

SWIMMING POOL

HEAT PUMP UNIT

Installation & Instruction Manual



FH-120



FH-220



FH-055



FH 109

To our customers

1. Please read this manual carefully before installation of the product.
2. If you need any technical information, please contact Fibropool Co LLC USA. Or your local dealer.
Fibropool contact information :
support@fibropool.com
1.877 FIBROPOOL

3.Attention:

- 3.1 Before installation of the heat pump, please make sure LOCAL ELECTRICAL CODES are followed and complied with.
For Electrical requirements, refer to the label on the unit or performance data in this manual.
- 3.2 Please install the GROUND WIRE and BONDING WIRE, according to the local regulations.
- 3.3 Connecting the heat pump to a ground wire is required in ALL municipalities.
- 3.4 An electrical wiring diagram is provided in this manual.
- 3.5 For safety reasons, please do not change or repair the heat pump by yourself. If it is necessary, please contact your local distributor for help.
- 3.6 Do not insert objects into the heat pump when running. It may touch the fan and damage it or lead to an accident.
- 3.7 Do not use the heat pump without ALL the panels assembled after installation.
- 3.8 If the unit is FLOODED with water, please contact your local dealer immediately.
The unit can only be restarted after a completed inspection by professional technicians.
- 3.9 Unqualified technicians should NOT be allowed to work on unit.

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8. FIBROHEAT HEAT PUMP LIMITED FACTORY WARRANTY

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1. Performance and installation

1.1 Performance and features

High efficiency

With a COP value up to 5.0 our heat pumps are very efficient when transferring heat from the air to the swimming pool water. You can save as much as 80% of cost compared to an electrical heater.

Long life-span

The heat exchanger is made of PVC & Titanium tube, which can withstand and prolong exposure to swimming pool water.

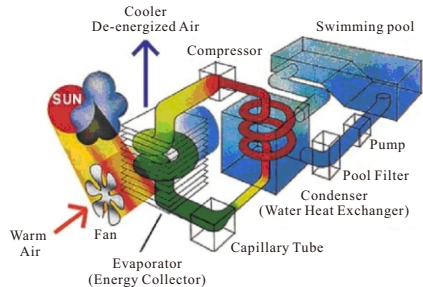
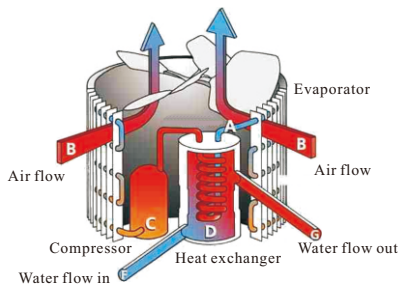
Easy control and operation

The unit is very easy to operate: simply switch it on and set the desired pool water temperature.

The system includes a micro-computer controller, allowing all operation parameters to be set.

Operation status can be displayed on the controller with LCD display.

1.2 Working principles



- Heat pumps utilize the sun's free heat by collecting and absorbing energy from the outside air. This energy is then compressed and transferred to the pool water. Your existing water pump circulates the water through the heater, usually next to the pool equipment, and the water warms up. The heat pump timer could be set to operate during daylight hours, for example, usually 9am to 5pm.
- The unit contains a fan that draws in outside air and directs it over the surface of the EVAPORATOR (energy collector). The liquid refrigerant within the EVAPORATOR coil absorbs the heat from the outside air and becomes a gas.
- The warm gas in the coil passes through the COMPRESSOR concentrating and increasing the heat to form a very hot gas which then passes to the CONDENSER (water heat exchanger). It is here that the heat exchange occurs as the hot gas gives off heat to the cool swimming pool water circulating through the coil.
- The pool water becomes warmer, and the hot gas cooling as it flows through the CONDENSER coil returns to its liquid form and, after passing on through the CAPILLARY TUBE, the whole process begins again.
- The state of the heat pump technology can efficiently collect heat from the outside air down to the 7°C to 10°C range. For tropic and subtropical climates, this means that the pool can be maintained at 26°C to 32°C

1.3 Location of heat pump installation

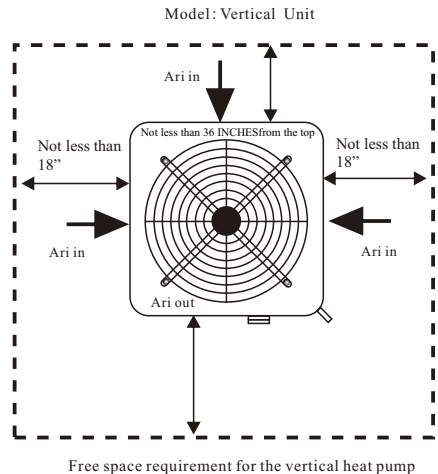
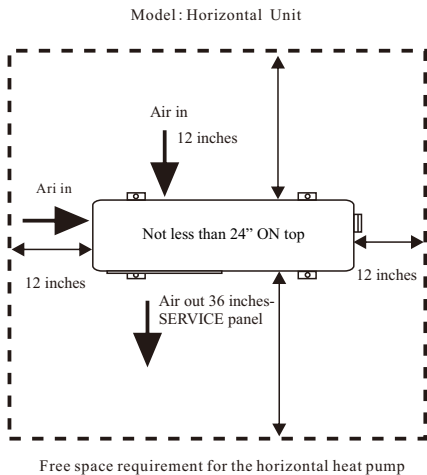
The unit will perform well on any location provided three factors are present:

1. Fresh air - 2. Electricity - 3. Pool filter piping

The unit may be installed virtually anywhere outdoors providing minimum distance requirements are met with respect to other objects (see diagram below). For indoor pools please consult your installer.

The unit is completely RAINPROOF. It should be installed out in an open area, where fresh air can circulate around it.

Attention: Do not place the unit in an enclosed area with a limited air volume where the unit's discharged air will be re-circulated or near shrubs that could block the air inlet. These locations deny the unit a continuous fresh air supply, which reduces its efficiency and may prevent adequate heat yield. See diagram below for minimum required distances.



Cautions

- Do not put your hands or any other object into the air outlet and fan. It could damage the heat pump and cause injuries.
- In case any abnormality was found in the heat pump, please cut off the power at once and contact a professional technician.

For models: Fh 120, Fh220, FH055, required clearance is 12 inches on all sides, 36 inches in front of the service panel, 24 inches on top.

- For model FH 109, required clearance is 18 inches on all sides, 36 inches on top, 36 inches in front of the service panel

1.4 Distance from the pool

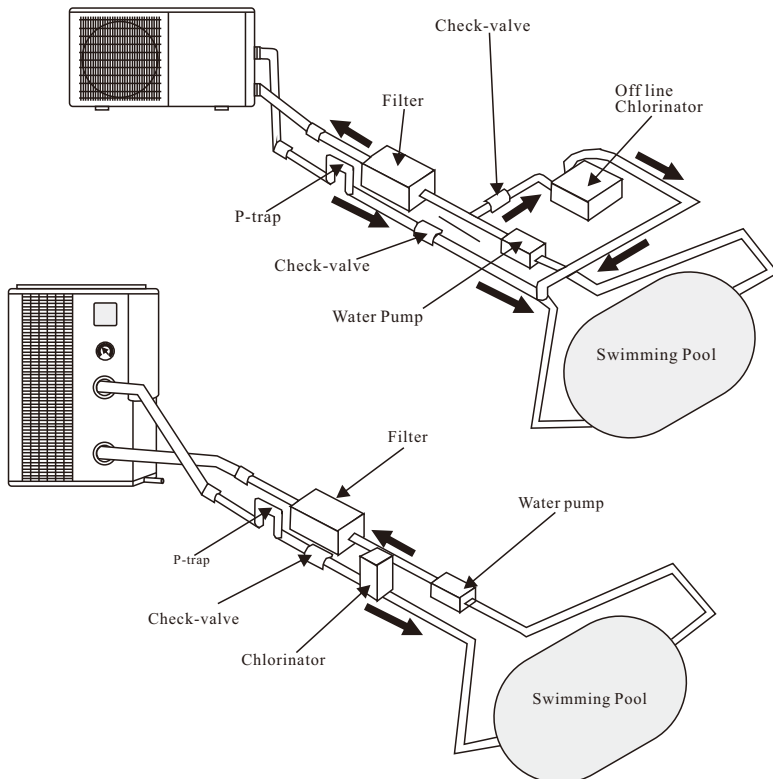
Normally, the pool heat pump is installed within 25 FEET of the pool. The greater the distance from the pool, the greater the heat loss from the piping. Since the piping is buried for the most part, heat loss is minimal for distances of up to 45 FEET, unless the soil is wet or the ground water level is high. Heat loss per 45 feet could roughly be estimated at 0.6 kw-hour (2000 BTU) for every 9°F temperature difference between the pool water and the soil surrounding the pipe, which translates to an operation time increase of 3-5%.

