

# **Air Source Heat Pump Water Heater**

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## **Domestic Series**

### **Instruction Manual**

- ◆ The instructions in this manual are for the use of qualified individuals specially trained and experienced in the installation and maintenance of this type of equipment.
- ◆ Persons not qualified shall not attempt to install, service, or maintain this equipment.
- ◆ Please read the manual carefully before installation.
- ◆ Please keep this manual well for future reference.

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# Part I: General Information

## 1.1 Function description

Air source heat pump water heater is used to heat water for domestic hot water or commercial hot water, etc.

## 1.2 Important Information



For your own security, and to ensure proper operation of the unit, this heat pump unit must be installed and repaired by qualified technician, not consumer himself.



A leakage protection switch must be installed near the heat pump in an accessible place.



Do not use any damaged wires and switches, If found ( to be damaged), replace it immediately.



Do not open the electrical box without shutting off all power sources to the heat pump.



When transporting the heat pump, ensure that it is not upside down and not tilted more than 45° in any direction.



Before performing any maintenance on the unit you must turn it off first and shut off the power to the unit.



This unit is designed for outdoor installation, do not install it in an closed area.



Do not install the unit in places where there are any inflammable or explosive materials.



Do not restrict or block the air intake or outlet of the unit.



When the unit is not used for a long time, please switch it off and disconnect the power supply. Drain the unit when ambient temperature is lower than 0°C



When power failure occurs and lasts for more than 5 hours with the ambient temperature lower than 2°C, please drain the unit to prevent the formulation of ice in it.



This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.



Respect safety distance between the unit and other equipment or structures. Guarantee adequate space for access to the unit for maintenance and/or service operations.



Power supply: the cross section of the electrical cables must be adequate for the power of the unit and the power supply voltage must correspond with the value indicated on the respective units. All

units must be earthed in conformity with legislation in force in the country concerned.

### 1.3 About heat pump

Heat Pump unit is a new technology and is regarded as the latest generation among the various water heating/cooling methods. It surpasses coal, electrical, gas and solar water heating, offering a better solution for energy saving and environmental protection.

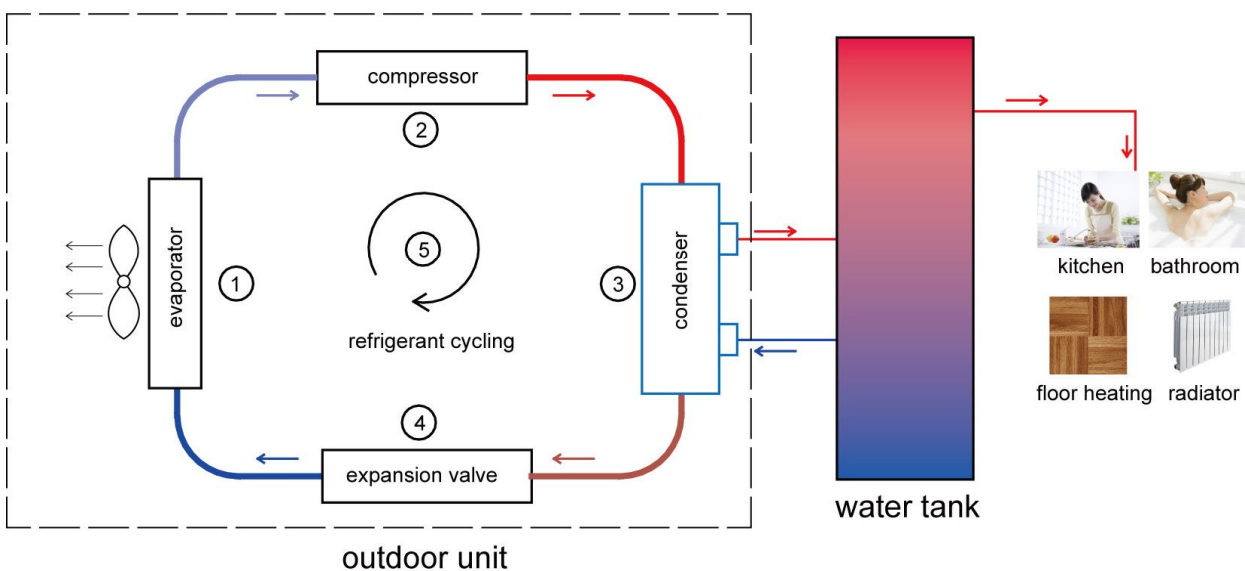
With the advantage of high energy efficiency ratio and pollution-free, heat pump is widely used all over the world. Compared to electrical heating, consuming the same quantity of electricity, heat pump water heater makes as 3~5 times of hot water as the former does.

### 1.4 Working principle

The basic principle of how a heat pump works is simple. Take air source heat pump for example, it works just like air conditioner in cooling mode, however, in heating mode, the refrigerant flow is reversed and heat is extracted from the outside air to heat your home. So the purpose of a heat pump is to absorb heat in one place where it is plentiful, then to transport and release it in another location where it can be used for space or water heating.

In order to absorb and release the heat into and from the refrigerant, we exploit the ability of the refrigerant fluid to boil from a liquid to a vapor and then to condense back into a liquid. This is a continual process while the compressor is running and circulating the refrigerant

Working Principle for Heat Pump Water Heater



1. The refrigerant in system extracts free heat energy from outside air through fin-coil evaporator.
2. The refrigerant is compressed to a high-temp. & high-pressure gas by compressor.
3. Heat energy transferred to water through tube-in-shell heat exchanger.
4. The refrigerant in system restores to low-energy condition
5. The cycle is repeated.

## 1.5 Features of heat pump water heater

### 1) **Wide application**

It can be widely used in villas, factories, schools, hospitals, hotels, restaurant, swimming pools and spas, bath centers, laundries, etc.

### 2) **More Safety**

Water and electricity are completely isolated, no electric shock problem, more secure than traditional electrical water heaters.

No fuel tubes and storage, no potential danger from oil leakage, fire, explosion, etc.

A full range of protection including compressor delay protection, high & low pressure protection, supper heating protection, Anti-phase and open-phase protection, high temperature protection, etc.

### 3) **Energy-saving**

It provides the same amount of hot water at 1/4 cost of electrical water heaters, heat pump water heater can save your bill every day.

