example B)	300L	600L	2000L	4000L
Water Temperature After Refrigeration	22°C	22°C	22°C	22°C

1. The rate of flow is dictated by the duty of the pump or water supply system which must be purchased in addition to the chiller.
2. The refrigeration performance test is carried out at an ambient temperature of 30°C without any other additional heat sources.
3. The cooling rate and efficiency will be affected by the installation location and any heat sources, such as heat from lighting or pumps.
4. Refrigeration efficiency will decrease when there is insufficient ventilation within the cabinet or room due to heat from the unit.

EXAMPLE PERFORMANCE CURVES

AMBIENT TEMPERATURE: 30°C. INITIAL WATER TEMPERATURE 28°C.
REFRIGERATED WATER VOLUME: DC300 - 150L, DC750 - 300L, DC2200 - 1000L, DC4000 - 2000L



The refrigeration performance test is carried out at an ambient temperature of 30°C without any other additional heat sources.

INSTALLATION

When the chiller carton is unpacked, check to see if the chiller is the right model and that no damage to the unit has occurred during transportation. You should also check that all spare parts and accessories are included as listed below.

1. PLEASE CHECK THE CONTENTS OF THE PACKAGE:

D-D DC Series Chiller - 1 set.

Instruction manual - 1 piece.

Water inlet & outlet connector - 2 pieces.

EU Plug and UK fused plug adaptor - 1 piece (not included on DC4000 model)

2. INSTALLATION POSITION:

(1) Do not install the chiller outdoors. (Fig.1)

(2) Select a position as cool as possible and keep the unit away from flammable sources, high temperature, direct sunshine, moisture or dust. (Fig.2)

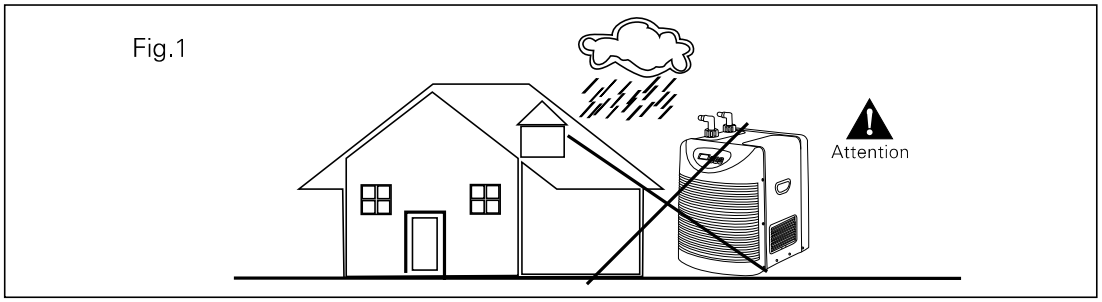
(3) Place the unit on a horizontal stable surface. (Fig.3)

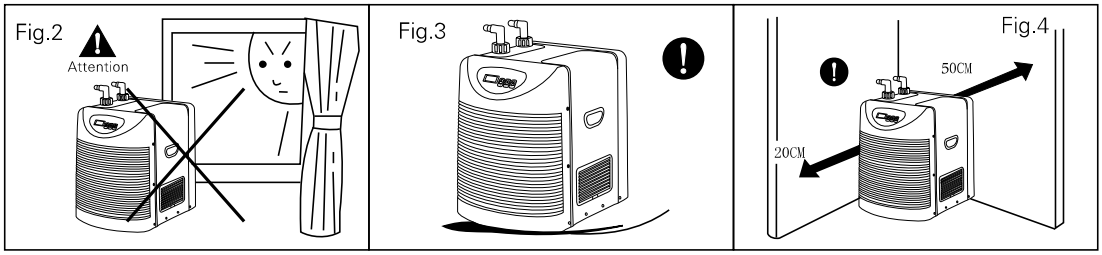
(4) Install at least 20-40cm away from any wall or structure for venting. (Fig.4)