1.5 Installation of the check-valve

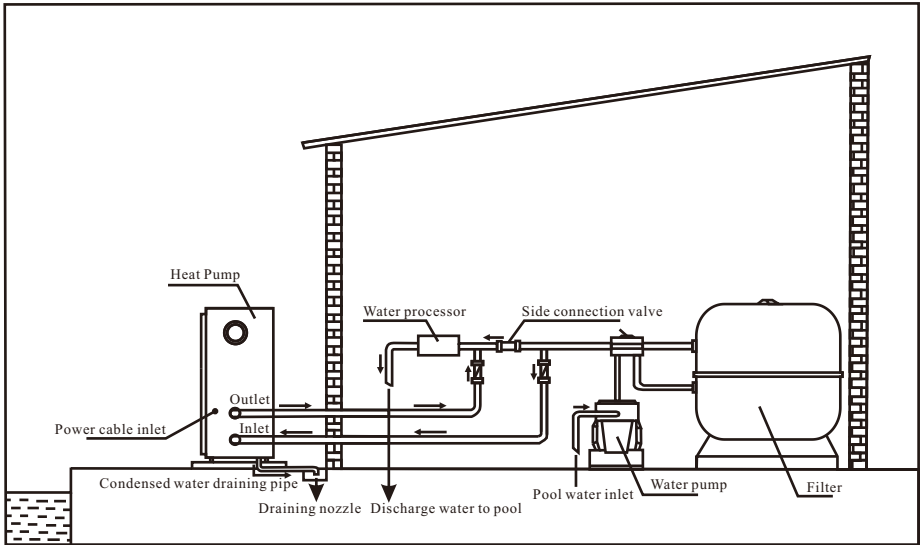
Attention- When using automatic chlorine and PH dosage systems, it is of uttermost importance to protect the heat pump from high concentrations of these chemicals that could corrode the gaskets. Therefore, such systems should add the chemicals in the conduits located DOWNSTREAM of the heat pump and it is recommended to install a check-valve in order to prevent backflow when there is no water circulation.

Damage to the heat pump caused by disregarding any of these recommendations will VOID the warranty.

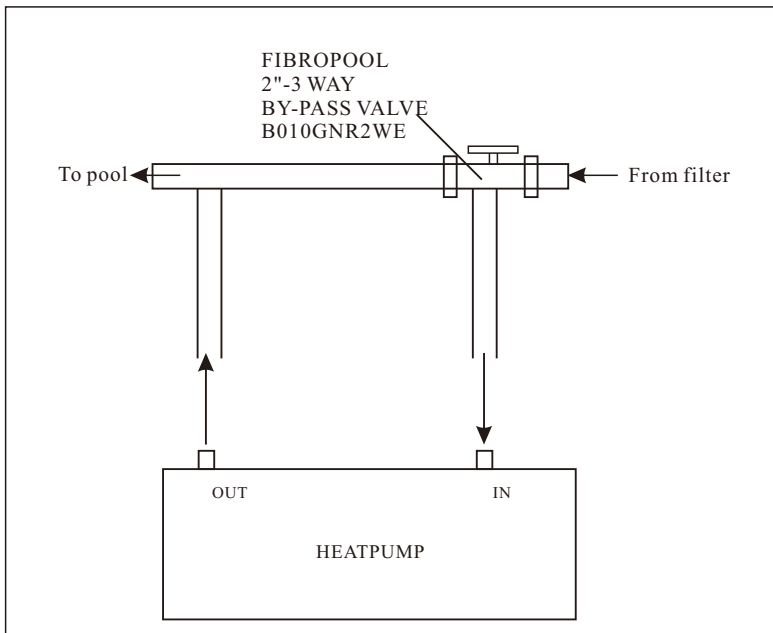
*If installing an inline chlorine dispenser, be sure that the inlet of the chlorinator is lower than the return line of the heat pump. This will prevent gravity feed of concentrated chlorine into the Unit.



1.6 Pool system set up



1.7 Connecting the by-pass



1.8 Electrical hook-up

Important—Although the heat pump is electrically isolated from the rest of the unit, this only prevents the passage of electricity to or from the pool water. Grounding the unit is still required to protect yourself from short circuits inside the unit. Make for adequate ground connection.

Check if the electrical mains voltage corresponds with the operating voltage of the heat pump prior to hooking up the unit. 225 – 247 VAC is required

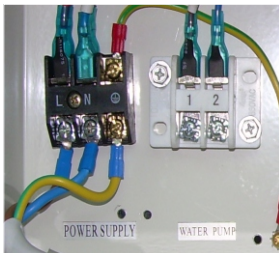
**** A DEDICATED CIRCUIT MUST BE USED FOR THE HEATPUMP.**

For horizontal models : remove the panel on the right of the fan opening.

For vertical models: remove the curve panel in the front side.

Connect the electrical wires with the terminal block labelled “Power Supply” .

Next to this connection, there is a second terminal block labelled “ Water Pump”,to which the filter pump (max.5A/240V)can be connected. This is connection makes it possible to control filter pump operation with the heat pump. A contactor must be installed separately for this service. . See further at Parameter setting table (Parameter 9) for the different possibilities. “WATER PUMP” connection is to be used ONLY if you have a separate and dedicated heater circulating pump. DO NOT connect your FILTRATION pump here.different possibilities.



- A DEDICATED CIRCUIT MUST BE USED FOR THE HEATPUMP
- GROUND WIRE MUST BE CONNECTED BEFORE STARTING UP THE SYSTEM
- #8 GAUGE BONDING WIRE MUST BE INSTALLED ON THE CHASSIS OF THE HEATER, CONNECTING IT TO THE POOL PUMP AND TO GROUND ROD.
- THE HEAT PUMP HAS 3 ELECTRICAL CONNECTIONS, DESIGNED FOR WATERPROOF OUTDOOR CABLES. IF YOU USE LIQUID TITE CONNECTIONS, SIMPLY REMOVE ONE AND INSERT A HALF INCH LIQUID TITE CONNECTOR

MODEL	Voltage(volts)	Breaker size	Nominal current(A)	WIRE SIZE
FH-120	116-123 VAC	20 Amps SINGLE	14 Amps	12 gauge:1+Neutral+ground
FH-220	220-240 VAC	20 Amps DOUBLE	8 Amps	12 gauge: 2 + ground
FH-055	220-240 VAC	20 Amps DOUBLE (upto 50 ft from breaker box) 30Amps DOUBLE (50-150 ft from breaker box)	13 Amps	12 Gauge:2+ground (upto 50 ft from breaker box) 10 Gauge:2+ground (50-150 ft from breaker box)
FH-109	220-240 VAC	30 Amps DOUBLE (upto 50 ft from breaker box) 40Amps DOUBLE 50-150 ft from breaker box)	23 Amps	10 gauge:2+ ground (upto 50 ft from breaker box) 8 gauge: 2+ Ground (50-150 ft from breaker box)

1.9 First time start-up

Note- In order for the unit to heat the pool (or spa), the filter pump must be running so that the water can circulate through the heat pump. Without this circulation, the heat pump will not start. And it will display EE03, indicating no water flow.

When all connections have been made and checked, you should follow these steps:

1. Turn on the filter pump. Check for leaks and verify flow to and from the pool.
2. Turn on the electrical power supply to the unit, then press the ON/ OFF key on the electronic control panel. The unit should start when the time delay period has lapsed .
3. When the unit has been running for a couple of minutes, check if the air leaving the unit is cooler.
4. Check the performance of the flow switch as follows: with the unit running, turn the filter pump off. The unit should also switch off automatically. If not, the flow switch must be readjusted.
5. All the unit and filter pump to run 24 hours a day until the desired pool water temperature is reached. When the set temperature is reached, the unit switches itself off. The unit will now automatically restart (as long as your filter pump is running) when the temperature of the pool water experiences a drop of more than 2' F below the set temperature.

Depending on the starting temperature of the pool water and the air temperature, it can take several days for the water to reach the desired temperature. Covering the pool can drastically reduced this period.