### 4) **Super-Sized evaporator coil**

Hydrophilic aluminum fin and rifled copper coil, it has higher performance in cold weather.

### 5) **High efficiency heat exchanger**

### 6) **World famous Compressor**

It adopts the world famous brand compressor---“Copeland”, “Panasonic”, “Hitachi”, “Sanyo”, unmatched reliability, quiet operation, energy-saving and environmental-friendly.

### 7) **Monoblock design, convenient installation, nice appearance.**

### 8) **All-weather running**

It supplies hot water no matter in a rainy day, snowy day or at night.

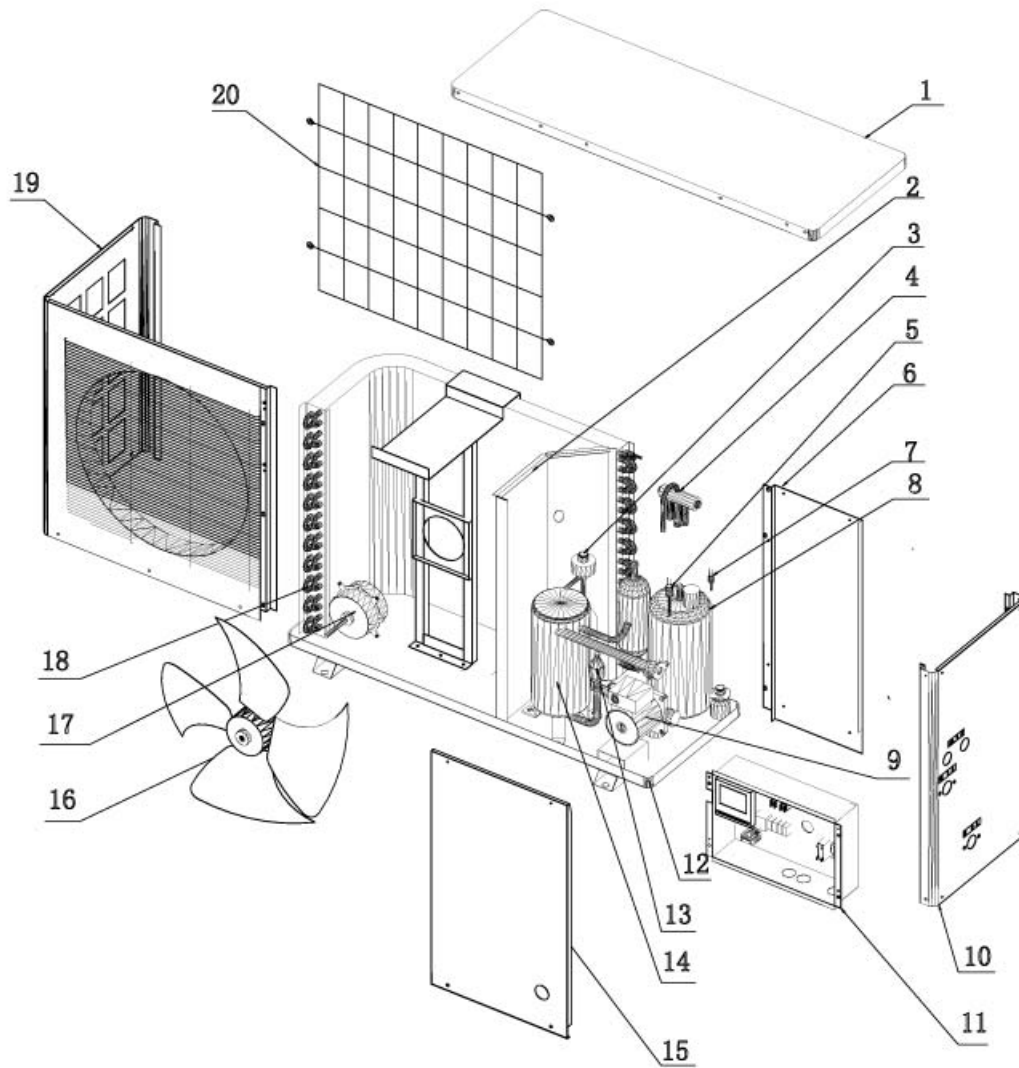
### 9) **Running automatically**

It is microcomputer controlled, with timer function, it can automatically start up and stop according to the water temperature and other running conditions you set, no need for a supervisor.

### 10) **Environmental friendly**

Environment-friendly, free of pollutions, it reduces the global green house effect.

## Part II Unit Exploded View



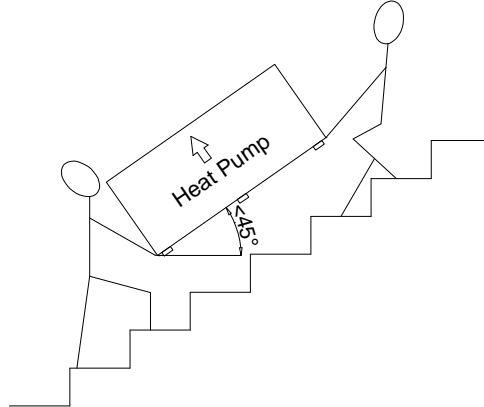
20	Protection grid	10	Right panel
19	Wind circulation grid	9	Circulation water pump
18	Evaporator	8	compressor
17	Fan motor	7	High pressure switch
16	Fan	6	Rear panel
15	Front panel	5	Low pressure switch
14	Heat exchanger	4	Four way valve
13	Filter	3	Electronic expansion valve
12	Bottom sheet	2	Partition sheet
11	Electric box	1	Top panel

# Part III Installation & Application

## 3.1 Transportation



When transporting the heat pump, ensure that it is not tilted more than 45° in any direction.



## 3.2 Installation Location Requirement



This unit is designed for outdoor installation, do not install it in an enclosed area.

It is very important to select a proper position for the unit, you should consider the followings:

- The space for installation should be large enough and well ventilated
- The installation position should be close to drainage channel or vent to facilitate water discharge.
- Choose a smooth, horizontal position where it can stand the weight of the unit, and it won't increase noise and vibration as well, or you can use bracket to fix it on the wall, if necessary.
- Do not install the unit in place where there is pollution, accumulation of dirt or fallen leaves.
- There should not be inflammable or explosive materials close to the unit.