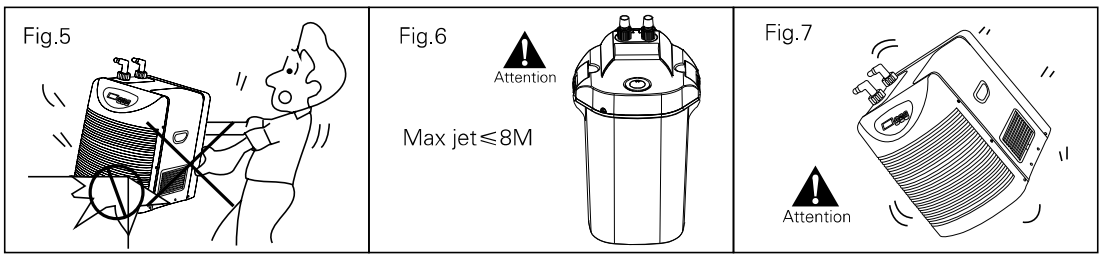
(5) Do not cover the chiller whilst it is working, avoid shaking or colliding with other objects directly.

(6) This chiller does not have a built-in water pump and so a suitable pump to circulate water is required as indicated in the specification table. The pump head pressure should be no more than 8m maximum and should be fitted with a pre-filter. If other equipment out of specification is used, it may cause water leakage or other damage. (Fig.6)

(7) Never store or stand the chiller upside down or on its side as this may damage the unit. If it has been stored in this orientation, then stand the correct way up and wait for at least 20 minutes before starting. (Fig.7)







3. SUGGESTIONS FOR INSTALLATION:

1. Electrical work must be done by a qualified electrician.

2. A dedicated power outlet should be used for the unit.

3. Ensure that the power source conforms to the power requirements specified on the product nameplate.

4. The power supply should be fitted with earth leakage breaker.

5. Disconnect the power during installation.

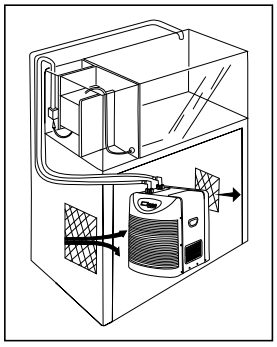
6. The DC4000 model is not fitted with a plug and should be professionally wired using a suitable contactor.

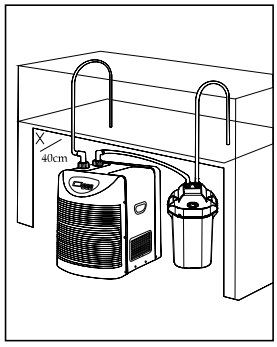
4. INSTALLATION METHODS

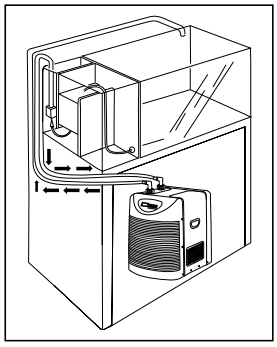
Note: The chiller must be operated with a recirculating and filtered water supply system.

The chiller also can be installed in a hidden position, such as inside a closed aquarium cabinet, however if your cabinet has no ventilation or grilles then they must be created, allowing a minimum opening area of 450cm2 for the flow of air. When the grilles are being formed, make sure that the air intake openings are in alignment with the grilles on the chiller and that the air outlet grille on the cabinet is made as high as possible to efficiently expel the hot air. The chiller should be installed with its back as near as possible to the grille of the cabinet to allow fresh air circulation. For the best air circulation, it is suggested to install your chiller outside of the aquarium cabinet.

If the chiller is placed under a water fish tank fitted with filter, the water feed can go directly to the inlet feed of the chiller. For salt water, it is especially important that the water must be filtered before feeding the chiller, or there is a possibility of blocking the coil and this will affect the cooling.







5. BEFORE STARTING THE OPERATION OF THE CHILLER, PLEASE CHECK THE FOLLOWING:

(1) Check if the water level inside the aquarium is suitable for the continuous supply of water.