If you do not have a cover, you can use a “Liquid Solar Cover”, which will drastically reduce heat loss.

Water flow switch—the unit is equipped with a flow switch that is switched on when enough water has flowed through the unit and that is switched off when the water flow becomes too low. (E.g. When the filter pump is switched off). Required water flow is 23 GPM

Time delay—the unit is equipped with a built-in 3-minute start delay included to protect electrical components and contacts . After this time delay, the unit will automatically be restarted . Even a brief interruption of the power supply will activate the start delay and prevent the unit from starting immediately. Additional interruptions of the power supply during the delay period will have no effect on the 3-minute countdown.

BONDING***

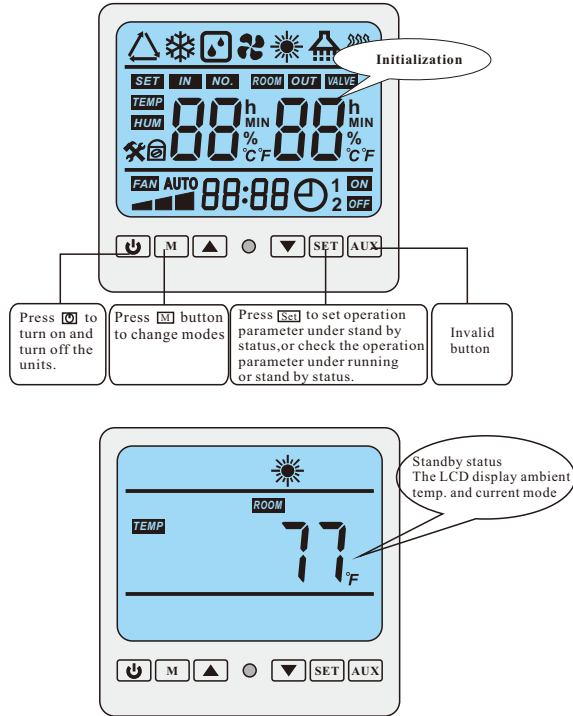
National electric Code requires this Heat Pump to be bonded by a #8 gauge copper wire to the ground rod near your pool pump. Ground lug is on the opposite side of the service panel. At the bottom of the Heat Pump

1.10 Condensation

When the swimming pool water is being heated by the heat pump, the incoming air is cooled down quite a bit, which can cause condensation on the fins of the evaporator. Condensed volumes can reach several gallons per hour high atmospheric humidity. Sometimes, this is wrongfully interpreted as a water leak. You can install the drain adapters at the bottom to direct the condensation away from the heater

2. Control the heat pump (LCD)

2.1 The functions of the wire controller



2.2 How to change desired temperature

To adjust the temperature of the heater (Fh 055 and FH 109), the heater must have power to it, and must be on stand by mode.


1. Turn on the heaters breaker and be sure the pool pump is on.
2. Look at the screen, and if you see only 1 temperature reading go to Step 4
3. If you see 2 temperature readings, then press the first button(the on/ off button, O with the slash) once until you see only 1 temperature.
4. Press the "set" button until it displays "01". If you miss it, wait 5 seconds and the screen will reset.
5. Move the up and down arrow keys until you reach the desired temperature.
6. Wait 5 seconds, menu will return to normal screen with 1 temperature reading.
7. Push the on/ off button once to turn the heater on.
8. Wait 45 seconds for the memory to record and a diagnostic chek.

The heater will start automatically

TEMPERATURE CANNOT BE CHANGED WHILE THE UNIT IS HEATING. PLEASE

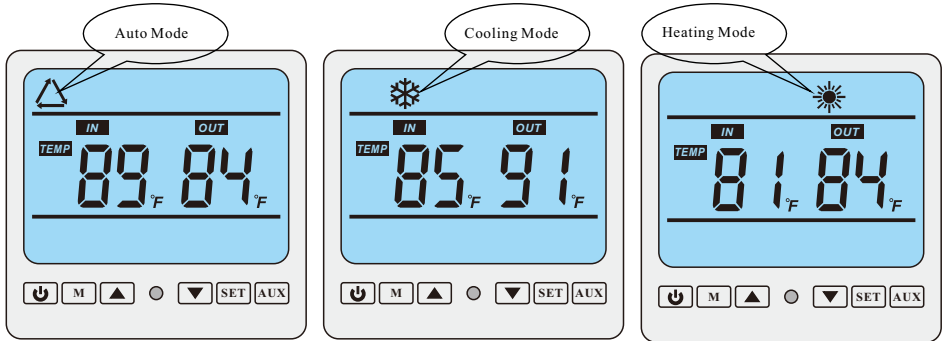
PUSH THE ON/OFF BUTTON TO PUT THE UNIT ON STANDBY MODE TO MAKE CHANGES

Notes:

1. You cannot change the temperature while the heater is running (2 temperatures on digital display= Running Mode)
2. You must put the heater on "Stand By" mode, by pressing the "  " button on the digital controller to change the temperature (1 temperature on digital display= Stand By mode)
3. If you wait too long, the screen will revert back to temperature display. Simply, press the "SET" button again until you reach "01"

2.3 How to set operation parameter

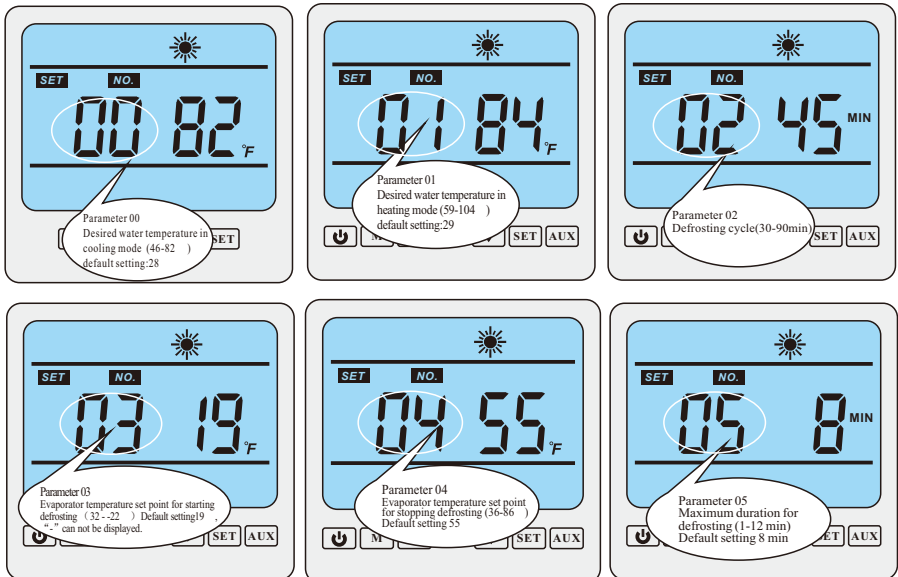
- Press “M”, to choose the (Auto ,cooling ,heating)mode one by one under the stand by status and running status. If AVAILABLE ON YOUR HEATER. MOST OF OUR HEAT PUMPS ARE HEAT ONLY.

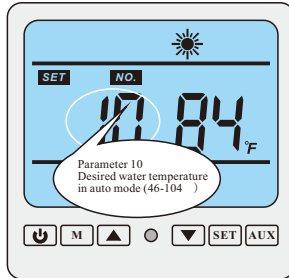
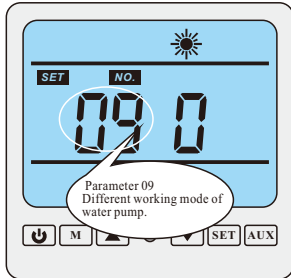
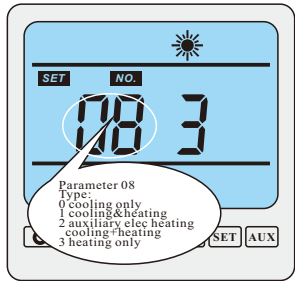
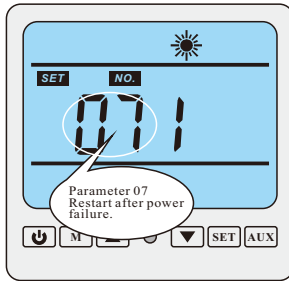
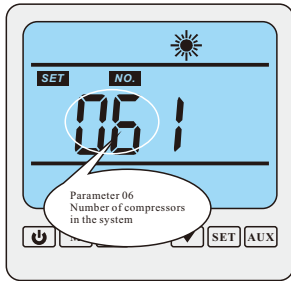


2.4 How to change parameter

- When heat pump is in standby status, Press “SET” button to enter Parameter setting interface
- Press “SET” again to start setting Parameter from 00 -10 (see Parameter Table)
- In parameter setting Parameter 00-01 can be changed only by pressing ▲ or ▼.
- Parameter 02-10 must be firstly unlocked by pressing ▲ and ▼ at the same time for 3-5 seconds until a sound of “Beep” is heard. Then press ▲ or ▼ to change the setting.
- Data will be stored in 3-5 seconds without any press on the controller and display will return to main interface. Parameter 02-10 must be adjusted by professional technicians.

