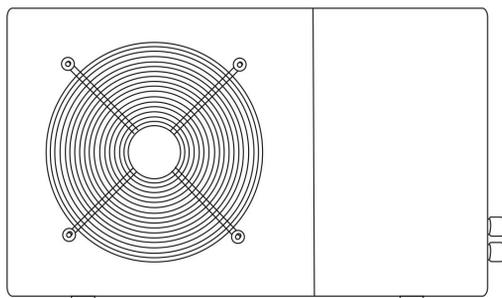




hydro-s

7018517	Hydro-S Heat pump 230V black type 3 horizontal
7018518	Hydro-S Heat pump 230V black type 5 horizontal
7018519	Hydro-S Heat pump 230V black type 8 horizontal
7018520	Hydro-S Heat pump 230V black type 10 horizontal
7018521	Hydro-S Heat pump 230V black type 12 horizontal

Swimming Pool Heat Pump User and Service manual



Hydro-S Swimming Pool Heat pump

USER & SERVICE MANUAL

INDEX

1. Specifications
2. Dimension
3. Installation
4. Initial start up of the unit
5. Operation of the heat pump
6. Maintenance
7. Electrical Wiring
8. Troubleshooting
9. Figures of the pump
10. Accessories
11. Warranty and return

Thank you for using Hydro-S swimming pool heat pump for your pool heating, it will heat your pool water and keep the constant temperature when the air ambient temperature is at 7 to 40°C



ATTENTION: This manual includes all necessary information for the usual practice of the Heat Pump, please to read the Service Manual provide with this product before installation and using.

WARNING: Please always empty the water in heat pump during winter time or when the ambient temperature drops below 0°C, or else the Titanium exchanger will be damaged because of being frozen, in such case, your warranty will be lost.

WARNING: Please always cut the power supply if you want to open the cabinet to reach inside the heat pump, because there is high voltage electricity inside.

1. Specifications

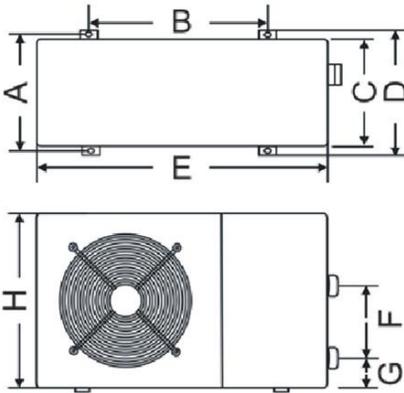
Technical data of Hydro-S heat pumps

Hydro-S	Model	3	5	8	10	12
Part number		7018517	7018518	7018519	7018520	7018521
Heating capacity A27/W27	kW	3,5	4,5	7,5	9,5	12
	BTU/h	12000	15300	25500	32400	41000
Heating capacity A15/W26	kW	3	3,7	5,5	6,1	8,2
	BTU/h	10000	12500	18500	20500	28000
Power input	kW	0,77	0,97	1,41	1,61	2,1
Maximum volume(good insulation)	m ³	15	20	30	45	60
Running current	A	3,4	4,9	7,4	8	10,6
Minimum fuse	A	10	15	20	20	30
COP at A27/W27	W/W	4,5	4,4	4,7	4,6	4,7
COP at A15/W26	W/W	3,9	3,8	3,9	3,7	3,9
Power supply	V/Ph/Hz	220-240/1/50				
Controller	LED Display					
Condenser	Titanium heat exchanger					
Compressor qty	1					
Compressor type	Rotary					
Refrigerant	R410a					
Fan quantity	1					
Fan power input	W	68	68	80	80	120
Fan speed	RPM	830~870				
Air flow	horizontal					
Noise level (10m)	dB(A)	37	37	39	39	43
Noise level (1m)	dB(A)	46	46	48	48	52
Water connection	mm	50				
Nominal water flow	m ³ /h	2,5	2,5	2,5	2,6	3,5
Maximum pressure loss	kPa	12	12	12	12	15
Net dimensions	L/W/H	750/290/500		930/350/550		1000/360/620
Shipping dimensions	L/W/H	850/330/540		1060/380/590		1120/380/660
Net weight / shipping weight	Kg	32/36	36/38	47/53	47/53	61/65

* Above data is subject to modification without notice.