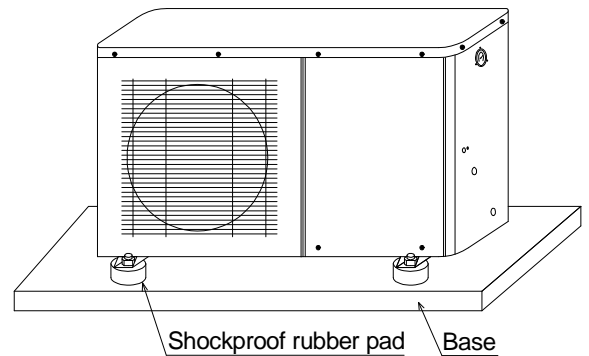


fig.1.1

## 3.3 Installation

### 3.3.1 Install the outdoor unit

- a. Mount the unit on the selected base and install the 4 black shockproof rubber pads under the 4 sheet of the unit to reduce vibration and sound transmission to the base. (Fig 1.1). For GT-SKR010B, GT-SKR015B, GT-SKR020B, users may use brackets to install the unit on wall (Fig 1.2)

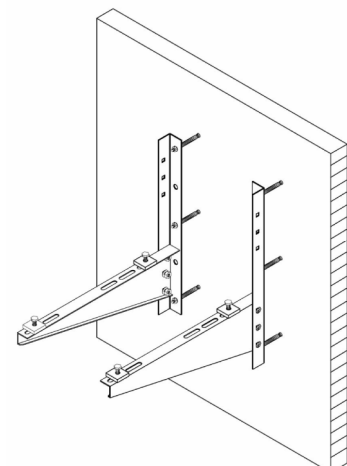


fig 1.2

- b. Connect the condensate connector to the draining hole on the bottom sheet. (Fig 2)

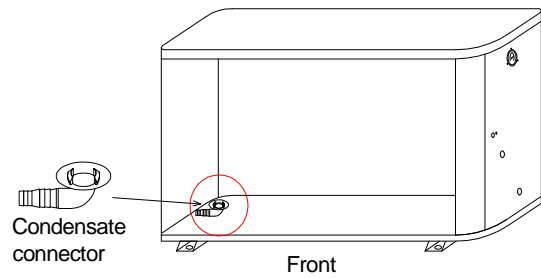
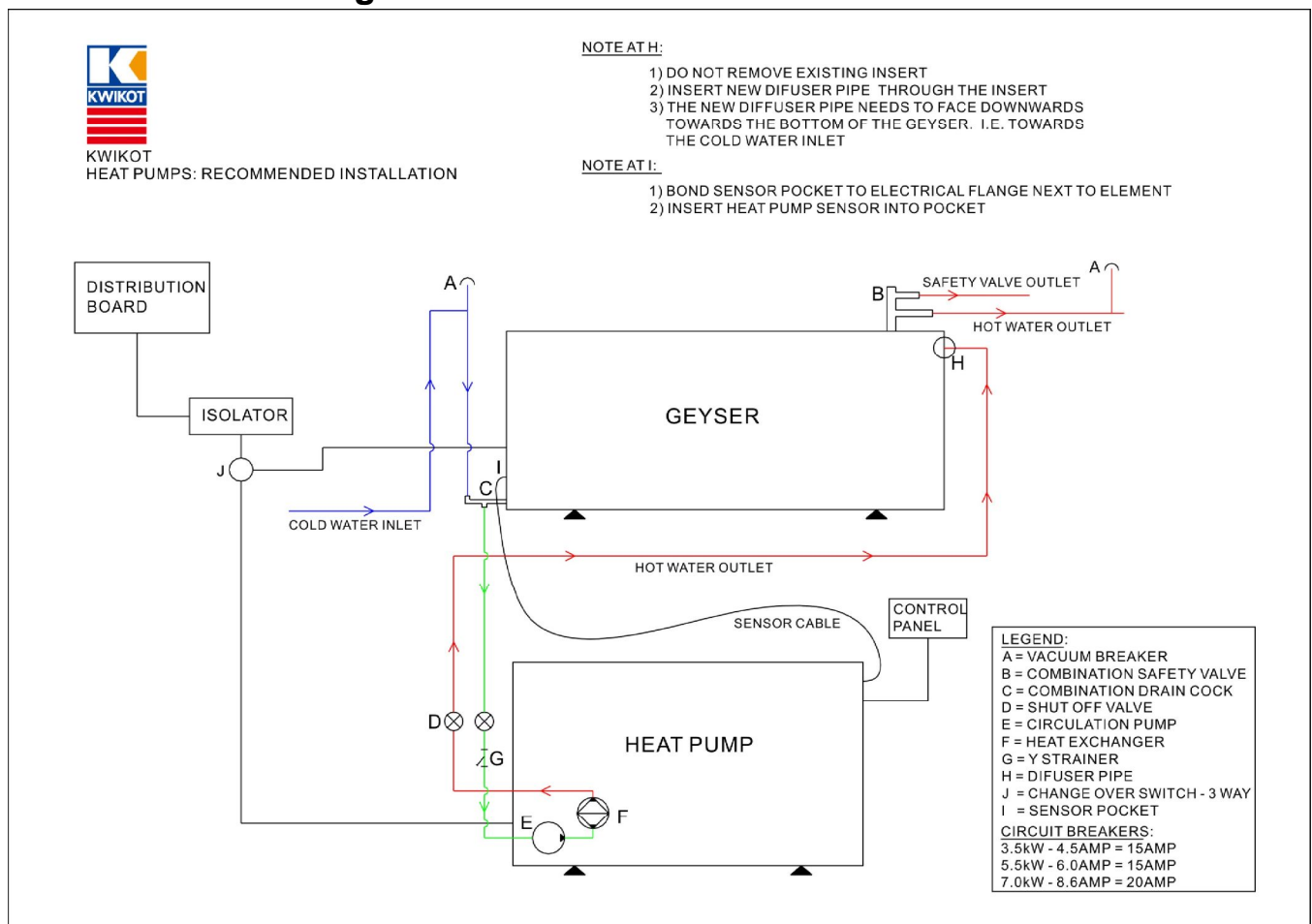


fig 2

### 3.3.2 Accessories

No	Item	Quantity
1	Instruction Manual	1
2	Condensate connector	1
3	Brackets	1 set

### 3.3.3 Installation diagram



Remark:


- Make sure to install **a Y strainer** before water inlet of the unit to avoid clogging of the system. For pressurized type water tank, It's an essential requirement to install **a safety valve** at the upper part of water tank.
- Fix the temperature sensor well into the connection to avoid falling down as the failure may cause overheating protection or system halted.
- In case the cable for the temperature sensor or control panel is not long enough, It is suggested to use




telephone cable and bind it with electrical adhesive type in order to avoid oxidation or loose connection as it may affect the transfer of data.