Important: Whilst running, all parameters can be only checked by pressing “SET” button, ut NOT be changed!





The heat pump's running setting parameter can be set on the wire controller. Please set the parameter according to the below table:

Parameter	Definition	Range	Default	Remark
00	Desired water temperature in cooling mode	46~82°F	82°F	Ajusted by Technicians
01	Desired water temperature in heating mode	59~99°F	82°F	Ajusted by Technicians
02	Defrosting cycle	30~90Min	40Min	Ajusted by Technicians
03	Evaporator temperature set point for starting defrosting	-22~32°F	27°F	Ajusted by Technicians
04	Evaporator temperature set point for stopping defrosting	37~86°F	55°F	Ajusted by Technicians
05	Maximum duration for defrosting	1~12Min	8Min	Ajusted by Technicians
06	Number of compressors in the system	1~2	1	Ajusted by Technicians
07	Restart after power failure	0~1	1 (Yes)	Ajusted by Technicians
08	Type: Cooling only 0/ Heating & cooling 1/ Heating & cooling + Auxiliary heating 2/ Heating only 3/	0~3	3	Ajusted by Technicians
09	Different working mode of water pump: water pump keeps working always 0/ water pump works in accordance with heat pump 1 /	0~1	0	Ajusted by Technicians
10	Desire water temperature in auto mode	46~99°F	82°F	Ajusted by Technicians

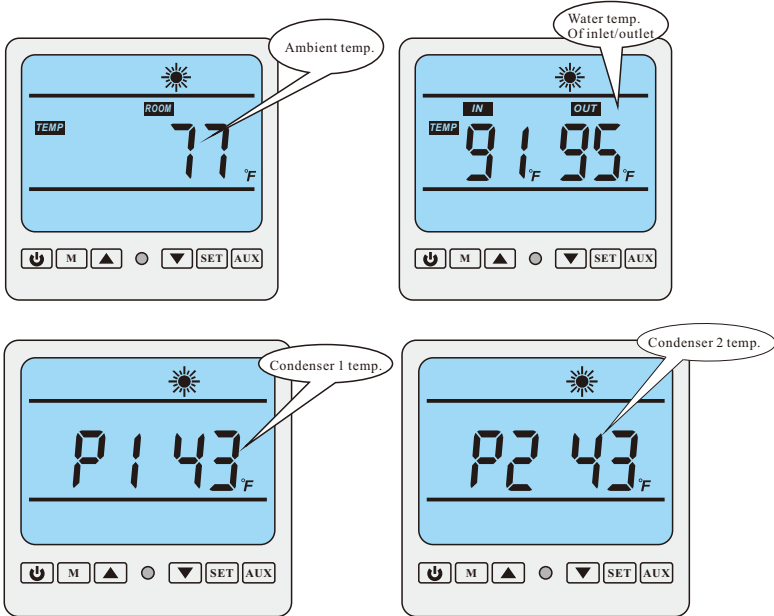
Important:Parameter 03 Icon “-” which stands for below “0” degree **CAN NOT** be displayed here. Value “30-22” stands “30°F” to “-22°F”. Default setting “19°F” actually stands for “19°F”.

2.5 How to know current status

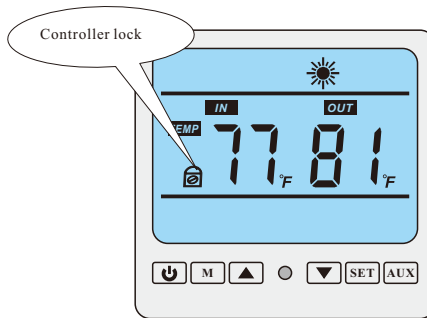
When heat pump is in running status, press ▲ and ▼ to check the current status of the unit. You can check water-in / water-out temperature, condenser temperature and ambient temperature. Please note no press on the controller for 5 seconds, controller will return to main interface, which displays water-in and water-out temperature.

When heat pump is in standby status, controller will display only ambient temperature.

Remarks: Standby status means the unit is connected with electricity but not running. Parameter 00-10 can **ONLY** be changed under standby status!



2.6 Controller lock



- Regardless the heat pump is in running or standby status, press ▲ and ▼ at the same time for 3 seconds, all buttons will be locked and display as above. Press ▲ and ▲ for 3 seconds for unlocking.

3. Control the heat pump (LED)

Preparation before startup







A) Inspection of the heat pump

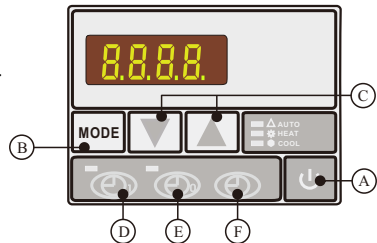
- Check whether the outer appearance of the unit or pipeline system in the unit is damaged during transportation.
- Check whether the ventilator fan does not touch any part of the unit

B) Verifying the electrical connections




- Check whether power supply complies with specifications in this manual or on the label placed on the unit.
- Check whether the power cabling is connected correctly and firm according to the wiring diagram.
Adequate grounding is required to protect against electrical shock.

3.1 Illustration of controller


- A.  : Switch on or off heat pump.
- B. **MODE** : Select auto, heating or cooling mode.
Relevant indicator would be on when selected.
- C.  or  : Press to change figures.
- D.  : Timer on setting button.
- E.  : Timer off setting button.
- F.  : Time setting button.




3.2 How to change desired temperature

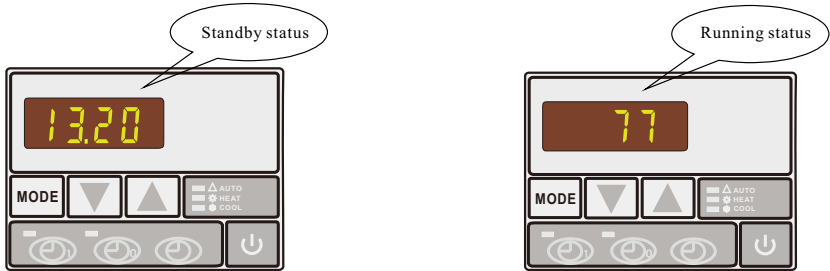
1. Be sure that the heater is on Stand by mode.
2. Press “**SET**” button repeatedly until you see "01"
3. Use the  and  buttons to reach the desired temperature.
4. Once it is set, wait a few seconds for the screen revert to temperature display.
5. Push the  button to start the heater.

Notes:

1. You cannot change the temperature while the heater is running (2 temperatures on digital display= Running Mode)
2. You must put the heater on "Stand By" mode, by pressing the " " button on the digital controller to change the temperature (1 temperature on digital display= Stand By mode)
3. If you wait too long, the screen will revert back to temperature display. Simply, press the “**SET**” button again until you reach "01"

3.3 How to start heat pump

Connected with power, the controller will display the time. This means the unit is in standby. Press  to start the Heat pump. The controller display will show inlet water temperature now.







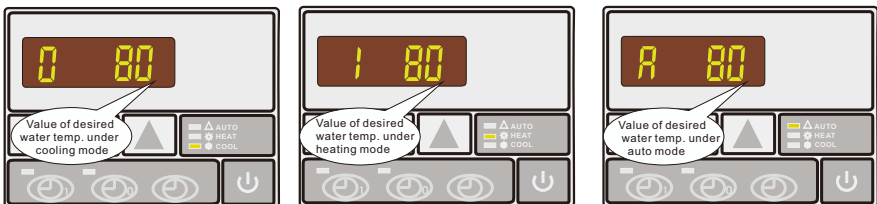
3.4 How to change mode

Press MODE button to select auto, heating or cooling mode, related indicator light on the right side of controller will be on as a symbol.