2. Dimension

Unit : mm



Model s	Hydro-S 3/5	Hydro-S 8/10	Hydro-S12
A	273	330	330
B	423	680	655
C	260	280	300
D	293	360	360
E	747	930	1000
F	210	230	340
G	83	83	83
H	470	520	590

3. Installation and Connection

3.1 Remarks

The factory supplies the heat pump on its own. Other components, including a by-pass where necessary, must be supplied by the user or installation technician.

N.B.:

Please follow the steps below when installing the heat pump:

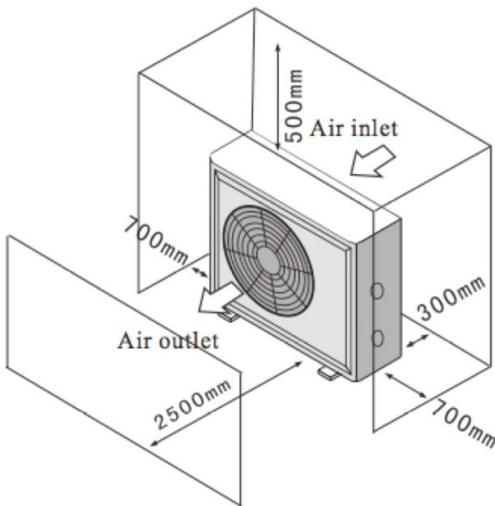
1. Any addition of chemicals must take place in the pipes located **behind** the heat pump.
2. Install a by-pass if the water flow of the swimming pool pump is more than 20% above the permitted flow through the heat exchanger of the heat pump.
3. Install the heat pump above the surface level of the swimming pool.
4. Always install the heat pump on a firm base and use the damping rubbers supplied to avoid vibration and noise.
5. Always keep the heat pump straight up. If the appliance was held in a diagonal position, wait for at least 24 hours before starting the heat pump.

3.2 Siting of the Heat Pump

The appliance will operate properly in any location, provided that three points are observed:

1. Fresh Air
- 2. Electricity
- 3. Swimming pool filters

The appliance may be installed practically anywhere outside, as long as minimum distances to other objects are observed



CAUTION:

Do not place the appliance in an enclosed space with restricted volume of air where the air expelled would be re-used, or near to shrubbery that might block the air inlet. These locations hinder the continuous flow of fresh air, resulting in a reduction in efficiency and possibly obstructing adequate supply of heat.

See diagram for the **minimum** distances.

3.3 Distance from the Swimming Pool

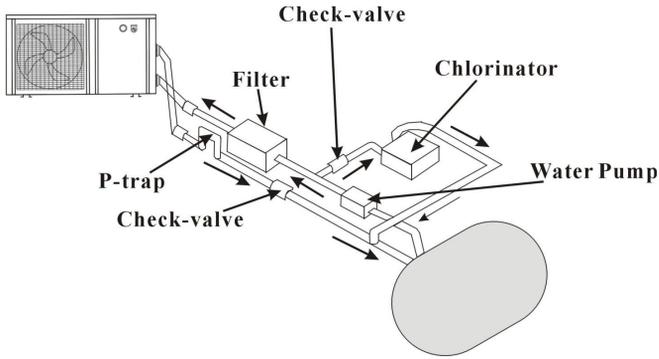
Install the heat pump as close as possible to the swimming pool in order to limit heat loss through the pipes.

Ensure a firm base and place the heat pump on the rubber blocks to avoid vibration. All exposed pipework is to be insulated to avoid heat loss.