(2) Make sure that there are no water leaks from the hose and pipe connections.

(3) Insert the power plug fully into the power outlet so that the plug itself does not wobble.

(4) Double check the circulating & filtration system, especially that the circulating tube is not clogged.

OPERATION

Note: Before starting the chiller, you must run the pump to ensure the correct operation of the water circulating/ filtration system.

There are three buttons for changing or setting the temperature on the control panel. (4 buttons on the DC4000 model)

AQUARIUM TEMPERATURE DISPLAY & SET TEMPERATURE DISPLAYS

When in operation, the display of the chiller will show the current water temperature. Press the (SET) button once and the display will change to show the current set temperature for the unit, a dot (1) on the display twinkles to indicate the setting temperature. Press the SET button once again or wait for 8 seconds and the display will return to the aquarium temperature.

ADJUSTING THE SET TEMPERATURE

Press the (SET) button for more than three seconds to enter the programming mode, indicated by a beep and the current set temperature value will flash on the display. Press the △ button for increasing temperature or ▽ button for decreasing the temperature to set your new required parameters. You will hear a beep with each press whilst in programming mode. Press the (SET) button again to save or just wait for eight seconds. The display will revert to the temperature of the aquarium water whilst the chiller is working. The available temperature set range is from 4°C to 28°C.

DC4000 ONLY - ADJUSTING THE SET TEMPERATURE

There are 4 keys on the control panel for this larger model to control the cooling and additional heating cycle.

To adjust the chiller temperature, press (COLD) for 3 seconds and then follow the standard set temperature adjustment instructions above. Temperature adjustment is available between 3°C to 46°C

To adjust the heating temperature, press (HEAT) for 3 seconds and then follow the standard set temperature adjustment instructions above. Scroll through the modes with the △▽ arrows.

“TPS” will be shown on the display to indicate the heating temperature is enabled. Temperature adjustment is available between 3°C to 46°C.

“DST” will be shown on the display to indicate the temperature to start defrosting.

“DFT” will be shown on the display to indicate the temperature to stop defrosting.

Confirm the required mode by pressing (HEAT) again and the current set value will appear on the display, press the △▽ arrows to choose the required value and then press (HEAT) again to set or wait 8 seconds.

CHANGING DEFROST START AND STOP TEMPERATURES

The heating circuit of this chiller has a defrost function to maintain heating efficiency. This is not used on the cooling mode.

To change the START defrost temperature (default -3°C), choose function DST from the above menu and press (HEAT) again to enable the setting mode. Press the △▽ arrows to choose the defrost start temperature (from -15°C to +3°C).

To change the STOP defrost temperature (default +5C), choose function DFT from the above menu and press (HEAT) again to enable the setting mode. Press the △▽ arrows to choose the defrost stop temperature (from -12°C to +15°C).

ADJUST HYSTERESIS TEMPERATURE

With the DC4000 model it is possible to adjust the hysteresis value between the on temperature and the off temperature between 1°C and 3°C. At 1°C the chiller will switch off and off more often but maintain a tighter temperature range.

Press the ▽ key for 3 seconds until the digits twinkle and press the △▽ buttons to adjust the value.

TEMPERATURE CALIBRATION

It is possible to calibrate the temperature of your chiller to match another piece of equipment, such as a high precision thermometer/temperature controller/aquarium computer, or to create an offset to match the water temperature in the aquarium if the chiller is remotely positioned.

Press the ▽ and △ together and hold for 6 seconds. It is then possible to adjust the reading up or down through 1.5 degrees in 0.1 degree steps.

If this function is not specifically required, then we suggest that you leave the reading at factory setting.

CHILLER PROTECTION SYSTEM

A protection system is built into the chiller which prevents the refrigeration compressor from starting for three minutes between cooling cycles during normal operation or after a reset or when in use for the first time. If used with a third-party external temperature controller then the chiller will see this as a reset and delay for 3 minutes before starting the compressor.