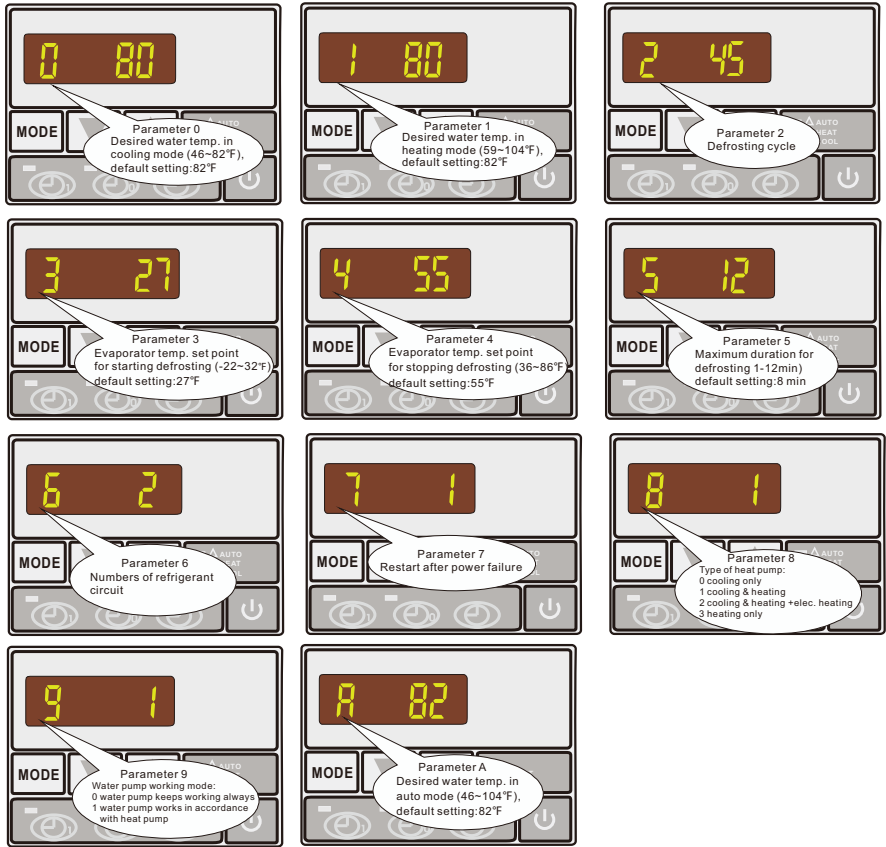
3.5 How to set desired water temperature.

1. First select desired mode, auto, heating or cooling.
2. No matter the heat pump is under standby status or running status, press  or , display will show the desired water temp. of selected mode with a flashing value, then change the water temp. by moving  or  as requested.



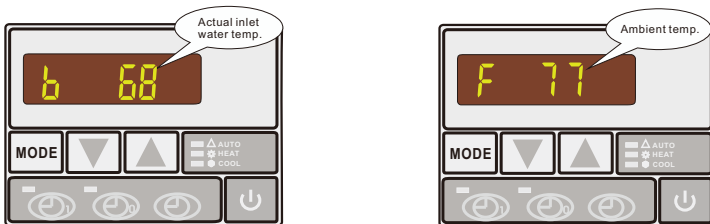
3.6 How to change parameter setting

1. In standby status press ▼ or ▲ to find parameter 0-A and measured values of current status B-F.
2. Press ▼ & ▲ at the same time for 5 seconds continuously to activate parameter setting.
3. Change value on setting until a BEEP is heard while display remains indicating parameter with its value flashing.
4. No pressing the controller for 5s PCB will store data automatically and return to standby status.



3.7 How to check parameter setting & measured values of current status








In standby or running status press ▼ or ▲ to find parameter 0-A and measured values of current status.



Parameter table overview











Parameter	Definition	Range	Default	Remark
0	Desired water temperature in cooling mode	46~82°F	82°F	Ajusted by Technicians
1	Desired water temperature in heating mode	59~99 °F	82°F	Ajusted by Technicians
2	Defrosting cycle	30~90Min	40Min	Ajusted by Technicians
3	Evaporator temperature set point for starting defrosting	-22~32°F	27°F	Ajusted by Technicians
4	Evaporator temperature set point for stopping defrosting	37~86°F	55°F	Ajusted by Technicians
5	Maximum duration for defrosting	1~12Min	8Min	Ajusted by Technicians
6	Number of compressor in the system	1~2	1	Ajusted by Technicians
7	Restart after power failure	0~1	1 (Yes)	Ajusted by Technicians
8	Type: Cooling only 0/ Heating & cooling 1/ Heating & cooling + Auxiliary heating 2/ Heating only 3/	0~3	3	Ajusted by Technicians
9	Different working mode of water pump: water pump keeps working always 0/ water pump works in accordance with heat pump 1 /	0~1	0	Ajusted by Technicians
A	Desired water temperature in auto mode	46~99°F	82°F	Ajusted by Technicians
B	Actual inlet water temp.	16~99 °F		Measured Value
C	Actual outlet water temp.	16~99°F		Measured Value
D	Coil temp. in system 1	16~99°F		Measured Value
E	Coil temp. in system 2	16~99°F		Measured Value
F	Ambient temp.	16~99°F		Measured Value

3.8 How to set clock

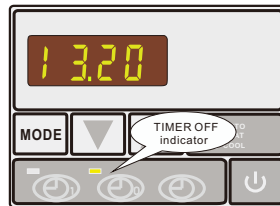
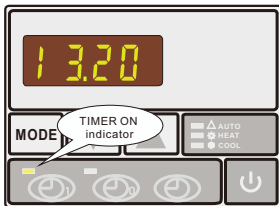
1. In standby status press  button, hour figures will be flashing and ready to be modified by  or .
2. Press  button for second time, minute figures will be flashing and ready to be modified by  or .
3. Press  button for final confirmation of time setting.

After the time is set LED display will show time when the heat pump is under standby status.




3.9 How to set timer on and timer off

- a) Press  to activate timer on setting, hour and minute figures will be flashing together.
- b) Press  again to have active hour setting, hour figure will be flashing and ready to be modified by  or .
- c) Press  again to have active minute setting, minute figure will be flashing and ready to be modified by  or .
- d) Press  to confirm the setting and display will return to standby status. Timer on indicator green light would be on as a symbol.
- e) Operate the same to timer off by using  instead of . timer off indicator red light would be on as a symbol.



Note: Timer on and timer off can be selected both or separately.



3.10 How to cancel timer on and timer off

Press  or  to activate, relative indicator light would be flashing, press  for cancellation of timer on or timer off.

3.11 Keypad lock and unlock

Except parameter setting, in other situation press  &  at the same for 3 s, keypad would be locked after BEEP. To unlock it please press both buttons together again for another 3 s.

4. Protection systems

4.1 Water flow switch

Equipped with flow switch the heat pump will not work when the filter pump is not working (and the water is not circulating).

This system prevents the heat pump from heating only the water present in the heat pump itself.

The protection also stops the heat pump if water circulation is cut off or stopped.

4.2 Refrigerant gas high and low pressure protection

The high pressure protection makes sure the heat pump is not damaged in case of over pressurisation of the gas. The low pressure protection emits a signal when refrigerant is escaping from the conduits and the unit can not be kept running.

4.3 Automatic defrost control

When the air is very humid and cold, ice can form on the evaporator. In that event, a thin layer of ice appears that will grow increasingly bigger as long as the heat pump is running. When the temperature of the evaporator has become too low, automatic defrost control will be activated, which will reverse the heat pump cycle so that hot refrigerant gas is sent through the evaporator during a brief period of time to defrost it.

4.4 Temperature difference between inflowing and outflowing water

During normal operation of the heat pump, the temperature difference between inflowing and outflowing water will approximate 1 to 4 °F. In the event that the pressure switch does not work and that the water stops circulating, the temperature probe monitoring the outflowing water will always detect a rise in temperature. As soon as the temperature difference between inflowing and outflowing water exceeds 10°F the heat pump will be automatically turned off.

4.5 Low temperature cut-out

If, during cooling, the temperature of the outflowing water reaches 41°F or drops below this temperature, the heat pump will turn itself off until the water temperature reaches or exceeds 45°F again.

4.6 Anti-frost protection during winter

This protection can only be activated if the heat pump is in STAND-BY status.

5. Direction

5.1 Swimming pool water chemistry

Special attention should be paid to the chemical balance of the pool water. The pool water values should always stay within the following limits:

	Min	Max
pH	7.0	7.4
Free chlorine ppm	0.5	3
TAC(mg/l)	80	120
Salt ppm		3000

Important: failure to comply with these limits will invalidate the warranty.