3.4 Installing the Check-Valve

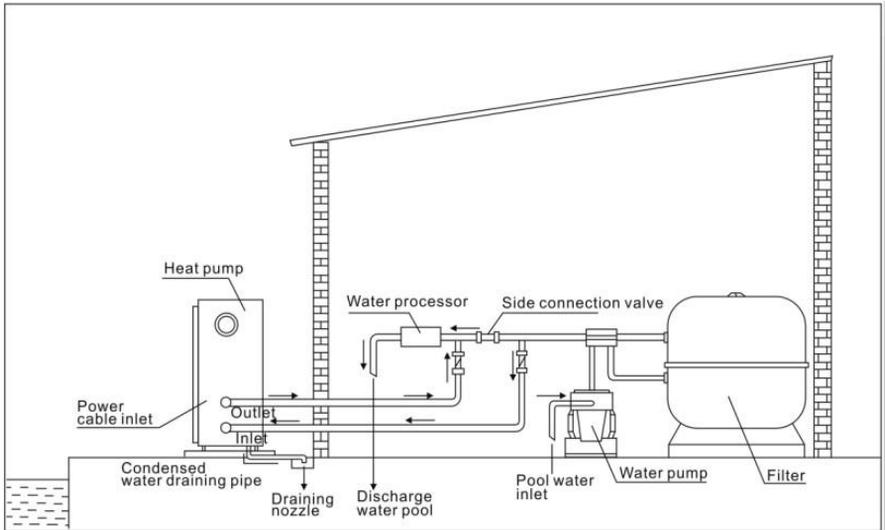
N.B.– When using automatic chlorine and pH dosing systems, it is extremely important to protect the heat pump from excessive concentrations that could damage the heat exchanger. For this reason, facilities of this kind must always be installed in the piping

located BEHIND the heat pump, and it is recommended to install a check-valve to prevent reverse flow in the absence of water circulation. Damage to the heat pump caused by failing to observe these precautions is not subject to the warranty.

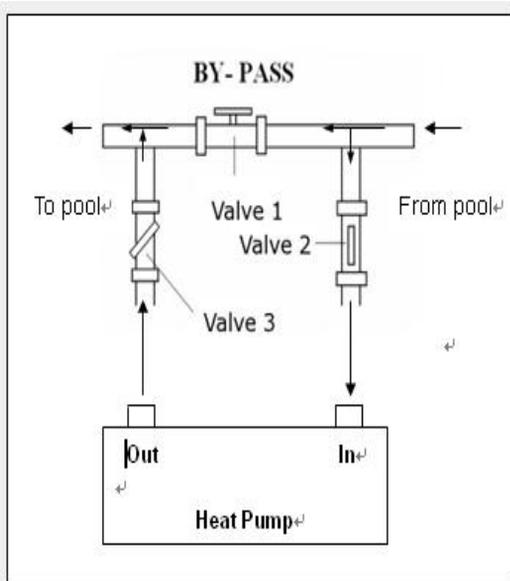


3.5 Typical Setup

Remark – This setup is only an example for demonstration



3.6 Setting the By-pass



Follow this procedure to set the by-pass:

- completely open the 3 valves
- close valve 1 gradually until the water pressure has risen by around 100-200 gram (see also 3.8)
- close valve 3 to around halfway to set the pressure of the refrigerant gas in the appliance.

The by-pass has to be built as shown:

- VALVE 1: Slightly closed
(water pressure increased with just 100 to 200 gr)
VALVE 2: Completely open
VALVE 3: Half way open

Optimal operation of the heat pump is achieved if the refrigerant gas is at a pressure of 20+/-2 bar.

This pressure may be read off from the pressure gauge next to the service panel of the heat pump. The correct setting also ensures that the optimal water flow always passes through the appliance.

Remark – The lack of a by-pass or poor setting may cause the heat pump not to operate optimally, or even become damaged. In that case the warranty is invalidated.

3.7 Electrical Connection

Important - Although the heat pump is electrically insulated from the rest of the swimming pool system, this merely prevents flow of current from and to the swimming pool water. An earth is still necessary to protect you against short circuits within the appliance. Ensure that there is a good earth.

Check beforehand whether the supply voltage corresponds to the operating voltage of the heat pump.

It is advisable to make use of a separate fuse (delay type – D curve) along with adequate cabling (see table below).

The heat pump must be used exclusively with the filter pump. For this reason, connect to the same fuse as the filter pump. If no water flows through the heat pump while in operation, it may be damaged and then the warranty is invalidated.