4. The circulation pipes and valves must be well insulated, otherwise it'll loose heat or cause frozen problem.
5. Wire the power of the heat pump water heater (refer to figure below), make sure the voltage is stable when give a trial run to the unit.

### 3.3.4 Electrical Connection

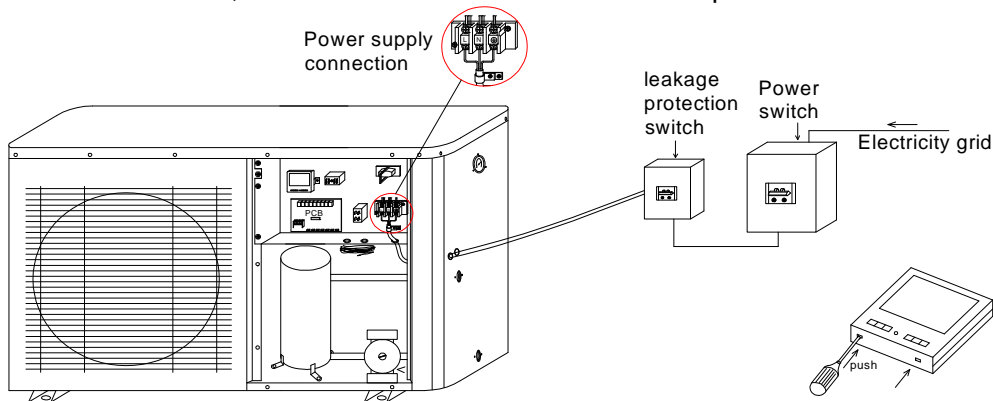
 For your own security, and to ensure proper operation of the unit, this heat pump unit must be installed and repaired by qualified technician, not consumer himself.

 A leakage protection switch must be installed near the heat pump in an accessible place.

 Do not use any damaged wires and switches, If found (to be damaged), replace it immediately.

 Do not open the electrical box without shutting off all power sources to the heat pump.

- All the wiring must meet the electrical safety requirement and conducted by qualified electricians.
- Ensure that there is a good earth connection for the power. Do not disconnect the earth connection of the power in any condition.
- Ensure that the heat pump water heater is well connected to the earth.
- Offer an separate power which meets rated requirements for the heat pump water heater
- When the water heater connects to the electricity network, there must be a short-circuit protection.
- Choose the suited type of wires when use the power outdoor.
- Do not use the main power switch to control the start/stop of the unit.
- After installation, double check before connect it to the power.



Open the control panel when relocate it.  
Make sure to install a waterproof box to guarantee safety.

#### The Specification of Power








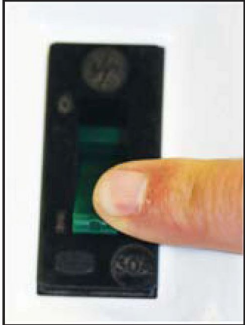

Type	010B/015B	020B	030B
Power supply	220-240V~,50Hz		
Power wiring (mm <sup>2</sup> )	3x2.5	3x2.5	3x4.0
Ground wiring (mm <sup>2</sup> )	2.5	2.5	4.0

### 3.3.5 How to install the water tank temperature sensor

- a. Opening the front panel to find the water tank temperature sensor
- b. Install it to the water tank according to the following steps:



## INSTALLATION OF A SENSOR POCKET

1. Switch "OFF" the electricity supply to the electric water heater.  

2. Remove the electrical cover plate on the electric water heater.  

3. Using sandpaper, lightly sand down a section on the flange plate to the left of the thermostat.  

4. Using high temperature epoxy i.e. "Pratley Steel", place the epoxy glue onto the back of the sensor pocket.  

5. Place the glued area on the sensor pocket onto the sanded area on the flange plate. Wait for the epoxy to set/cure.  

6. Insert the supplied sensor into the sensor pocket.  

7. Replace the electrical cover plate.  

8. Switch "ON" the electrical supply to the electric water heater.  

9. Switch the Heat Pump "ON" at the control key pad. Set the temperature on the key pad to 55°C.  


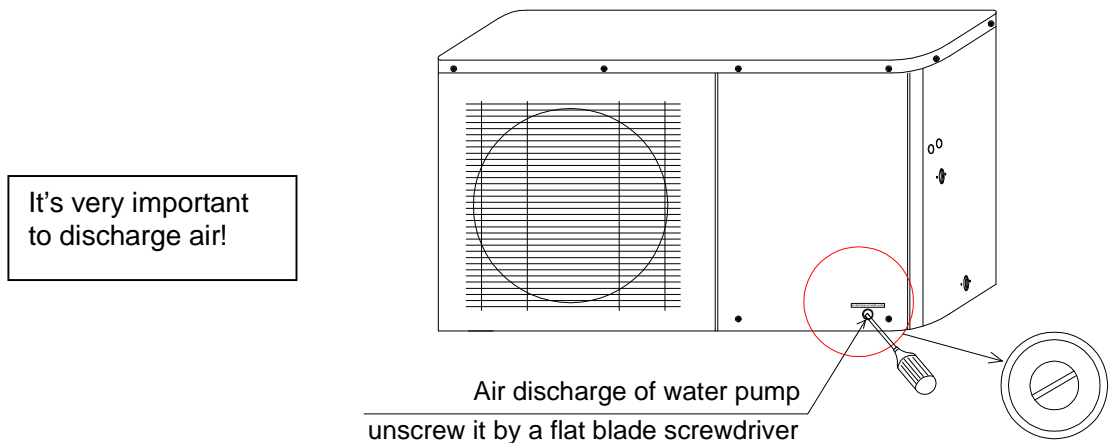
### 3.4 Trial Operation

- To ensure that start-up is performed correctly, it should only be operated by qualified technician.
- The heat pump water heater is designed according to the conditions as follows: the range of ambient temperature is  $-10^{\circ}\text{C}\sim 43^{\circ}\text{C}$  and the range of water pressure is  $0.15\sim 0.8\text{Mpa}$ . The range of water outlet temp. is  $28\sim 60^{\circ}\text{C}$
- Make sure the piping system and water tank is filled up with water before commissioning.