Note: exceeding one or several limits can damage the heat pump beyond repair. Always install water treatment equipment past the heat pump's water outlet, especially if the chemicals are automatically added to the water.

A check-valve should also be installed between the outlet of the heat pump and this equipment in order to prevent products from flowing back into the heat pump if the filter pump stops.

5.2 Heat pump winterizing

Important: failure to take the necessary precautions for winterizing can damage the heat pump, which will invalidate the warranty.

The heat pump, filter pump, filter and conduits must be protected in areas where the temperature can drop below the freezing point, Evacuate all water from the heat pump as follows:

1. Interrupt the electrical power supply to the heat pump
2. Close the water supply to the heat pump: completely close valves 2 and 3 of the by-pass
3. Disconnect the water inlet and outlet coupler fittings of the heat pump, tilt the heat pump, and let the water drain out of the unit
4. Loosely reattach water inlet and outlet coupler fittings to the heat pump in order to prevent dirt from setting into the conduits.

Note: these precautions should not be taken if you choose to use the built-in anti-frost protection.

5.3 Restarting the pump after winter

If you purged your heat pump for winterizing, you should undertake the following steps to restart it in spring:

1. Check first if there is no dirt in the conduits and if there are no structural problems
2. Check if the water inlet and outlet coupler fittings are adequately fastened to the heat pump
3. Start the filter pump to start the water flow to the heat pump. Set the by-pass again.
4. Reconnect the electrical power supply to the heat pump and turn it ON.

5.4 Check-up

Fibropool heat pumps have been developed and built to last, that is, if they have been installed correctly and can run under normal conditions. Regular check-ups are important if you want your heat pump to function safely and efficiently for years on end.

1. Make for easy access to the service panel.
2. Keep the area surrounding the heat pump free of contingent organic waste.
3. Prune the vegetation near the heat pump so that there is enough free space around the pump.
4. Remove contingent water sprinklers from the vicinity of the heat pump. They can damage the heat pump.
5. Prevent rain from directly running off a roof onto the heat pump. Install proper drainage.
6. Do not use the heat pump if it has been flooded. Immediately contact a qualified technician to inspect the heat pump and repair it if should prove necessary.

Condensation can occur when the heat pump is running. This condensation can flow away through an opening in the base pan of the unit. The amount of condensation water will increase when atmospheric humidity is high. Remove any dirt that could possibly hamper the evacuation of condensation.

10 to 20 litres of condensation water can be produced while the unit is running. If more condensation is produced, stop the heat pump and wait for one hour before checking for leaks in the conduits.

Note: a quick way to verify that the water running through the condensation drain is indeed condensation, is to shut off the unit and keep the pool pump running. If the water stops running out of the condensation drain, it is condensation. AN EVEN QUICKER WAY is to TEST THE DRAIN WATER FOR CHLORINE. If no chlorine is detected, the drain water is a result of condensation.

Also take care to leave air inlet and exhaust passages free. Prevent exhaust air from immediately re-entering the unit through the inlet.

6. Maintenance and inspection

6.1 Maintenance

- ⦿ Check the water inlet and drainage often. The water and air inflow into the system should be sufficient so that its performance and reliability does not get compromised. You should clean the pool filter regularly to avoid damage to the unit caused by clogging of the filter.
- ⦿ The area around the unit should be spacious and well ventilated. Clean the sides of the heat pump regularly to maintain good heat exchange and to save energy.
- ⦿ Check if all processes in the unit are operational and pay special attention to the operation pressure of the refrigerant system.
- ⦿ Check the power supply and cable connections regularly. Should the unit begin to function abnormally or should you notice a smell from an electrical component, arrange for timely repair or replacement.
- ⦿ You should also purge the water if the unit will not work for an extended period of time. You should check all parts of the unit thoroughly and completely fill the system with water before turning it on again afterwards.

6.2 Trouble shooting guide

Improper installation may result in an electrical discharge that could lead to death or serious injury to pool users, installers or others due to electrical shock and may also cause damage to property. DO NOT attempt to modify the internal configuration of the heat pump.

1. Keep your hands and hair clear of the fan blades to avoid injury.
2. If you are not familiar with your pool filtering systems and heat pump:
 - a. **Do not** attempt to adjust or service without consulting your dealer or your professional pool or air conditioning contractor.
 - b. Read the entire installation and user manual before attempting to use, service or adjust the unit.
 - c. Start the heat pump at least 24 hours after its installation in order to prevent damage to the compressor.

Note: Switch off the power prior to maintenance or repairs.

IMPORTANT REMARK: if a malfunction can not be resolved immediately, in order to analyse the problem itself, we will need to know the message (error code) that is displayed on the controller, as well as the values for the settings (parameter 00-10 for LCD display while parameter 0-A for LED display) and for status of the heat pump (ambient temperature, water inlet / outlet temperature and system coil temperature) just before the failure or, if this is impossible, just after it. Please keep this information at hand when calling customer service. On the following pages, you will find an overview of the different types of failure problems that can occur, along with directions to solve them.

Problem:	the heat pump doesn't work
Observation:	the screen does not light up and the fan/compressor doesn't make a sound
Possible cause	
No electrical power supply	Solution
	Check power supply (wiring, fuses,.....)

Problem:	the heat pump works normally but there is no or insufficient heating
Observation:	The screen displays the temperature but no error codes
Possible cause	
Solution	
1. In sufficient capacity of the heat pump in proportion to the size of the swimming pool	1. Install a larger sized model or an extra heat pump. Cover the pool to limit heat loss
2. The compressor works but the fan doesn't	2. Check the electrical wiring of the fan. Replace the condenser or the fan motor if necessary.
3. The fan works but the compressor doesn't	3. Check the electrical wiring of the compressor. Replace the condenser or the compressor if necessary.
4. The heat pump has not been placed on an optimal location	4. Make for sufficient air circulation(see manual for details)
5. Faulty temperature setting	5. Set the correct temperature
6. By-pass not adjusted	6. Have the by-pass readjusted by the installer
7. Massive ice formation on the evaporator	7. Have the settings for automatic defrost control checked by the installer
8. Not enough refrigerant	8. Have the heat pump checked by a refrigeration technician

Problem:	The heat pump works normally but the water is cooling down instead of heating up
Observation:	The screen displays the temperature but no error codes
Possible cause	
Solution	
1.The wrong mode has been selected	1.Verify the parameters, select the correct mode
2. The controller is out of order	2. Check the voltage in the electrical wiring to the 4-way valve. If no electric potential is measured, replace the controller
3. The 4-way valve is out of order	3. Check the voltage in the electrical wiring to the 4-way valve. If electric potential is measured, replace the coil. If the problem persists, have the heat pump checked by a refrigeration technician

Problem:	the heat pump doesn't stop
Observation:	the screen displays the temperature but no error codes
Possible cause	
Solution	
1.Wrong setting of parameters	1.Check the set parameters and adjust them if necessary (settings just above the capacity of the heat pump)
2. Pressure switch out of order	2. Check operation of the pressure switch by turning off the filter pump and restarting it. If the heat pump doesn't react to this, the pressure switch must be adjusted or replaced.
3. Electrical failure	3. Contact your installer

Problem:	water leak	
Observation:	there's an amount of water under the heat pump	
	Possible cause	Solution
	1. Condensation due to atmospheric humidity	1. No action required
	2. Water leak	2. Try to localize the leak and check for the presence of chlorine in the water. If that is the case, the heat pump must be temporarily replaced during repair.

Problem:	abnormal amount of ice formed on the evaporator	
Observation:	the evaporator is for the most part covered in ice	
	Possible cause	Solution
	1. Insufficient air inflow	1. Check the location of the heat pump and remove any dirt that could be present on the evaporator
	2. High water temperature	2. If the pool water is already quite hot (warmer than 29°), the probability of ice formation increases. Lowering the set temperature is a possible option
	3. Incorrect setting of automatic defrost control	3. Check the setting of the defrosting function together with your installer.
	4. The 4-way valve is out of order	4. Check the voltage in the electrical wiring to the 4-way valve. If electric potential is measured, replace the coil. If the problem persists, have the heat pump checked by a refrigeration technician.
	5. Not enough refrigerant	5. Have the heat pump checked by a refrigeration technician.