Connect the cable carrying the current to the clamp connector block behind the panel located next to the fan.

Model	Supply (Volt)	Safety Fuse (A)	Nominal Current (A)	Cable Diameter (mm ²) for 15 m in length
Hydro-S-3	220-240	10	3.4	1.5
Hydro-S-5	220-240	15	4.9	1.5
Hydro-S-8	220-240	20	7.4	2.5
Hydro-S-10	220-240	20	8	2.5
Hydro-S-12	220-240	30	10.6	2.5

These should be seen as guidelines only. Check the local regulations.

3.8 Starting up for the first time

After all the connections have been made and checked, the following steps must be taken:

1. Turn on the filter pump. Check for leaks and make certain that the water flows from and to the swimming pool.

2. Connect the current to the heat pump and set the switch to ON. The appliance will start up after the time delay (see below) has elapsed.
3. After a few minutes check whether the air being expelled from the appliance is cooler.
4. Leave the appliance and filter pump in operation 24 hours per day until the desired water temperature has been reached. At this point the heat pump ceases operation. The appliance will now start up again automatically (as long as the filter pump is in operation) whenever the swimming pool temperature falls to 1 degree below the programmed temperature.

Depending on the initial temperature of the swimming pool water and the air temperature, several days may be needed to bring the water up to the temperature required. Covering the swimming pool properly can considerably shorten this period.

Time Delay – the appliance is fitted with built-in start-up delay of 3 minutes as protection for the electronics and to increase the life of the contacts. After this interval, the appliance will restart automatically. Even a brief interruption in the flow of current will activate this delay and thus prevent the appliance from starting up immediately. Additional interruptions in the current during this delay will have no influence on the 3-minute countdown.

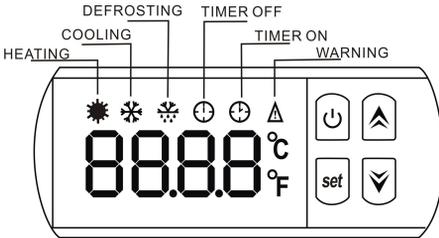
3.9 Condensation

The intake air is cooled significantly as a result of the operation of the heat pump when heating the swimming pool water, and water may condense on the fins of the evaporator. When humidity is high, this could even amount to several litres per hour. This is sometimes erroneously seen as a water leak.



4. Operation

(1) Guide for operation



(2) Start the pool heat pump

Press  to start the heat pump, the LED display will show the inlet water temperature and current working mode after 5s.

(3) Stop the pool heat pump

Press  once again to stop the heat pump, the LED display shows 'OFF'

(4) Water temperature setting

Press  or  to set the desired water in temperature in current working mode, then Press  to save setting and exit.

(5) TIME setting

Press  button ,then press  to enter into " TIME " display ;

**** HOUR SETTING****

Press  again to "HOUR" setting , "HH" flashed ,then press  or  to adjust the HOUR from 0 to 23 ;

****MINUTE SETTING****

Press  to enter into MINUTE setting ,"MM" flashed , then press  or  to adjust the MINUTE from 0 to 59.

(6) TIMER ON Setting

Press  button ,then press  button twice to enter into TIMER ON setting .When you see the starting time displaying on controller ,Press  to confirm to enter into TIMER ON setting interface , finally press  or  to adjust the starting time.

(7) TIMER OFF Setting

Press  button ,then press  button 3 times to enter into " TIME OFF" setting . When you see the stopping time displaying on controller ,Press  to confirm to enter into TIMER OFF setting interface , finally press  or  to adjust the stopping time .

****Above operations, you could press  button to save the setting and quick-exit the program. ****

(8) How to check the parameters?

Press  button ,then press  to check the parameter of B - C - D - E- F- G - H .

Code	Parameter	Range
B	Water in temperature	-9 to 99℃
C	Water out Temperature	-9 to 99℃
D	Heating pipe temperature	-29 to 99℃
E	Gas return temperature	-29 to 99℃
F	Ambient temperature	-29 to 99℃
G	Cooling pipe temperature	-9 to 99℃
H	Actual steps of Electronic expansion valve	N*5

**** ATTENTION ****

When you press  and press  button to enter into parameter checking , the  button could not be operated.