#### 3.4.1 Preparation


The following items need to be checked prior to start-up:

- a. The heat pump must be fully connected.
- b. All valves that could impair the proper flow of water in the heating circuit must be open.
- c. The air intake and air outlet paths must be clear.
- d. Ensure the condensate outflow functions.
- e. Open the gate valve to fill the piping system and water tank, then discharge air in piping system and water tank (refer to the following instruction)



#### ■ To discharge air in water pump and piping system:

Step1: loosen the screw on the water pump through the hole,

Step2: connect heat pump to power supply, then start it by pressing  on controller.

Step3: Discharge air for about 15 minutes, then fasten the screw..

#### ■ To discharge air out of water tank

The water tank is pressured type, after opening water refilling gate valve, it will be filled up automatically and air in it will be discharged automatically through relief valve on hot water outlet.

#### 3.4.2 Trial run

- Make sure the piping system and water tank is filled up with water before commissioning and air is discharged out of the system.
- The water outlet temperature is set by the controller. When the water temperature of tank is higher than it is set, the unit will stop running, but if lower by  $5^{\circ}\text{C}$  (default temperature difference), it may start up automatically.
- The heat pump is started up via the heat pump control panel. After the water pump has been running for 30 seconds, the unit starts to work, and then observe whether it works normally.

- When you restart the unit, the compressor won't start to work until three minutes later, and this function is designed to protect the compressor.

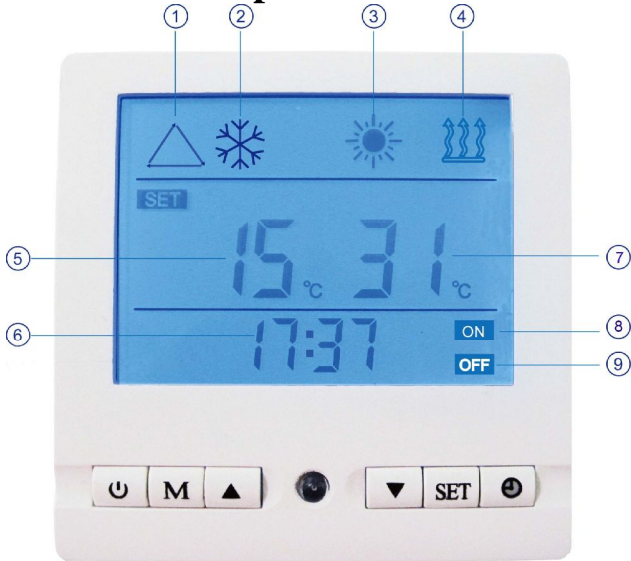
### **3.4.3 Caution**

If something happen as follows, please stop it immediately and cut the power off. You should contact with our authorized agent or maintenance personnel, don't repair it by yourselves. Without professional technology, it may cause fire and you may get hurt.

- Fuse blown or protection activated frequently
- The wire and switches are heated abnormally
- Abnormal sounds coming from the unit
- Abnormal smell comes out of the unit.
- Electricity leakage

# Part IV Control System

## 4.1 Description of Icons



- |   |  |
|---|--|
| ① | Flashing when compressor starts running          |
| ② | Defrosting indication                            |
| ③ | Showing when the unit starts running             |
| ④ | Auxiliary electrical heating indication (unuesd) |
| ⑤ | The desired temperature                          |
| ⑥ | Clock  |
| ⑦ | Measured water tank temperature                  |
| ⑧ | Timer of turning-on the unit                     |
| ⑨ | Timer of turning-off the unit                    |

## 4.2 Operation Instruction



OFF



ON



Compressor starts running

### A. Lock/Unlock the buttons

- Lock the buttons: Under ON or OFF status, extended press button simultaneously for 5 seconds, buttons are locked, and icon is shown on the screen.
- Unlock the buttons: Repeat the above step to unlock the buttons

### B. On/Off the unit

- Connect power to the unit, press button to turn on the unit, When compressor starts working, icon flashes on screen.
- When the unit is on, press button, you can turn it off.

### C. Set the clock (Note: it will exit the interface when no operation for 10 seconds)

Under ON or OFF status, extended press button for 5 seconds, then press button to set

the hour, press **SET** button, then press **▲ ▼** button to set the minute, press **SET** button to exit.

#### D. Set water temperature

When the unit is on, press **▲ ▼** button to set desired water tank temperature. The setting will be saved automatically when no further operation on it for 10 seconds. The range is 28-60°C, recommended temp. setting range is 48-52°C, defaulted hot water temperature is 50°C.

Note:

- Heat pump unit will stop running automatically when water temperature in water tank reaches desired water temperature you set.
- The unit will start running automatically when water temperature drops to a certain temperature. (according to temperature difference you set, refer to item 05 in table 4.1)

#### E. Set/Cancel the timer of On/Off (Note: it will exit the interface when no operation for 10 seconds)

Note:

You can set totally three period of time for the unit to start/stop automatically. Under ON or OFF status, Press **🕒** button once, “ 1 🕒 ” flashing; Press **🕒** button twice, “ 2 🕒 ” flashing; Press **🕒** button thrice, “ 3 🕒 ” flashing.

1. Set timer: (Take “ 1 🕒 ” for example)






when “ 1 🕒 ” is flashing, Press **SET** button, **ON** flashing on the screen, then press **▲ ▼** button to set hour, Press **SET** button then press **▲ ▼** button to set minute; press **SET** button, **OFF** flashing on the screen, then press **▲ ▼** button to set hour, Press **SET** button then press **▲ ▼** button to set minute, press **SET** button to finish setting.

2. Cancel timer: To cancel timer, just set the unit to turning-on & turning-off at the similar time, then **ON** **OFF** icon disappeared.

#### F. Set/Review the parameters (for technician only)

When the unit is on, extended press **M** button to enter the interface. press **▲** button, select item (01-08), press **M** button, then press **▲ ▼** button to set, press **M** button to confirm.