6.3 Failure code table for single-system

Wire controller	Protection/Failure	Check	Solution
PP01/PP1	Inlet water temp. sensor failure	<ol style="list-style-type: none"> 1. Check the connection of inlet water sensor. 2. Check if the sensor is broken. 	<ol style="list-style-type: none"> 1. Reconnect the sensor. 2. Replace the sensor.
PP02/PP2	Outlet water temp. sensor failure	<ol style="list-style-type: none"> 1. Check the connection of outlet water sensor. 2. Check if the sensor is broken. 	<ol style="list-style-type: none"> 1. Reconnect the sensor. 2. Replace the sensor.
PP03/PP3	Coil temp. sensor failure	<ol style="list-style-type: none"> 1. Check the connection of coil temperature sensor. 2. Check if the sensor is broken. 	<ol style="list-style-type: none"> 1. Reconnect the sensor. 2. Replace the sensor.
PP05/PP5	Ambient temp. sensor failure	<ol style="list-style-type: none"> 1. Check the connection of ambient temperature sensor. 2. Check if the sensor is broken. 	<ol style="list-style-type: none"> 1. Reconnect the sensor. 2. Replace the sensor.
PP06/PP6	Protection for over-big temp. Difference between water inlet & outlet	<ol style="list-style-type: none"> 1. Check if there is any jam in the water circuit. 2. Check if the water flow volume is enough. 3. Check if the water pump has failed to work. 	<ol style="list-style-type: none"> 1. Remove the jam. 2. Increase the water flow volume. 3. Repair or replace the water pump.
PP07/PP7	Anti-freeze protection for cooling	Refer to PP06.	Refer to PP06.
PP07/PP7	Winter anti-freeze protection I	No action required	
PP07/PP7	Winter anti-freeze protection II	No action required	
EE01/EE1	High pressure protection	<ol style="list-style-type: none"> 1. Check if high pressure switch is broken 2. Check if there is a blockage in water circuit or water flow is not enough. 3. Check if there is a blockage in refrigerant circuit. 	<ol style="list-style-type: none"> 1. Replace high pressure switch. 3. Remove cause of blockage or increase water flow. 4. Send heat pump to dealer for detailed check.
EE06/EE6	Low pressure protection	<ol style="list-style-type: none"> 1. Check if low pressure switch is broken. 2. Check if refrigerant level is low. 3. Ambient temp. and water inlet temp. is too low. 	<ol style="list-style-type: none"> 1. Replace low pressure switch. 2. Fill up with enough refrigerant. 3. Decrease water flow. 4. Send heat pump to dealer for detailed check.
EE03/EE3	Water flow switch failure	<ol style="list-style-type: none"> 1. Check if wiring connection of flow switch is in position. 2. Check if enough water flow. 3. Check if flow switch is broken. 4. Check if water pump failure. 	<ol style="list-style-type: none"> 1. Reconnect the wiring. 2. Increase enough water flow. 3. Replace flow switch. 4. Repair or replace water pump.
EE04/EE4	Order of phases incorrect (only for 3 phase model)	Order of phases incorrect	Reconnect the phases in right order.
EE05/EE5	Failure of over-big temp. difference between water inlet & outlet	<ol style="list-style-type: none"> 1. Check if there is enough water flow volume. 2. Check if inlet / outlet water temp. sensor failure. 	<ol style="list-style-type: none"> 1. Adjust bigger water flow. 2. Replace related sensor.
No display	Defrosting		
EE08/EE8	Communication failure	Check the connection	Reconnect the connection wire.

6.4 Failure code table for double-system

Wire controller	Protection/Failure	Check	Solution
PP01/PP1	Inlet water temp. sensor failure	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP02/PP2	Outlet water temp. sensor failure	1. Check the connection of outlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP03/PP3	Coil 1 temp. sensor failure	1. Check the connection of coil 1 temperature sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP04/PP4	Coil 2 temp. sensor failure	1. Check the connection of coil 2 temperature sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP05/PP5	Ambient temp. sensor failure	1. Check the connection of ambient temperature sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP06/PP6	Protection for over-big temp. difference between water inlet & outlet	1. Check if there is any jam in the water circuit. 2. Check if the water flow volume is enough. 3. Check if the water pump has failed to work.	1. Remove the jam. 2. Increase the water flow volume. 3. Repair or replace the water pump.
PP07/PP7	Anti-freeze protection for cooling	Refer to PP06.	Refer to PP06.
PP07/PP7	Winter anti-freeze protection I	No action required	
PP07/PP7	Winter anti-freeze protection II	No action required	
EE01/EE1	High pressure in system 1	1. Check if high pressure switch is broken 2. Check if there is a blockage in water circuit or water flow is not enough. 3. Check if there is a blockage in refrigerant circuit.	1. Replace high pressure switch. 3. Remove cause of blockage or increase water flow. 4. Send heat pump to dealer for detailed check.
EE02/EE2	High pressure in system 2		
EE06/EE6	Low pressure in system1	1. Check if low pressure switch is broken. 2. Check if refrigerant level is low. 3. Ambient temp. and water inlet temp. is too low.	1. Replace low pressure switch. 2. Fill up with enough refrigerant. 3. Decrease water flow. 4. Send heat pump to dealer for detailed check.
EE07/EE7	Low pressure in system2		
EE03/EE3	Water flow switch failure	1. Check if wiring connection of flow switch is in position. 2. Check if enough water flow. 3. Check if flow switch is broken. 4. Check if water pump failure.	1. Reconnect the wiring. 2. Increase enough water flow. 3. Replace flow switch. 4. Repair or replace water pump.
EE04/EE4	Wrong phase or lack of phase	1. Check if high or low pressure switch is broken. 2. Check if lack of refrigerant. (For low pressure) 3. Ambient temp. and water inlet temp. is too low. (For low pressure) 4. Check if there's jam in water circuit or water flow not enough. (For high pressure) 5. Check if refrigerant circuit jam. (For high pressure)	1. Replace new pressure switch. 2. Charge enough refrigerant. 3. Adjust less water flow. 4. Remove jam or adjust bigger water flow. 5. Send heat pump to dealer for detailed check.
EE05/EE5	Failure of over-big temp. difference between water inlet & outlet	1. Check if there is enough water flow volume. 2. Check if inlet / outlet water temp. sensor failure.	1. Adjust bigger water flow. 2. Replace related sensor.
No display	Defrosting		
EE08/EE8	Communication failure	Check the connection	Reconnect the connection wire.