At the same as above ,when you press  and press  button to check TIME - starting time of TIMER and Stopping time of TIMER ,the  could be not operated.

5. Parameter setting

This part should be operated only by qualified technicians for after-service or maintenance.

(1) Press  +  +  at same time in 5 second, display flashes ,

(2) Press  or  to choose the parameter you want to adjust

(3) Press  again to enter into interface

(4) Press  or  to adjust the value setting.

(5) Finally press  once again to save the data or press  to save and quick-exit the parameter setting .

Parameter	Meaning	Range	Default	Remarks
0	To set the entering water temp. under cooling mode	7-35°C	28°C	Not adjustable
1	To set the entering water temp. under heating mode	15-42°C	28°C	Adjustable
2	Entry into defrosting time period	30-90MIN	40MIN	Adjustable
3	Terms of Entry defrosting function	-30°C to0°C	-7°C	Adjustable
4	Terms of Exit defrosting	2 to 30°C	20°C	Adjustable
5	Time of Exit defrosting	1 to 12MIN	12MIN	Adjustable
6	Mode: 0 Heat 1 Heat and Cool	0-1	0	Not adjustable
7	Mode selection of Electronic expansion valve	0-1	1(auto)	Adjustable
A	Manual adjustment steps of electronic expansion valve	18-94	70	Adjustable
L	Entering water temperature calibration	-9.9-9.9	0	Adjustable

Recover to Factory default setting

Long press  and  simultaneously in 10 second to recover to factory default setting ,it will display “0000” and then back to “OFF”.

6. Maintenance

6.1 Maintenance

(1) You should check the water supply system regularly to avoid the air entering the system and occurrence of low water flow, because it would reduce the performance and reliability of HP unit.

(2) Clean your pools and filtration system regularly to avoid the damage of the unit as a result of the dirty of clogged filter.

(3) You should discharge the water from bottom of water pump if HP unit will stop running for a long time (specially during the winter season).

(4) In another way, you should check the unit is water fully before the unit start to run again.

(5) After the unit is conditioned for the winter season, he is preconize to cover the heat pump with special winter heat pump.

(6) When the unit is running, there is all the time a little water discharge under the unit.

(7) The location of chemical’s instruction to your system is also critical to the heater’s life.

If an automatic chlorinator or brominates is used, it must be located downstream of the heater.

6.2 Refrigerant pressure

For checking the unit under running model, make sure there is refrigerant pressure gauge which shows working condition of unit. The following mapping table shows the number of refrigerant pressure and unit working condition. If there is big difference between them, the machine is probably malfunctioning.

R410A pressure and temperature mapping table



Unit Condition	Power Off				Running				
	Ambient (°C)	-5~5	5~15	15~25	25~35	/	/	/	/
Water temp (°C)	/	/	/	/	10~15	15~20	20~25	25~30	30~35
Pressure gauge (Mpa)	0.68~0.93	0.93~1.2	1.25~1.6	1.64~1.8	1.3~1.8	1.5~1.9	1.6~2.3	2.2~2.8	2.3~2.9

7. Malfunction and Troubleshooting

7.1 Error code on controller

Malfunction	Error code	Reason	Solution
Low ambient temperature protection	PP0	Ambient temperature is too low	
Inlet water temperature sensor failure	PP1	The sensor in open or short circuit	Check or change the sensor
Outlet water temperature sensor failure	PP2	The sensor in open or short circuit	Check or change the sensor
Heating condenser sensor failure	PP3	The sensor in open or short circuit	Check or change the sensor
Gas return sensor failure	PP4	The sensor in open or short circuit	Check or change the sensor
Ambient temperature sensor failure	PP5	The sensor in open or short circuit	Check or change the sensor
Temperature difference too much protection water inlet and outlet	PP6	Water flow volume is not enough	Check the water flow volume or water jammed or not.
First grade antifreeze protection in Winter	PP7	Ambient temperature or water inlet temperature is too low	Water pump will run automatically for first grade antifreeze
Second grade antifreeze protection in Winter	PP7	Ambient temperature or water inlet temperature is too low	Heat pump will start heating for second grade antifreeze