Table 4.1

Item	Description	Range	Default Value	Remark
01	Coil temp. to start defrosting	-1~-9°C	-3°C	 flashing
02	Coil temp. to stop defrosting	5~25°C	12°C	 flashing
03	Time interval for defrosting	10~90 Min	45 Min	 flashing
04	Running time of defrosting	5-17 Min	10 Min	 flashing
05	Temperature difference set	2-30	9	Refer to note 1,2,3 as below
06	Temp. compensation	0-30	0	
07	Return water temperature	28~60°C	40°C	<b>IN</b> flashing, it's for commercial unit.
08	Ambient temp. for starting electrical heating (unused)	0~35°C	5°C	 flashing, when ambient temp. is lower than set temp. , electrical heating functions.

Note:

1. Set the temperature difference between measured water temperature and purpose water temperature
2. By setting the temperature difference to control the unit to start up/stop automatically.
3. For example, the default value is 9 (that represents 5°C), when the measured temperature is lower than desired water temperature by 5°C, the unit will start automatically. The unit will not stop until the measured temperature reaches the desired water temperature you set.  
1 equals 0.5°C, the range is 2-30.

**G. Review Data**

When the unit is on, shortly press **M** button, then press **▲** button, review the actual measured data as below:

**Table 4.2**

Name	Item	Remarks
Code of recoverable fault	01	It shows "28" when it works normally, others please refer to Table 4.3
"Mode Selection" Code Name	02	"0" circulation heating mode
Unit type	03	"0" single compressor, without phase detection
Unused	04	Spare
Coil temperature	05	Monitoring point of Defrosting temp. for compressor
Ambient temperature	06	Opening measurement of the electric expansion valve, and the anti-freeze temperature
Water outlet temperature	07	overheating protection (70°C)
Unused	08	Spare
Water temperature in tank	09	The unit stops working automatically when temp. reaches desired value.
Unused	10	Spare
Unused	11	Spare

**Table 4.3: Recoverable faults**

Fault Name	Remark
"01E" Overheat protection	Hydraulic pressure switch protection
"05E" Overheat protection	If the water outlet temperature is higher than 70°C and lasts for 20 seconds, the unit may stop. And when the temperature cools down, it will restart in three minutes.
"Ht" Overheat protection	When ambient temp. > 35°C & (ambient temp. + water tank temp.) > 95°C, the unit will stop working automatically to protect the unit, it'll resume work automatically when <95°C
"Lt" Auto-antifreeze	To prevent the pipes and pumps from being frozen, it's an auto function and recoverable. There are 2 stages: <ol style="list-style-type: none"> <li>1. When ambient temp. &lt; 5°C and water outlet temp. &gt; 10°C, Circulation pump runs for 3 minutes with working interval of 30 min.</li> <li>2. When ambient temp. &lt; 5°C and water outlet temp. ≤9°C, Circulation pump runs automatically and stops when Ambient temp. ≥ 5°C or water outlet temp. ≥15°C.</li> </ol>

## 4.3 Protection

- ◆ Compressor delay protection: the delay for the compressor to start/stop is three minute, it starts up in one minute for the first time to turn on the unit.
- ◆ High pressure protection: After compressor starts running and the high pressure switch interrupts for 10 seconds, the unit stops, "03E" flashing on the screen, and alarm sounds finally.
- ◆ Low pressure protection: After compressor starts running for 3 minutes and the low pressure switch interrupts for 10 seconds, the unit stops, "04E" flashing on the screen, and alarm sounds finally.
- ◆ Water outlet temp. protection (05E): when water outlet temperature is higher than 70°C for 20 seconds, the compressor stops, and when the temperature cools down to where it is set and the unit meets the condition of stopping for three minutes, the unit restarts automatically,
- ◆ Overheat protection (Ht): When ambient temp.  $> 35^{\circ}\text{C}$  & (ambient temp. + water tank temp.)  $> 95^{\circ}\text{C}$ , the unit will stop working automatically to protect the unit, it'll resume work automatically when  $< 95^{\circ}\text{C}$
- ◆ Auto-antifreeze (Lt): To prevent the pipes and pumps from being frozen, there are 2 stages:
  1. When ambient temp.  $< 5^{\circ}\text{C}$  and water outlet temp.  $> 10^{\circ}\text{C}$ , Circulation pump runs for 3 minutes with working interval of 30 min.
  2. When ambient temp.  $< 5^{\circ}\text{C}$  and water outlet temp.  $\leq 9^{\circ}\text{C}$ , Circulation pump runs automatically and stops when Ambient temp.  $\geq 5^{\circ}\text{C}$  or water outlet temp.  $\geq 15^{\circ}\text{C}$ .
- ◆ Sensor fault: if one of the sensors is unplugged from PCB, all parts stop working.

## Part V Maintenance



Before performing any maintenance on the heat pump you must switch it off first and shut off the power to the unit.

A well-maintained heat pump could save your energy costs. When installed and tested by a qualified technician, heat pumps can deliver many years of dependable service and comfort. Below are some tips you can follow to ensure that your heat pump gives you optimum performance.

1. Turn the power off when the unit is being maintained.
2. Do not use petrol, naphtha, dissolvent and any other chemicals on the unit, otherwise, it may damage the surface. External heat pump parts can be wiped with a damp cloth and domestic cleaner.
3. Avoid leaning or putting objects on the device.
4. Keep it dry and drafty round the unit.
5. If the unit will be shut down for a long time, users should drain the water in the pipe, turn the power off and cover it with protective cover, Check it roundly before you start it again.
6. When scales accumulated in heat exchanger, it may cause high pressure protection and "03E" will flash on the screen of controller. It is advised to use the phosphoric acid whose temperature is about  $50\sim 60^{\circ}\text{C}$  and consistency is 15% to clean the heat exchanger of the unit. First start the circulation pump to clean it for 3 hours, and then flush it with tap water for three times. Do not use any amycytic detergent to clean the heat exchanger and the tank.
7. Change the installation site

If the customer wants to change the site, please contact with the dealer or the local Customer Service for help.