AUTOMATIC ON & OFF SWITCHING OF THE REFRIGERATION COMPRESSOR

When the refrigeration compressor has not been running for over three minutes and the water temperature is 1 ºC above the set temperature, the compressor will start to work again automatically.

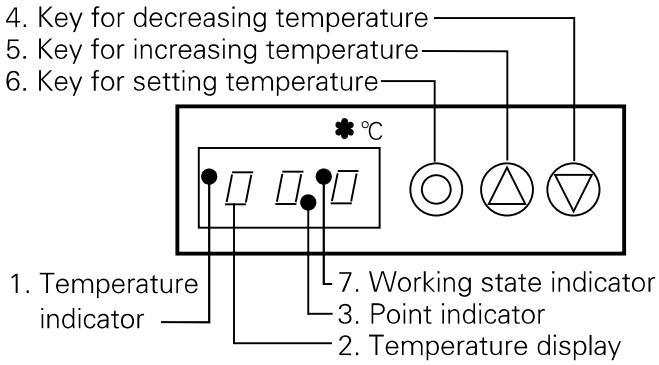
The compressor will continue to run and cool the water then stop working automatically when the aquarium water temperature reaches or falls below the set temperature.

The indicator light (7) shows that the chiller is working. The light turns off when the aquarium water temperature reaches the set temperature & the compressor stops running, the light twinkles to show that the protection device is delaying the compressor from restarting for three minutes.

FAULT DISPLAY SYSTEM

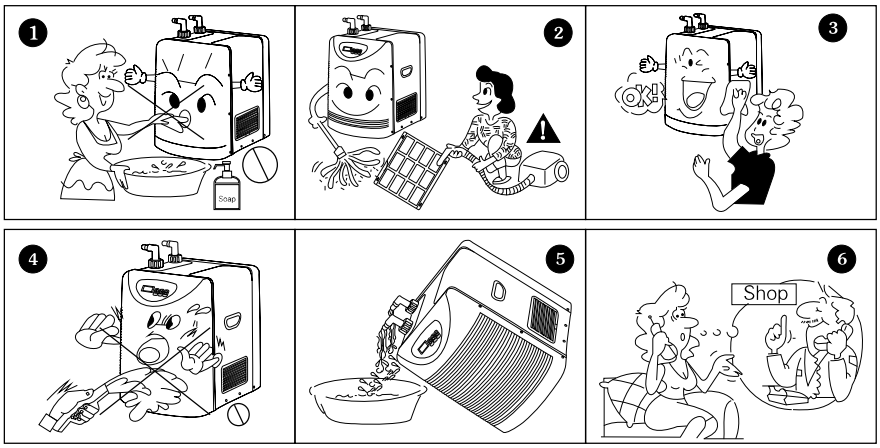
Some breakdowns will automatically show on the display. When the water temperature sensor is broken the letter. P1/(E1 – DC4000 model) will appear on the display and the protection device will respond to stop the chiller. E2 – DC4000 MODEL will be shown if the defrost circuit is not working.