Cooling condenser sensor failure	PP8	The sensor in open or short circuit	Check and change the temperature sensor
Cooling outlet water temperature is too low	PP7	Water flow volume is not enough	Check the water flow or water system is jammed or not
Cooling temperature is too cold	PP9	The sensor in open or short circuit	Check or change the sensor
High pressure protection	EE1	<ol style="list-style-type: none"> 1. Refrigerant is too much 2. Air flow is not enough 	<ol style="list-style-type: none"> 1. Discharge redundant refrigerant from HP gas system 2. Clean the air exchanger
Low pressure protection	EE2	<ol style="list-style-type: none"> 1. Refrigerant is not enough 2. Water flow is not enough 3. Filter jammed or capillary jammed 	<ol style="list-style-type: none"> 1. Check if there is any gas leakage, re-fill the refrigerant 2. Clean the air exchanger 3. Replace the filter or capillary
Flow switch closed	ON /EE3	Low water flow, wrong flow direction, or flow switch failure.	Check if the water flow is enough and flow in right direction, or else the flow switch could be failed.
Power supply connections wrong (for 3 phase unit)	EE4	Wrong connection or lack of connection	Check the connection of power cable
Inlet and outlet water temperature difference malfunction	EE5	Water flow volume is not enough, water pressure difference is too low	Check the water flow rate or water system is jammed or not
Communication failure	EE8	Wire connection is not good	Check the wire connection

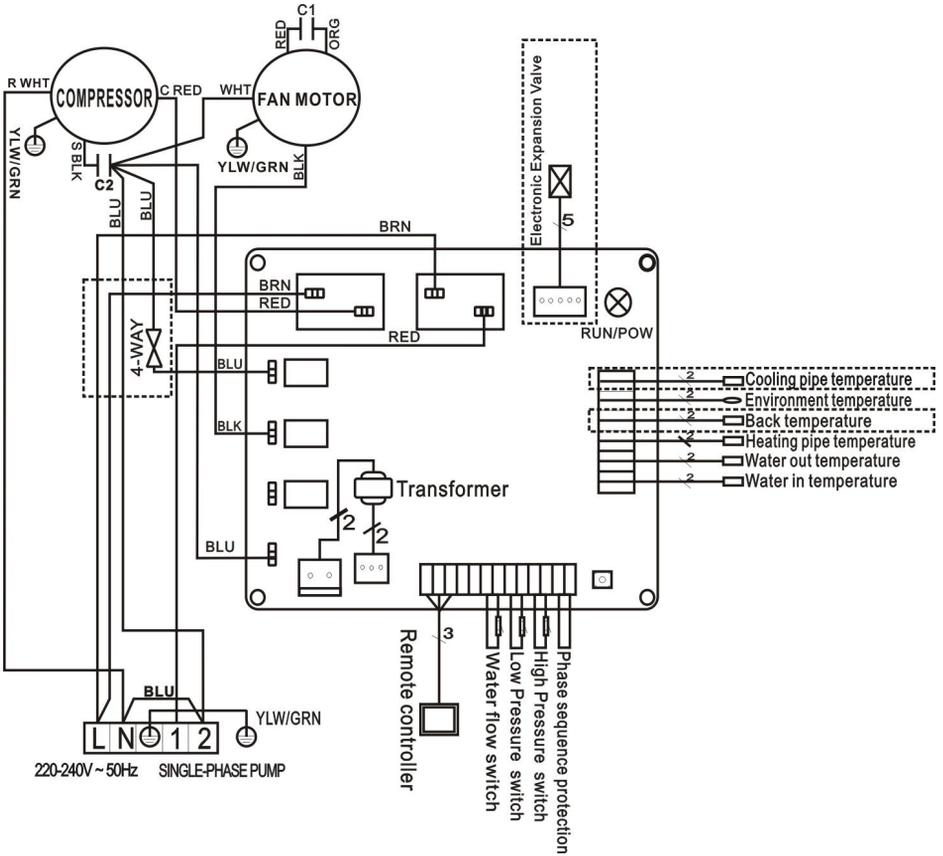
7.2 Other malfunction and solutions (No display on controller)