# Part VI Trouble Shooting

**Table 6.1**

Fault Code	Fault	Possible Causes & Treatment
02E	Current protection	<ol style="list-style-type: none"> <li>1) Check the wire connection between terminal block of main power &amp; compressor, to see if it is loose.</li> <li>2) The current transformer is broken, replace a new one.</li> <li>3) Compressor or refrigerant system fault cause the over-current.</li> <li>4) The discharge pressure of compressor is too high, please refer to the high pressure protection.</li> </ol> <p>If the error code still be there after the above steps, please replace the PCB.</p>
03E	High pressure protection (protect when high pressure switch interrupts)	<ol style="list-style-type: none"> <li>1) No water flow or inadequate water flow, please check the followings: <ul style="list-style-type: none"> <li>* Clean the Y strainer</li> <li>* Discharge air out of the suction pipe of water pump</li> <li>* The water pipes are clogged somewhere.</li> <li>* Inadequate water in water tank, please fill up the water tank.</li> <li>* The circulation water pump is broken.</li> </ul> </li> <li>2) The probe of water tank temp. sensor falls down and the hot water temp goes very high, then this causes the high pressure.</li> <li>3) The tube-in-shell heat exchanger accumulated scale, please clean it.</li> <li>4) The refrigerant system has some problem. <ul style="list-style-type: none"> <li>* Excessive refrigerant, please discharge some.</li> <li>* The system need to be fully evacuated.</li> <li>* The electronic expansion valve is broken or clogged (sometimes operate incorrectly)</li> </ul> <p>Note: The faulty ambient temp. sensor may cause the incorrect operation of the electronic expansion valve. So please check the measured ambient temp. through the controller, if it's obviously lower than actual ambient temp. please replace the sensor.</p> </li> <li>5) High pressure switch is broken.</li> </ol> <p>Please use a multimeter to check the terminals of high pressure switch on the PCB, if they're circuit, but the error code still be there, please replace the PCB</p>
04E	Low pressure switch fault (protect when interrupts)	<ol style="list-style-type: none"> <li>1) The refrigerant system has some problem. <ul style="list-style-type: none"> <li>* Inadequate refrigerant, please put in some.</li> <li>* The fin-coil evaporator is blocked or covered.</li> <li>* The fan motor doesn't work.</li> <li>* The electronic expansion valve is broken or clogged (sometimes operate incorrectly)</li> </ul> <p>Note: The faulty ambient temp. sensor may cause the incorrect operation of the electronic expansion valve. So please check the measured ambient temp. through the controller, if it's obviously lower than actual ambient temp. please replace the sensor.</p> </li> <li>2) Low pressure switch is broken. <p>If the protection occurs when the pressure is higher than 0.05MPa, that means the switch is broken, please replace it.</p> </li> <li>3) Please use a multimeter to check the terminals of low pressure switch on the PCB, if they're circuit, but the error code still be there, please replace the PCB.</li> </ol>
05E	outlet water temp. is too high	<ol style="list-style-type: none"> <li>1) No water flow or inadequate water flow, please check the followings: <ul style="list-style-type: none"> <li>* Clean the Y strainer.</li> <li>* Discharge air out of the suction pipe of water pump.</li> <li>* The water pipes are clogged somewhere.</li> <li>* Inadequate water in water tank, please fill up the water tank.</li> <li>* The circulation water pump is broken.</li> </ul> </li> <li>3) The water tank temp. sensor is broken or the probe of sensor falls down, the unit can't stop working automatically, please replace the sensor.</li> <li>4) If the error code still be there after the above steps, please replace the PCB.</li> </ol>
09E	Communication error ( the control panel can't receive information from the PCB)	<ol style="list-style-type: none"> <li>1) The connection cable between controller &amp; PCB is open circuit, short circuit or phase sequence is wrong. Replace it, if necessary.</li> <li>2) If the error code still be there, please replace the controller first.</li> <li>3) If the error code still be there, please replace the PCB.</li> </ol>
11E	Coil sensor fault	1) The sensor falls down from PCB or it's connector is loose, please install it firmly.
12E	Environment sensor fault	2) The sensor is has some problem, please check if it's open circuit or short circuit, please measure the resistance of it ( it's 5kΩ at 25℃) to see if the sensor is broken, please replace it if necessary.
13E	Water outlet sensor fault	3) When there is strong electromagnetic interference from the surroundings, the unit maybe will have some problem.
15E	Water-tank sensor fault	4) If the error code still be there after the above steps, please replace the PCB.
Ht	Overheat protection	When ambient temp. > 35℃ & ambient temp. + water tank temp.>95℃, the unit will stop working automatically to protect the unit., it'll resume work automatically when <95℃
Lt	Anti-freezing protection	When ambient temp. < 5℃, the unit will activate the circulation pump to avoid the freezing. Refer to P15 table 4.3 for the detailed description of Lt.