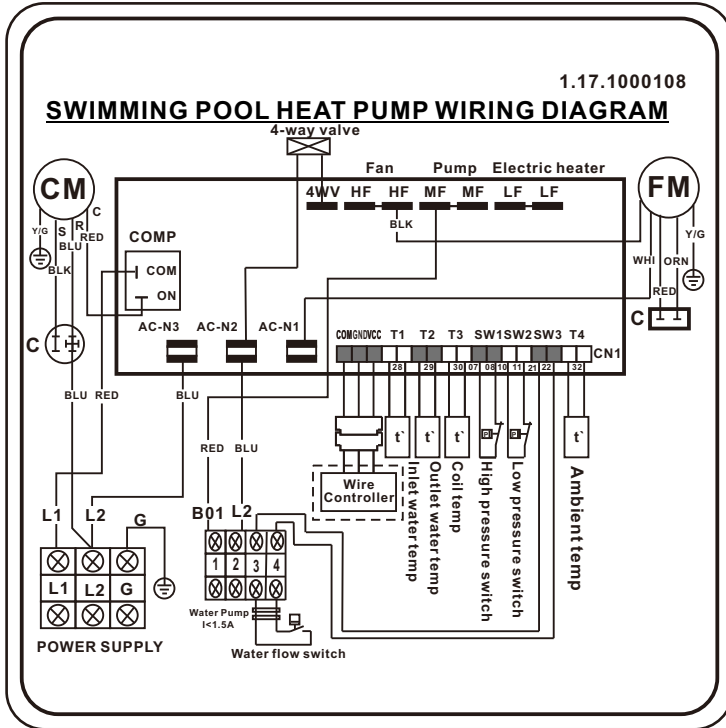
7.Name plate & wiring diagram

7.1Name plate

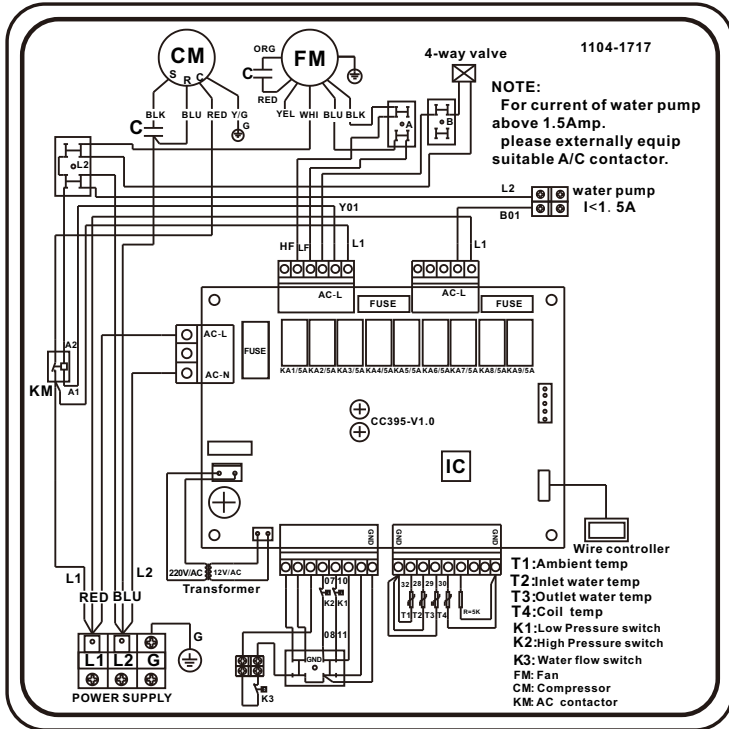


7.2 Wiring diagram

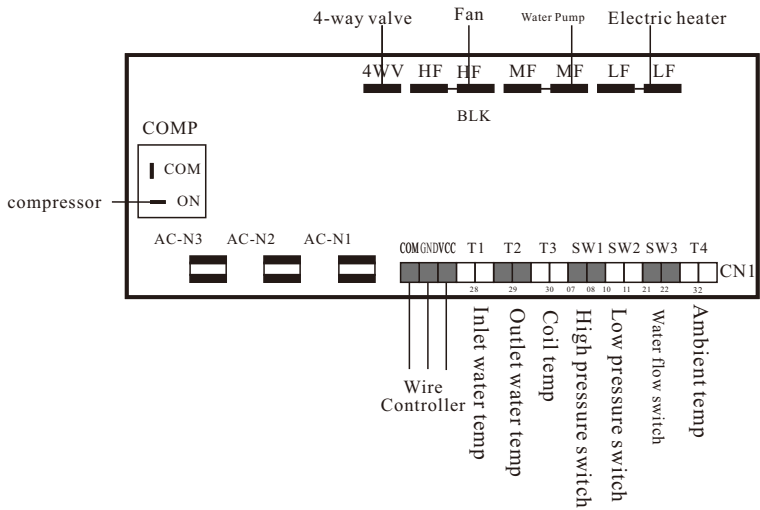
FH-120/FH-220



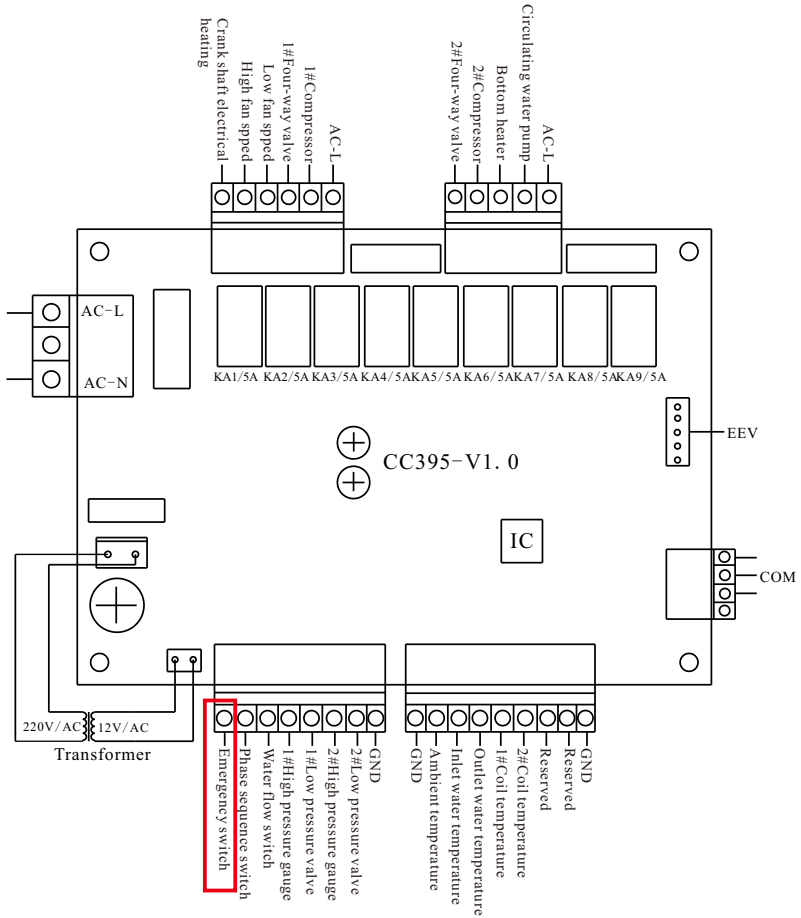
FH-055



AQUALINK CONNECTION IS DONE BY INTERRUPTING THE EMERGENCY SWITCH WIRE. AQUALINK RELAY SHOULD BE INSTALLED AS ON / OFF SWITCH FOR THIS WIRE.



AQUALINK CONNECTION IS DONE BY INTERRUPTING THE EMERGENCY SWITCH WIRE. AQUALINK RELAY SHOULD BE INSTALLED AS ON / OFF SWITCH FOR THIS WIRE.



FIBROHEAT HEAT PUMP LIMITED FACTORY WARRANTY

Fibropool Co.LLC warrants this Pool/Spa Heat Pump, to the original owner, to be free of material and workmanship defects for a limited TEN(10) year term. Heat pumps utilizing Fibropool Titanium Heat Exchangers carry a lifetime warranty on the titanium tubing. Specific warranty term are listed below. This warranty will begin on the homeowner's proof of purchase documents.

The full warranty term includes parts and labor charges to remove, repair or replace defective components or failure due to workmanship. CLAIMS FOR WARRANTY REIMBURSEMENT MUST HAVE PRIOR AUTHORIZATION BY FIBROPOOL and be performed by a Factory Authorized Service Center. This warranty does not include transportation changes for equipment parts to and from the factory, covered by this warranty.

Note 3: Seasonal warranty begins on the date of purchase and ends on Dec 31st of the same year.
Note 4: Scuff, rip, tear and overexposure to ultraviolet rays is not covered by this warranty.

This warranty is applicable only if the unit's installation and operation is expressly and completely followed in accordance with the purchased model's Owner/ Installation manual. These documents are furnished with each unit and are available by contacting the Fibropool Co.LLC.

The liability of Fibropool Co.LLC shall not exceed the repair or the replacement of defective parts under the referenced year exclusion, ten (10) year limited term and shall not include consumables, including refrigerant or transportation to or from the Fibropool Service Center. Fibropool Co. LLC is not liable for any damages of any sort whatsoever, including incidental and consequential.

PROOF OF PURCHASE REQUIRED FOR WARRANTY COVERAGE

Warranty Schedule

- Lifetime warranty on titanium tubing heat exchanger
- 1 year labor on the entire unit
- 2 years full on compressor, cabinet and digital display
- 3-10 years prorated warranty on the compressor, cabinet and digital display
- 5 years full warranty on all other parts
- 6-10 years prorated warranty on all other parts

This warranty does not include damage to any internal piping components due to freezing conditions, negligence and abuse, installations in corrosive environments or atmospheres nor acts of God. There are no implied warranties of merchantability of fitness for a particular purpose that apply to this product.

PLEASE RETAIN THE UPPER PORTION OF THIS SHEET AND MAIL THE BOTTOM PORTION TO: Fibropool LLC.
 PO Box 2425, Bay Saint Louis, MS 39520 USA

Toll free: 1-877 342 7676 Fax: +1-201 328 3300 Email: support@fibropool.com

Customer Name			
Address			
City	State/Province	Zip/Post code	Country
Email Address		Phone Number	
Item Purchased		Serial Number (if applicable)	
Date of Purchase	Dealer/Retailer		
Installer name/contact information (if other than customer/homeowner)			