Malfunctions	Observing	Reasons	Solution
Heat pump is not running	LED wire controller no display.	No power supply	Check cable and circuit breaker if it is connected
	LED wire controller. displays the actual time.	Heat pump under standby status	Startup heat pump to run.
	LED wire controller displays the actual water temperature.	<ol style="list-style-type: none"> 1. Water temperature is reaching to setting value, HP under constant temperature status. 2. Heat pump just starts to run. 3. Under defrosting. 	<ol style="list-style-type: none"> 1. Verify water temperature setting. 2. Startup heat pump after a few minutes. 3. LED wire controller should display "Defrosting".
Water temperature is cooling when HP runs under heating mode	LED wire controller displays actual water temperature and no error code displays.	<ol style="list-style-type: none"> 1. Choose the wrong mode. 2. Figures show defects. 3. Controller defect. 	<ol style="list-style-type: none"> 1. Adjust the mode to proper running 2. Replace the defect LED wire controller, and then check the status after changing the running mode, verifying the water inlet and outlet temperature. 3. Replace or repair the heat pump unit
Short running	LED displays actual water temperature, no error code displays.	<ol style="list-style-type: none"> 1. Fan NO running. 2. Air ventilation is not enough. 3. Refrigerant is not enough. 	<ol style="list-style-type: none"> 1. Check the cable connections between the motor and fan, if necessary, it should be replaced. 2. Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. 3 Replace or repair

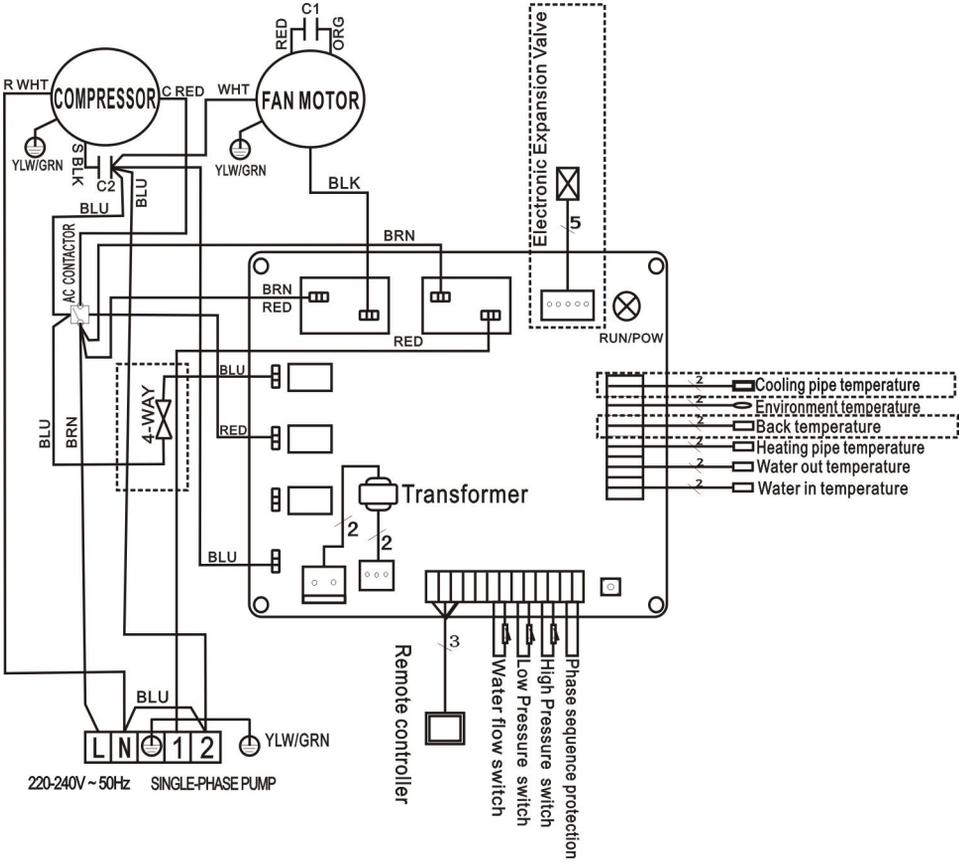
			the heat pump unit.
water stains	Water stains on heat pump unit.	<ol style="list-style-type: none"> 1. Concreting. 2. Water leakage. 	<ol style="list-style-type: none"> 1. No action. 2. Check the titanium heat exchanger carefully if it is any defect.
Too much ice on evaporator	Too much ice on evaporator.		<ol style="list-style-type: none"> 1. Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. 2. Replace or repair the heat pump unit.