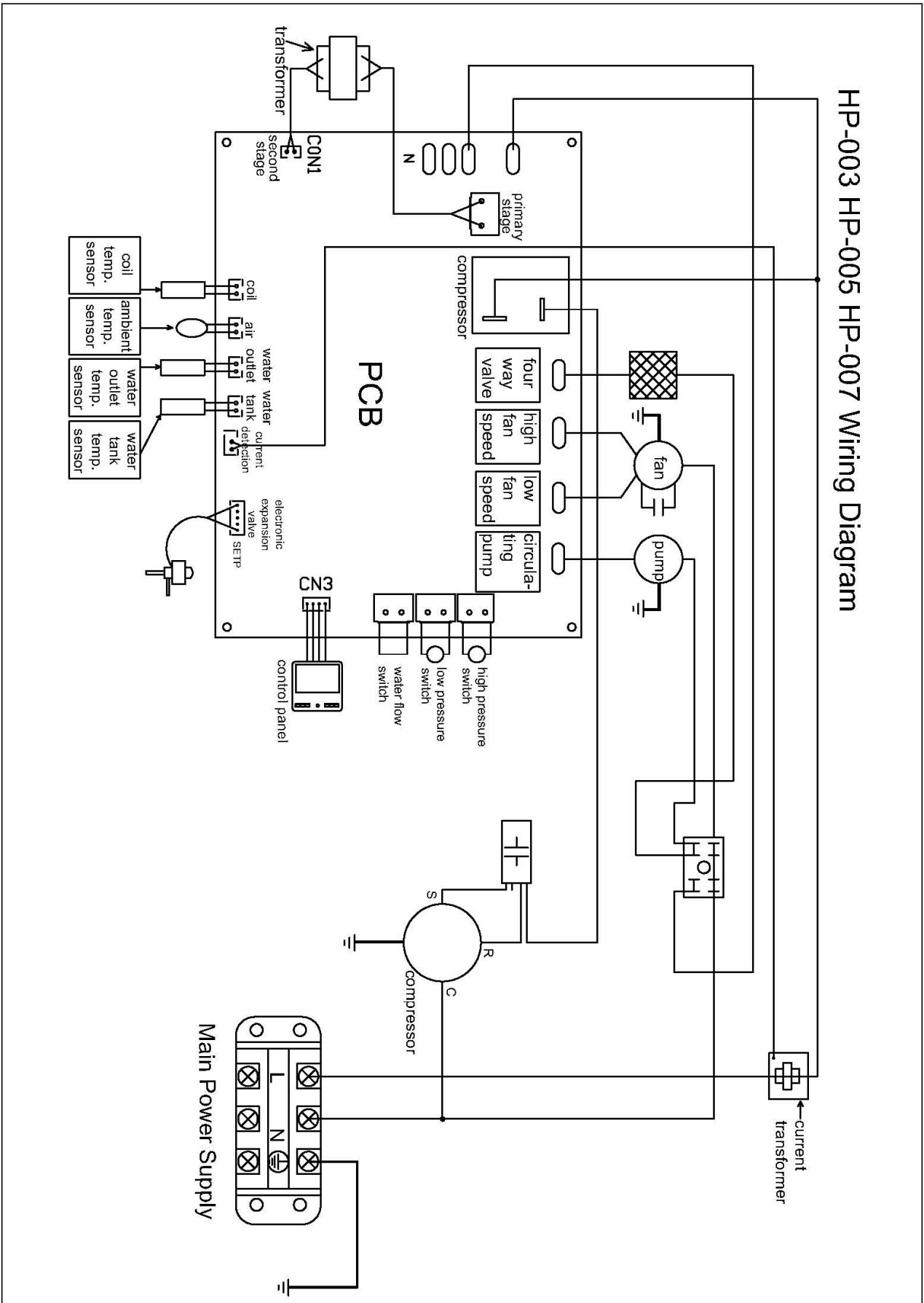
Note: when the fault arises, the correspondent fault code will be flashing on the screen and alarm sounds (Ht & Lt no sounds, recoverable).

**Table 6.2**

Fault Condition	Possible Causes	Treatment
The unit doesn't work	<ul style="list-style-type: none"> <li>◇ Power failure</li> <li>◇ Bad connection to the power</li> <li>◇ Fuse blow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Turn off the switch, check the Power source</li> <li>◇ Find the causes and renovate them</li> <li>◇ Replace the fuse</li> </ul>
The pump is working but too noisy and the water is not cycled	<ul style="list-style-type: none"> <li>◇ Lack water In the system</li> <li>◇ There is air in the water circulation</li> <li>◇ Any valve in the system is not open</li> <li>◇ Filter stoppage</li> </ul>	<ul style="list-style-type: none"> <li>◇ Check the water make-up device and fill in with water</li> <li>◇ Discharge the air in the water system</li> <li>◇ Open all the valves</li> <li>◇ Clean the filter</li> </ul>
Low heating capacity	<ul style="list-style-type: none"> <li>◇ Inadequate refrigerant</li> <li>◇ bad insulation of the water system</li> <li>◇ Drying filter stoppage</li> <li>◇ Air side heat exchanger is un-efficient</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Leak hunting and fill in standard quantity of refrigerant</li> <li>◇ Improve the heat insulation</li> <li>◇ Replace the drying filter</li> <li>◇ Clean the heat exchanger</li> <li>◇ Clean the water filter</li> </ul>
The compressor doesn't work	<ul style="list-style-type: none"> <li>◇ Power failure</li> <li>◇ Compressor contactor destroyed</li> <li>◇ Poor connection</li> <li>◇ Overheating protection</li> <li>◇ water outlet temperature is too high</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Check it and solve the problems</li> <li>◇ Replace contactor</li> <li>◇ Check and renovate it</li> <li>◇ Check and solve the problems</li> <li>◇ Reset a proper temperature</li> <li>◇ Clean the water filter and discharge the air in the water system</li> </ul>
The compressor works but too noisy	<ul style="list-style-type: none"> <li>◇ Liquid refrigerant goes into the compressor</li> <li>◇ interior components destroyed</li> <li>◇ Inadequate refrigeration oil</li> </ul>	<ul style="list-style-type: none"> <li>◇ Check the expansion valve</li> <li>◇ Replace the compressor</li> <li>◇ Add in adequate refrigeration oil</li> </ul>
The fan doesn't work	<ul style="list-style-type: none"> <li>◇ Capacitor damaged</li> <li>◇ The fans are not fixed well</li> <li>◇ The electromotor burned out</li> <li>◇ Contactor destroyed</li> </ul>	<ul style="list-style-type: none"> <li>◇ Replace it</li> <li>◇ Fix it well again</li> <li>◇ Replace the electromotor</li> <li>◇ Replace the Contactor</li> </ul>
Compressor works but not heating	<ul style="list-style-type: none"> <li>◇ Refrigerant leakage</li> <li>◇ Compressor fault</li> </ul>	<ul style="list-style-type: none"> <li>◇ Leak hunting and fill in standard quantity of refrigerant</li> <li>◇ Replace the compressor</li> </ul>
Low water-flow protection	<ul style="list-style-type: none"> <li>◇ Hydraulic switch destroyed</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Replace the switch</li> <li>◇ Clean the filter and discharge the air</li> </ul>
Excessive discharge pressure	<ul style="list-style-type: none"> <li>◇ Too much refrigerant</li> <li>◇ Non-condensable gas in the Refrigeration cycle</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Draw off the superfluous refrigerant</li> <li>◇ Drive the gas out</li> <li>◇ Check the circulation and increase the flow</li> </ul>
Low suction pressure	<ul style="list-style-type: none"> <li>◇ Drying filter stoppage</li> <li>◇ Lack of refrigerant</li> <li>◇ Excessive pressure drop in the heat exchanger</li> </ul>	<ul style="list-style-type: none"> <li>◇ Replace the filter</li> <li>◇ Leak hunting and fill in standard quantity of refrigerant</li> <li>◇ Check the opening of electronic expansion valve</li> </ul>

# Part VII Wiring Diagram

HP-003 HP-005 HP-007 Wiring Diagram



## Disposal

Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging you health and well-being.



There won't be a further notice if anything changes as the unit improved.

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