CELSIUS OPERATION PANEL



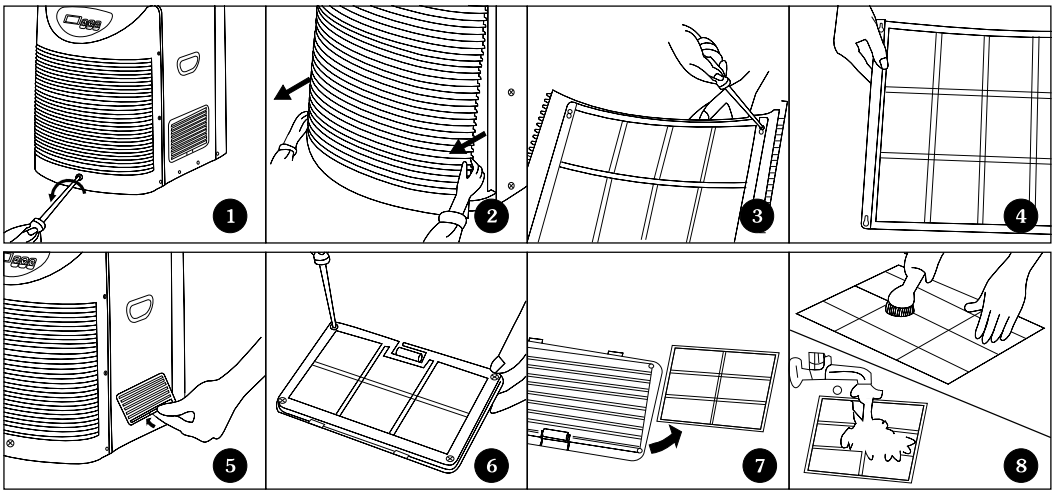
CLEANING AND MAINTENANCE

1. Cleaning of the circulating system and the filtration system is recommended each month to maintain maximum refrigeration operation and efficiency. Always unplug the cord from the outlet before cleaning. Rinse collected debris from the filter media, inlet & outlet pipe, flow diverter, impeller and chamber cover in clean lukewarm tap water. Soap or detergents are not recommended for circulation filter maintenance because they can be bad for the fish's health. (Fig.1)
2. Remove the dust from the air inlet and outlet with a brush or vacuum cleaner. To avoid electric shock, during operation do not insert wires or tools into the exhaust outlet or the air inlet. (Fig.2)
3. The plug, electric supply switch and temperature adjuster must be cleaned with dry soft cloth. (Fig.3)
4. NEVER immerse the unit into water or flush it directly with water to prevent damage to the electric insulation of the chiller. (Fig.4)
5. Disconnect the power supply plug if the unit is not to be used for a long time. Remove the inlet & outlet pipes and tilt the front of the chiller to remove water from the unit. Clean all of the parts with a soft cloth and cover it with a plastic bag and store upright in a safe and dry place. (Fig.5)
6. If you still have any other questions, please contact your dealer. (Fig.6)



STEPS FOR FILTER CLEANING (FRONT OR SIDE FILTERS)

1. Loosen the screw on the front of the inlet cover, turn counter clockwise (Fig.1).
2. Pull the inlet cover forward carefully by hand (Fig.2).
3. Loosen the screws of the filter and remove (Fig.3.4).
4. Lift and remove side filter covers (Fig.5).
5. Loosen the screws of the side draft hood & remove the filter (Fig.6.7).
6. Remove the dust with a brush or vacuum cleaner or rinse it well with water and dry completely before reinstalling (Fig.8).
7. Reinstall in reverse.



GUIDE TO SIMPLE PROBLEM SOLVING

Before calling customer service, please check the following chart for possible causes to the problems you are experiencing.

SYMPTOM	CAUSE	SOLUTION
The chiller does not run and the display is dead.	Power not turned on	Turn on the power
	Loose plug	Be sure the power cord is fully plugged in
	The fuse has blown	Change for a new fuse
The chiller switches on and off	Connected to wrong voltage and/or frequency	Connect to correct power source, according to the name plate
Refrigeration capacity reduces or even no refrigeration	The chiller protection device is operating as normal	Wait for 3 minutes and the chiller will turn on again automatically
	The setting temperature is higher than the aquarium water temperature	Change the refrigeration temperature
	The air inlet and outlet are clogged with dirt	Clean the dust from the air inlet and outlet with a brush or a vacuum cleaner
	Loss of refrigerant medium	Refill the chiller with the correct refrigerant. Carried out by a qualified engineer.
	Too much water flow	Reduce water circulation
Runs noisy or with vibration	The base is not flat	Mount on a level surface

WARRANTY

1. This product is warranted by us against defects due to faulty workmanship or materials.
2. If the product has been damaged under normal use it will be entitled to be repaired for free. Repairs under warranty are provided only upon production of proof of purchase if the date of the claim is within the guarantee period.
3. The warranty is not valid if the defect is due to accidental damage, misuse or neglect and in case of alterations or repair carried out by unauthorized personnel.

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