8. Electrical Wiring

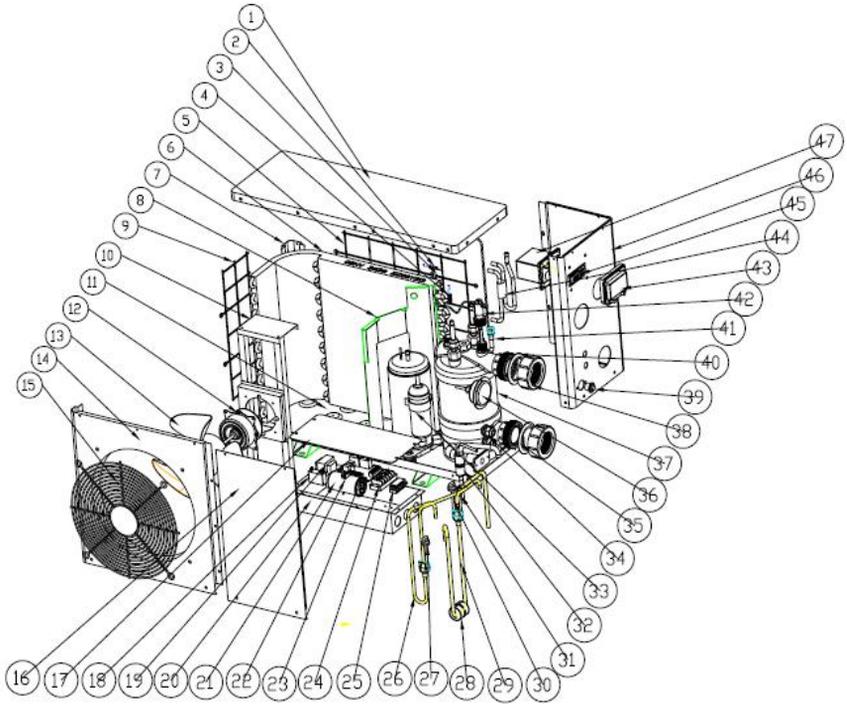
Hydro-S 3/5/8/10 wiring diagram



Hydro-S 12 wiring diagram



9. Figures of the pump
9.1 Exploded Diagram



9.2 Parts list

NO	Part Name	NO	Part Name
1	Top cover	25	Wiring clip
2	Ambient temp. sensor	26	Exhaust pipe
3	Ambient temp. sensor clip	27	High pressure switch
4	Heating pipe sensor	28	Shock proof hammer
5	Back grill	29	Return pipe
6	Evaporator	30	Low pressure switch
7	Pillar	31	Needle
8	Isolation panel	32	Piping
9	Left grill	33	Compressor
10	Motor fixture	34	Power cable connection
11	Base tray	35	Blue rubber ring
12	Motor	36	Gauge
13	Fan blade	37	Heat exchanger
14	Front panel	38	Water connection
15	Ventilation	39	Drainage plug
16	Service panel	40	Red rubber ring
17	Electric box cover	41	Distribution pipe
18	Motor capacitor	42	Water flow switch
19	Transformer	43	Waterproof box
20	Electric box	44	Collective pipe
21	Compressor capacitor	45	Display
22	Clip	46	Right panel
23	PCB	47	Display cover
24	Terminal		

10. Accessories



Anti-vibration base, 4 pcs



Beneath the machine stand



Draining jet, 2 pcs



Under the bottom panel